



MITSUBISHI CNC NC Specification Selection Guide M800/M80/E80/C80 Series



- M800W Series
- M800S Series
- M80W Series
- M80 Series
- E80 Series
- C80 Series

GLOBAL IMPACT OF MITSUBISHI ELECTRIC



Through Mitsubishi Electric's vision, "Changes for the Better" are possible for a brighter future.

Changes for the Better

We bring together the best minds to create the best technologies. At Mitsubishi Electric, we understand that technology is the driving force of change in our lives. By bringing greater comfort to daily life, maximizing the efficiency of businesses and keeping things running across society, we integrate technology and innovation to bring changes for the better.

Mitsubishi Electric is involved in many areas including the following

Energy and Electric Systems

A wide range of power and electrical products from generators to large-scale displays.

Electronic Devices

A wide portfolio of cutting-edge semiconductor devices for systems and products.

Home Appliance

Dependable consumer products like air conditioners and home entertainment systems.

Information and Communication Systems

Commercial and consumer-centric equipment, products and systems.

Industrial Automation Systems

Maximizing productivity and efficiency with cutting-edge automation technology.

OVERVIEW

0 Series)·
UP
-09
IONS LIST ····
LINEAR SERV M-RB Series ···)TOR /TOOL S J-DG Series ··· J-B Series ···· G Series ···· 400V Q-H Series ··· DR 400V G-JR Series ·· DS-EH Series S····

DEDICATED OPTIONS DRIVE UNIT OPTION SELECTION OF CABLES AND CONNECTORS LIST OF CABLES

GLOBAL SALES & SERVICE NETWORK ······167

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M800W

CNC LINEUP

			Selection pro	
Bromium CNC	nrovidos ovpandability	·		Start selecting the N
and flexibility	provides expandability		STEP 1	Check the machine type and sp
 Windows-based dia which provides exc Four expansion slop 	ts are provided as standard			• Machine type: lathe / machining center / • Details of control, required accuracy, with/wi
card slot	ving for expansion using option		STEP 2	Decide the NC specifications
	well suited to high-speed nachining and multi-axis m control		•	 Number of axes, axis configuration, number of Check the position detection method and detect Select the size of the display unit, keyboa
	ntrol unit with integrated display ture allows for high performance		STEP 3	Decide the servo motor
and high functional •Non-Windows-base	graphics ed display provides easy operability			Select the servo motor capacity (NC Server Check the outline dimensions, encoder, a
Standard CNC expandability a		I	STEP 4	Decide the spindle motor
Windows-based disp provides excellent ex- Packaged type for se Two expansion slots	ontrol unit separated from display blay is included in the lineup, which kpandability electing a machine type easily are provided as standard ng for expansion using option cards slot		•	 Check the spindle's base/maximum rotation speed, Frame-type or built-in spindle motor With/without optional specifications (orier Check the C axis accuracy and the speed
Standard CNC	provides high		STEP 5	Decide the drive unit
 Panel-in type, a cor 	nd easy operability ntrol unit with integrated display e (TypeA/TypeB) for easier			Check the capacity and the dimensions of Check the power regeneration/resistor re
selection	e (Typer Typer) for easier		STEP 6	Decide the power supply unit
operability				Select the power supply unit only when a (NC Servo Selection)
	80 Series, offering easy dhigh cost performance		STEP 7	Decide the hardware options
 Provided in packag selection 	ntrol unit with integrated display e (TypeA/TypeB) for easier ed display provides easy		•	 Check the options (manual pulse generator, synchronous encoder, Check the required cables and connecto
operability			STEP 8	Decide the software options
Series incorpo state-of-the-a	ompatible CNC C80 prated with Mitsubishi's rt technologies			• Check the number of programs stored (n • Check the required functions
•MELSEC sequence	nany and varied MELSEC units. er for PLC and GOT2000 for display		STEP 9	Check the development tools
	e mounted on one base and the			Check the screen development tool (whe
control system with be established.	up to 21 part systems/48 axes can			NC specification sele



M80W



M80



E80



C80



SELECTION PROCEDURE

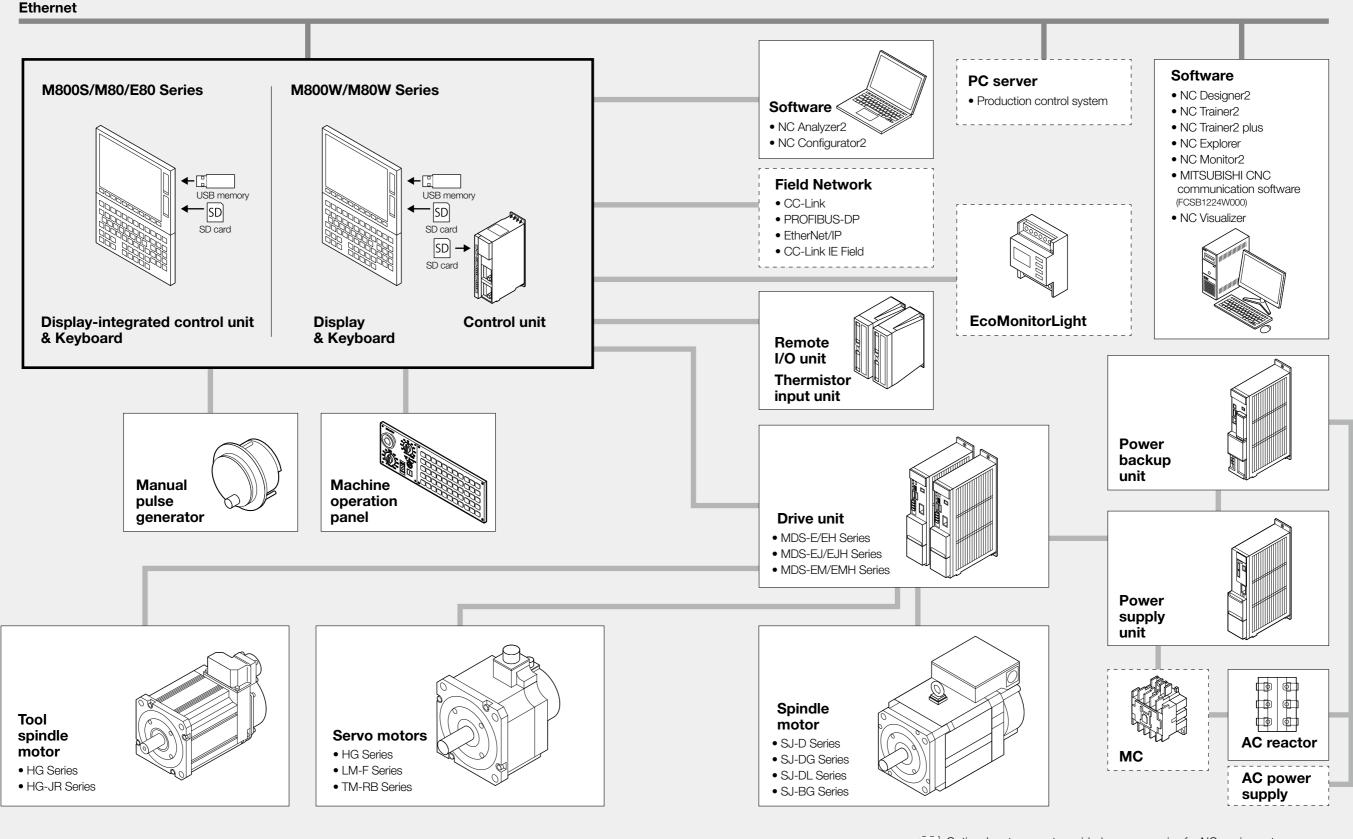
Selection procedure flow chart

	 Machine type: lathe / machining center / gri Details of control, required accuracy, with/without
STEP 2	Decide the NC specifications
	 Number of axes, axis configuration, number of par Check the position detection method and detection p Select the size of the display unit, keyboard
STEP 3	Decide the servo motor
	 Select the servo motor capacity (NC Servo S Check the outline dimensions, encoder, and
STEP 4	Decide the spindle motor
	 Check the spindle's base/maximum rotation speed, outp Frame-type or built-in spindle motor With/without optional specifications (orientation) Check the C axis accuracy and the speed (we have a speed)
STEP 5	Decide the drive unit
	 Check the capacity and the dimensions of a Check the power regeneration/resistor regen
STEP 6	Decide the power supply unit
	 Select the power supply unit only when a po (NC Servo Selection)
STEP 7	Decide the hardware options
	 Check the options (manual pulse generator, synchronous encoder, avail Check the required cables and connectors
STEP 8	Decide the software options
	 Check the number of programs stored (memory Check the required functions
STEP 9	Check the development tools
	\cdot Check the screen development tool (when so
	NC specification selection

SELECTION PROCEDURE

pecifications	
er / grinding machine / specia /without auxiliary axes (for work	
	P4
of part systems, with/without sp ection performance (absolute/relativ oard	
	P84
ervo Selection) r, and whether it has a scale o	or break
	P90
ed, output, torque, outline dimension	
ientation, spindle/C-axis, syn eed (when C axis is used)	ichronization, etc.)
	P117
s of a drive unit regeneration	
regeneration	unit is used
regeneration	unit is used P45,P62,P148
regeneration	
	P45,P62,P148
regeneration n a power regenerative drive u er, availability of network connection	P45,P62,P148
regeneration n a power regenerative drive u er, availability of network connection	P45,P62,P148 on and PLC connection, etc.) P11
regeneration n a power regenerative drive u er, availability of network connection tors	P45,P62,P148 on and PLC connection, etc.) P11
regeneration n a power regenerative drive u er, availability of network connection tors	P45,P62,P148 on and PLC connection, etc.) P11 of variable sets, etc. P165

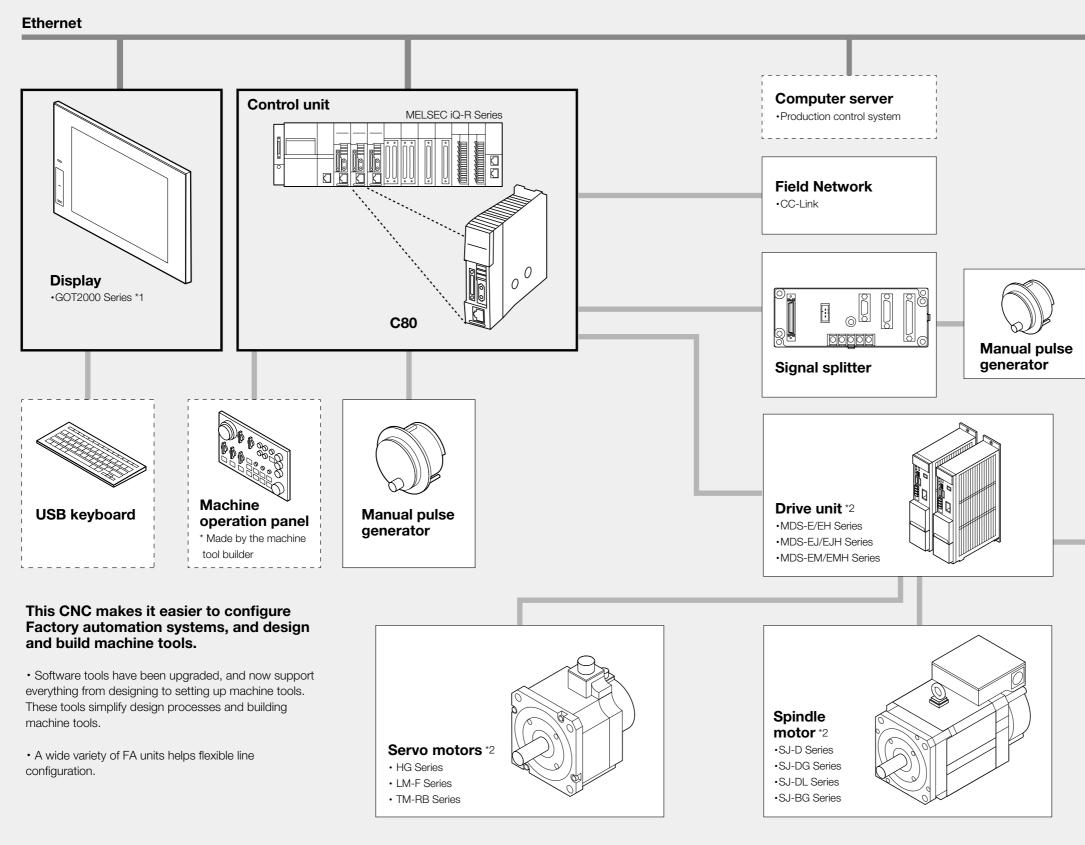
PRODUCT LINES (M800/M80/E80 Series)



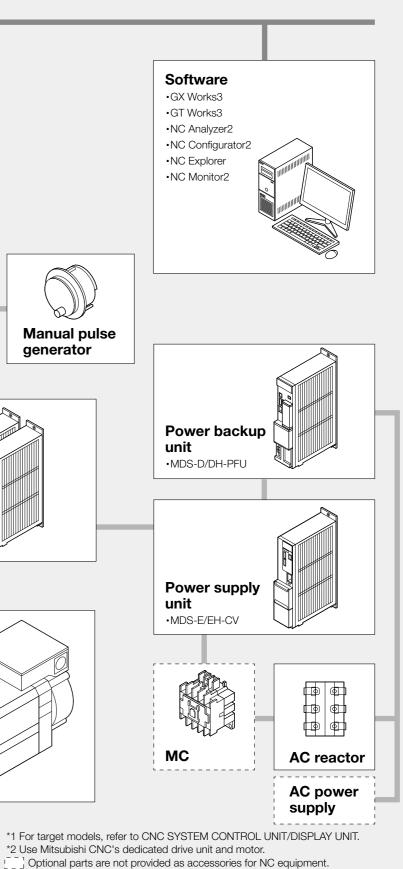
PRODUCT LINES (M800/M80/E80 Series)

[]] Optional parts are not provided as accessories for NC equipment. Please purchase desired components from a Mitsubishi Electric dealership, etc.

PRODUCT LINES (C80 Series)



PRODUCT LINES (C80 Series)



Please purchase desired components from a Mitsubishi Electric dealership, etc.

M800/M80/E80/C80 SERIES LINEUP

						Lathe	system				
			Control unit	(Display/Control unit		(Display/Control unit		Control unit	(Display/Control unit		
			ted-type) N Series		ed-type) S Series	separated-type) M80W Series		ted-type) Series		ted-type) Series	C80 Series
Mode	el name	M850W	M830W	M850S M830S		_	ТуреА	ТуреВ	ТуреА	ТуреВ	_
Max. number of axes		32		3	32	12	12	9	8	5	16
	(NC axes + Spindles + PLC axes) Max. number of NC axes										
Number of control	(in total for all the part systems)		32		32	10	10	7	5	4	16
ber of	Max. number of spindles	8			8	4+G/B ^(*2)	4+G/B ^(*2)	3	3	2	7
contro	Max. number of PLC axes		8		8	6		6		3	8
ol axes	Max. number of PLC indexing axes Number of simultaneous		1		1	4		4	1		8
<u>о</u>	contouring control axes	8	4	8	4	4		4		4	4
	Max. number of NC axes in a part system		12	1	12	8	8	5	5	4	8
Max. r	number of part systems (main + sub)		8		8	4	4	2		1	7
Max.	number of main part systems		8		8	2	2	2		1	7
Max.	number of sub part systems		8		8	2	2	1	-	_	2
	unit-side High-speed program server mode		ilable	_		Available	-		-		-
	unit-side High-speed program server mode	Availat	ole/— (*3)	Ava	ilable	Available/— ("3)	Ava	ilable	Ava	ilable	_
	high-speed program server mode		Available								
	-side SD card mode		_								
	-side USB memory mode	Available 1nm 1nm 0.1µm 0.1µm 0.1µm									 0.1µm
	control increment	1				0.1µm	Iµm	0.1	ιμm	0.1µm	
	per of tool offset sets	q	199	q	99	256	99		99	256	
	program capacity	2,0 (5,1	00kB 20m) programs)	2,000kB (5,120m) (1,000programs)		500kB (1,280m) (1,000programs)	256 99 500kB (1,280m) (1,000programs)		230kB (600m) (400programs)		2,000kB (5,120m) (1,000programs)
Max.	PLC program capacity [steps]	512	2,000	512,000		64,000	64,000 32,000		20,000		Available (MELSEC)
Multi-p	project [number of PLC projects stored]		6		6	3 3		1		1	-
Intera	ctive cycle insertion					Available				_	
High-s	peed machining mode I maximum [kBPM]	3	3.7	3	3.7	33.7	33.7	_	-	_	33.7
High-s	peed machining mode II maximum [kBPM]	1	68	1	68	67.5	67.5		-	_	67.5
High-sp	eed high-accuracy control I maximum [kBPM]	6	7.5	6	7.5	33.7	33.7	-	-	_	33.7
	eed high-accuracy control II maximum [kBPM]	1	68	1	68	67.5	67.5		-	_	67.5
	eed high-accuracy control III maximum [kBPM]					-	_				
High-	accuracy control						ilable			_	
SSS	control (Super Smooth Surface)				Ava	ilable			(eSSS su	upported.)	-
Tolera	ance control					Available					-
	ink (Master/Local)					Available					Available (MELSEC)
	TBUS-DP (Master)					Available					_
	interface library					Available					_
Smar	t Safety observation	10 hms lovel	norman 40 km	15 +		ilable					Available
Displa	ay unit™	horizontal to type touchscre	screen, 19-type uchscreen, 15- een, or 10.4-type can be selected	or 10. touch	uchscreen 4-type screen selected	19-type touchscreen, 19-type horizontal touchscreen, 15-type touchscreen, 10.4-type touchscreen, or 8.4-type can be selected	touchscreen, 10.4-type touchscreen, touchscreen or 8.4-			-type	12.1-type touchscreen, 10.4-type touchscreen, 8.4- type touchscreen or 5.7-type touchscreen can be selected
Wind	ows®8 selection(*4)	Availat	ole/— ("3)	-		Available/— ("3)	-		-	_	
* 1.400	imum specifications including	ontional	oppolitiontic	no oro liot	ad Dafar	to the Creations	List for the	a dataila at	faaab aati		

* Maximum specifications including optional specifications are listed. Refer to the Specifications List for the details of each option.

(*1) Rotary axis up to 1 axis

(*2) G/B: Guide Bush

(*3) Windows-based dispaly unit/non-Windows-based displpay unit

(*4) For details, refer to "CNC SYSTEM CONTROL UNIT/DISPLAY UNIT" to be described.

						Machining c	enter sys	tem					
									I II				
		(Display/C	Control unit			(Display/Control unit		(Display/Control unit	(Display/Control unit		(Display/C	ontrol unit	
			ed-type) V Series		ted-type) S Series	separated-type) M80W Series		ed-type)	integrate E80 S		C80 Series		
Mode	l name	M850W	M830W	M850S	M830S		ТуреА	M80 Series TypeA TypeB		TypeB			
	Max. number of axes		32		32	11	11	9	TypeA 6	4	16		
_	(NC axes + Spindles + PLC axes) Max. number of NC axes		6			8	8	6	5(*1)	3	16		
Numb	(in total for all the part systems)												
Number of control	Max. number of spindles		8		4	2		6	1	0	7		
contr	Max. number of PLC axes				8	6			2	-	8		
rol axes	Max. number of PLC indexing axes Number of simultaneous		8		8	4		4	1	0	8		
S	contouring control axes	8	4	8	4	4		4	4	3	4		
	Max. number of NC axes in a part system	1	2	1	12	8	8	5	5(*1)	3	8		
Max. r	number of part systems (main + sub)	2		2		2	2	1	1		7		
Max.	number of main part systems	2		2		2	2 1		1		7		
	number of sub part systems		2	2		_	-		-	-	_		
	unit-side High-speed program server mode		ilable	-	_	Available	-	_	-		_		
	unit-side High-speed program server mode	Availab	ole/— ("3)	Available		Available/— (*3)	Avai	ilable	Avail	able			
	eide CD aard made					Available					Available		
	side SD card mode		_										
	command increment	11	ากา	1	Available 1nm 0.1µm 0.1µm					1µm	0.1µm		
	control increment						1m		0.1µm	ipin	0.1011		
	per of tool offset sets	9	99	9	99	400	400 400		200 99		400		
	program capacity	999 2,000kB (5,120m) (1,000programs)		999 2,000kB (5,120m) (1,000programs)		500kB (1,280m) (1,000programs)	500kB 500kB (1,280m) (1,280m)		500kB (1,280m) (1,000programs)		2,000kB (5,120m) (1,000programs)		
Max.	PLC program capacity [steps]	512	,000	512,000		64,000	64,000 32,000		20,0	000	Available (MELSEC)		
Multi-p	project [number of PLC projects stored]		6		6	3	3	1	1		_		
	ctive cycle insertion					Available					_		
	beed machining mode I maximum [kBPM]		3.7		3.7	33.7	33.7	16.8	-	-	33.7		
-	peed machining mode II maximum [kBPM]		68		68	67.5		7.5	-	-	67.5		
	eed high-accuracy control I maximum [kBPM]		7.5		7.5	33.7		3.7	-	-	33.7		
	eed high-accuracy control II maximum [kBPM]		68		68	67.5		7.5		-	67.5		
	eed high-accuracy control III maximum [kBPM]	2	70	2	70	135 Available	135	_	-		135 Available		
-	accuracy control								-	_	Available		
	control (Super Smooth Surface)				Ava	ilable			(eSSS supported.)	_	Available		
	ince control					Available				_	Available		
	ink (Master/Local)					Available					Available (MELSEC)		
	IBUS-DP (Master)					Available					—		
	t Sofaty obconvotion				۸	Available							
	t Safety observation	horizontal tou type touchscre	screen, 19-type uchscreen, 15- en, or 10.4-type can be selected	or 10. touch	Ava Duchscreen .4-type Iscreen selected	Iable 19-type touchscreen, 19-type horizontal touchscreen, 15-type touchscreen, 10.4-type touchscreen, or 8.4-type can be selected	ype 10.4-type, creen, touchscreen or 8.4-		8.4-type		Available 12.1-type touchscreen, 10.4-type touchscreen, 8.4- type touchscreen or 5.7-type touchscreen can be selected		
Wind	ows®8 selection ^(*4)		an be selected		Selected	or 8.4-type can be selected Available/— ("3)	type can L	be selected	_	_	Available		
T T I I CI		, wande				/ (valua)/6/					, wandbio		

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M800/M80/E80/C80 SERIES LINEUP

CNC SYSTEM M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

OStandard \triangle Optional \square Selection Specifications of separated-type display are classified with "Windows-based" and non-Windows-based

		_					Lathe system M80W M80 E80				000	
		class	M80 M850W	M830W	M8 M850S	M830S	M80W	M80 TypeA	80 M80 TypeB	E80 TypeA	80 E80 TypeB	C80
Сс	ntr	ol axes						туред	турев	Туред	турев	
1	_	ntrol axes										
	1	Number of basic control axes (NC axes)	02 016	02 016	02 016	O2 O16	02	02	02	02	02	02
	2	Max. number of axes (NC axes + Spindles + PLC axes)	△32 ○16	∆32 016	∆32 016	△32 ○16	12 10	12 10	9	8	5	16 16
		1 Max. number of NC axes (in total for all the part systems)	∆32	∆32	∆32	∆32						
		2 Max. number of spindles 3 Max. number of PLC axes	8	8	8	8	4+G/B*2 6	4+G/B*2	3	3	2	7
	4		8	8	8	8	4	6	4	1	0	8
		Number of simultaneous contouring control axes	8	4	8	4	4	4	4	4	4	4
	6		O8 ∆12	O8 ∆12	O8 ∆12	O8 ∆12	8	8	5	5	4	8
	7	Axis name extension	0	0	0	0	0	0	0	-	-	_
2	Co	ntrol part system										
	1	Standard number of part systems	1	1	1	1	1	1	1	1	1	1
	2	Max. number of part systems (main + sub)	O4 △8	O4 △8	O4 △8	O4 △8	04	04	02	01	01	07
		1 Max. number of main part systems	04 ∆8 04	04 ∆8 04	04 ∆8 04	04 ∆8 04	02	02	02	01	01	07
		2 Max. number of sub part systems ntrol axes and operation modes	_∆8	8	8	8	02	02	01	_	-	02
	1	Tape (RS-232C input) mode	0	0	0	0	0	0	0	0	0	_
				-								
	2 3	Memory mode MDI mode	0	0	0	0	0	0	0	0	0	0
	3	High-speed program server mode	0	0	0	U		0				0
	Ė	1 Control unit-side High-speed program server mode	Δ	Δ	_	—	0	_	_	_	_	_
		2 Display unit-side High-speed program server mode	۵/—	۵/—	Δ	Δ	0/—	0	0	0	0	_
		3 FTP high-speed program server mode	_	_	_	_	_	_	_	_	_	Δ
	5	Front-side SD card mode	0	0	0	0	0	0	0	0	0	_
	6	Front-side USB memory mode	0	0	0	0	0	0	0	0	0	—
ηp	out	command										
1	Da	ta increment									_	
	1	Least command increment										
		Least command increment 1µm	0	0	0	0	0	0	0	0	0	0
		Least command increment 0.1µm	0	0	0	0	0	0	0	0	0	0
							0	0			0	0
		Least command increment 0.01 µm (10nm)	Δ	Δ	Δ	Δ	_	_	_	_	-	
		Least command increment 0.001µm (1nm)	\triangle	Δ	Δ	\triangle	-	_	-	-	-	—
	2	Least control increment										
		Least control increment 0.01µm (10nm)	0	0	0	0	0	0	0	0	0	0
		Least control increment 0.001µm (1nm)	0	0	0	0	0	0	0	0	0	0
	3	Indexing increment	0	0	0	0	0	0	0	0	0	0
2		indexing increment	0	0	0	0	0	0				0
	1	Inch / Metric changeover	0	0	0	0	0	0	0	0	0	0
	2	Input command increment tenfold	_	_	_	_	_				_	_
2	Pr	pgram format							L		1	
_	1											
		1 Format 1 for Lathe (G Code List 2, 3)	0	0	0	0	0	0	0	0	0	0
		2 Format 2 for Lathe (G Code List 4, 5)	0	0	0	0	0	0	0	0	0	0
		3 Special format for lathe (G Code List 6, 7)	0	0	0	0	0	0	0	0	0	0
		4 Format 1 for Machining center	_		_	_	_	_				_
		5 Format 2 for Machining center (M2 format)	_	_	_	_	_	_			_	_
		6 MITSUBISHI CNC special format	0	0	0	0	0	0	0	0	0	0
	2	Program format switch	Δ	Δ	Δ	Δ	_	_	_	_	_	_
ļ	Co	mmand value										
	1	Decimal point input $\ {\mathbb I}$, ${\mathbb I}$	0	0	0	0	0	0	0	0	0	0
	2	Absolute / Incremental command	0	0	0	0	0	0	0	0	0	0

M800W M800S					enter sys		-	0				
M8	oow	M8	005	M80W	M80	80 M80	E80	80 E80	C80	General explanation		
M850W	M830W	M850S	M830S	—	ТуреА	ТуреВ	ТуреА	ТуреВ	-			
00	00	00	01	01	00	01	00	01	02	The NC axis, spindle, and PLC axis are generically called the control axis.		
O3 O16	03 016	03 016	O3 O16	03	03	03	03	03	03	The NC axis can be manually or automatically operated using a machining		
∆32	∆32	∆32	∆32	11	11	9	6	4	16	program. The PLC axis can be controlled using a sequence program.		
016	016	016	016	8	8	6	5*1	3	16	The number of axes that is within the max. number of control axes, and that doe not exceed the max. number given for the NC axis, spindle and PLC axis, can b		
4	4	4	4	2	2	2	1	1	7	used.		
8	8	8	8	6	6	6	2	0	8	*1 Rotary axis up to 1 axis *2 G/B: Guide Bush		
8	8	8	8	4	4	4	1	0	8	The number of PLC axes available to be used as indexing axis.		
8 08	4 08	8 08	4 08	4	4	4	4	3	4	Number of axes with which simultaneous interpolation control is possible.		
∆12	△12	∆12	∆12	8	8	5	5*	3	8	Max. number of NC axes possible to control in the same part system. * Rotary axis up to 1 axis		
0	0	0	0	0	0	0	_	_	_	The axis name (command axis name) to issue the absolute/incremental value command to NC control axis can be expanded to two letters.		
										command to two control dxis can be expanded to two letters.		
1	1	1	1	1	1	1	1	1	1	One part system is the standard.		
02	02	02	02	02	02	01	01	01	07	[M800/M80/E80]		
02	02	02	02	02	02	01	01	01	07	Up to eight part systems for a lathe system, and up to two part systems for a machining center system.		
02	02	02	02	02	02		01	01	07	[C80]		
02	02	02	02	-	-	-	-	-	—	Up to seven part systems.		
0	0	0	0	0	0	0	0	0	_	In this mode, operation is performed using the machining program data from th RS-232C interface built in the CNC unit.		
0	0	0	0	0	0	0	0	0	0	Machining programs stored in the memory of the CNC module are run.		
0	0	0	0	0	0	0	0	0	0	MDI data stored in the memory of the CNC unit are executed.		
\triangle		-	-	0	-	-	-	-	_	The machining program stored in SD card can be operated by installing a SD c in the control unit SD card interface.		
										The machining program stored in the built-in disk of the display unit can be operated.		
∆/—	∆/—		Δ	0/—	0	0	0	0	—	operated. The built-in disk of the display unit is mounted in the personal computer for M800W/M80W (Wndows-based display unit). For M800S/M80/E80, the SD c inserted into SD card I/F on the back of the display unit is equivalent to the built disk of the display unit.		
	_						_		Δ	This function allows high-speed transfer of machining programs from the FTP server to the large-capacity buffer memory in CNC CPU via Ethernet to execute		
			_							the program.		
0	0	0	0	0	0	0	0	0	_	The machining program stored in a SD card can be operated. This SD card is installed to the front-side SD card I/F.		
0	0	0	0	0	0	0	0	0	_	The machining program stored in a USB memory can be operated. This USB memory is installed to the front-side USB memory <i>VF</i> .		
						1				memory is installed to the none side bed memory in.		
										The data increment handled in the controller includes the input setting increment and command increment. Each type is set with parameters.		
0	0	0	0	0	0	0	0	0	0	Possible to command in increments of 0.001mm (linear axis) and 0.001° (rotary axis).		
0	0	0	0	0	0	0	0	_	0	Possible to command in increments of 0.0001mm (linear axis) and 0.0001° (rot		
		-								axis). Possible to command in increments of 0.00001mm (linear axis) and 0.00001° (ro		
Δ	Δ	Δ	Δ	_	_	_	_	_		axis).		
Δ		Δ	Δ	-	-	-	-	-	-	Possible to command in increments of 0.000001mm (linear axis) and 0.000001 (rotary axis).		
										The least control increment determines the CNC's internal operation accuracy.		
0	0	0	0	0	0	0	0	0	0	Possible to control in increments of 0.00001mm (linear axis) and 0.00001° (rota axis).		
0	0	0	0	0	0	0	0	0	0	Possible to control in increments of 0.000001mm (linear axis) and 0.000001° (re axis).		
0	0	0	0	0	0	0	0	0	0	This function limits the command value for the rotary axis.		
						1						
0	0	0	0	0	0	0	0	0	0	The unit systems of the data handled in the controller include the metric system and inch system. The type can be designated with a parameter and a machini		
-	-	-	-	-	-	_	-	-		program. The program's command increment can be multiplied by an arbitrary scale with		
0	0	0	0	0	0	0	0	0	0	parameter designation. This function is valid when a decimal point is not used f		
	I					I				the command increment.		
										G code (program) format		
_	-	-	_	_	-	-	_	-	_			
_	-	-	_	_	-	-	_	-	_	G code list for the lathe system. The G code list is selected by parameter.		
_	-	-	_	_	-	-	_	-	_			
0	0	0	0	0	0	0	0	0	0	G code list for the machining center system. The G-code list is selected by parameter.		
U				0					0	The formats of the fixed cycle for turning machining (G77 to G79), compound t		
-	-	_	_	_	-	_	_	_	_	fixed cycle for turning machining (G71 to G76) and fixed cycle for dnling (G80 t G89) can be switched to the MITSUBISHI CNC special formats. This function is designed to switch the program format (G code lst) using G co or PLC signal. When you run a lathe-based multi-tasking machine, and if you change to the G code list of machining center system, you can use a free-curv		
										surface machining program made with CAM without modifying the program.		
	0	0	0	0	0	0	0	0	0	For the decimal point input type 1, the unit of the last digit of a command withc a decimal point is the same as that of the least command increment. For decim point input type 2, the last digit of a command without a decimal point is integrin in millimeters during the metric mode, in inches in the inch mode, or in second a time-based command.		
0										When axis coordinate data are issued in a machining program command, eithe		

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

								athe system				
		class	M80	woo	M8	00S	M80W	M		E80		C80
		01055	M850W	M830W	M850S	M830S	_	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	_
	з	Diameter / Radius designation	0	0	0	0	0	О	О	О	О	0
	4	Diameter / Radius designation switch	0	0	0	0	0	0	0	0	0	_
3 P		oning / Interpolation				0	0	0	0	0	0	
		sitioning		1								
	1	Positioning	0	0	0	0	0	0	0	0	0	0
-	2	Unidirectional positioning	_		_	-	-	-	-	_	-	-
2	Lin 1	ear / Circular interpolation Linear interpolation	0	0	0	0	0	0	0	0	0	0
	2	Circular interpolation (Center / Radius designation)	0	0	0	0	0	0	0	0	0	0
	-		0	0	0	0	0	0	0	0	0	
	3	Helical interpolation	0	0	0	0	0	0	0	0	0	0
	4	Spiral / Conical interpolation				_	_	—	_	_	_	_
	5	Cylindrical interpolation	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ
	6	Polar coordinate interpolation	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ
	7	Milling interpolation	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ
	8	Hypothetical axis interpolation	—	_	—	—	—	—	—	—	_	—
3	Cu	rve interpolation		1								
	1	Involute interpolation	—	_	—	—	—	—	—	—	-	—
	2	Exponential interpolation	Δ	Δ	Δ	Δ	_	—	_	—	_	—
	3	Spline interpolation (G05.1Q2 / G61.2)	_	_	_	_	_	_	_	_	_	—
	4	NURBS interpolation	_	_	_	_	_	—	—	_	_	_
	5	3-dimensional circular interpolation	_	_	_	_	_	—	_	_	_	_
	6	Spline interpolation2 (G61.4)	_	_	_	_	_	_	_	_	_	_
1 Fe	ed											
1	Fe	edrate		1								
	1 2	Rapid traverse rate (m / min) Cutting feedrate (m / min)	1000 1000	1000 1000	1000 1000	1000 1000	1000 1000	1000	1000 1000	1000	1000 1000	1000
	\vdash	Manual feedrate (m / min)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	4	Rotary axis command speed tenfold	0	0	0	0	0	0	0	0	0	0
2	Τ	edrate input methods										
	1	Feed per minute (Asynchronous feed)	0	0	0	0	0	0	0	0	0	0
	2	Feed per revolution (Synchronous feed)	0	0	0	0	0	0	0	0	0	0
	3	Inverse time feed	_	_	_	_	-	—	-	_	-	_
	4	F 1-digit feed	0	0	0	0	0	0	0	0	0	0
	5	Manual speed command	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ
0	7 Ov	G00 feedrate designation (,F command) erride	Δ	Δ	Δ	Δ	0	0	_	_	_	Δ
	1	Rapid traverse override	0	0	0	0	0	0	0	0	0	0
	2	Cutting feed override	0	0	0	0	0	0	0	0	0	0
	3	2nd cutting feed override	0	0	0	0	0	0	0	0	0	0
	4	Override cancel	0	0	0	0	0	0	0	0	0	0
L	1							5	5			

				chining co						
M80	bow	M8	005	M80W		80		80	C80	General explanation
M850W	M830W	M850S	M830S	_	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	—	
_	_	_	_	_			-	-	_	The designation method of an axis command value can be changed over with parameters between the radius designation or diameter designation. When the diameter designation is selected, the scale of the length of the selected axis is doubled. (moves only half (1/2) the commanded amount)
0	0	0	0	_	_	_		-	_	Diameter/Radius designation switch function enables you to switch the diameter/ radius designation of each axis using a G code at your desired timing.
			_			_				
0	0	0	0	0	0	0	0	0	0	This function carries out positioning at high speed using a rapid traverse rate with
										the travel command value given in the program. The G code command always moves the tool to the final position in the direction
Δ	Δ	Δ	Δ	0	0	0	0	0	Δ	determined by parameters.
0	0	0	0	0	0	0	0	0	0	Linear interpolation is a function that moves a tool linearly by the travel command
0	0	0	0	0	0	0	0	0	0	value supplied in the program at the cutting feedrate designated by the F code. This function moves a tool along a circular arc on the plane selected by the travel
-	-		-			-		-		command value supplied in the program. With this function, any two of three axes intersecting orthogonally are made to
0	0	0	0	0	0	0	0	0	0	perform circular interpolation while the third axis performs linear interpolation in synchronization with the arc rotation. This control can be exercised to machine large-diameter screws or 3-dimensional cams.
Δ		\triangle		0	0	-	—	-	Δ	This function interpolates arcs where the start point and end point are not on the circumference of the same circle into spiral shapes.
Δ	Δ	Δ	Δ	0	0	0	_	_	Δ	This function transfers the shape that is on the cylinder's side surface (shape yielded by the cylindrical coordinate system) onto a plane, and when the transferred shape is designated in the program in the form of plane coordinates, the shape is converted into a movement along the linear and rotary axes of the original cylinder coordinates, and the contours are controlled by means of the CNC unit during machining.
Δ	Δ	Δ	Δ	_	_	_	_	_	Δ	This function converts the commands programmed by the orthogonal coordinate axes into linear axis movements (tool movements) and rotary axis movements (workpiece rotation) to control the contours. It is useful for cutting linear cutouts on the outside diameter of the workpiece, grinding cam shafts, etc.
_			_			_				When a lather with linear axes (K, Z axes) and rotary axis (C axis) serving as the control axes is to perform milling at a workpiece and face or in the longitudinal direction of the workpiece, this function uses the hypothetical axis Y, which is at right angles to both the X and Z axes, to enable the milling shape to be programmed as the X, Y and Z orthogonal coordinate system commands.
Δ	Δ	Δ	Δ	_	_	_	_	_	_	This function sets one of the axes of the helical interpolation or spiral interpolation, including a linear axis, as a hypothetical axis (axis with no actual movement), and performs pulse distribution. This enables SIN or COS interpolation, which corresponds to the side view (view from the hypothetical axis) of the helical interpolation or spiral interpolation.
										Tools can be moved along the involute curve. This can be used for scroll machining
		Δ	Δ	0	0	_	_	-	_	of involute gears or compressors, and smooth accurate machining can be performed without stepping of path from the command by fine segment or without acceleration/deceleration by segment length.
Δ	Δ	Δ	Δ	_	_	_	_	-	—	With this function, the rotary axis movement is changed into exponential functions vis-a-vis the linear axis movements.
Δ	Δ	Δ	Δ	0	0	_	_	_	Δ	This function automatically generates spline curves that smoothly pass through rows of dots designated by a fine-segment machining program, and performs interpolation for the paths along the curves. This enables high-speed and high- accuracy machining.
Δ	Δ	Δ	Δ	_	—	_	_	_	_	This function realizes NURBS curve machining by commanding NURBS curve parameters (number of stages, weight, knot, control point). The path does not need to be replaced with fine segments.
Δ	Δ	\triangle	Δ	—	—	-	—	-	—	An arc shape determined by three points (start point, intermediate point, end point) designated in the three-dimensional space can be machined.
Δ	Δ	Δ	Δ	0	0	_	_	_	Δ	This function automatically generates curves that smoothly pass in the tolerance error range, and moves on the paths along the curves. This enables smooth
_										machining.
			-							
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	The rapid traverse rate can be set independently for each axis using parameters. This function specifies the feedrate of the cutting commands, and gives a
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	command for a feed amount per spindle rotation or feed amount per minute. The manual feedrates are designated as the feedrate in jog mode or incremental
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	feed mode for manual operation and the feedrate during dry run ON for automatic operation. The manual feedrates are set using external signals.
0	0	0	0	0	0	0	0	0	0	This function multiplies the rotary axis' command speed by ten during initial inching
0	0	0	0	0	0	0	0	0	0	By issuing a G command, the command from the block is issued directly with a
Δ	Δ	Δ	Δ	0	0	0	0	0	Δ	numerical value following F as the feedrate per minute (mm / min or inch / min). By issuing a G command, the command from the block is issued directly with a numerical value following F as the feedrate per spindle revolution (mm / rev or inch
Δ	Δ	Δ	Δ	0	0	_	_	_	Δ	/ rev). This function can issue one block of machining time (inverse) commands in F commands, in place of normal feed commands. This enables the machining speed on the cutting surface to be constantly controlled and prevents the loss of accuracy, even if radius compensation is applied to the machining program that
0	0	0	0	0	0	0	0	0	0	expresses the free curve surface with fine segment lines. The feedrate registered by parameter in advance can be assigned by designating a single didit, following address F.
Δ	Δ	Δ	Δ	0	0	0	0	_	Δ	By enabling a manual speed command and selecting either handle feed or jog (manual) feed in the memory or MDI mode, automatic operation can be carried out at this feedrate.
Δ	Δ	Δ	Δ	0	0	_	_	_	Δ	at this recorder. Feedrates can be specified for G00 (positioning command). The speed of tool exchange, axis movement of gantry, etc. can be specified with the machining program so that the mechanical vibration can be suppressed.
0	0	0	0	0	0	0	0	0	0	Override can be applied to manual or automatic rapid traverse using the external
· · · ·		0	0	0	0	0	0	0	0	input signal. Override can be applied to the feedrate command designated in the machining
					U U	. <u> </u>	· · ·	. <u> </u>	- U	program using the external input signal.
0	0	0	0	0	0	0	0	0	0	Override can be further applied as a second-stage override to the feedrate after the cutting feed override has been applied.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

						Lathe	system				
	class	M80	woo	M8	00S	M80W	M80			80	C80
		M850W	M830W	M850S	M830S	—	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	—
4 A	cceleration / Deceleration		1		1						
	Automatic acceleration / deceleration after interpolation	0	0	0	0	0	0	0	0	0	0
:	Rapid traverse constant inclination acceleration / deceleration	0	0	0	0	0	0	0	0	0	0
:	Rapid traverse constant inclination multi-step acceleration / deceleration	_	_	—	_	_	—	_	_	_	_
5 T	nread cutting		1					1			
	Thread cutting (Lead / Thread number designation)	0	0	0	0	0	0	0	0	0	0
L	2 Variable lead thread cutting	0	0	0	0	0	0	0	0	0	0
-	Synchronous tapping										
	1 Synchronous tapping cycle	0	0	0	0	0	0	0	0	0	0
	2 Pecking tapping cycle	Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
	3 Deep-hole tapping cycle	Δ		Δ	Δ	0	0	0	-	-	\bigtriangleup
	4 Multiple spindle synchronous tapping	_	_	_	_	_	_	_	_	_	Δ
	5 Synchronous tapping with analog I/F spindle	0	0	0	0	0	0	0	0	0	_
	Chamfering	0	0	0	0	0	0	0	0	0	0
	Circular thread cutting	Δ	Δ	Δ	Δ	0	0	_	_	_	_
;	High-speed synchronous tapping (OMR-DD)	0	0	0	0	0	0	0	_	_	0
1	0 Thread recutting	Δ	Δ	Δ	Δ	0	0	_	_	-	Δ
1	1 Thread cutting override	Δ	Δ	Δ	Δ	0	0	_	_	_	Δ
1	2 Variable feed thread cutting	Δ	Δ	Δ	Δ	0	0	_	_	_	Δ
1	3 Thread cutting time constant switch	0	0	0	0	0	0	0	0	0	_
6 N	lanual feed		1		1			1			
	Manual rapid traverse	0	0	0	0	0	0	0	0	0	0
	2 Jog feed	0	0	0	0	0	0	0	0	0	0
;	Incremental feed	0	0	0	0	0	0	0	0	0	0
	Handle feed	0	0	0	0	0	0	0	0	0	0
	Manual feedrate B	0	0	0	0	0	0	0	0	0	0
1	Manual feedrate B surface speed control	_	_	_	_	_	_	_	-	-	_
1	Manual speed clamp	0	0	0	0	0	0	0	0	0	0
Т	well		I					I			
ŀ	Dwell (Time-based designation)	0	0	0	0	0	0	0	0	0	0
	2 Dwell (Revolution-based designation)	0	0	0	0	0	0	0	-	-	0
_	ram memory / editing lemory capacity		_			_		_		_	_
	Memory capacity (number of programs stored)										
	230kB [600m] (400 programs) 500kB [1280m] (1000 programs)	-			-	 0	0		0	0	0
	1000kB [1280m] (1000 programs) 1000kB [2560m] (1000 programs)	Δ	0 	0 							Δ
	2000kB [5120m] (1000 programs)	Δ		Δ	Δ	-	-	-	-	-	Δ
2 E	diting Program editing	0	0	0	0	0	0	0	0	0	0
	Program equiling Plackground editing	0	0	0	0	0	0	0	0	0	0
	Buffer correction	0	0	0	0	0	0	0	0	0	0
	6 Multi-part system simultaneous program editing	0	0	0	0	0	0	0	_	-	0
	Special program editing display for synchronization between part systems	Δ	Δ	Δ	Δ	0	0	0	-	-	Δ

				chining c						
M80	woo	M8	005	M80W	M80	80 M80	E80	80 E80	C80	General explanation
M850W	M830W	M850S	M830S	—	ТуреА	ТуреВ	ТуреА	ТуреВ	—	
										Acceleration / deceleration is automatically applied to all commands. The acceleration / deceleration patterns can be selected using a parameter from the
0	0	0	0	0	0	0	0	0	0	following types: linear acceleration/deceleration, soft acceleration / deceleration, exponent function acceleration / deceleration and exponent function acceleration /
										linear deceleration.
0	0	0	0	0	0	0	0	0	0	This function performs acceleration / deceleration at a constant inclination during linear acceleration / deceleration in the rapid traverse mode. Compared to the
0		0	Ū	Ū	0			Ŭ	0	method of acceleration / deceleration after interpolation, the constant inclination acceleration / deceleration method enables improved cycle time.
										This function carries out the acceleration / deceleration according to the torque characteristic of the motor in the rapid traverse mode during automatic operation.
\triangle		Δ	Δ	0	0	0	_	_	\triangle	(This function is not available in manual operation.) The rapid traverse constant inclination multi-step acceleration / deceleration method makes for improved cyck
										time because the positioning time is shortened by using the motor ability to the
						I				maximum.
Δ	Δ	Δ	Δ	0	0	0	0	0	Δ	Thread cutting with a designated lead can be performed. Inch threads are cut by designating the number of threads per inch with the E address.
_	_	_	_	_	_	_	_	_	_	By commanding the lead increment/decrement amount per thread rotation,
						I				variable lead thread cutting can be performed. * With digital I/F spindle
0	0	0	0	0	0	0	0	0	0	This function performs tapping through synchronized control of the spindle and servo axis. This eliminates the need for floating taps and enables tapping to be
0	0	0	0	0	0	Ŭ	Ŭ	0	0	conducted at a highly accurate tapping depth.
\triangle		Δ	Δ	0	0	0	_	_	Δ	The load applied to the tool can be reduced by designating the depth of cut per pass and cutting the workpiece to the hole bottom with a multiple number of
										passes. In the deep-hole tapping, the load applied to the tool can be reduced by
\triangle		Δ	Δ	0	0	0	-	-	Δ	designating the depth of cut per pass and cutting the workpiece to the hole bottor with a multiple number of passes.
_	_	_	_	_		_	_	_	Δ	This function enables two or more spindles to perform synchronous tapping at a
										time, thereby improving the tapping efficiency. This function performs tapping using the analog-connected spindle.
0	0	0	0	0	0	0	0	0		A dedicated inverter with position controller is required. Chamfering can be enabled during the thread cutting cycle by using external
_		_	_	_	_		_	-	_	signals.
_			_					-		Circular thread in which the lead is in longitudinal direction can be cut. The servo axis directly detects and compensates the spindle's delay in tracking b
0	0	0	0	0	0	0	_	_	0	using the communication between drive units over the high-speed optical servo network. By minimizing the synchronization error, the accuracy of the synchronous
										tapping is increased.
_	_	_	_	_	_	_	_	_	_	The function stores a thread groove position and compensates a start position of spindle thread cutting automatically so that the tool can pass along the memorize
										position of the thread groove at the thread cutting execution. The thread cutting feedrate can be changed by changing the spindle override
_	_	_	_	_				-	_	depending on rough cutting, finish machining, etc.
_	_	_	_	_	_	-	_	-	_	This function changes the cutting feedrate by the spindle override at the time of the thread cutting. The machining condition during thread cutting can be changed.
0	0	0	0	0	0	0	0	0	—	"Thread cutting time constant" can be applied to the acceleration/deceleration tim constant of the NC control axis during the tread cutting.
	1					1				
0	0	0	0	0	0	0	0	0	0	The tool can be moved at the rapid traverse rate for each axis separately. Override can also be applied to the rapid traverse rate by means of the rapid traverse
			-							override function. The tool can be moved in the axis direction (+ or .) in which the machine is to be
0	0	0	0	0	0	0	0	0	0	moved at the per-minute feedrate. The tool can be moved for the designated amount (incremental value) in the axis
0	0	0	0	0	0	0	0	0	0	direction each time the jog switch is pressed.
0	0	0	0	0	0	0	0	0	0	The machine can be moved in very small amounts by rotating the manual pulse generator.
0	0	0	0	0	0	0	0	0	0	Manual feedrate B is a function that sets an arbitrary axis feedrate from the user PLC separately from the manual feedrate.
										When machining with the manual feedrate B function by moving the orthogonal
Δ		Δ	Δ	_	_	_	_	_		axis while rotating the rotary table, the table rotation speed is controlled according to the distance from the rotation center.
0	0	0	0	0	0	0	0	0	0	The maximum speed for manual feed can be switched to the rapid traverse rate o the manual feed clamp speed.
	·					I				
0	0	0	0	0	0	0	0	0	0	The G code command temporarily stops machine movements and sets the machine in the stand-by status for the time designated in the program.
_	-	_	_	_	_	-	_	-	_	When G04 is commanded in the synchronous feed mode (G95), the machine wait for the spindle to rotate for the number of the revolutions designated.
_	_	_	_			_		_	_	Machining programs are stored in the NC memory, data server or external memor
0	0	0	0	0	0	0	0	0	0	devices (front SD card, built-in disk of display unit, etc.). (Note) For a multi-part system, the specifications shown here is
Δ				_	_	_	_	_	Δ	the total for all part systems.
Δ				_	_		_		Δ	
0	0	0	0	0	0	0	0	0	0	This function enables program editing such as correction, deletion and addition.
0	0	0	0	0	0	0	0	0	0	This function enables one machining program to be created or edited while anothe program is running.
										During automatic operation (including memory, tape, SD card or Data Server (DS)
0	0	0	0	0	0	0	0	0	0	operation) or MDI operation, this function initiates single block stop and enables th next command to be corrected or changed. When a program error has occurred,
										the function enables the block in which the error occurred to be corrected and operation to be resumed without having to perform NC resetting.
										When an operation to open a machining program in the NC memory is performed on the edit screen, machining programs are opened in the right and left areas at
0	0	0	0	-	—	-	-	-	—	the same time; the specified machining program of the displayed part system in
										the edit area being selected and the machining program of another part system with the same name in the unselected edit area.
				0	0					When the left and right edit areas are displaying the same named programs of different part systems stored on the NC memory, the display is switched to the
Δ										synchronized display of the left- and right- side programs aligned using the timing

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

						l athe e	system				
	class	M80	woo	M8	00S	M80W	-	80		80	C80
	CidSS	M850W	M830W	M850S	M830S	_	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	_
7	Finish shape view programming	Δ	Δ	Δ	Δ	0	0	0	0	0	_
Opera	ation and display										
	ucture of operation / display panel										
1	Color display (8.4-type LCD TFT) Color touchscreen display (10.4-type LCD TFT)					_			0	0	_
3	Color touchscreen display (10.4-type LCD TFT)										
4	Separated-type color display (8.4-type LCD TFT)	_	_	_	_		_	_	_	_	_
5	Separated-type color touchscreen display (10.4-type LCD TFT)			_	_		_	_			_
6	Separated-type color touchscreen display (15-type LCD TFT) Separated-type color touchscreen display				_		_	_			_
7	(15-type LCD TFT / Windows8)			_	_		_	_		_	_
8	Separated-type color touchscreen display (19-type LCD TFT / Windows8)			_	_		_	_	_	_	_
9	Separated-type color touchscreen display (19-type Horizontal LCD TFT / Windows8)			_	_		—	-	_	_	-
11	GOT (GOT2000 Series GT27 / GT25 12.1 / 10.4 / 8.4 / 5.7)	_	_	_	_	_	_	_	_	_	0
2 Op	eration methods and functions										
1	Operation input	0	0	0	0	0	0	0	0	0	0
2	Absolute value / Incremental value setting	0	0	0	0	0	0	0	0	0	0
3	Multiple display connection	_	_	_	_	_	_	_	_	_	O(GOT)
4	Common display to multiple NCs	_	_	_	_	_	_	_	_	_	O(GOT)
5	Displayed part system switch	0	0	0	0	0	0	0	_	—	0
6	Menu list	0	0	0	0	0	0	0	0	0	0
7	Display switch by operation mode	0	0	0	0	0	0	0	0	0	0
8		0	0	0	0	0	0	_			0
9	Screen saver	0	0	0	0	0	0	0	0	0	O(GOT)
10	Parameter guidance	0	0	0	0	0	0	0	0	0	0
11	Alarm guidance	0	0	0	0	0	0	0	0	0	0
12	Machining program input mistake check warning	Δ	Δ	Δ	Δ	—	—	—	_	_	-
14	Screenshot capture	—/O	—/O	0	0	—/O	0	0	0	0	O(GOT)
15	User selectable menu configuration	0	0	0	0	0	0	0	0	0	0
16	PC-NC network automatic connection	0/—	0/—	_	_	0/—	_	_	_	_	_
17	Device open parameter	0	0	0	0	0	0	0	0	0	_
	SRAM open parameter	0	0	0	0	0	0	0	0	0	_
19	MTB selectable menu configuration	0	0	0	0	0	0	0	0	0	0
20	Remote desktop connection	_/0	_/0	Δ	Δ	_/O	0	0			
	VNC server	—/A	—/A	Δ	Δ	_/0	0	0	_	_	_
	play methods and contents				_		-	-		I	
1		0	0	0	0	0	0	0	0	0	0
2	Clock display	0	0	0	0	0	0	0	0	0	0
3	Monitor screen display	0	0	0	0	0	0	0	0	0	0
4	Setup screen display	0	0	0	0	0	0	0	0	0	0
5	Edit screen display	0	0	0	0	0	0	0	0	0	0
6	Diagnosis screen display	0	0	0	0	0	0	0	0	0	0
7	Maintenance screen display	0	0	0	0	0	0	0	0	0	0
8	Home application	0/—	0/—	—	_	0/—	—	—	_	_	_
9	Home screen	0	0	0	0	0	0	0	0	0	_

	2014/				enter sys		_	00	000	
	W00		00S	M80W	M80	80 M80	E80	B0 E80	C80	General explanation
M850W	M830W	M850S	M830S	—	ТуреА	ТуреВ	ТуреА	ТуреВ	—	
Δ	Δ	Δ	Δ	0	0	0	_	_	_	This function shows the machining shape according to the command at the time the machining program is input. The machining shape can be confirmed easily without performing the automatic operation or the graphic check.
_	_	_	_	_			0	0		-
										-
_	_				_		_	_	_	-
		—	—		_	_	_	_	_	The setting and display unit consists of the display unit and the keyboard unit. Refer to ""HARDWARE"" described later for the details.
		_	_		_	_	_	_		(Note) Only software keyboard is available and there is no hardware keyboard for the separated-type color touchscreen display (19-type LCD TFT/Windows8 or 1
		-	-		-	-	—	-	_	type horizontal LCD TFT/Windows8).
		_	_		_	_	_	_	_	
		_	_		_	_	_	_	_	
_	—	_	_		_	_	_	_	0	Select a GOT in its lineup. For details, refer to catalogs : "GOT2000 series".
	1							1		In addition to the method of directly inputting numeric data, a method to input th
0	0	0	0	0	0	0	0	0	0	operation results using four basic arithmetic operators and function symbols can be used for specific data settings.
0	0	0	0	0	0	0	0	0	0	When setting the data, the absolute/incremental setting can be selected from th menu.
—	_	—	_	—	—	—	—	—	O(GOT)	Using an Ethernet hub, one CNC module can be connected to and switched between up to eight displays. (Note that the max. number of connectable displa is limited depending on the machine operation panel specifications.)
_	_	_	_	_	_	_	_	_	O(GOT)	Using an Ethernet hub, one display can be connected to and switched between to 64 CNC modules. (Note that the max. number of connectable displays is lim depending on the machine operation panel specifications.)
0	0	0	0	0	0	_	_	_	0	The part system displayed on the screen can be changed.
0	0	0	0	0	0	0	0	0	0	The menu list function displays the menu configuration of each screen as a list, making it possible to directly select the menu for other screens.
0	0	0	0	0	0	0	0	0	0	The screen display changes when the screen mode selection switch is change
0	0	0	0	0	0	_	_	_	0	The screen display changes with the signal from PLC.
0	0	0	0	0	0	0	0	0	O(GOT)	The screen saver function protects the display unit by turning the backlight OFF after the length of time specified in a parameter.
0	0	0	0	0	0	0	0	0	0	This function displays the details of the parameters or the operation methods according to the state of the screen currently displayed.
0	0	0	0	0	0	0	0	0	0	Guidance is displayed for the alarm currently issued.
\triangle		Δ		_	-	_	_	-	_	If an illegal input is found in the decimal point after the current cursor position, the cursor will move to that position, and a warning message will appear.
_/0	_/0	0	0	—/O	0	0	0	0	O(GOT)	This function allows to output a bitmap file of a screen displayed on the setting display unit.
0	0	0	0	0	0	0	0	0	0	This function allows to change the display order of the main menu in the "Monit
0/	0/-	_	_	0/	_	_	_	_	_	"Setup" and "Edit" screens, and to change display / non-display selection. This function supports to restore the connection when the network connection between the display unit and the control unit.
0	0	0	0	0	0	0	0	0	_	This function can set or change the user backed up area of the PLC device from
										the NC screen. This function can set or change the SRAM open area for machine tool builders
0	0	0	0	0	0	0	0	0		from the NC screen. Menu items on the "Monitor", "Setup" and "Edit" screens (of MITSUBISHI stand
0	0	0	0	0	0	0	0	0	0	format) can be moved within a screen or hidden as desired. The custom screen menu items added by machine tool builders, on the contrary, cannot be moved hidden.
—/O	_/0	Δ	Δ	<u> </u>	0	0	_	_	_	This enables the operation of the external personal computer on the screen of I with UltraVNC Server embedded.
$-\Delta$	—/A	Δ	Δ	—/O	0	0	_	_	_	This function enables status confirmation and remote operation by displaying the NC screen display on the external computer/tablet type computer.
		-		-	-	2	-	-	-	
0	0	0	0	0	0	0	0	0	0	The status of the program currently being executed is indicated. The clock is built in, and the date (year, month, date) and time (hour, minute,
0	0	0	0	0	0	0	0	0	0	second) are displayed. Various information related to operation, such as the axis counter, speed displa
0	0	0	0	0	0	0	0	0	0	Vanous information related to operation, such as the axis counter, speed displa and MSTB command are displayed. Tool/workpiece related settings, user parameter settings, MDI editing, counter
0	0	0	0	0	0	0	0	0	0	setting, manual numeric command issuing and pallet program registration (optic can be carried out.
0	0	0	0	0	0	0	0	0	0	Machining program editing (addition, deletion, change) and checking, simple program creation, and machining program input / output can be carried out.
0	0	0	0	0	0	0	0	0	0	The following operations related to the CNC diagnosis can be carried out. (1) Display the hardware and software configuration. (2) Display the CNC options. (3) Diagnose the PLC interface. (4) Display the drive unit information. (5) Display the alarm message / alarm history list etc.
0	0	0	0	0	0	0	0	0	0	Parameter setting and display, and NC data input/output, etc., can be carried of
0/—	0/—	_	_	0/—	_	_		_	_	19-type vertical display unit has the expansion applications that display the machine status, software keyboard, etc. in the lower half of the screen in no link with the upper half.
0	0	0	0	0	0	0	0	0	_	Home screen is able to display the machine status (including spindle loads and positions of linear and rotary axes) which can be monitored by an operator. Als each application can be called by pressing the application button on the home screen.

6

M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

							Lathe s	system		-		
		class	M8	woo	M8	00S	M80W	M			80	C80
			M850W	M830W	M850S	M830S	_	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	—
	-	Additional languages										
		1 Japanese 2 English	0	0	0	0	0	0	0	0	0	0
		3 German										
		4 Italian										
		5 French										
		6 Spanish										
		7 Chinese		_		_	_	_	_	_		
		Traditional Chinese characters Simplified Chinese characters										
		8 Korean										
		9 Portuguese										
	1	10 Hungarian										
		11 Dutch										
		12 Swedish 13 Turkish										
	- F	14 Polish										
		15 Russian										
		16 Czech										
		Output functions and devices										
	_	ut / Output data			0	0	0	0	0			0
		Machining program input / output Tool offset data input / output	0	0	0	0	0	0	0	0	0	0
	3	Common variable input / output	0	0	0	0	0	0	0	0	0	0
	4	Parameter input / output	0	0	0	0	0	0	0	0	0	0
		History data output	0	0	0	0	0	0	0	0	0	0
	7	System configuration data output	0	0	0	0	0	0	0	0	0	0
	<u> </u>	ut / Output I/F									1	
IL	1	RS-232C I/F	0	0	0	0	0	0	0	0	0	_
	2	SD card I/F		-								
		Control unit-side SD card I/F [up to 32GB] Front-side SD card I/F [up to 32GB]	0/-	0/-	0	-	0/-	0	-	-	-	_
		Ethernet I/F	0/-	0/-	0	0	0/-	0	0	0	0	O(GOT)
1 F	_	Display unit-side data server I/F	0	0	0	0	0	0	0	0	0	_
	5	Front-side USB memory I/F [up to 32GB]	0	0	0	0	0	0	0	0	0	—
	6	USB I/F (GOT front-side USB I/F)		_	_	_	_	_	_			0
	7	SD I/F (GOT back-side SD card I/F) mputer link	-		-		_	_		_	-	0
	1	Computer link B	Δ	Δ	Δ	Δ	0	0	0	_		
		Pers					0	0		_		_
4 ([
	1	Handy terminal connection	0	0	0	0	0	0	0	_	-	_
_	_	le, Tool and Miscellaneous functions ndle functions (S)										
	1	Spindle control functions										
		1 Spindle digital I/F	0	0	0	0	0	0	0	0	0	0
		2 Spindle analog I/F	0	0	0	0	0	0	0	0	0	\triangle (MELSEC)
		3 Coil switch	0	0	0	0	0	0	0	0	0	0
		4 Automatic coil switch	0	0	0	0	0	0	0	0	0	0
	Ì							0	0	0	0	—
		5 Encoder input I/F			0	0		0				
		5 Encoder input VF 6 Spindle-mode servo motor control			0 	0 	0	0	0	0	0	Δ
									0	0	0	
		6 Spindle-mode servo motor control	Δ			Δ	0		0 — 0		0 — —	
		Spindle-mode servo motor control Spindle-mode rotary axis control			Δ	Δ	0	0	_		_	_
-	2	Spindle-mode servo motor control Spindle-mode rotary axis control Turret gear change control	△ — △	Δ — Δ	Δ 	Δ — Δ	0 — 0	0 — 0	-	-	_	_
-	2	Spindle-mode servo motor control Spindle-mode rotary axis control Turret gear change control S code output	Δ — Δ Ο	Δ Δ Ο	Δ — Δ Ο	Δ Δ Ο	0 0 0	0 0 0	- 0 0		- - 0	 0
	2 3 4	Spindle-mode servo motor control Spindle-mode rotary axis control Turret gear change control S code output Constant surface speed control	Δ — Δ Ο	Δ — Δ Ο	Δ — Δ Ο	Δ — Δ Ο	0 0 0	0 0 0	- 0 0			 0
	2 3 4 5	6 Spindle-mode servo motor control 7 Spindle-mode rotary axis control 8 Turret gear change control S code output Constant surface speed control Spindle override Spindle override	Δ — Δ Ο	Δ — Δ Ο	Δ — Δ Ο	Δ — Δ Ο	0 0 0	0 0 0	- 0 0			 0
-	2 3 4 5	6 Spindle-mode servo motor control 7 Spindle-mode rotary axis control 8 Turret gear change control S code output Constant surface speed control Spindle override Multiple-spindle control	Δ Δ Ο Ο Ο	Δ Δ Ο Ο Ο	Δ Δ Ο Ο Ο	Δ Δ Ο Ο Ο	0 	0 0 0 0 0	- 0 0 0	- 0 0	- - 0 0	- 0 0

	00111				enter sys				000	
M80	00W	M8	005	M80W		80	E80	80	C80	General explanation
M850W	M830W	M850S	M830S	—	M80 TypeA	M80 TypeB	TypeA	E80 TypeB	-	
					Турск	Турсь	Турск	Турсь		
0	0	0	0	0	0	0	0	0	0	-
										_
										-
										-
		_								-
										Available display languages.
										Available display la iguages.
										-
]
-		-		-	-		-		-	
0	0	0	0	0	0	0	0	0	0	-
0	0	0	0	0	0	0	0	0	0	4
0	0	0	0	0	0	0	0	0	0	Certain kinds of data handled by the NC system can be input and output between the NC system's memory and external devices.
0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	-
		0								
0	0	0	0	0	0	0	0	0		Port 1 and 2 are available with the RS-232C interface. The connection point for a
0		0		0	0		0	0	_	connector depends on the product model.
_										
0	0		-	0	-	-	-	-		Interface card to use SD card can be attached inside the NC control unit.
0/	0/-	0	0	0/-	0	0	0	0		Interface card to use SD card can be attached in front of the display unit.
0	0	0	0	0	0	0	0	0	O(GOT)	Ethernet interface card can be attached onto the NC unit.
0	0	0	0	0	0	0	0	0	-	A built-in disk of display unit can be used. A USB memory can be mounted.
									0	Interface card to use USB memory can be attached inside the GOT.
_	_	_	_	_	_	_	_	_	0	Interface card to use SD card can be attached inside the GOT.
	1		1			1		1		
Δ	Δ	Δ	Δ	0	0	0	_			Computer link B is a function to receive/send data between the host computer and
Δ				0			_			the CNC.
	1		1			1		1		This function controls the serial communication (RS232C) of CNC and handy
0	0	0	0	0	0	0	-	-	-	terminal. Handy terminal is a downsized machine operation panel which enables
										you to operate the machine including setup at hand.
										The spindle rotation speed is determined in consideration of the override and gear
										ratio for the S command given in automatic operation or with manual numerical commands, and the spindle is rotated.
0	0	0					0			This interface is used to connect the digital spindle (AC spindle motor and spindle
0	0	0	0	0	0	0	0	0	0	drive unit).
0	0	0	0	0	0	0	0	0	(MELSEC)	Spindle control can be executed using an analog spindle instead of the digital spindle.
										Constant output characteristics can be achieved across a broad spectrums down
0	0	0	0	0	0	0	0	0	0	to the low-speed ranges by switching the spindle motor connections. This is a system under which commands are assigned from the PLC.
										Constant output characteristics can be achieved across a broad spectrums
0	0	0	0	0	0	0	0	0	0	down to the low-speed ranges by switching the spindle motor connections. This is a system under which the CNC module switches the coils automatically in
										accordance with the motor speed.
		0	0		0	0	0	0	_	With this function, arbitrary pulse can be input by parameters set in R register. *
							-			Encoder expansion card is required for M800W/M80W. This function controls a spindle using the combination of servo motor and servo
\triangle	Δ	Δ	Δ	0	0	0	-		Δ	drive unit (MDS-E Series) which controls NC axis.
										This function enables a rotary axis driven by a servo motor to be controlled as a spindle. This enables lathe-turning machining, including synchronous feed and
\triangle		Δ		0	0	-	-	-	-	thread cutting, to be performed in synchronization with the feedback speed of the
										rotary axis (spindle-mode rotary axis mode). This function enables axes in the semi-closed system to select four types of gear
_	_	_	_	_	_	_	_	_	_	ratios which are set to the spindle specification parameters according to the control
										input from the PLC. When an 8-digit number following address S (S0 to S±99999999) is commanded,
0	0	0	0	0	0	0	0	0	0	signed 32-bit binary data and start signal, or non-signed 32-bit binary data and
-	-	-		-			-			start signal will be output to the PLC.
~										With radial direction cutting, this function enables the spindle speed to be changed in accordance with changes in the radial direction coordinates and the workpiece
0	0	0	0	0	0	0	0	0	0	to be cut with the cutting point always kept at a constant speed (constant surface
	-				-				-	speed). This function applies override to the rotation speed of a spindle or milling spindle
0	0	0	0	0	0	0	0	0	0	assigned by the machining program command during automatic operation or by
					-				-	manual operation. Multiple-spindle control is a function that controls all the spindles except the first
										spindle (main spindle) in a machine tool equipped with the second, third and fourth
	1									spindles (sub-spindles) in addition to the first spindle.
_	-	-	-	-	-	-	-	-	-	This function controls the spindles in a machine tool equipped with several spindles.
	1	0	0	0	0	0	_	_	0	With this function, commands to the spindle are performed with one S command,
0		()				. ~		i	. ~	and a signal from the PLC determines which spindle is selected.
0	0	0	0	0	0	0	0	0	0	This function stops the spindle rotation at a certain position.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

CNC SYSTEM

							Lathe					
		class		woo		005	M80W	M80	80 M80	E80	80 E80	C80
1			M850W	M830W	M850S	M830S	_	ТуреА	ТуреВ	ТуреА	ТуреВ	—
	7	Spindle position control (Spindle / C axis control) 1 Spindle position control (Spindle / C axis control)	0	0	0	0	0	0	0	0	0	0
											0	
		2 C axis control during Spindle synchronization Spindle synchronization	Δ	Δ	Δ	Δ	0	0	0		-	Δ
		1 Spindle synchronization I	0	0	0	0	0	0	0	0	0	0
		2 Spindle synchronization II	0	0	0	0	0	0	0	0	0	0
		3 Guide bushing spindle synchronization					0	0		_		_
				Δ	Δ	Δ	0	0	_		_	_
	9	Tool spindle synchronization I (Polygon) 1 Tool spindle synchronization I A (Spindle-Spindle, Polygon)	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ
		2 Tool spindle synchronization I B (Spindle-Spindle, Polygon)		Δ	Δ	Δ	0	0	0	0	0	Δ
		3 Tool spindle synchronization I C (Spindle-NC axis, Polygon)	Δ	Δ	Δ	Δ	0	0	_	_	_	Δ
	10	Tool spindle synchronization II (Hobbing)	Δ	Δ	Δ	Δ	0	0	_	_	-	Δ
	11	Spindle speed clamp	0	0	0	0	0	0	0	0	0	0
	13	Spindle oscillation	Δ	Δ	Δ	Δ	-	_	_	-		_
	14	Spindle superimposition control	Δ	Δ	Δ	Δ	0	0	_	_	_	Δ
	15	Multiple spindle synchronization set control	0	0	0	0	0	0	0	_	_	0
	16	Spindle speed fluctuation detection		Δ	Δ	Δ	0	0	0	_	_	_
2	Тос	ol functions (T)										
	1	Tool functions (T command)	0	0	0	0	0	0	0	0	0	0
3	Mis	cellaneous functions (M)										
	1	Miscellaneous functions	0	0	0	0	0	0	0	0	0	0
	2	Multiple M codes in 1 block	0	0	0	0	0	0	0	0	0	0
	3	M code independent output	0	0	0	0	0	0	0	0	0	0
	4	Miscellaneous function finish	0	0	0	0	0	0	0	0	0	0
		M code output during axis traveling	0	0	0	0	0	0	_	_	_	0
4		Miscellaneous function command high-speed output d miscellaneous functions (B)	0	0	0	0	0	0	0	0	0	0
	1	2nd miscellaneous functions	0	0	0	0	0	0	0	0	0	0
	2	2nd miscellaneous function name extension	0	0	0	0	0	0	0	0	0	0
		ompensation										
1		I length / Tool position Tool length offset	0	0	0	0	0	0	0	0	0	0
	2	Tool position offset	_	_	_	_	_	_	_	_	_	_
	3	Tool compensation for additional axes	0	0	0	0	0	0	0	0	0	0
	4	Tool position compensation (G43.7)	_	_	_	_	_	_	_	_	_	_
2	Тос	ol radius		I								
	1	Tool radius compensation	_	_	_	_	_	_	_	_	_	_
	2	3-dimensional tool radius compensation	∆*	∆*	_	_	_	_	_	_	_	_
	3	Tool nose radius compensation (G40 / 41 / 42)	0	0	0	0	0	0	0	0	0	0

				chining c						
M80	oow	M8	005	M80W		80		80	C80	General explanation
M850W	M830W	M850S	M830S	—	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	—	
					.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
0	0	0	0	0	0	0	0	-	0	This function enables one spindle drive unit to be also used as the C axis (rotary axis) using an external signal.
Δ		Δ		_	_	_	_	_	Δ	This control enables C axis positioning while a long workpiece is controlled by front and back spindles that are in synchronization with each other. Under this control,
										the machine can perform milling at the center of workpiece.
0	0	0	0	0	0	0	_	_	0	In a machine with two or more spindles, this function controls the rotation speed
0	0	0	0	0	0	0	_	_	0	and phase of one selected spindle (synchronized spindle) in synchronization with the rotation of the other selected spindle (basic spindle). There are two methods for
	0	0		0	0					giving commands: G code and PLC. This function is used for a machine with a spindle motor to rotate a guide bushing.
_	-	_	-	_	_	_	-	-	_	It synchronizes the guide bushing spindle (G/B spindle) with the spindle motor used as a reference (basic spindle).
										With a machine equipped with two or more spindles under serial connection control, this function enables spindle-spindle polygon machining (A) by controlling.
_	_	_	_	_	_	_	_	_	—	the workpiece spindle rotation in synchronization with the rotary tool spindle rotation. The rotary tool spindle and workpiece spindle are designated from the spindles subject to serial connection control.
										With a machine equipped with two or more spindles under serial connection control, this function enables spindle-spindle polygon machining (IB) by controlling
_	-	_	_	_	_	_	_	-	—	the rotary tool spindle rotation in synchronization with the workpiece spindle rotation. The rotary tool spindle and workpiece spindle are designated from the spindles subject to serial connection control.
_	_	_	_	_	_	_	_	_		This function controls the workpiece (spindle) and tool (NC axis) so that they
_	_							_		synchronously rotate at the commanded ratio, allowing polygon machining. This function is to cut the gear with a hob (hob cutter).
0	0	0	0	0	0	0	0	0	0	The spindle rotation speed is clamped between max. rotation speed and min.
Δ	Δ	Δ	Δ	_	_				_	rotation speed. This function reciprocates (oscillates) the spindles with designated amplitude and
Δ					_			_		frequency. Spindles are controlled by superimposing the rotation speed of one spindle on the
_	-	—	-	-	_	-	-	-	-	rotary speed of other spindle. Use this function when the tool spindle needs to be rotated with the superimposed speed on the spindle rotation speed.
										By setting the parameter, spindle synchronization I, tool spindle synchronization IA/ IB (spindle-spindle, polygon), tool spindle
_	-	—	-	-	—	-	-	-	0	synchronization II (hobbing) and spindle superimposition control can be executed simultaneously for multiple sets of spindles.
										When this function is valid and the spindle actual speed fluctuates for the
\triangle		Δ		0	0	0	_	_	_	commanded speed by the program due to external factors such as load fluctuation, the NC outputs the signal to PLC and the operation error occurs. PLC
										can take the necessary measure for the fluctuation of the spindle speed using the output signal from the NC.
0	0	0	0	0	0	0	0	0	0	The tool function is commanded with an 8-digit number following the address T (T0 to T99999999) to specify the tool No. In the controller for a lathe, the tool
0									0	compensation (tool length compensation, tool nose wear compensation) Nos. are also indicated.
	1		1			1				
0	0	0	0	0	0	0	0	0	0	Miscellaneous function, or M function, is used to command auxiliary functions for NC, such as rotating the spindle forward / backward or stopping it, as well as
0	0	0	0	0	0	0	0	0	0	turning the cooling oil ON/OFF. Up to four sets of M commands can be issued in a block.
			-							When the M00, M01, M02 or M30 command is issued during an automatic operation (tape, memory, MDI) or by a manual numerical command, the signal of
0	0	0	0	0	0	0	0	0	0	this function is output. It is turned OFF after the miscellaneous function finishes or
										by the reset & rewind signal. These signals inform the CNC system that a miscellaneous function (M), spindle
0	0	0	0	0	0	0	0	0	0	function (S), tool function (T) or 2nd miscellaneous function (A, B, C) has been issued, and that the PLC that has received it has completed the required operation They include miscellaneous function finish signal 1 (FIN1) and miscellaneous
										function finish signal 2 (FIN2). This function controls the timing at which miscellaneous functions are output, and
—	-	—	-	-	—	-	-	-	—	it outputs a miscellaneous function when the axis reaches the designated position movement.
0	0	0	0	0	0	0	0	0	0	This function shortens a processing time per miscellaneous function.
	1		1					1		The code data and start signals are output when an 8-digit number is assigned
0	0	0	0	0	0	0	0	0	0	following the address code A, B or C . whichever does not duplicate the axis name being used.
0	0	0	0	0	0	0	0	0	0	The 2nd miscellaneous function name same as the additional axes (A, B, C) can be used by specifying the command address of the 2nd miscellaneous function with
0		0		0	0			0	0	two characters.
-	_		_			_		_	_	
		0			0		0		0	These commands make it possible to control the axis movement by offsetting the position of the end point of the travel command by the amount set in the tool
0	0	0	0	0	0	0	0	0	0	compensation screen.
0	0	0	0	0	0	0	0	0	0	This function uses commands to control the movement by changing the end point positions of the movement commands to positions which have been extended or reduced for a tool compensation amount.
_	_	_	_	_	_	_	_	_		The tool compensation for a lathe is valid for the X and Z axes. If an additional axis (Y
										axis) is added, the tool compensation will be validated for the additional axis. The position compensation of a turning tool is executed when turning is performed
Δ	Δ	Δ	Δ	_	_		_			in a machine of machining center system. * Option is "turning machining tool compensation".
										This function provides tool radius compensation. Through a combination of the G
	0	0	0	0	0	0	0	0	0	command and D address assignment, the actual tool center path is compensated
0										either inside or outside the programmed path by an amount equivalent to the tool radius.
0										This command serves the function of compensating the spherical radius of ball end mills. It compensates the actual tool center path to be either more outside or
0										
0	Δ	Δ		-	-	-	-	-	_	inside the programmed path by an amount equivalent to the tool radius amount in accordance with the 3-dimensional vectors. "This function is available during
_	Δ	Δ	Δ	_	_	_	-	_		

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

			Me	woo	Ma	00S	Lathe s		80	F	80	C80
		class	M850W	M830W	M850S	M830S	_	M80	M80	E80	E80	_
4	4	Automatic decision of nose radius compensation direction (G46 / 40)	0	0	0	0	0	TypeA O	TypeB	TypeA O	TypeB O	0
+	+	Tool radius compensation diameter designation	_	_	_	_	_	_	_	_	_	_
		I offset amount										
	1	Number of tool offset sets										
	- H	1 99 sets 2 128 sets	0	-	0	-	—	_	0	0	0	0
		3 200 sets	_	_	_	_	_	_	_	_	-	_
	- H	4 256 sets 5 400 sets				_	0	0		_	_	
		5 400 sets 6 999 sets							_			_
2		Offset memory										
	_	1 Tool shape / wear offset amount	0	0	0	0	0	0	0	0	0	0
_		2 Compensation type selection by parameter	_	_	_	_	_	_	_	_	_	_
3	3	Number of tool offset sets allocation to part systems	0	0	0	0	0	0	0	_	_	_
Doc	orc	linate system										
1 C	\sim	ordinate system type and setting										
1	1	Machine coordinate system	0	0	0	0	0	0	0	0	0	0
2	2	Coordinate system setting	0	0	0	0	0	0	0	0	0	0
		Automatic coordinate system setting	0	0	0	0	0	0	0	0	0	0
4		Workpiece coordinate system selection										
		1 Workpiece coordinate system selection (6 sets)	0	0	0	0	0	0	0	0	0	0
	- H	 Extended workpiece coordinate system selection (48 sets) G54.1P1 to P48 Extended workpiece coordinate system selection (96 sets) G54.1P1 to P96 	Δ	Δ	Δ	Δ —	0	0	0	0	0	Δ
	- H	Extended workpiece coordinate system selection (300 sets) G54.1P1 to P30 Extended workpiece coordinate system selection (300 sets) G54.1P1 to P300					_					_
Ę	5	External workpiece coordinate offset	0	0	0	0	0	0	0	0	0	0
e	5	Workpiece coordinate system preset (G92.1)	0	0	0	0	0	0	0	0	0	0
7	7	Local coordinate system	0	0	0	0	0	0	0	0	0	0
		Coordinate system for rotary axis	0	0	0	0	0	0	0	0	0	0
ę	Э	Plane selection	0	0	0	0	0	0	0	0	0	0
1	0	Origin set / Origin cancel	0	0	0	0	0	0	0	0	0	0
1	1	Counter set	0	0	0	0	0	0	0	0	0	0
		Workpiece coordinate system shift	0	0	0	0	0	0	0	0	0	0
Т	T	um		-	_	-	_	_		_		
1	1	Manual reference position return	0	0	0	0	0	0	0	0	0	0
2	2	Automatic 1st reference position return	0	0	0	0	0	0	0	0	0	0
$\left \right $	+	2nd, 3rd, 4th reference position return	0	0	0	0	0	0	0	0	0	0
+	+	Reference position check	0	0	0	0	0	0	0	0	0	0
	+	Absolute position detection	0	0	0	0	0	0	0	0	0	0
e	6	Tool exchange position return	0	0	0	0	0	0	0	0	0	0

	M800W		Ma	achining center system						
M80	woo	M8	005	M80W		80	E	80	C80	Conserval averal and the
M850W	M830W	M850S	M830S	_	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	_	General explanation
_	_	_	_	_	_	_	-	_	_	The nose radius compensation direction is automatically determined from the tool tip and the specified movement vector. Tool diameter designation handles the compensation amount as diameter value
0	0	0	0	0	0	0	0	0	0	and compensates the amount set in the tool compensation amount as clarineter value and compensates the amount set in the tool compensation amount screen when tool radius compensation (G41/G42) is commanded.
-	_	_	-	-	_	_	-	0	_	_
0	0	0	0		-	-	0	_	0	The number of configurable sets of tool data such as tool length compensation
-	-	-	-	_	_	-	-	—	-	and tool radius compensation.
				0	0	0		_		-
										This function registers the tool shape compensation and wear compensation
0	0	0	0	0	0	0	0	0	0	amounts. This function switches the tool compensation type to the tool compensation type
0	0	0	0	0	0	0	_	_	—	III with the parameter. This function enables tool compensation for a turning tool by registering the tool compensation amount of the base axes UK and tool tip point for a machining center system.
0	0	0	0	-	_	_	_	_	-	* Variable number of per-part-system tool offset sets The number of tool offset sets can be set per part system. There are two types of the allocation: "Arbitrary allocation" which allocates the number of tool offset sets to each part system arbitrarily and "Fixed allocation" which automatically allocates the number of tool offset sets to each part system equally, and the type can be selected using the parameter.
										This shows the coordinate systems handled by the NC. The points that can be commanded with the movement command are points in the local coordinate system
										or machine coordinate system. The machine coordinate system is used to express the prescribed positions (such
0	0	0	0	0	0	0	0	0	0	as the tool change position and stroke end position) that are specific to each machine, and it is automatically set immediately upon completion of the first dog- type reference position return after power ON, or immediately after power ON if the absolute position specifications apply.
0	0	0	0	0	0	0	0	0	0	By issuing a G code, the program coordinate system (zero point of program) can be changed in the workpiece coordinate system.
0	0	0	0	0	0	0	0	0	0	After turning the power ON, even without executing the reference position return, the basic machine coordinate system and the workpiece coordinate system are set automatically.
0	0	0	0	0	0	0	0	0	0	When multiple workpieces with the same shape are to be machined, these commands enable the same shape to be machined by executing a single
				0	0	0	0			machining program in the coordinate system of each workpiece.
				-	_	_	_	_		In addition to the six workpiece coordinate systems G54 to G59, 48/96 sets of workpiece coordinate systems can be used by assigning G54.1Pn command.
0	0	0	0	0	0	0	0	0	0	An external workpiece coordinate offset that serves as a reference for all the workpiece coordinate systems is available outside the workpiece coordinates. By setting the external workpiece coordinate offset, the external workpiece coordinate system can be shifted, and all the workpiece coordinate systems can
										be simultaneously shifted by an amount equivalent to the offset. This function presets the workpiece coordinate system, which has been shifted by
Δ	Δ	Δ	Δ	-	_	_	-	_	—	the programmed command or the manual operation, as the workpiece coordinate system which has been offset by the programmed command (G92.1) from the machine zero point by an amount equivalent to the workpiece coordinate offset amount.
0	0	0	0	0	0	0	0	0	0	This function is for assigning another coordinate system in the workpiece coordinate system currently selected. This enables the workpiece coordinate system to be changed temporarily.
0	0	0	0	0	0	0	0	0	0	The rotary axis includes the rotating type (short-out valid/invalid) or the linear type (workpiece coordinate position linear type, all coordinate position linear type). The workpiece coordinate position range is 0 to 359.999° for the rotating type, and 0 to 99999.999° for the linear type.
0	0	0	0	0	0	0	0	0	0	By issuing a G code, it is possible to specify the planes for the arc, tool radius compensation, coordinate rotation and other commands.
0	0	0	0	0	0	0	0	0	0	Origin set is a function that shifts the coordinate system so that the current position is set as the zero point in the workpiece coordinate system containing the workpiece coordinate system's offset value. Origin cancel is a function that manually cancels all deviated amounts, and shifts to the designated zero point with the workpiece offset.
0	0	0	0	0	0	0	0	0	0	The relative position counter can be set to an arbitrary value from the setting and display unit screen.
-	_	_	_	-	_	_	_	_	-	When a workpiece coordinate system which is considered at programming is misaligned with an actual set workpiece coordinate or a workpiece coordinate set by automatic coordinate system setting, the measured workpiece coordinate system can be shifted to the workpiece coordinate system at the program creation so that the machining can be performed without modification of the machining program.
0	0	0	0	0	0	0	0	0	0	This function enables the tool to be returned manually to a position specific to the machine (reference position).
0	0	0	0	0	0	0	0	0	0	By commanding the G code during an automatic operation, the 1st reference position return is executed. If an intermediate point is commanded, a positioning is made to the point at rapid traverse rate, then each axis returns to its 1st reference
0	0	0	0	0	0	0	0	0	0	position. As in the automatic 1st reference position return, by commanding the G code during an automatic operation, an axis returns to a certain position specific to the machine (2004)(dt) reference position
0	0	0	0	0	0	0	0	0	0	machine (2nd/3rd/4th reference position). By issuing a G code, a machining program where the tool is programmed to start off from the reference position and return to the reference position can be checked if the tool will return successfully to the reference position.
0	0	0	0	0	0	0	0	0	0	With this function, a battery stores the relation of the actual machine position and the machine coordinate kept in the CNC even during the power OFF, and an automatic operation is enabled without executing a reference position return.
0	0	0	0	0	0	0	0	0	0	By specifying the tool change position in a parameter and also assigning a tool change position return command in a machining program, the tool can be changed at the most appropriate position.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

							Lathe s	system				
		class	M80	WOO		00S	M80W	M M80	80 M80	E80 E80		C80
			M850W	M830W	M850S	M830S	_	ТуреА	ТуреВ	ТуреА	ТуреВ	_
		ation support functions		_					_			
Т	1	Optional block skip	0	0	0	0	0	0	0	0	0	0
	2	Optional block skip addition	0	0	0	0	0	0	0	_	_	0
	3	Single block	0	0	0	0	0	0	0	0	0	0
2 F	Pro	ogram test							I			
	1		0	0	0	0	0	0	0	0	0	0
-	2	Machine lock	0	0	0	0	0	0	0	0	0	0
		Miscellaneous function lock	0	0	0	0	0	0	0	0	0	0
	4	Graphic check 1 Graphic check	0	0	0	0	0	0	0	0	0	
		2 3D solid program check	0	0	0	0	0	0	0	0	0	-
	5	3 Graphic check rotary axis drawing Graphic trace		Δ	Δ	Δ	0	0	0	0	0	_
ŀ		1 Graphic trace	0	0	0	0	0	0	0	0	0	-
		2 Graphic trace rotary axis drawing		Δ	Δ	Δ	0	0	0	0	0	_
	6	Machining time computation	0	0	0	0	0	0	0	0	0	_
	7	Manual arbitrary reverse run (Program check operation)	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ
		High-speed simple program check	0	0	0	0	0	0	0	0	0	0
Т	1	ogram search / start / stop Program search	0	0	0	0	0	0	0	0	0	0
⊦	2		0	0	0	0	0	0	0	0	0	0
ŀ	-	Verification stop	0	0	0	0	0	0	0	_	_	0
ł		Program restart	0	0	0	0	0	0	0	0	0	0
	5	Automatic operation start	0	0	0	0	0	0	0	0	0	0
h		NC reset	0	0	0	0	0	0	0	0	0	0
ŀ	7	Feed hold	0	0	0	0	0	0	0	0	0	0
ŀ	8		0	0	0	0	0	0	0	0	0	0
		Auto-restart errupt operation	0	0	0	0	0	0	0	0	0	0
Т	1	Manual interruption	0	0	0	0	0	0	0	0	0	0
ľ	2	Automatic operation handle interruption	0	0	0	0	0	0	0	0	0	0
	3	Manual absolute switch	0	0	0	0	0	0	0	0	0	0
ľ	4	Thread cutting cycle retract	0	0	0	0	0	0	0	_	_	0
	5	Tapping retract	0	0	0	0	0	0	0	0	0	0
	6	Manual numerical value command	0	0	0	0	0	0	0	0	0	0
ł	7	Arbitrary reverse run	_	_		_	_	_	_	_	_	_
	8	MDI interruption	0	0	0	0	0	0	0	0	0	0
	9	Simultaneous operation of manual and automatic modes	0	0	0	0	0	0	0	0	0	0
	10	Simultaneous operation of JOG and handle modes	0	0	0	0	0	0	0	0	0	0
-	11	Reference position retract	0	0	0	0	0	0	0	0	0	0
	12	Tool retract and return		Δ		Δ	0	0	0	_	_	_
-	13	Skip retract	_	_	_	_	_	_	_	_	-	_
-	14	PLC interruption	0	0	0	0	0	0	0	0	0	0
		Machining interruption	-	-	—	-	-	-	-	_	-	Δ
		am support functions chining method support functions										
_	1											

				chining ce				~~		
M80	WOO	M8	005	M80W	M80	80 M80	E80	80 E80	C80	General explanation
M850W	M830W	M850S	M830S	—	ТуреА	ТуреВ	ТуреА	TypeB	—	
					.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
						1		1		When "/" (slash code) is programmed at the head of a block, and the optional block
0	0	0	0	0	0	0	0	0	0	skip input signal from the external source is turned ON for automatic operation, the block with the "/" code is skipped.
0	0	0	0	0	0	0	_	_	0	When "/n (n: 1 to 9)" is programmed at the head of a block, and the optional block skip input n signal from the external source is turned ON for automatic operation,
										the block with the "/n" code is skipped. The commands for automatic operation can be executed one block at a time (block
0	0	0	0	0	0	0	0	0	0	stop) by turning ON the single block input signal.
		-		-						F code feed commands for automatic operation can be switched to the manual
0	0	0	0	0	0	0	0	0	0	feedrate data of the machine operation board by turning ON the dry run input signal.
0	0	0	0	0	0	0	0	0	0	When the machine lock input signal is set to ON, the CNC operations can be executed without actually moving the NC axis.
0	0	0	0	0	0	0	0	0	0	When the "External input" signal or "Miscellaneous function lock" signal is turned ON, the output signals of M, S, T, and B (2nd miscellaneous function) will not
										be output to the PLC. This is useful when checking only travel commands in a program check.
0	0	0	0	0	0	0	0	0		This function traces the programmed movement path without executing an
0	0	0	0	0	0	0	0	0		automatic operation. It enables three-dimensional drawing and also rotary axis drawing. By using this function, machining programs can be checked before they
_	_	—	—	_	—	_	_	_	—	are actually run.
0	0	0	0	0	0	0	0	0		This function traces the machine tool's machine positions. It draws the movement
_				_					_	path of an actual automatic or manual operation, and the tool tip movement path. The function also monitors the machine operations during machining. It enables
										the drawing of a rotary axis as well. This function analyzes the machining program without moving the axis and
0	0	0	0	0	0	0	0	0		calculates the approximate time required for machining.
\triangle		Δ		0	0	0	-	-	Δ	The manual arbitrary reverse run can be performed by controlling the feedrate being in the automatic operation in the memory or MDI mode in proportion to the arrow of the data the interactive area of the property the additional sectors.
				-						manual feedrate by jog or the rotation speed by manual handle. This function checks whether a program error occurs by operating the machining
0	0	0	0	0	0	0	0	0	0	program without the axes movements. The estimated machining time can be checked in time shorter than the actual execution time of the machining program.
	1					1		1		This function specifies the program No. of the program to run automatically and
0	0	0	0	0	0	0	0	0	0	calls the program.
0	0	0	0	0	0	0	0	0	0	Blocks can be indexed by setting the program No., sequence No. and block No. of the program to run automatically.
0	0	0	0	0	0	0	_	_	0	This function enables the single block stop status to be established at any block without having to turn the SINGLE BLOCK switch ON.
0	0	0	0	0	0	0	0	0	0	When a machining program is to be resumed after suspended midway due to tool damage or for some other reason, this function searches the program and the
										block to resume and enables machining to be resumed from the block. With the input of the automatic operation start signal (change from ON to OFF),
0	0	0	0	0	0	0	0	0	0	automatic operation of the program that was found by an operation search is started by the controller (or the halted program is restarted).
0	0	0	0	0	0	0	0	0	0	This function enables the controller to be reset.
0	0	0	0	0	0	0	0	0	0	When the feed hold signal is set to ON during automatic operation, the machine feed is immediately decelerated and stopped.
0	0	0	0	0	0	0	0	0	0	If the "Search & Start" signal is input when the memory mode is selected, the designated machining program is searched and executed from the beginning.
0	0	0	0	0	0	0	0	0	0	A machining program is restarted automatically at the completion of the machining program execution.
	1		1			1		1		Manual interrupt is a function that enables manual operations to be performed
0	0	0	0	0	0	0	0	0	0	during automatic operation. The handle command can interrupt and be superimposed onto a command
0	0	0	0	0	0	0	0	0	0	without suspending automatic operation to move the machine by rotating the manual pulse generator during automatic operation.
										The program absolute positions are updated by an amount equivalent to the
0	0	0	0	0	0	0	0	0	0	distance by which the tool is moved manually when the manual absolute switch signal is turned ON.
0	0	0	0	0	0		-	_	_	This function suspends the thread cutting cycle if a feed hold signal has been input during thread cutting cycle.
0	0	0	0	0	0	0	0	0	0	If tapping is interrupted by a reset or emergency stop signal that is input during tapping and the tap is left engaged inside the workpiece, the tap tool engaged
0		0		0	0				0	inside the workpiece can be rotated in the reverse direction so that it will be disengaged by inputting the tap retract signal.
0	0	0	0	0	0	0	0	0	0	On the screen of the setting and display unit, the M, S and T (and B when 2nd miscellaneous function is valid) commands can be executed by setting numerical
		-					-		-	values and pressing [INPUT]. This function allows a program to run the executed blocks backward after the
0	0	0	0	0	0			-	_	block stop in the automatic operation. This function enables MDI programs to be executed during automatic operation in
0	0	0	0	0	0	0	0	0	0	the single block stop status. When the modal status is changed in a MDI program, the modal status in the automatic operation mode is also changed.
										This function enables manual operations to be performed during automatic
0	0	0	0	0	0	0	0	0	0	operation by selecting an automatic operation mode (tape, MDI or memory) and manual mode (handle, step, jog or manual reference position return) simultaneously.
			_			-	-	_		(Arbitrary feed based on the PLC is also possible.) When executing the jog feed and handle feed, both these feeds are available
0	0	0	0	0	0	0	0	0	0	without changing the mode each time by inputting the jog mode signal and simultaneous operation of jog and handle modes signal to the control unit.
0	0	0	0	0	0	0	0	0	0	When the retract signal is turned ON during the automatic and manual operation, this function can retract the tool immediately to a set reference position.
Δ		Δ	Δ	0	0	0		_	_	Even if the machining program's operation is halted and the tool is retracted to change the tool or check the workpiece, etc., the tool can be returned to the halted
										point (machining halted point) and resume machining. This function is used to return in the direction opposite the travel direction when the
0	0	0	0	0	0	0		_	0	Skip signal is input during G31 command. The interrupt program set with the R register is executed with the signals from the
0	0	0	0	0	0	0	0	0	0	PLC during single block stop in program operation or during the manual mode.
_	-	-	_	-	_	_	-	-	Δ	Machining interruption is a function which enables interrupt operations while a program is normally executed.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

	_				-		Lathe	system				
		class	M8	oow	M8	00S	M80W	M	80		80	C80
			M850W	M830W	M850S	M830S	—	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	—
	1	Subprogram control [Layers]	010	010	010	O10	O10	010	010	010	010	08
-	2	Figure rotation										_
	3	Scaling										_
-	4	Axis name switch	0	0	0	0	0	0	0	0	0	0
		acro program					0	0	0		0	0
	1	User macro [Layers]	04	04	04	04	04	04	04	04	04	04
	2	Machine tool builder macro	0	0	0	0	0	0	0	0	0	0
I L		Macro interruption	0	0	0	0	0	0	0	0	0	0
ŀ	4	Variable command										
		1 200 sets 2 600 sets		_		_	_	_	0	0	0	_
		3 700 sets	0	0	0	0	0	0	_			0
		4 8000 sets	Δ	Δ	Δ	Δ	0	0	—	—	—	—
		6 (600+100×number of part systems) sets	0	0	0	0	0	0	_	_]	0
3	_	7 (7900+100×number of part systems) sets xed cycle				Δ	0	0	_		-	-
		Fixed cycle for drilling	0	0	0	0	0	0	0	0	0	0
	-	Fixed cycle for drilling (Type II)	0	0	0	0	0	0	0	0	0	0
	3	Special fixed cycle	-	-	_	—	—	—	—	—	-	_
	4	Fixed cycle for turning machining	0	0	0	0	0	0	0	0	0	0
	5	Compound type fixed cycle for turning machining					0	0	0	0	0	0
	6 7	Compound type fixed cycle for turning machining (Type II) Small-diameter deep-hole drilling cycle					0		0			
		irror image Mirror image by parameter setting	0	0	0	0	0	0	0	0	0	0
	-	Mirror image by external input	0	0	0	0	0	0	0	0	0	0
:	3	Mirror image by G code	_	-	_	_	_	_	_	_	-	_
	4	Mirror image for facing tool posts	0	0	0	0	0	0	0	_	_	0
1	5	T code mirror image for facing tool posts	0	0	0	0	0	0	0	_	_	0
5	C	oordinate system operation										
	1	Coordinate rotation by program	Δ		Δ	Δ	0	0	_	_	_	Δ
:	2	Coordinate rotation by parameter	-	-	_	_	_	_	_	_	_	_
:	3	3-dimensional coordinate conversion	_	-	_	_	_	_	_	_	_	_
6	Di	imension input										
	1	Corner chamfering / Corner R	Δ		Δ	Δ	0	0	0	0	0	\triangle
	2	Linear angle command	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ
:	3	Geometric command	0	0	0	0	0	0	0	0	0	0
	_	Polar coordinate command		-		_			_		_	_
		kis control Chopping										
			1									
	-	1 Chopping	Δ		Δ	Δ	0	0	0		_	Δ
		Normal line control	-	-			_	_	_		-	_
		Circular cutting	-	-	_	-	_	_	-	_	-	-
8	M	ulti-part system control		1								
	1	Timing synchronization between part systems	0	0	0	0	0	0	0	_	_	0
	2	Start point designation timing synchronization	0	0	0	0	0	0	0			0
				1				-		1		-

M80				chining c						
	pow	M8	00S	M80W		80		B0	C80	General explanation
M850W	M830W	M850S	M830S	_	M80	_M80	_E80	_E80	_	
					ТуреА	ТуреВ	ТуреА	ТуреВ		When the same pattern is repeated during machining, the machining pattern is
O10	010	010	010	010	010	010	010	010	08	registered as one subprogram, which can be called from the main program as
010		010		010	010		010	010	00	required, thereby realizing the same machining easily. This enables the efficient us of programs.
										If the same pattern is used repeatedly on a concentric circle, one of the rotary
^										machining patterns can be registered as a subprogram. When the subprogram is called from the main program, if the rotation center is designated, a path similar t
Δ										the rotary phase can be easily created on the concentric circle. This simplifies the
										creation of a program. The shape commanded by a program can be extended or reduced to the desire
\triangle				0	0	0	0	-	Δ	size by applying a scale factor to the movement axis command position.
_	_	_	_	_	_	_	_	_	_	The axis name switch function switches the name of a command axis and a
										control axis.
04	04	04	04	04	04	04	04	04	04	In order to execute one integrated function, a group of control and arithmetic
04	04	04	04	04	04	04	04	04	04	instructions can be used and registered as a macro program.
0	0	0	0	0	0	0	0	0	0	This function enables macro programs exclusively designed for use by a specific machine tool builder to be registered in addition to the regular user macro
		-				-				programs.
0	0	0	0	0	0	0	0	0	0	By inputting a user macro interrupt signal from the PLC, the program being currently executed is interrupted and other programs can be called instead.
—	_	—	_	—	—	—	—	0	—	
_	-	—	—	—	—	—	0	—	—	Programming can be made flexible and versatile by designating variables instead
0	0	0	0	0	0	0	_	_	0	directly assigning numbers to addresses in programs and by supplying the values of those variables as required when running the programs.
\triangle	Δ	Δ	Δ	0	0	—	—	—	_	Arithmetic operations (adding, subtracting, multiplying and dividing) can also be
0	0	0	0	0	0			_	0	conducted for the variables.
\triangle				0	0	_	<u> </u>	_		
	-							-		
0	0	0	0	0	0	0	0	0	0	These functions enable drilling, tapping and other hole machining cycles to be
_		_	_					-	_	assigned in a simple 1-block program. Special fixed cycles must always be used combination with fixed cycles.
<u> </u>				0	0	0	0	0	Δ	
0	0	0	0	0	0		_	_		The shape normally programmed in several blocks for rough cutting, etc. in the turning machining can be commanded in one block. This function is useful for
_		_	_	_	_		_	_	_	simplifying machining programs.
										In deep hole drilling, cutting and retract are repeated and the workpiece is
0	0	0	0	0	0	0	_	_	_	machined multiple times. In addition, when PLC signals are input during cutting,
0				Ŭ						the cutting for the time concerned is skipped. In this way, the load applied to the tool is reduced.
0	0	0	0	0	0	0	0	0	0	A parameter is used to designate the axis for which the mirror image function is to
-	-									be executed before the machining program is run. Signals from an external device (PLC) request the mirror image operation either
0	0	0	0	0	0	0	0	0	0	during or before the execution of a machining program.
0	0	0	0	0	0	0	0	0	0	Using a program for the left or right side of an image, this function can machine the other side of the image when a left/right symmetrical shape is to be cut.
										With machines in which the base tool post and the facing tool post are integrated
_	-	-	-	-	-	-	-	-	-	in one post, this function enables the programs prepared for cutting at the base
										side to be executed by the tools on the facing side as well. When tools that correspond to tool Nos. 1 to 64 are selected (T commands) but
_	_	_	_	_	_	_	_	_	_	these are the tool Nos. for which the facing tool post mirror image function has
										already been designated with a parameter, the status equivalent to G68 (facing to post mirror image ON) is established.
										When it is necessary to machine a complicated shape at a position that has beer rotated with respect to the coordinate system, you can machine a rotated shape
\triangle				0	0	0	0	0	Δ	programming the shape prior to rotation on the local coordinate system, and the
										specifying the parallel shift amount and rotation angle by means of this coordinate
										If a deviation occurs between the workpiece alignment line and the machine
\triangle				_	_	_	_	_	_	coordinate system's coordinate axis when the workpiece is mounted, the machin
-	-									can be controlled to rotate the machining program coordinates according to the workpiece alignment line deviation.
_				-	-					With the 3-dimensional coordinate conversion function, a new coordinate system
\triangle				0	0	-	-	-	Δ	can be defined by rotating and moving in parallel the zero point in respect to the X Y and Z axes of the currently set workpiece coordinate system.
						1		1		
Δ	Δ	Δ	Δ	0	0	0	0	0	Δ	This function executes corner processing by automatically inserting a straight line
$ \simeq $										or arc in the commanded amount between two consecutive travel blocks.
				0	0	0	0	_	Δ	The end point coordinates are automatically calculated by assigning one element (one component of the selected plane) of the end point coordinates and the linear
Δ										angle.
Δ					1	0	0	_	_	When it is difficult to find the intersection point of two straight lines with a continuous linear interpolation command, this point can be calculated automatica
				0	0		_ ۱			by programming the command for the angle of the straight lines.
Δ	Δ	Δ	Δ		0					
		Δ	Δ	0	0	0	_	-	Δ	
Δ	Δ							_	Δ	
Δ	Δ						_	_	Δ	With this function, the end point position is commanded with the radius and angl
Δ	Δ								Δ	With this function, the end point position is commanded with the radius and angle
Δ		Δ	Δ	0	0	0				With this function, the end point position is commanded with the radius and angle This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain.
		Δ	Δ	0	0	0				With this function, the end point position is commanded with the radius and angle This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a better surface accuracy than using abrasive grain. This function controls the swiveling of the Cavis (rotary axis) so that the tool
Δ		Δ	Δ	0	0	0			Δ	With this function, the end point position is commanded with the radius and angle This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the swiveling of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement commands during program operation.
Δ Δ Δ Ο		Δ Δ Ο	Δ Δ Ο	0	0	0 0 —			Δ 0	With this function, the end point position is commanded with the radius and ang This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the serviveling of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement commands during program operation. In circular cutting, a system of cutting steps are performed; first, the tool departs
		Δ	Δ	0	0	0			Δ	With this function, the end point position is commanded with the radius and angle This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the swiveling of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement
△ △ △ ○		Δ Δ Ο	Δ Δ Ο	0	0	0 0 —			Δ 0	With this function, the end point position is commanded with the radius and ang This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the swiveling of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement commands during program operation. In circular cutting, a system of cutting steps are performed; first, the tool departs from the center of the circle, and by cutting along the inside circumference of the circle, it draws a complete circle, then it returns to the center of the circle.
Δ Δ Δ		Δ Δ Ο	Δ Δ Ο	0	0	0 0 —			Δ 0	With this function, the end point position is commanded with the radius and ang This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the swiveling of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement commands during program operation. In circular cutting, a system of cutting steps are performed; first, the tool departs from the center of the circle, and by cutting along the inside circumference of the circle, it draws a complete circle, then it returns to the center of the circle. The multi-axis, multi-part system compound control CNC system can
Δ Δ Δ Ο		Δ Δ Ο	Δ Δ Ο	0	0	0 0 —			Δ 0	With this function, the end point position is commanded with the radius and angle This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the serwileing of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement commands during program operation. In circular cutting, a system of cutting steps are performed; first, the tool departs from the center of the circle, and by cutting along the inside circumference of the circle, it draws a complete circle, then it returns to the center of the circle. The multi-axis, multi-part system compound control CNC system can simultaneously run multiple machining programs independently. This function is used in cases when, at some particular point during operation, the operation, sho peration, sho
		Δ Δ Ο	Δ Δ Ο	0	0 0 0	0 0 —			 ○	With this function, the end point position is commanded with the radius and angle This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the swiveling of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement commands during program operation. In circular cutting, a system of cutting steps are performed, first, the tool departs from the center of the circle, and by cutting along the inside circumference of the circle, it draws a complete circle, then it returns to the center of the circle. The multi-axis, multi-part system compound control CNC system can simultaneously run multiple machining programs independently. This function is used in cases when, at some particular point during operation, the operations of different part systems are to be synchronized or in cases when the operation of
		Δ Δ Ο	Δ Δ Ο	0	0 0 0	0 0 —			 ○	With this function, the end point position is commanded with the radius and angle This function continuously raises and lowers the chopping axis independently of program operation. During the grinding operation, chopping can produce a bette surface accuracy than using abrasive grain. This function controls the serwileing of the C axis (rotary axis) so that the tool is always pointing in the normal line direction for the X and Y axes movement commands during program operation. In circular cutting, a system of cutting steps are performed; first, the tool departs from the center of the circle, and by cutting along the inside circumference of the circle, it draws a complete circle, then it returns to the center of the circle. The multi-axis, multi-part system compound control CNC system can simultaneously run multiple machining programs independently. This function is used in cases when, at some particular point during operation, the operation, sho peration, sho

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

							Lathe	-				
		class	M8	woo		00S	M80W	M80	80 M80	E80	80 E80	C80
			M850W	M830W	M850S	M830S	—	ТуреА	ТуреВ	ТуреА	ТуреВ	—
Ι		1 Mixed control (cross axis control)	Δ	Δ	Δ	Δ	0	0	_	_	-	Δ
		2 Arbitrary axis exchange control	Δ	Δ	Δ	Δ	0	0	_	_	_	Δ
	4	4 Control axis superimposition										
		1 Control axis superimposition			Δ	Δ	0	0	_	_	_	-
		2 Arbitrary axis superimposition control	Δ	Δ	Δ	Δ	_	_	_	_	-	_
	5	5 Control axis synchronization between part syste	ems 🛆	Δ	Δ	Δ	0	0	0	_	_	Δ
	6	6 Balance cut	0	0	0	0	0	0	_	_	_	0
	7	7 Common memory for part systems	0	0	0	0	0	0	_	_	_	0
	8											
		1 Two-part system simultaneous thread cutting	g 🛆	Δ	Δ	Δ	0	0	_	_	_	0
		2 Multi-part system simultaneous thread cuttin	ng 🛆	Δ	Δ	Δ	_	_	_	_	_	_
	9	9 Multi-part system program management	0	0	0	0	0	0	0	_	_	0
	10											
		1 Single block between part systems	Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
		2 Dwell / Miscellaneous function time override	Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
		3 Synchronization between part systems OFF	Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
	11	1 Sub part system control I	Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
		2 Sub part system control II	Δ	Δ	Δ	Δ	0	0	_	_	_	Δ
ŝ	1 D	Data input / output by program Parameter input by program	0	0	0	0	0	0	0	0	0	0
	2		0	0	0	0	0	0	0	0	0	0
	3	3 Tool/Material shape input by program	0	0	0	0	0	0	0	0	0	0
	5	API section and sub-section Nos-input /		0	0	0	0	0	0	0	0	0
	\vdash	output by program	0				0					
		6 R-Navi data input by program				_	_	_			-	_
1(Machining modal		-		_			-		_	
	1		0	0	0	0	0	0	0	0	0	0
1	2 1 H	2 Cutting mode High-speed parts machining	0	0	0	0	0	0	0	0	0	0
İ	1		Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
2 M	lach	chining accuracy support functions		•								
1		Automatic corner override	0	0	0	0	0	0	0	0	0	0
2	-	Deceleration check					0		0			
		Exact stop check mode Exact stop check	0	0	0	0	0	0	0	0	0	0
		3 Error detection	0	0	0	0	0	0	0	0	0	0
		4 Programmable in-position check	0	0	0	0	0	0	0	0	0	0
		5 Automatic error detection			Δ	Δ	—	_	_	_	-	—
		-speed and high-accuracy functions [kBPM: k Block per N	/inute]									
1		High-speed machining mode High-speed machining mode I (G05P1) maximum [k	kBPM] △33.7	∆33.7	∆33.7	∆33.7	033.7	033.7	_		_	∆33.7
0	2	High-speed machining mode II (G05P2) maximum [High-speed machining mode II (G05P2) maximum [High-accuracy control		∆33.7 ∆168	△33.7	∆33.7 ∆168	033.7	033.7	_	_		∆33.7 ∆67.5
		High-accuracy control (G61.1 / G08)	Δ	Δ	Δ	Δ	0	0	0	0	0	Δ

					enter sys					
M80	00W	M8	005	M80W		80		B0	C80	General explanation
M850W	M830W	M850S	M830S	—	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	-	
_	_	_	_	_					_	This function enables any axis to be replaced with another axis between part
										systems. There are two methods for giving commands: G code and PLC. An arbitrary axis can be exchanged freely across part systems in the multiple
Δ	Δ	Δ	Δ		_	_	_	_	Δ	part systems. The machining can be freer by exchanging an axis which can be commanded for machining programs in each part system.
_	_		_	_	_	_		_		This function enables to superimpose on and control an axis in a part system with an axis in another part system. There are two methods for giving commands: G code and PLC.
_	-	_	-	_	_	-	_	_	-	The arbitrary control axis in other part system can be moved by superimposing on the movement command for the arbitrary control axis in own part system.
_	_	_	_	_	_	_	_	_	-	Synchronization control enables an arbitrary control axis in another part system to move in synchronization with the movement command assigned to an arbitrary control axis. There are two methods for giving commands: G code and PLC.
_	_	_	_	_	_	_	_	_	_	The deflection can be minimized by holding tools simultaneously from both sides c the workpiece and using them in synchronization to machine the workpiece (balano cutting). In addition, since the workpiece is machined by two tools, the machining time is reduced.
_	_	_	_	_	_	_	_	_		For a machine with multiple part systems, the common variables and tool compensation memory which exist for each part system can be made common to all part systems by setting the parameters.
_	_		_	_		_	_	_		This function performs synchronous thread cutting for the same spindle using the
_	_	_	_	_	_	_	_	_	_	1st and 2nd part systems. This function performs thread cutting for the same spindle in the different part system. This has two commands; the command (G76.1) for simultaneously cutting threads in multiple places, which is known as "multi-part system simultaneous
										thread cutting cycle I", and the command (G76.2) for simultaneously cutting a thread by two part systems, which is known as "two-part system simultaneous thread cutting cycle II". Separate programs, used in each part system, can be managed under a commor
0	0	0	0	0	0	-	_	-	0	name in a multi-part system.
_	_		_			_		_		Single block operation with part systems synchronized is the function for executing single block operation while maintaining the synchronization among the part systems when two or more part systems are operated in the multi-part system. When one part system has been stopped by single block stop, the other part systems pause in the cycle operation.
_	_	_	_	-	_	_	_	_	_	Override can be applied to dwell time and miscellaneous function finish wait time of all part systems. The synchronization among part systems can be maintained when the multiple machining programs are operated with override.
_	_	_	_	_	_	_	_	_	_	Synchronization among part systems and feedrate change are turned OFF in a part of a machining program to eliminate a synchronization relation among part systems by single block operation with part systems synchronized or variation of a machining program feedrate by dry run. This function is effective mainly in blocking the cycle operation pause or feedrate variation in only some of part systems when the sub part system control II function is being used.
Δ	Δ	Δ	Δ		_	_		_	_	This function activates and operates any non-operating part system (sub part system) in the multi-part system. An auxiliary axis machining program can be controlled in the sub part system by commanding Sub part system control I (G122 from the main part system.
_	_	_	_	_	_	_	_	_	_	This function activates and operates any non-operating part system (sub part system) in the multi-part system. Using sub part systems enables parallel operation between an operating program in main part system and a program called with Sub part system control II (G144).
-	-	-								
0	0	0	0	0	0	0	0	0	0	The parameters set from the display can be changed using machining programs. The value of the workpiece coordinate systems selected can be set or changed using program commands. The tool compensation amounts, that are set from the
0	0	0	0	0	0	0	0	0	0	display can be input using program commands. Tool shape data on the tool management screen and workpiece shape data of the
0	0	0	0	0	0	0	0	0	0	3D solid program check can be set with the machining program. NC internal data can be read/written by specifying the section number, sub-section
										number, part system number and axis number using system variables. The R-Navi setup parameter can be set from the machining program. The setting
Δ	Δ	Δ	Δ	0	0	_		_	_	value can be checked and the machining surface can be selected on the setup screen for the parameter set from the machining program.
0	0	0	0	0	0	0	0	0	0	When tapping mode commands are issued, the CNC system is set to the internal control modes required for tapping.
0	0	0	0	0	0	0	0	0	0	When a cutting mode command is issued, the CNC system is set to the cutting mode that enables a smoothly cut surface.
Δ	Δ	Δ		0	0	0	_	_	Δ	This function enables the next block to start (overlap) without waiting for positionin (G00) or reference position return (G28/G30). Consequently, cycle time of machining can be reduced.
0	0	0	0	0	0	0	0	0	0	To prevent machining surface distortion due to increase in the cutting load when cutting corners, this function automatically applies an override on the cutting feedrate so that the cutting amount is not increased for a set time at the corner.
0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	This function decelerates and stops a motor before executing the next block,
0	0	0	0	0	0	0	0	0	0	which reduces the impact on the machine caused by a rapid change of feedrate, and prevents a corner from being machined round.
0	0	0	0	0	0	0	0	0	0	This function is effective to reduce the extension of cycle time for the cutting at the
_	_	_	-	_	-		_		-	corner and realize the high edge accurate machining.
∆33.7 ∆168	∆33.7 ∆168	∆33.7 ∆168	△33.7 △168	O33.7 O67.5	O33.7 O67.5	O16.8 O67.5			△33.7 △67.5	This function runs a machining program that approximates a free curve with fine segments at a high speed.
Δ	Δ	Δ		0	0	0	0	_		Machining errors caused by delays in control systems can be inhibited. This function is useful for machining which needs to make an edge at a corner or reduce an error from an inner route of curved shape.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

							Lathe					
		class		woo		00S	M80W	M80	80 M80	E80	B0 E80	C80
			M850W	M830W	M850S	M830S	—	ТуреА	ТуреВ	ТуреА	ТуреВ	—
	2	2 Multi-part system simultaneous high-accuracy control			Δ	Δ	_	_	_	_	_	_
	3	3 SSS control			\triangle	Δ	0	0	0	_*	_*	_
	4	1 Tolerance control			\triangle	Δ	0	0	0	0	0	_
		Variable-acceleration pre-interpolation acceleration /										
	5	deceleration	-	-	-	-	-	-	-	-	-	-
	┢											
	6	High-accuracy acceleration / deceleration time constant extension	-	-	—	-	—	-	-	_	-	-
	┢											
	7	7 Axis-based acceleration tolerance control			Δ	Δ	_	_	_	_	_	_
	_	High-speed high-accuracy control										
	1		△67.5	△67.5	△67.5	△67.5	033.7	033.7	_	_	_	△33.7
	2		△168	△168	△168	△168	067.5	067.5				△67.5
	3	High-speed high-accuracy control III (G05P20000) maximum [kBPM]	_	-	_	_	_	-	-	_	_	_
	┢											
	4	Smooth fairing	_	_	_	_	_	_	_	_	_	_
	4	Machining condition selection I	0	0	0	0	0	0	-	_	-	0
-	-											
	5 [Direct command mode			Δ	Δ	_	-	-	_	_	_
4 F	Proc	gramming support functions										
	T	Playback	Δ	Δ	Δ	Δ	_	_	_	_	_	
		i dybdor			4							
	3 I	Interactive cycle insertion			\triangle	Δ	0	0	0	0	0	-
-	4 5	Simple programming (NAVI MILL / LATHE)					0	0	0	0	0	
	4 (Simple programming (NAVENILE / DATHE)	Δ	Δ	Δ	Δ	0	0	0	0	0	
	5 0	G code guidance	0	0	0	0	0	0	0	0	0	0
	+											
	7 [DXF data input			Δ	Δ	0	0	_	_	_	_
		ne accuracy compensation										
		ic accuracy compensation										
	1 [Backlash compensation	0	0	0	0	0	0	0	0	0	0
	2	Memory-type pitch error compensation [sets]	032	032	032	032	016	016	016	016	016	010
	_											
	3 1	Memory-type relative position error compensation	0	0	0	0	0	0	0	0	0	0
	4	External machine coordinate system compensation			Δ	Δ	0	0	0	0	0	Δ
	_				_	_						
	5 (Circular error radius compensation	Δ		Δ	Δ	0	0	0	_	_	Δ
1 1									0	—	_	Δ
	6 8	Ball screw thermal expansion compensation		Δ	Δ		0	0				
		Ball screw thermal expansion compensation	Δ	Δ	Δ	Δ	0	0			'	
		Ball screw thermal expansion compensation Rotation center error compensation			Δ		0 —	_	_	_	_	_
							0 —	_	_	_	_	_
	7	Rotation center error compensation Position-dependent gradually increasing-type backlash							-	_	_	_
	7	Rotation center error compensation	Δ — Δ	Δ — Δ	Δ — Δ	Δ — Δ	0 — 0	0	-	_	_	
	7 F	Rotation center error compensation Position-dependent gradually increasing-type backlash compensation					0	-			_	
	7 F	Rotation center error compensation Position-dependent gradually increasing-type backlash							- 0	-		
	7 F	Rotation center error compensation Position-dependent gradually increasing-type backlash compensation					0	-				
	7 F 8 F (Rotation center error compensation Position-dependent gradually increasing-type backlash compensation					0	-				
	7 F 8 F (Rotation center error compensation Position-dependent gradually increasing-type backlash compensation Two-way pitch error compensation		ـــــــــــــــــــــــــــــــــــــ			- 0	-				Δ
	7 F 8 F () 9 -	Rotation center error compensation Position-dependent gradually increasing-type backlash compensation Two-way pitch error compensation		ـــــــــــــــــــــــــــــــــــــ			- 0	-				Δ
	7 F 8 F 0 9 -	Rotation center error compensation Position-dependent gradually increasing-type backlash compensation Two-way pitch error compensation Spatial error compensation amic accuracy compensation	Δ		Δ		- 0 -	- 0 -	0	_		Δ
	7 F 8 F 0 9 -	Rotation center error compensation Position-dependent gradually increasing-type backlash compensation Two-way pitch error compensation Spatial error compensation		ـــــــــــــــــــــــــــــــــــــ			- 0	-				Δ
	7 F 8 F (1) 9 -	Rotation center error compensation Position-dependent gradually increasing-type backlash compensation Two-way pitch error compensation Spatial error compensation amic accuracy compensation Smooth high-gain (SHG) control	Δ Δ 	Δ Δ 	 Δ 	 Д О	- 0 -	- 0 -	0 — 0	 0	-	△ 0
	7 F 8 F (1) 9 -	Rotation center error compensation Position-dependent gradually increasing-type backlash compensation Two-way pitch error compensation Spatial error compensation amic accuracy compensation	Δ		Δ		- 0 -	- 0 -	0	_		Δ
	7 F 8 F (9 -) 9 -) 9 -) 9 - 1 (1 (2 [Rotation center error compensation Position-dependent gradually increasing-type backlash compensation Two-way pitch error compensation Spatial error compensation amic accuracy compensation Smooth high-gain (SHG) control	Δ Δ 	Δ Δ 	 Δ 	 Д О	- 0 -	- 0 -	0 — 0	 0	-	△ 0

					enter sys					
M80	bow	M8	005	M80W		80	E	-	C80	General explanation
M850W	M830W	M850S	M830S	_	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	—	
					турея	турев	турея	турев		High-accuracy control and high-speed machining mode are available respectively
Δ				0	0	_	_	_	Δ	in all part systems. The simultaneous usage of high-accuracy control and high- speed machining mode (including High-speed high-accuracy control I/II/III) are
										available only in part systems which are limited by the parameter. * Up to 2 part
										systems With SSS (Super Smooth Surface) control, the large area path information is used
										instead of just the angle between the blocks. Thus, optimum speed control that is not adversely affected by minute steps or waviness is possible. This enables
\triangle				0	0	0	*	_	Δ	machining with a fewer scratches and streaks on the cutting surface compared to the normal high-accuracy control function.
										Multiple part systems simultaneous high-accuracy function is required to conduct
										the SSS control in the second or following part systems. * eSSS supported
\triangle				0	0	0	0	-	Δ	This function enables the smooth operation within the tolerance error range. The desired machining result can be obtained with simple parameter adjustment.
										This function can perform the acceleration / deceleration during SSS control by setting diverse acceleration to each axis. Therefore, the acceleration for the axis
\triangle				_	-	-	—	-	—	with high responsiveness can be larger than before so that cycle time can be
										reduced especially in the indexing machining. This extends the upper limit of cutting feed time constant from 5,000[ms] to
\bigtriangleup				-	-	-	_	-	_	30,000[ms] for acceleration/deceleration before interpolation. * 1st part system only
										The acceleration to be generated at a seam between blocks is evaluated for each
\triangle				-	-	-	_	-	_	axis to control deceleration so that the seam is passed at the optimum speed. The enables highly accurate edge machining.
										* 1st part system only
∆67.5	△67.5	△67.5	△67.5	033.7	033.7	033.7	_	_	∆33.7	A machining program that approximates a free curve with fine segments can
△168	△168	∆168	∆168	067.5	067.5	067.5	_	-	△67.5	be run at a high speed and with a high accuracy. This function is effective in decreasing the cycle time of machining dies with free curves. This function is also
△270	△270	△270	△270	0135	0135				∆135	useful in machining which needs to make an edge at a corner or reduce a path error from inner route of curved shape because the high-accuracy control mode
Z270	Z270	Z270		0135	0135	_		_	2135	turned ON automatically.
				_						A path can be smoothen by compensating commanded positions of a machinin program. This function is useful when executing a fine segment program to
\bigtriangleup				0	0	-	_	-	Δ	machine smoothly at low speed or a rough machining program with long segme to machine smoothly.
										The machining condition parameter set which consists of parameters related to t
0	0	0	0	0	0	0	—	-	0	high-accuracy control can be configured in advance for each machining applicati (such as part machining or die machining) or machining process (such as rough
										finishing), and it can be switched according to the purpose. By reducing the load applied during the NC program analysis and interpolation to
_	_	_	_	_	_	_	_	_	_	the minimum possible level, the machining programs expressed in fine segments
										are executed at a high processing speed.
0	0	0	0	0	0	0	0	_	0	This function enables creation of a program while proceeding with sample
0										machining by manual (handle or job) feed or mechanical handle feed. This function enables to interactively insert a cycle to assist in the machining and
\bigtriangleup				0	0	0	0	0	—	setup for the program opening on the edit screen. The cycle can easily be inserte by editing data in an interactive window.
Δ	Δ	Δ	Δ	0	0	0	0	0		Create a part program by using NAVI MILL (for machining center system) or NAV
-			-		-			Ŭ		LATHE (for lathe system). G code guidance is a function to display illustration of the contents or movement
0	0	0	0	0	0	0	0	0	0	of the commanded format for the G code currently under editing. This is used when creating or editing a machining program.
										This function allows you to import a DXF drawing file from an external I/O device through DXF data input window, extract the figure element data from the drawing
\bigtriangleup				Δ	0	-	_	-	-	Extracted data can be set as arbitrary shape data or as hole position data to the
										cycle being edited using the interactive cycle insertion function.
0	0	0	0	0	0	0	0	0	0	This function compensates the error (backlash) produced when the direction of the machine system is reversed.
									0.10	Machine accuracy can be improved by compensating the errors in the screw pite
032	032	032	032	016	016	016	016	016	010	intervals among the mechanical errors (production errors, wear, etc.) of the feed screws.
0.02	0	0	0	0	0	0	0	0	0	Machine accuracy can be improved by compensating the relative error between machine axes, such as a production error or aging.
0										The coordinate system can be shifted by inputting a compensation amount from
0				_			0	0		the PLC. This compensation amount will not appear on the counters (all counters
	Δ	Δ	Δ	0	0	0	0			including machine position).
0		Δ	Δ	0	0	0	_	_	Δ	With commands designated during arc cutting, this function compensates
0 Δ		Δ	Δ	0	0		_	_		With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansion
0	Δ			-		0			Δ	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC.
0 Δ		Δ	Δ	0	0	0				With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine with
0 Δ Δ		Δ Δ	Δ	0	0	0				With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error.
		Δ Δ	Δ Δ	0	0 0 —	0 0 —	-			With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a bal screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can
0 Δ Δ		Δ Δ	Δ	0	0	0	- - - 0			With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount
0 Δ Δ Δ Δ Δ				0 0 — 0	0 0 —	0 0 — 0			Δ — Δ	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount according to the distance from the direction reversal point.
		Δ Δ	Δ Δ	0	0 0 —	0 0 —	-			With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount
0 Δ Δ Δ Δ Δ				0 0 — 0	0 0 —	0 0 — 0			Δ — Δ	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on the distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount according to the distance from the direction reversal point. Two-way pitch error compensation function is used to compensate the pitch error in each direction. This function can compensate the pitch error. This function can compensate for three-dimensional errors of a machine tool during the positive and negative direction.
0 Δ Δ Δ Δ Δ				0 0 — 0	0 0 —	0 0 — 0			Δ — Δ	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensate the pitch error in each direction by setting the pitch error compensate mount according to the distance from the direction reversal point. Two-way pitch error compensation function is used to compensate the pitch error in each direction by setting the pitch error compensation amount when moving in the positive and negative direction. This function can compensate for three-dimensional errors of a machine tool due to its linear and rotary axes. This measures the spatial errors with a measuring device, inputs the measurement results to the NC to make an error data file and device.
				0 0 — 0	0 0 —	0 0 — 0			Δ — Δ	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensate the pitch err in each direction by setting the pitch error compensation amount according to the distance from the direction reversal point. Thor-way pitch error compensation function is used to compensate the pitch err in each direction. This measures the spatial errors with a measuring device, inputs the measurement results to the NC to make an error data file and device.
				0 0 — 0	0 0 —	0 0 — 0			Δ — Δ	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensate the pitch err in each direction by setting the pitch error compensate apoint. Two-way pitch error compensation function is used to compensate the pitch error in be add negative direction. The self all errors with a measuring device, inputs the measurement results to the NC to make an error data file and adds the calculated compensation amount of the linear and rotary axes. This measures the by NC market an error data file and adds the calculated compensation amount of the linear and rotary axes to the d command position to perform the compensation.
				0 0 — 0	0 0 —	0 0 — 0			Δ — Δ	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a fall screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual totation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount according to the distance from the direction reversal point. Two-way pitch error compensation function is used to compensate the pitch error in each direction by setting the pitch error compensate nach direction is reversed and device, injust the measurement results to the NC to make an error data file and adds the calculated compensation amount of the linear and rotary axes. This measures the spatial errors with a measuring device, injust the measurement results to the NC to make an error data file and adds the calculated compensation amount of the linear and rotary axes to the di- command position to perform the compensation. This is a high-response and stable position control method using the servo systee SHG control realizes an approximately three-fold position loop gain compared to
				0 0 0 0	0 0 0 	0 0 0 		_	Δ — Δ —	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, 'machine rotation center error' may be observed) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on the distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount according to the distance from the direction reversal point. Two-way pitch error compensation for there-dimensional errors of a machine tool due to this linear and negative direction. This function can compensate for three-dimensional errors of a machine tool due to the linear and rotary axes. This measures the spatial errors was to the di command position to perform the compensation. This is a high-response and stable position control method using the servo syster SHG control realizes an approximately three-field position loop gain compared to the conventional control method.
				0 0 0 0	0 0 0 	0 0 0 		_	Δ — Δ —	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, 'machine rotation center error' may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on the distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount according to the distance from the direction reversal point. Two-way pitch error compensation function is used to compensate the pitch error in each direction by setting the pitch error compensation amount according to the distance from the direction reversal point. This function can compensate for three-dimensional errors of a machine tool due to its linear and rotary axes. This measures the spatial errors with a measuring device, inputs the measurement results to the NC to make an error data file and adds the calculated compensate for three-fold position loop gain compared to the content realizes an approximately three-fold position loop gain compared to the conventional control method. Use position feedback with a motor-side encorder in ranges with high acceleration to enable stable control. In arrages with low acceleration, use position feedback is and the value control method.
				0 0 0 0 	0 0 0 0 	0 0 0 0 		- - 0	Δ — Δ Δ —	With commands designated during arc cutting, this function compensates movement toward the inside of the arcs caused by a factor such as servo delay. This compensates the axis feed error caused by a ball screw's thermal expansio etc. using the values set by the PLC. In a machine with a rotary axis, there may be a case where the actual rotation center deviates from the programmed rotation center. (In other words, "machine rotation center error" may be observed.) Higher accuracy machining can be realized by compensating this error. With this function, the gradually increasing-type lost motion which depends on th distance from the point where the machine movement direction is reversed can be compensated by controlling the variation of backlash compensation amount according to the distance from the direction reversal point. Two-way pitch error compensation function is used to compensate the pitch error in each direction by setting the pitch error compensation amount when moving in the positive and negative direction. This function can compensate for three-dimensional errors of a machine tool due to its linear and rotary axes. This measures the spatial errors with a measuring device, inputs the measurement results to the NC to make an error data file and dads the calculated compensation mount of the linear and rotary axes to the dr command position to perform the compensation. This is a high-response and stable position control method using the servo syster SHG control realizes an approximately three-fold position loop gain compared to the conventional control method. Use position feadback with a motor-side encorder in ranges with high acceleration the position feadback with a motor-side encorder in ranges with high acceleration the conventional control method.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

		M8	00W	M8	00S	Lathe s	system M	80	E	80	C80
	class	M850W	M830W	M850S	M830S	_	M80	M80	E80	E80	
r	Γ	NICOUV	1000000	100000	100003		ТуреА	ТуреВ	ТуреА	ТуреВ	
4	OMR II (Backlash with filter)					0	0	0	_		Δ
-											
						_	_	-	_	-	
6	OMR-FF	Δ		Δ	Δ	0	0	0	0	0	Δ
7	Distance-coded reference position detection			Δ	Δ	0	0	0	_	_	_
10	Cogging torque compensation					0	0	0	-	-	_
uto	mation support functions										
	easurement										
1	Skip										
	1 Skip	0	0	0	0	0	0	0	0	0	0
	2 Multiple-step skip	0	0	0	0	0	0	0	0	0	0
	4 PLC skip	Δ	Δ	Δ	Δ	0	0	0		-	Δ
	5 Speed change skip	Δ		Δ	Δ	_	_	-	_	-	_
			_			_	_				
	6 Torque limitation skip	Δ				0	0	-	_	_	Δ
2	Automatic tool length measurement	0	0	0	0	0	0	0	0	0	0
3	Manual tool length measurement 1	0	0	0	0	0	0	0	0	0	0
Ē										Ŭ	
4	Manual tool langth magazirament 2	0	0	0	0	0	0	0	0	0	0
4	Manual tool length measurement 2										0
5	Workpiece coordinate offset measurement	0	0	0	0	0	0	0	0	0	0
-											
	Moducine position manage remark										
6	Workpiece position measurement	-	-	_	_	-	_	-	-	-	_
\vdash											
7	Rotation measurement	-	-	-	-	-	-	-	-	-	_
8	Rotation center error measurement	_	_	_	_	_	_	_	_	_	_
9											_
	ol life management										
10	Tool life management										
	1 Tool life management I	0	0	0	0	0	0	0	0	0	0
	2 Tool life management II	0	0	0	0	0	0	0	0	0	0
	3 Tool life management III	_	_	_	_	_	_	_	_	_	_
2			I		1			1			
	99 sets	-	-	_	_	_	_	0	0	0	_
	128 sets	0	0	0	0					_	0
	200 sets 256 sets	<u> </u>	-			-	0				Δ
	400 sets	Δ	Δ	Δ	Δ			_			
L	999 sets	Δ	Δ	Δ	Δ		—	-	—	—	_
з	Tool life management set allocation to part systems	0	0	0	0	0	0	0	_	_	0
Ot	hers		I		I			I		1	
1.	Programmable current limitation	0	0	0	0	0	0	0	0	0	0
1											
-		0	0	0	0	0	0	0	0	0	_
-	Auto power OFF										
2							l —	l —	_	-	_
2	Auto power OFF Load monitoring I	Δ		Δ		-					
2		Δ	۵ 0/—			0/		_		_	
2 4 5	Load monitoring I Power ON / OFF sequence										
2 4 5 6	Load monitoring I Power ON / OFF sequence PLC axis current limit	0/—	0/—			0/—	_	_			-
2 4 5 6	Load monitoring I Power ON / OFF sequence	0/—	0/—			0/—	_	_			

MAO				chining c						
IVIO	00W	M8	005	M80W	M		E		C80	- General explanation
M850W	M830W	M850S	M830S	_	M80	M80	E80 TypeA	E80 TypeB	_	
					ТуреА	ТуреВ	туреа	турев		The OMR (Optimal Machine Response) control function estimates the machine or
										motor model (moment of inertia, clone friction, viscosity coefficient, etc.) that can
										cause a path error (deviation of the actual tool path from the programmed path). High-accuracy machining is achieved by carrying out feed forward control based
\bigtriangleup		Δ		0	0	0	0	0		on that model. This allows error cased by quadrant protrusions during circular
										interpolation or quadrants on the inner side of the path to be greatly reduced. OMR-II is a function that focuses on the quadrant protrusions, and improves the
										path error with this. Quadrant path compensation is included in OMR-II.
\triangle				0	0	0	0	0		OMR-FF control enables fine control by generating feed forward inside the drive unit and can realize the strict feedback control to the program command than the
-	_			Ŭ	Ŭ	Ŭ	Ŭ	Ŭ		conventional high-speed accuracy control.
\triangle		Δ		0	0	0	-	_	-	This is a function where a distance-coded reference scale is used to establish the reference point in the relative position detection system.
										Cogging torque compensation function increases machining accuracy by applyin
\triangle		Δ		0	0	0	_	_	_	a compensation amount to the torque command (current command) in order to reduce the torque ripple (cogging torque) which is caused because the magnetic
										energy in the motor varies depending on the position.
										When the external skip signal is input during linear interpolation using the G31
0	0	0	0	0	0	0	0	0	0	command, machine feeding is stopped immediately and the remaining distance
										discarded to execute the commands in the next block. This function realizes skipping by designating a combination of skip signals for
0	0	0	0	0	0	0	0	0	0	each skip command.
Δ	Δ	Δ	Δ	0	0	0	_	_	Δ	This function enables skip operations to be performed by signals which are input
					-					from the user PLC. This function is used to change the feed rate or to stop the movement by inputtin
\triangle		Δ	Δ	-	_		-	_	_	the skip signal during the linear interpolation.
Δ		Δ		_	_		_	_	_	Axis movement is performed in the torque limited status, and the axis movement command is suspended to proceed to the next block when the current comman
					_		_			value reaches the designated torque skip value and the torque skip turns ON.
										This function moves the tool in the direction of the tool measurement position by the commanded value between the measurement start position and measurement
0	0	0	0	0	0	0	0	0	0	position. It stops the tool as soon as it reaches the sensor and calculates the
0							0	0		difference between the coordinates where the tool has stopped and the comman coordinates. It registers this difference as the tool length compensation amount fi
										that tool.
0	0	0	0	0	0	0	0	0	0	Simple measurement of the tool length is done without a sensor.
										[M system] When the tool is positioned at the reference position, this function measures the distance from the reference position to the tool tip and registered it
0	0	0	0	0	0	0	0	0	0	as the tool length compensation amount.
0							0	0		[L system] A device with a built-in touch sensor is used. Simply by causing the to nose to touch the touch sensor in manual feed, the tool compensation amount of
										be calculated and stored in tool compensation amount memory.
										The external workpiece coordinate offset data for the Z axis can be set by cutting
_	-	_	-	-	_	-	-	_	_	the workpiece face by means of manual operations and inputting the workpiece measurement signal.
										The workpiece position measurement function is used to measure each axis'
0	0	0	0	0	0	0	0	0	0	coordinate by installing a sensor on the spindle and the sensor contacting the workpiece with the manual feed or handle feed. The surface, hole center and
0							Ŭ	Ŭ		width center coordinates are calculated from the measured coordinates, and tho
										calculated results are set in the workpiece coordinate offset. The offset of the rotary coordinate system (rotation center and rotation angle) is
0	0	0	0	0	0	0	_	_	0	measured, and the results are set to the workpiece coordinate system offset (rotation
										center) and the parameters. This function executes automatic measurement with the touch sensor on the
\triangle		Δ		-	-	-	-	—	-	reference sphere to calculate the rotation center error compensation amount.
\triangle	_	Δ	_	_	_	_	_	_	_	This function executes automatic measurement with the touch sensor to calculat
										the workpiece installation error compensation amount.
0	0	0	0	0	0	0	0	0	0	The tool usage is monitored by accumulating each tool's usage time or the
0							<u> </u>			frequency of use. [M system] A spare tool change function is added to the tool life management I.
0	0	0	0	0	0	0	0	0	0	[L system] The life of each tool (time and frequency) is controlled, and when the lif
										is reached, a spare tool of the same type is selected from the same group. The tool usage is monitored by accumulating each tool's usage time and the
0	0	0	0	0	0	0	0	0	0	frequency of use. This function is not controlled by the group No.
_							_	_		
			_		_				_	
0	0	0	0	0	0	0	0	0	0	The max. sets of tools available for tool life management
-	-	-	-	-	_		—	_	-	-
		Δ		_			—	_	Δ	-
\triangle	Δ	Δ		-			-	_		* Variable number of management tools
										The number of tool life management tools can be set per part system.
	1	0	0		_	_	_		_	There are two types of the allocation: "Arbitrary allocation" which allocates the number of tool life management tools to each part system arbitrarily and "Fixed
0	0		1							allocation" which automatically allocates the number of tool life management too
0	0									to each part system equally, and the type can be selected using the parameter.
0	0									
0	0									
0	0	0	0	0	0	0	0	0	0	This function allows the current limit value of the NC axis to be changed to a desired value in the program, and is used for the workpiece stopper, etc.
0	0								-	desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OFF
		0	0	0	0	0	0	0	0 —	desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OFF after shutting the display unit down by entering "automatic power OFF request"
0	0			0	0	-			_	desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OFI after shutting the display unit down by entering "automatic power OFF request" signal from user PLC to NC. This function aims at detecting tool wear or degradation by detecting and
0	0					-			-	desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OF after shutting the display unit down by entering "automatic power OFF request" signal from user PLC to NC. This function aims at detecting tool wear or degradation by detecting and monitoring the actual load (current value) on spindle and NC axes on a real time
о 0 Д	о о д	0	0	0	0	0	0	0	_	desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OFI after shutting the display unit down by entering "automatic power OFF request" signal from user PLC to NC. This function aims at detecting tool wear or degradation by detecting and
0	0	0	0	0	0	0	0	0	_	desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OF after shutting the display unit down by entering "automatic power OFF request" signal from user PLC to NC. This function aims at detecting tool wear or degradation by detecting and monitoring the actual load (current value) on spindle and NC axes on a real time basis. This function turns the power supply ON / OFF, synchronizing the NC control uni and the HMI screen.
о 0 Д	о о д	0	0	0	0	0	0	0	_	desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OF after shutting the display unit down by entering "automatic power OFF request" signal from user PLC to NC. This function aims at detecting tool wear or degradation by detecting and monitoring the actual load (current value) on spindle and NC axes on a real time basis. This function turns the power supply ON / OFF, synchronizing the NC control uni and the HMI screen.
о 0 Д	о о д	0 	0 	0 — 0/—	0	0 — —	0 — —	0 — —		desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OF after shutting the display unit down by entering "automatic power OFF request" signal from user PLC to NC. This function aims at detecting tool wear or degradation by detecting and monitoring the actual load (current value) on spindle and NC axes on a real time basis. This function turns the power supply ON / OFF, synchronizing the NC control uni and the HMI screen. A current limit is available for the PLC axis as well as for the NC axis. This function
о 0 Д	о о д	0 	0 	0 — 0/—	0	0 — —	0 — —	0 — —		desired value in the program, and is used for the workpiece stopper, etc. Auto power OFF function notifies that the control unit's power can be turned OFI after shutting the display unit down by entering "automatic power OFF request" signal from user PLC to NC. This function aims at detecting tool wear or degradation by detecting and monitoring the actual load (current value) on spindle and NC axes on a real time basis. This function turns the power supply ON / OFF, synchronizing the NC control uni and the HMI screen. A current limit is available for the PLC axis as well as for the NC axis. This function

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

						Lathe					
	class	M80	woo		005	M80W	M80	80 M80	E80	B0 E80	C80
		M850W	M830W	M850S	M830S	—	ТуреА	ТуреВ	ТуреА	ТуреВ	—
	2 Data protection key	0	0	0	0	0	0	0	0	0	0
2 C	Display for ensuring safety										
	1 NC warning	0	0	0	0	0	0	0	0	0	0
L	2 NC alarm	0	0	0	0	0	0	0	0	0	0
	3 Operation stop cause	0	0	0	0	0	0	0	0	0	0
⊢	4 Emergency stop cause	0	0	0	0	0	0	0	0	0	0
L	5 Thermal detection 6 Battery alarm / warning	0	0	0	0	0	0	0	0	0	0
	Protection						0				0
	1 Stroke end (Over travel)	0	0	0	0	0	0	0	0	0	0
4	Stored stroke limit Stored stroke limit //I	0	0	0	0	0	0	0	0		0
	2 Stored stroke limit M	Δ	Δ	Δ	Δ	0	0	0		0	Δ
	3 Stored stroke limit IIB	Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
-	4 Stored stroke limit IC Stroke check before travel			Δ		0	0 0	0		_	Δ
	4 Chuck / Tailstock barrier check	0	0	0	0	0	0	0	0	0	0
F	5 Interlock	0	0	0	0	0	0	0	0	0	0
	6 External deceleration	0	0	0	0	0	0	0	0	0	0
	7 Interference check III	Δ	Δ	Δ	Δ	_	_	_	_	_	_
8	8 3D machine interference check	_	_	_	_	_	_	_	_	_	_
\$	9 Door interlock 1 Door interlock I	0	0	0	0	0	0	0	0	0	0
	2 Door interlock II	0	0	0	0	0	0	0	0	0	0
			-				-				
F	10 Parameter lock 11 Program protection (Edit lock B, C)	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
H	12 Program display lock	0	0	0	0	0	0	0	0	0	0
⊢	13 Data protection by user's level	Δ	Δ	Δ	Δ	0	0	0	-	_	Δ
⊦	15 Vertical axis pull-up16 Machine group-based alarm stop	0 	0 	0 	0 	0	0	0	0	0	0
	17 Interference check between part systems	0	0	0	0	0	0		_	_	_
1	18 Spindle protection	0	0	0	0	0	0	0			
4 N	Maintenance and troubleshooting									I	
-	1 Operation history	0	0	0	0	0	0	0	0	0	0
-	2 Data sampling	0	0	0	0	0	0	0	0	0	0
L	3 NC data backup	0	0	0	0	0	0	0	0	0	0
4	4 Servo tuning support										
	1 NC Analyzer2 (Note 1)	0	0	0	0	0	0	0	0	0	0
ł	5 Automatic backup	0	0	0	0	0	0	0	0	0	O(GOT)
8	8 Application error detection	0/—	0/—	_	_	0/—	_	_	_	_	
ę	9 Email notification to operator	Δ	Δ	Δ	Δ	0	0	0	0	0	_
1	10 NC Configurator2 (Note 2)	0	0	0	0	0	0	0	0	0	0

				tem	enter svs	hinina ce	Machining center system 800S M80W M80 E80 C80								
General explanation	C80			80	M	M80W		M80	W00	M8					
	-	E80 TypeB	E80 TypeA	M80 TypeB	M80 TypeA	-	M830S	M850S	M830W	M850W					
With the input from the user PLC, it is possible to prohibit the parameter se deletion, and the program edit from the setting and display unit.	0	0	0	0	0	0	0	0	0	0					
Warnings are output by the CNC system. When one of these warnings occ warning number is output to the PLC and a description of the warning app the screen. Operation can be continued without taking further action.	0	0	0	0	0	0	0	0	0	0					
The alarms are output by the CNC system. When one of these alarms occi alarm number is output to the PLC, and a description of the alarm appears screen. Operation cannot be continued without taking remedial action.	0	0	0	0	0	0	0	0	0	0					
The stop cause of automatic operation is shown on the display.	0	0	0	0	0	0	0	0	0	0					
When the "EMG" (emergency stop) message is displayed in the operation s area of the display, the cause of the emergency stop can be confirmed.	0	0	0	0	0	0	0	0	0	0					
When overheating is detected in the control unit, an overheat signal is outp same time as the alarm is displayed.	0	0	0	0	0	0	0	0	0	0					
When it is time to change the batteries, an alarm and warning are displayed	0	0	0	0	0	0	0	0	0	0					
Limit switches and dogs are attached to the machine, and when a limit swi kicked a dog, the movement of the machine is stopped by the signal input the limit switch.	0	0	0	0	0	0	0	0	0	0					
	0		0	0	0		0	0		0					
This function sets the areas prohibited for the tool to enter. There are multip	Δ	0	_	0	0	0	0 	0 	0 	0 					
of prohibitions according to the prohibited range and method.	\triangle		_	0	0	0	Δ	Δ	Δ	Δ					
By commanding, from the program, the boundary for prohibiting machine e	Δ			0	0	0	Δ	Δ	Δ	\triangle					
a coordinate position in the machine coordinate system, entry into the inner that boundary can be prohibited.	Δ	-	_	0	0	0	Δ	Δ	Δ	Δ					
By limiting the tool nose point movement range, this function prevents the t colliding with the chuck or tail stock because of a programming error.	_	_	_	_	_	_	_	-	_	—					
The machine movement will decelerate and stop as soon as the interlock s serving as the external input, is turned ON. When the interlock signal is turn	0	0	0	0	0	0	0	0	0	0					
the machine starts moving again. This function reduces the feedrate to the deceleration speed set by the par		0			0		0		0	0					
when the external deceleration input signal has been set to ON. By checking the relative relation between interference objects, the interference	0	0	0	0	0	0	0	0	0	0					
be prevented from occurring. One interference object is defined by one to s tridimensional objects. The maximum definable number is 128 for the interf objects and is 256 for the tridimensional objects.	—	_	_	_	_	—	Δ	Δ	Δ	\triangle					
The machine pre-reads the position to be moved during the operation to cl interference by the 3D model (machine, tool and jig) registered in advance. an interference is predicted, an alarm will be shown immediately and all the will be decelerated to stop.	—	_	—	—	_	—	-	-	Δ	Δ					
Under the CE marking scheme of the European safety standards (machine	0	0	0	0	0	0	0	0	0	0					
directive), the opening of any protection doors while a machine is moving is prohibited. When the door open signal is input from the PLC, this function 1 decelerates, stops all the control axes, establishes the ready OFF status, al shuts off the drive power inside the servo drive units so that the motors are	0	0	0	0	0	0	0	0	0	0					
Ionger driven. This function is used to prohibit the changing of machine parameters.	0	0	0	0	0	0	0	0	0	0					
The edit lock function B or C inhibits machining program B or C (group by machining program numbers) from being edited or erased when these prov	0	0	0	0	0	0	0	0	0	0					
require protection. This function allows the display of only a target program (label address 900			0	0	0					0					
disabled for the program display of only a target program (able address soo disabled for the program display in the monitor screen, etc. Up to 8 levels of access permission helps to prevent you from dispatching of	0	0	0	0	0	0	0	0	0	0					
works. This function prevents the tool from breakage, through pulling up the cuttin	Δ	-	_	0	0	0	Δ	Δ	Δ	Δ					
during emergency stop or instantaneous power interruption at low cutting s When an alarm occurs for an axis, this function performs an alarm stop on	0	0	0	0	0	0	0	0	0	0					
axes in a machine group to which the axis belongs. This function checks the relative position of up to six cuboids (referred to as interfering objects) all the time, and if a command which causes the interfer objects to collide with each other is issued, the function stops the axis mov		_		0	0	0	Δ								
to prevent the interference in advance. Such interference can be prevented covering the tool post, etc. with cuboids. * Up to 4 part systems This function consists of a function of calculating the equivalent load ratio of															
motor and a function for states of a function or cancellating the equivalent load ratio spindle motor to the log file.	-	-	_	0	0	0	0	0	0	0					
This is a maintenance function which is useful for tracing down the history a			_							_					
operation information and analyzing problems, etc. This information is save history data file, and can be displayed on the screen and output to a file. The NC data sampling function samples the NC internal data (speed output	0	0	0	0	0	0	0	0	0	0					
NC to drive unit, and feedback data from the drive unit, etc.). This data can output as text data.	0	0	0	0	0	0	0	0	0	0					
The NC data back up function backs up the NC parameters, etc., on a buil of display unit or SD card. The data can also be restored.	0	0	0	0	0	0	0	0	0	0					
With this function, the servo parameters can be automatically adjusted by connecting the CNC and NC Analyzer2, which is an application that runs o regular personal computer.	0	0	0	0	0	0	0	0	0	0					
With this function, gustern data, ladder program and gustern apfluare appl	O(GOT)	0	0	0	0	0	0	0	0	0					
Application error detection function observes applications such as MITSUE standard screen or oustom screen. When an error such as screen lock is d	_	_	_	_	_	0/—	_	_	0/—	0/—					
this function saves information and data in the log to investigate the causes This function enables NC to transmit emails to network-connected emails (SMTP servers). With this function, the NC can send emails to PCs and mc terminals away from machines. You are able to know machining complitors as machining completion, stop and failure) even if you are in remote places	_	0	0	0	0	0	Δ	Δ	Δ	Δ					
NC Configurator? runs on a personal computer to edit the NC data files rec for NC control and machine operations such as parameters, tool data and common variables.	0	0	0	0	0	0	0	0	0	0					

(Note 1) Please contact us to purchase this tool.

(Note 2) Please contact us to purchase a full function version. A limited function version is also available free of charge.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

				MO	DOW	MO	00S	Lathe s	system M	80		B0	C80
			class	M850W	M830W	M850S	M830S	W08W	M80	M80	E80	E80	
	11	Dior							ТуреА	ТуреВ	ТуреА	ТуреВ	
	+		gnosis data output	0	0	0	0	0	0	0	0	0	0
			kup / Restore	_	-	_	_	_	_	_	-	_	0
5 F	-uno	ctior	nal safety										
	1	Safe	ety observation		Δ	Δ	Δ	0	0	0	0	0	_
	2 3	Sma	art Safety observation										
	1	1 5	Safety-related I/O observation	Δ	Δ	Δ	Δ	0			_	_	Δ
			Emergency stop observation	Δ	Δ	Δ	Δ	0			_	_	Δ
	2		Drive safety function SLS (Safely-Limited Speed)	Δ	Δ	Δ	Δ	0			_	_	Δ
		2	SLP (Safely-Limited Position)		Δ	Δ	Δ	0			_	_	Δ
		3	SOS (Safe Operating Stop)		Δ	Δ	Δ	0			_	_	Δ
		4	SSM (Safe Speed Monitor)	Δ	Δ	Δ	Δ	0			_	_	Δ
		5	SBC / SBT (Safe Brake Control / Safe Brake Test)	Δ	Δ	Δ	Δ	0			_	_	Δ
		6	SCA (Safe Cam)	Δ	Δ	Δ	Δ	0			_	_	Δ
		7	SS1 / SS2 (Safe Stop)	Δ	Δ	Δ	Δ	0			_	_	Δ
		8		Δ	Δ	Δ	Δ	0			_	_	Δ
		syste /o / :	em Spindle									_	
ŀ	1		d axis										
	1	_	/IDS-E-Vx /IDS-EH-Vx										
		_											
		_	/IDS-EJ-Vx										
		4 N	/IDS-EJ-Vx /IDS-EJH-Vx										
	5	4 N 5 N 6 N	IDS-EJ-Vx IDS-EJH-Vx IDS-EM-SPVx IDS-EMH-SPVx										
14	2 5	4 N 5 N 6 N Spir	/IDS-EJ-Vx /IDS-EJH-Vx /IDS-EM-SPVx /IDS-EMH-SPVx rolle										
14	2 :	4 N 5 N 6 N Spir 1 N 2 N	IDS-EJ-Vx IDS-EJH-Vx IDS-EM-SPVx IDS-EMH-SPVx IDS-EMH-SPVx IDS-E-SPx IDS-EH-SPx										
2	2 3 1 2 3	4 N 5 N 6 N Spir 1 N 2 N 3 N	IDS-EJ-Vx IDS-EJH-Vx IDS-EM-SPVx IDS-EMH-SPVx idle IDS-E-SPx IDS-EH-SPx IDS-EJ-SPx IDS-EJ-SPx										
2	2 1 2 3 5	4 N 5 N 6 N 5 N 1 N 2 N 3 N 5 N	IDS-EJ-Vx IDS-EJH-Vx IDS-EM-SPVx IDS-EMH-SPVx IDS-EMH-SPVx IDS-E-SPx IDS-EH-SPx										
		4 N 5 N 6 N 5 N 1 N 2 N 3 N 5 N 6 N	IDS-EJ-Vx IDS-EJ-Vx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-E-SPx IDS-EH-SPx IDS-EJ-SPx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-EMH-SPVx IPS-EM-SPVx IPS-EMH-SPVx IPS-EMH-SPVx										
	2 : 2 : 2 : 2 : 3 : 5 : 6 : 4 : 1	4 N 5 N Spir 1 N 2 N 3 N 5 N 5 N 63 N Pow 1 N	IDS-EJ-Vx IDS-EJH-Vx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-E-SPx IDS-EH-SPx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-ECV										
2	2 (2 (2 (3 (5 (6 (4) 1 (2 (2 (3 (5 (6 (4) 1 (2 (2 (1 (2 (3 (5 (6 (4)))))))))))))))))))))))))))))))))))	4 N 5 N 6 N Spir 1 1 N 2 N 3 N 5 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N	IDS-EJ-Vx IDS-EJ-Vx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-E-SPx IDS-EH-SPx IDS-EJ-SPx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-EMH-SPVx IPS-EM-SPVx IPS-EMH-SPVx IPS-EMH-SPVx										
2 Mai	2 (2 (2 (2 (3 (2 (3 (6 (4 (1 (2 (3 (6 (4 (1 (2 (3 (1 (2 (3 (1 (2 (3	4 N 55 N Spir N 11 N 22 N 33 N 55 N Pow N 11 N 22 N 75 N 75 N 75 N 75 N 75 N 75 N	IDS-EJ-Vx IDS-EJH-Vx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-EH-SPx IDS-EJ-SPx IDS-EJ-SPx IDS-EJ-SPx IDS-EM-SPVX IDS-EM-SPVX										
2 Ma 1 F	2 : 2 : 2 : 2 : 2 : 3 : 5 : 6 : 4 : 2 : 2 : 3 : 5 : 6 : 4 : 2 : 2 : 5 : 5 : 6 : 4 : 1 : 2 : 5	4 N 5 N 6 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 8 N 9 N	ADS-EJ-Vx ADS-EJH-Vx ADS-EMH-SPVx ADS-EMH-SPVx rdle ADS-E-SPx ADS-EJ-SPx ADS-EJ-SPx ADS-EM-SPVx ADS-EM-SPx ADS-EM-SPx ADS-EM-SPx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx IDS-EM-SPVx IDS-EM-SPVx IDS-EM-CV upport functions L-in PLC processing mode										
2 Ma 1 F	2 (2 (3 (6 (4) 2 (1) 2 (1) 2) 2)	4 N 5 N 5 N 6 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 8 N 9 N 1 N 2 N 1 N 2 N 1 N 2 N 1 N 2 N 1 N 2 N 1 N 2 N 1 N 2 N 3 N 3 N 4 N 5 N 5 N	ADS-EJ-Vx ADS-EJH-Vx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-ESPx ADS-EJ-SPx ADS-EJ-SPx ADS-EM-SPVx ADS-EM-SPVx ADS-EMH-SPVx ADS-EMH-SPVx ver supply ADS-E-CV ADS-E-CV ADS-EM-CV upport functions t-in PLC processing mode C functions										
Ma 1 F	2 (2 (1 2 3 5 6 4 f 1 2 2 8 chir 2 2 1 1 2 2 2 2 2 2 2 2 2 2 3 5 5 6 6 4 1 2 2 3 5 5 6 6 1 2 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 5 6 6 1 2 1 2 5 1 5 1 2 1 2 1 2 1 2 1 2 1 1 2 1 2	4 N 5 N 6 N Spir 1 N 2 N 3 N 5 N 5 N 5 N 5 N 6 N 7 8 0 1 N 2 N 8 0 1 N 2 N 1 N 2 N 3 N 5 N 1 N 2 N 3 N 5 N 1 N 5 N 1 N 5 N 1 N 5 N 5 N 1 N 5 N 5 N 5 N 7 N 5 N 7 N 5 N 7 N 6 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 7	ADS-EJ-Vx ADS-EJH-Vx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-ESPx ADS-EJ-SPx ADS-EJ-SPx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx IDS-EM-SPVx IDS-EM-CV IDS-EM-SPVx										
Ma 1 F	2 (2 (1 2 3 5 6 4 f 1 2 2 8 chir 2 2 1 1 2 2 2 2 2 2 2 2 2 2 3 5 5 6 6 4 1 2 2 3 5 5 6 6 1 2 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 5 6 6 1 2 1 2 5 1 5 1 2 1 2 1 2 1 2 1 2 1 1 2 1 2	4 N 5 N 5 N 6 N Spir 1 1 N 3 N 5 N 6 N 7 N 8 N 9 N 1 N 9 N 1 N 1 E 1 E 1 E	ADS-EJ-Vx ADS-EJH-Vx ADS-EMI-SPVx ADS-EMI-SPVx ADS-EMI-SPVx ADS-E-SPx ADS-EJ-SPx ADS-EMI-SPVx ADS-EMI-SPX ADS-EMI-SPVx ADS-EMI-SPVx ADS-EMI-SPVx ADS-E-CV ADS-E-CV ADS-E-CV ADS-E-CV BDS-EI-CV upport functions Et-in PLC processing mode 2: functions Built-in PLC basic function Index modification										
Ma 1 F	2 (2 (1 2 3 5 6 4 f 1 2 2 8 chir 2 2 1 1 2 2 2 2 2 2 2 2 2 2 3 5 5 6 6 4 1 2 2 3 5 5 6 6 1 2 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 5 6 6 1 2 1 2 5 1 5 1 2 1 2 1 2 1 2 1 2 1 1 2 1 2	4 N 5 N 5 N 6 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 8 N 9 N 1 N 1 N 1 N 1 E 1 E 1 E 1 E 1 E 1 E	ADS-EJ-Vx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-ESPx ADS-EJ-SPx ADS-EJ-SPx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-CV ADS-EH-CV ADS-EH-CV ADS-EH-CV ADS-EM-CV										
Ma 1 F	2 (2 (1 2 3 5 6 4 f 1 2 2 8 chir 2 2 1 1 2 2 2 2 2 2 2 2 2 2 3 5 5 6 6 4 1 2 2 3 5 5 6 6 1 2 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 5 6 6 1 2 1 2 5 1 5 1 2 1 2 1 2 1 2 1 2 1 1 2 1 2	4 N 5 N 5 N 6 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 8 N 9 N 1 N 1 N 1 N 1 E 1 E 1 E 1 E 1 E 1 E	ADS-EJ-Vx ADS-EJH-Vx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-ESH-SPX ADS-EJ-SPx ADS-EJ-SPx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx rer supply ADS-E-CV ADS-E-E-CV ADS-E-E-CV<										
Ma 1 F	2 (2 (1 2 3 5 6 4 f 1 2 2 8 chir 2 2 1 1 2 2 2 2 2 2 2 2 2 2 3 5 5 6 6 4 1 2 2 3 5 5 6 6 1 2 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 5 6 6 1 2 1 2 5 1 5 1 2 1 2 1 2 1 2 1 2 1 1 2 1 2	4 N 5 N 5 N 6 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 8 N 9 N 1 N 1 N 1 N 1 E 1 E 1 E 1 E 1 E 1 E	ADS-EJ-Vx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-ESPx ADS-EJ-SPx ADS-EJ-SPx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-CV ADS-EH-CV ADS-EH-CV ADS-EH-CV ADS-EM-CV										
Ma 1 F	2 (2 (1 2 3 5 6 4 f 1 2 2 8 chir 2 2 1 1 2 2 2 2 2 2 2 2 2 2 3 5 5 6 6 4 1 2 2 3 5 5 6 6 1 2 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 5 6 6 1 2 1 2 5 1 5 1 2 1 2 1 2 1 2 1 2 1 1 2 1 2	4 N 5 N 5 N 6 N 7 N 8 N 5 N 5 N 5 N 5 N 6 N 7 N 7 N 8 N 9 N 1 N 9 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 3 N	ADS-EJ-Vx ADS-EJ-Vx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EJ-SPx ADS-EJ-SPx ADS-EJ-SPx ADS-EJ-SPx ADS-EM-SPVx AD										
Ma 1 F	2 (2 (1 2 3 5 6 4 f 1 2 2 8 chir 2 2 1 1 2 2 2 2 2 2 2 2 2 2 3 5 5 6 6 4 1 2 2 3 5 5 6 6 1 2 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 3 5 5 6 6 1 2 5 6 6 1 2 1 2 5 1 5 1 2 1 2 1 2 1 2 1 2 1 1 2 1 2	4 N 5 N 5 N 6 N 7 N 7 N 7 N 7 N 7 N 7 N 7 N 8 N 9 N 1 N 1 N 1 N 1 E 1 E 1 E 1 E 1 E 1 E	ADS-EJ-Vx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-E-SPx ADS-E-SPx ADS-EM-SPVx ADS-EM-SPVx ADS-EM-SPVx ADS-E-CV ADS										

			Mag	chining c	enter svs	tem				
M80	00W	M8	005	M80W		80	E	80	C80	
M850W	M830W	M850S	M830S	-	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	-	General explanation
0	0	0	0	0	0	0	0	0	0	With this function, the information indicating the replacement cycle of the service parts used in NC, drive or motor can be output to the ZR registers.
									0	This function stores the setting information (sequence programs, parameters and the setting values, etc.) of a connected device to the installed data storage in GOT,
			_	_					0	and restores those data to the device as needed.
	1									The safety observation function ensures safe access to the machine's working
\triangle		Δ	Δ	0	0	0	0	0	-	parts (e.g. for adjustment or preparation) without shutting off the power, which reduces the time required to restart the machine.
										Using the dual circuits for processing signals input/output to/from the machine (safety signal compare sequence) and dual execution of safety signal process logic
\triangle		Δ		0			_	-		made by users (safety PLC), if one circuit has broken down, the other circuit can detect errors, which improves the safety of signal process. * Safety card is required
										for M80. Emergency stop signal is doubled and observed to see whether there is any error.
\triangle		Δ		0			_	-		When one emergency stop signal is in open state, the whole system can be set in emergency stop condition. * Safety card is required for M80.
	1					1				Axis speed (command speed, FB speed) is observed doubly to see whether the
\triangle	Δ	Δ	Δ	0			_		Δ	speed exceeds the safe speed. * Safety card is required for M80.
\bigtriangleup		Δ	Δ	0			_	_		Axis absolute position (command position, FB position) is observed doubly to see whether the position exceeds the safe position range. * Safety card is required for
										M80. Axis stop speed (command speed, FB speed) is observed doubly whether the
										speed exceeds the safe stop speed. Axis stop position (command position, FB position) is observed doubly whether the
\triangle		Δ	Δ	0			_	-		position exceeds the safe stop position range. Observe axis stop position deviation (difference between command position and
										FB position) doubly to see whether the deviation exceeds the safe stop position deviation.
										* Safety card is required for M80. This function uses the safety signals to inform that the axis speed (command
\triangle		Δ	Δ	0			_	-		I his function uses the safety signals to inform that the axis speed (command speed, FB speed) is equal to or below the safe speed. * Safety card is required for M80.
										The brakes connected to motors are activated by this function. Because there are
Δ		Δ		0			_	_		two circuits for activating the brakes, one circuit can activate the brakes even when the other circuit is broken down. Furthermore, Safe Brake Test (SBT) can diagnose
				0						the circuits for activating the breaks and the effectiveness of the brakes (deterioration due to abrasion, etc.).
										* Safety card is required for M80. This function uses the safety signals to inform that the axis absolute position
\triangle		Δ	Δ	0			-	-		(command position, FB position) is within the range of safe position. *Safety card is required for M80.
										[Safe stop 1 (SS1)] STO function is activated after an axis is decelerated and the speed (command speed, FB speed) becomes equal to or below the safe stop
				0	_					speed. [Safe stop 2 (SS2)] SOS function is activated after an axis is decelerated and the
Δ		Δ	Δ	0			_	-		speed (command speed, FB speed) becomes equal to or below the safe stop
										speed. * Safety card is required for M80.
\triangle		Δ		0			_	_		This function shuts OFF power supply to axes. Because there are two power shutoff circuits, one circuit can shut OFF the power supply even when the other
										circuit is broken down. * Safety card is required for M80.
										CNC-dedicated drive units, spindle motors, and servo motors are used.
										one-dedicated unite units, spinole motors, and serve motors are used.
										-
~		~		-	~					An exclusive sequence program that controls various signals between the controlle
0	0	0	0	0	0	0	0	0		and the machine to realize the operations applicable to each machine can be created and built in.
	1							1	Δ	
0	0	0	0	0	0	0	0	0	(MELSEC)	
0	0	0	0	0	0	0	0	0	\triangle (MELSEC)	
0120	0120	0120	0120	060	060	060	060	060	Δ	[M800/M80/E80] Basic commands (bit processing commands): 43 commands including LD, LDI,
0120		0120	0120	000					(MELSEC)	OR, ORI, AND, ANI, OUT, PLS, etc. Function commands: 188 commands including data transfer, 4 basic arithmetic
0	0	0	0		_	0	0	0		operations, logic arithmetic operations, large/small identification, binary/BCD conversion, branching, conditional branching, decoding, encoding, etc.
\triangle	Δ	Δ	Δ	0	0	_	_	_	-	[C80] [C80] [For the details, refer to the manual of MITSUBISHI Programmable Controller
			Δ	_				_	-	"MELSEC IQ-R series".
Δ										
 ○	0	0	0	0	0	0	0	0	△ (MELSEC) △	

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

CNC SYSTEM

class MBOUV MBOUV <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>Lathe</th><th>system</th><th></th><th></th><th colspan="2"></th></th<>								Lathe	system				
Image: Note of the set of the s			alass	M80	woo	M8	00S			80	E	80	C80
2 P.C. conclude instruction 0 <th></th> <th></th> <th>Glass</th> <th>M850W</th> <th>M830W</th> <th>M850S</th> <th>M830S</th> <th>_</th> <th></th> <th></th> <th></th> <th></th> <th>_</th>			Glass	M850W	M830W	M850S	M830S	_					_
β R. C. august functions Image: control Image: contro Image: contro Image: contro		T							ТуреА	ТуреВ	ТуреА	ТуреВ	
I Aerr message display O		2	PLC exclusive instruction	0	0	0	0	0	0	0	-	-	 (MELSEC)
P C C O	3	F	PLC support functions		1		1			1		1	
3 Memory switch PLC switch - - - - 3 Memory switch PCS switch S2 points O		1	Alarm message display	0	0	0	0	0	0	0	0	0	_
3 Memory switch PLC switch - - - - 3 Memory switch PCS switch S2 points O													
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		2	Operator message display	0	0	0	0	0	0	0	0	0	O*
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		3	Memory switch (PLC switch)										
P P C A		F		0	0	0	0	0	0	0	0	0	_
4 Ladre arrest display O				-								-	_
E List PLC version display O <td></td> <td>L</td> <td></td> <td>_</td>		L											_
φ Ladder program writing during RLN O													0
Image: control of the second secon		5	User PLC version display	0	0	0	0	0	0	0	0	0	0
7 PLC program protection 0		6	Ladder program writing during RUN	0	0	0	0	0	0	0	0	0	 (MELSEC)
Image: Constraint of the		F											(IVILLOLO)
Image: Constraint of the		7	PLC program protection	0	0	0	0	0	0	0	0	0	Δ
1 Standard PLC capacity (number of steps) C128000 C108000 C108000 C108000 C108000 C108000 C108000 C108000000 C108000000000000 C10800000						-	-						(MELSEC)
2 Large PLC capacity: 526000 steps Δ	4	E	Built-in PLC capacity		1		1			1		1	
2 Large PLC capacity: 526000 steps Δ		1	Standard PLC capacity [number of steps]	0128000	0128000	0128000	0128000	064000	064000	032000	020000	020000	
a Large PLC capacity: 512000 steps Δ Δ Δ Δ Δ Δ Δ													(MELSEC)
δ Machine contact input / output VF O		Г											
A standard Image: Solution of the standard		3	Large PLC capacity: 512000 steps			Δ		-	-	-	-	-	-
A standard Image: Solution of the standard		T											
A standard Image: Solution of the standard		.				_	_	_	_		_		
7 PLC development Image: construct of the second	5		Machine contact input / output I/F	0	0	0	0	0	0	0	0	0	(MELSEC)
7 PLC development Image: construction Image: co													
7 PLC development Image: construction Image: co													
7 PLC development Image: construction Image: co													- (OOT
1 On-board development O	6		Ladder monitor	0	0	0	0	0	0	0	0	0	O(GOT)
1 On-board development O													
2 MELSEC development tool (GX Developer) O	7	F	PLC development										
3 MELSEC development tool (GX Works2) (Note 1) 0 </td <td></td> <td>1</td> <td>On-board development</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>O(GOT)</td>		1	On-board development	0	0	0	0	0	0	0	0	0	O(GOT)
3 MELSEC development tool (GX Works2) (Note 1) 0 </td <td></td>													
4 MELSEC development tool (GX Works3) (Note 1) -		\vdash		0	0	0	0	0	0	0	0	0	_
8 PLC parameter -		3	MELSEC development tool (GX Works2) (Note 1)	0	0	0	0	0	0	0	0	0	-
1 PLC constant (150 points) O </td <td></td> <td>4</td> <td>MELSEC development tool (GX Works3) (Note 1)</td> <td>_</td> <td>_</td> <td>_</td> <td>_</td> <td>_</td> <td>_</td> <td>_</td> <td>_</td> <td>_</td> <td>0</td>		4	MELSEC development tool (GX Works3) (Note 1)	_	_	_	_	_	_	_	_	_	0
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	8	F	PLC parameter		I		1			1		1	
9 GOT connection O				0	0	0	0	0	0	0	0	0	0
1 Ethermet connection O				0	0	0	0			-	_	-	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	9	+			-		-			-		-	
3 C-Link IE field network connection $ -$													0
3 CC-Link IE field network connection		2	CC-Link connection	0	0	0	0	0	0	0	0	0	 (MELSEC)
1 1 <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<>		3	CC-Link IE field network connection	_	_	_	_	_	_	_	_	_	
2 Machine construction Image: Construction </td <td></td> <td>-</td> <td></td> <td>(MELSEC)</td>		-											(MELSEC)
1 Servo OFF 0						_					_		_
2 Axis detachment O	2 M	acr	nine construction		1					1		1	
3 Synchronous control A A A A O O O - 4 Inclined axis control A A A A O	1	8	Servo OFF	0	0	0	0	0	0	0	0	0	0
3 Synchronous control A A A A O O O - 4 Inclined axis control A A A A O	2	A	Axis detachment	0	0	0	0	0	0	0	0	0	0
4 Inclined axis control Δ Δ Δ Δ Δ Ο O	F	1											
4 Inclined axis control Δ Δ Δ Δ Δ Ο O	3	8	Synchronous control			Δ		0	0	0	-	_	
5 Position switch O24 <													
5 Position switch O24 <		1.	nclined avia control	_		~	~		_		0		_
	4	"				Δ			0		0	0	Δ
													7
7 Index table indexing 0	5	F	Position switch	024	024	024	024	024	024	024	024	024	O*
7 Index table indexing 0													
	7	7 Index table indexing		0	0	0	0	0	0	0	0	0	0
8 Tool length compensation along the tool axis Δ^* Δ^* Δ^* Δ^* Δ^* $ -$	8	Т	Fool length compensation along the tool axis	Δ*	Δ*	Δ^*	Δ*	-	-	-	-	-	-
	L												

					enter sys					-
M80	WOO	M8	005	M80W		80		BO	C80	General explanation
M850W	M830W	M850S	M830S	-	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	-	
0	0	0	0	0	0	0	_	_	\triangle (MELSEC)	PLC-dedicated instruction is provided for some limited applications, enabling a complex machining process, which is difficult to carry out only by the basic
	1							I	(WILLOLO)	instructions and function instructions.
0	0	0	0	0	0	0	0	0	-	The contents of the alarms which have occurred during sequence (user PLC) processing can be displayed on the setting and display unit.
0	0	0	0	0	0	0	0	0	0*	When some conditions occur where you wish to inform a messages to the operator, an operator message can be displayed separately from the alarm message.
										* Only the macro alarm message can be displayed.
0	0	0	0	0	0	0	0	0		PLC switches can be set on the setting and display unit screen, and the ON / O
				_	_				-	control executed.
0	0	0	0	0	0	0	0	0	0	A load meter can be displayed on the setting and display unit.
0	0	0	0	0	0	0	0	0	0	The user PLC version can be displayed in the software list on the Software Configuration screen.
0	0	0	0	0	0	0	0	0	\triangle (MELSEC)	Ladder program can be edited while PLC is running. This function is available, either by GX Developer or PLC onboard edit.
0	0	0	0	0	0	0	0	0	∆ (MELSEC)	[M800/M80/E80] For PLC data protection, the file password can be set to each file of PLC data. [C80] For the details, refer to the manual of MITSUBISHI Programmable Controller *MELSEC IQ-R series*.
128000 △	O128000 △	O128000 △	O128000 △	O64000 —	O64000 —	O32000 —	O20000 —	020000	(MELSEC)	(MG00/M60/E80) In the program memory, it is possible to store the system area of parameters, intelligent function module parameters, sequence programs, device comments, and device initial values.
Δ	Δ	Δ	Δ	_	_	_	_	_	_	[C80] For the details, refer to the manual of MITSUBISHI Programmable Controller
0	0	0	0	0	0	0	0	0	(MELSEC)	"MELSEC iQ-R series". [M800/M80/E80] The operation panel I/O unit or the remote I/O unit is selected based on the type of nput signals (sink/source) or output signals (source) available for input or outp and the number of contacts required. [C80] The device is selected from the I/O modules of the MITSUBISHI Programmable
0	0	0	0	0	0	0	0	0	O(GOT)	Controller "MELSEC iQ-R Series". [M800/M80/E80] This function enables the operating status of the sequence circuit to be checked on the controller's setting and display unit. [C80] This function enables to display on GOT the operating status of the sequence circuit to be checked. "Sequence program monitor" (GOT2000) is used.
0	0	0	0	0	0	0	0	0	O(GOT)	On-board refers generically to the PLC related operations carried out with the C unit. The Mitsubishi CNC on-board realizes functions and operations similar to t MELSEC Series ladder development tool (GX Developer).
0	0	0	0	0	0	0	0	0		This function enables the data of the PLC contained inside the NC system to be developed and debugged using the GX Developer.
0	0	0	0	0	0	0	0	0		This function enables the data of the PLC contained inside the NC system to be developed and debugged using the GX Works2. Using GX Works3, the sequence programs of the MELSEC CPU can be develo
_	_	_	_	-	_	_	_	-	0	Using GX Works3, the sequence programs of the MELSEC CPU can be develo and debugged.
0	0	0	0	0	0	0	0	0	0	The PLC constants set with the data type, and the bit selection parameters set
0	0	0	0	_	_	_	_	_	_	with the bit types can be specified on the screen as the parameters to use in the built-in PLC.
0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	∆ (MELSEC)	For connecting a MITSUBISHI Graphic Operation Terminal (GOT), refer to the G
_								_	Δ	Catalogs.
_									(MELSEC)	Pallet program function assists the machining setups as it allows machining
Δ	Δ	Δ	Δ	_	-	_	_		_	programs to be registered for each pallet of the auto pallet changer.
0	0	0	0	0	0	0	0	0	0	When the servo OFF signal (per axis) is input, the corresponding axis is set in th servo OFF state. When the moving axis is mechanically clamped, this function i
0	0	0	0	0	0	0	0	0	0	designed to prevent the servo motor from being overloaded by the clamping for This function enables the control axis to be released from control.
Δ	Δ	Δ	Δ	0	0	0	_	_		The synchronous control is a control method whereby both master and slave a are controlled with the same travel command by designating the travel comman for the master axis also to the slave axis. This function is assumed to be used in such equipment as large machine tools, which drive one axis with two servo matters.
Δ	Δ	Δ	Δ	0	0	0	_	_	_	motors. Even when the control axes in a machine are mounted at an angle other than 9 degrees, this function enables it to be programmed and controlled in the same as with an orthogonal axis.
024	024	024	024	024	024	024	024	024	0*	Instead of a dog switch on a machine's axis, a hypothetical dog switch is established using a parameter to set a coordinate position to show the axis nar and the hypothetical dog position. When the machine reaches the position, a si is output to the PLC interface. * 24 points for each part system and 32 points for the whole PLC axes.
0	0	0	0	0	0	0	0	0	0	The indexing of the index table can be performed by setting the index axes.
Δ	Δ	Δ	Δ	_	_	_	_	_	_	(1) Changing the tool length compensation along the tool axis and compensatio amount. Even if the tool axis direction is not the Z axis direction because the rotary axis is rotated, the tool can be compensated in the tool axis direction. (2) Machine configuration The tool length compensation along the tool axis is carried out in respect to the direction of the tool nose axis (rotary axis). * This function is available during program format switch for L system.

(Note 1) Please contact us to purchase this tool.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

			WOO	Mo	008	Lathe s		00	E80		<u></u>
	class				00S M830S	M80W	M80	80 M80	E80	E80	C80
		M850W	M830W	M850S	M830S	_	ТуреА	ТуреВ	ТуреА	ТуреВ	_
9	Tool handle feed & interruption	-	-	-	-	-	-	-	-	-	-
10	Tool center coordinate display	_	_	_	_	_	_	_	_	_	_
11	Tool center point control	_	_	_	_	_	_	_	_	_	_
12	Inclined surface machining command			Δ	Δ	0	0	—	-	-	—
13	Simple inclined surface machining command	Δ	Δ	Δ	Δ	0	0	0	0	_	_
14	3-dimensional tool radius compensation (Tool's vertical-direction compensation)	Δ*	Δ*	∆*	∆*	_	_	_	_	_	_
15	Workpiece installation error compensation	∆*	_	∆*	_	_	_	_	_	_	-
16	3-dimensional manual feed	Δ	Δ	Δ	Δ	0	0	_	_	_	-
	R-Navi			_	_	_		_	_	-	_
20	Real-time tuning										
	1 Real-time tuning 1 (speed gain)		Δ	Δ	Δ	0	0	_	_	_	-
	2 Real-time tuning 2 (rapid traverse time constant)	Δ	Δ	Δ	Δ	0	0	_	_	_	_
21	Constant torque control	Δ	Δ	Δ	Δ	0	0	_	_	_	_
	External encoder position output I/F	0	0	0	0	0	0	0	0	0	-
3 PL	C operation	0	0	0	0	0	0	0			0
2	Arbitrary feed in manual mode Circular feed in manual mode	Δ	0 	0 	Δ	0 —	0 —	0 —	0 —	0 —	0
3	PLC axis control	0	0	0	0	0	0	0	0	0	0
5	PLC axis indexing	0	0	0	0	0	0	0	0		0
6	NC axis / PLC axis switchover	Δ	Δ	Δ	Δ	0	0	0	_	_	Δ
	C interface		1								
	CNC control signal	0	0	0	0	0	0	0	0	0	0
2	CNC status signal	0	0	0	0	0	0	0	0	0	0
3	PLC window	0	0	0	0	0	0	0	0	0	0
4	External search	0	0	0	0	0	0	0	0	0	0
5	Direct Screen Selection	0	0	0	0	0	0	0	0	0	0
6	Buzzer sound control	0	0	0	0	0	0	0	0	0	-
<u> </u>	achine contact I/O		•								
1	Operation Panel I/O 1 DI:64 / DO:64		□/—	_	_	□/—	_	_			_
	2 DI:64 / DO:64+SDI:8	□/—	□/—	_	_	□/—	_	_			_
	3 DI:96 / DO:64 5 DI:64 / DO:48 / AO:1	_/□ _/□	_/□ _/□			—/□ —/□					_
2	Remote I/O										
	1 DI:32 / DO:32 2 DI:64 / DO:48										_
	2 DI:04 / DO:48 3 DI:64 / DO:48+AO:1										_
	5 DI:16 / DO:8										
	6 DI:32 / DO:32+SDI:8 / SDO:4 7 SDI:8 / SDO:4										_

					enter sys					
M80	woo	M8	00S	M80W		80		80	C80	General explanation
M850W	M830W	M850S	M830S	-	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	—	
Δ	Δ	Δ	Δ	_				-	_	This function makes it possible to move the axis with the manual pulse generator in the tool axis direction, tool diameter direction X and tool diameter direction Y in the
Δ	Δ	Δ	Δ							hypothetical coordinate system over the tool axis. The tool center coordinates, handle interrupt amount (tool axis movement) and tool center point speed are displayed during the tool center point control function, tool length compensation along the tool axis function, and tool handle feed & interrupt function (tool axis direction handle feed, too handle interrupt, tool diameter direction handle feed, nose center rotation handle feed.
Δ	Δ*	Δ	Δ*	0*	0*	_	_	_		This function controls so that the position command in a machining program is at the tool center point in the coordinate system (table coordinate system) which rotates together with the workpiece.
Δ	Δ	Δ	Δ	0	0		_	-	Δ	An arbitrary spatial plane defined with this function can be machined using normal program commands.
_	_	_	_	_	_	_	_	_	_	* This includes simple tool center point control. This function is used when a lathe with the orthogonal axes XYZ and the turret with B axis performs the milling on the inclined surface in the end face direction. This allows the operator to perform cutting on an inclined surface with no need for considering the inclination angle.
Δ	Δ	Δ		-	_	_	-	-	—	This function is to compensate the tool radius of the 5-axis machine with two rotan axes, in accordance with the change of the workpiece direction and inclination of the tool due to the movement of the rotary axis. * This function is available during program format switch for L system.
Δ	_	Δ	_	_	_	_	-	_	_	This function is used for a 5-axis machine. This compensates the error when a workpiece is placed off the workpiece coordinate system to enable machining according to the program.
Δ	Δ	Δ	Δ	0	0	_	_	_	Δ	By selecting the hypothetical coordinate system to be machined, axis can be moved with manual feed (JOG, HANDLE or INCREMENTAL) in the coordinate system with this function. It can be easy to setup because multiple axes is moved by NC according to the tool angle or the inclination of the table.
\triangle	Δ	Δ	Δ	0	0	_	_	-	_	This provides easy set too a get or the internation of the table. using a rotary axis.
Δ	Δ	Δ		0	0	_		_	_	This function estimates the inertia (or workpiece weight) of mechanical system and changes the speed control gain automatically according to the estimation results to suppress mechanical vibration. Users can expect suppression of vibration caused by inertia fluctuation, as well as reduction of machining time through adaptation of appropriate speed control gain.
Δ	Δ	Δ	Δ	0	0	_	_	_	_	This function estimates the inertia (or workpiece weight) of mechanical system and optimizes the acceleration/deceleration time constant automatically according to the estimation results. It achieves the cycle time reduction when the inertia of workpiece to machine changes significantly.
_	_	_	-	-	_	_	-	_	_	The servo motor of the axis designated for [Constant torque control] outputs the torque set by the parameter in a constant direction. The servo motor of the axis designated for [Proportional torque stopper control] generates the torque set by the parameter in the stopper direction.
0	0	0	0	0	0	0	0	0	_	This function outputs the position (angle) of external encoder to PLC device based on the input pulses from the encoder. This function can be used to monitor the position of angular head which the external encoder is connected to. * Encoder expansion card is required for M800W/M80W
0	0	0	0	0	0	0	0	0	0	This function enables the feed directions and feed rates of the control axes to be controlled using commands from the user PLC.
Δ	Δ	Δ	Δ	_	_	_	_	_		By specifying a hypothetical coordinate on the machine coordinate from the user PLC, oblique linear interpolation or circular interpolation is executed with jog / handle feed, manual rapid traverse or incremental feed of either X axis or Y axis.
0	0	0	0	0	0	0	0	0	0	This function allows independent axes to be controlled with PLC-based commands, separately from the NC control axes.
0	0	0	0	0	0	0	0	_	0	PLC axis indexing allows a PLC axis to function as an auxiliary axis with no need for changing the user ladder used conventionally for an auxiliary axis.
\triangle	Δ	Δ	Δ	0	0	0	_	_	Δ	By setting positioning points (stations) in advance, positioning control can be performed simply by designating a positioning point No. (station No.).
			1			1		1		Control commands to the CNC system are assigned from the PLC. Input signals
0	0	0	0	0	0	0	0	0	0	with skip inputs that respond at high speed can also be used. The status signals are output from the CNC system. They can be utilized by
0	0	0	0	0	0	0	0	0	0	referencing them from the PLC. [M800/M80/E80]
0	0	0	0	0	0	0	0	0	0	This function uses the "read window" or "write window" assigned to the R register's user area to read and write the CNC operation status, axis information, parameters and tool data, etc. [C80] This function uses the "read window" or "write window to read and write the CNC operation status, axis information, parameters and tool data, etc.
0	0	0	0	0	0	0	0	0	0	This function enables searching of the program to automatically start from the PLC The program No., block No. and sequence No. can be designated. In addition, the details of the search in progress can be read.
0	0	0	0	0	0	0	0	0	0	This signal allows an automatic transition to the alarm display screen when an alarm occurs.
0	0	0	0	0	0	0	0	0	_	This function gives a buzzer mounted on the NC keyboard by operating the PLC device. This is effective in applications of sounding a buzzer such as during the alarm occurrence, or for the program operation end notification.
□/—	□/—		_	□/—	_	_			_	
□/—	/	_	_		_	_			_	Some types of signals can be input/output from the operation panel I/O unit
—/□ /□	—/□ /□			_/□					—	according to the type and No. of contacts.
—/ □	_/□			_/□					_	
									_	
									_	The remote I/O unit equipped with the maximum number of DI/DO points is the one with 64 points for DI and 48 points for DO. Multiple remote I/O units can be
										used as long as the total number of occupied stations is 64 or less.
									_	* Safety card is required for M80 when using "DI:32/DO:32+SDI:8/SDO:4" or "SDI:8/SDO:4".
									_	1

M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

						Lathe	system				
	class	M80	woo	M8	00S	M80W	M	80	E	B0	C80
		M850W	M830W	M850S	M830S	—	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	_
6 E	xternal PLC link										
	CC-Link (Master / Local)										∆ (MELSEC)
	PROFIBUS-DP (Master)										_
:	CC-Link IE Field network (Master / Local)										\triangle (MELSEC)
1	EtherNet/IP										_
	0 CC-Link IE Field Basic										_
	stalling S/W for machine tools										
ļ	Customization(NC Designer2) (Note 1)	0	0	0	0	0	0	0	0	0	_
	1 Customization data storage capacity [MB]			6	6		6	6	1	1	
	2 Customization working memory size [MB]	6	6	6	6	3	3	3	1	1	_
1 -	2 User-defined key	0	0	0	0	0	0	0	0	0	
	EZSocket I/F (Note 1)	0	0	0	0	0	0	0	0	0	_
4	APLC release (Note 1)		Δ	Δ	Δ	0	0	0	0	0	Δ
4	Custom API library	0	0	0	0	0	0	0	0	0	_
6	MES interface library		Δ	Δ	Δ	0	0	0	0	0	-
-	SLMP Server	0	0	0	0	0	0	0	0	0	-
8	Mitsubishi CNC communication software FCSB1224W000 (Note 1)	0	0	0	0	0	0	0	0	0	_
1	0 GOT2000 screen design tool GT Works3	_	_	_	_	_	_	_	_	_	0
8 C	thers										
	System lock			Δ	Δ	0	0	0	0	0	_
	CNC remote operation tool										
	1 NC Monitor2 (Note 1)	0	0	0	0	0	0	0	0	0	0
	2 NC Explorer (Note 3)	0	0	0	0	0	0	0	0	0	0
	Automatic operation lock	0	0	0	0	0	0	0	0	0	0
	Power consumption computation	0	0	0	0	0	0	0	0	0	0
4	EcoMonitorLight connection	0	0	0	0	0	0	0	0	0	
(GOT Window	-	_	_	_	_	_	_	_	_	0
	Log Viewer	-	_	_	_	_	-	_	_	_	0

				chining c					000	
M80	woo	M8	005	M80W		80		B0	C80	General explanation
M850W	M830W	M850S	M830S	—	M80 TypeA	M80 TypeB	E80 TypeA	E80 TypeB	-	
									∆ (MELSEC)	[M800/M80/E80] NC unit can be directly connected to the network to serve as the master/local station of the MELSEC CC-Link. [C80] Refer to manuals of each unit of MITSUBISHI Programmable Controller "MELSEC iO-R series" for information on the function and the performance.
									_	NC can input / output devices to / from slave stations as a master station of PROFIBUS-DP communication by connecting to PROFIBUS-DP-capable slave stations.
									\triangle (MELSEC)	Refer to manuals of each unit of MITSUBISHI Programmable Controller "MELSEC IQ-R series" for information on the function and the performance.
									-	By mounting EtherNet/IP communication expansion unit on NC control unit to connect EtherNet/IP-compatible equipment, PLC devices can be input/output using NC control unit as a scanner or an adapter for EtherNet/IP communication.
									-	CC-Link IE Field Basic enables periodical data communication (cyclic data transmission) between master station and slave station by connecting the NC controller to CC-Link IE Field Network Basic compatible devices via built-in Ethernet port.
0	0	0	0	0	0	0	0	0	-	It is an optional function that allows a user-created screen or window to be
		6	6		6	6	1	1	-	displayed as an HMI screen or another application on the screen. * Capacity depends on memory space for M800W/M80W
6	6	6	6	3	3	3	1	1	-	
0	0	0	0	0	0	0	0	0		This function allows an arbitrary character string to be assigned to a key and makes it easy to input a typical character string. This middleware makes it easy to develop applications having the Windows
0	0	0	0	0	0	0	0	0	-	interface.
Δ		Δ		0	0	0	0	0	Δ	APLC (Advanced Programmable Logic Controller) release is a function that allows the user-generated C language module to be called from the NC. Control operations that are difficult to express in a sequence program can be created with the C language.
0	0	0	0	0	0	0	0	0	-	This function is designed to interface an NC with an application developed by a user. You can set and refer the data for NC using this function. * Please contact us for details.
Δ	Δ	Δ	Δ	0	0	0	0	0	-	The MES interface library function links the NC internal data and the database of information system (manufacturing execution system) without a communication gateway.
0	0	0	0	0	0	0	0	0	-	Transfers data using the SLMP between an NC and an external device. This function enables easy connection with external devices and read/write NC data through the Ethernet cable.
0	0	0	0	0	0	0	0	0	_	The software designed to help development of an application with Windows interface for Mitsubishi computerized numerical controller. The product can accelerate development by using OLE interface common to computerized numerical controller without knowing internal processing of the machine.
_	_	_	_	_	_	_	_	_	0	This integrated software is used to create professional screen designs for GOTs.
Δ	Δ	Δ	Δ	0	0	0	0	0	_	This function locks the operations of the NC if the release code is not entered before the specified time limit.
0	0	0	0	0	0	0	0	0	0	NC Monitor2 is a PC software tool that monitors information in the NC unit connected with the Ethernet. NC Explorer is a software tool to operate the machining data files of each NC
0	0	0	0	0	0	0	0	0	0	unit connected with a host personal computer by Ethernet connection from the Explorer on the host personal computer.
0	0	0	0	0	0	0	0	0	0	Automatic operation lock function prevents the falsification of APLC (C language module) by a third party. Present power consumption and accumulated power consumption can
0	0	0	0	0	0	0	0	0	0	be acquired with this function. The present power consumption notifies the instantaneous power consumption and the accumulated power consumption notifies the integrated value of the present power consumption.
0	0	0	0	0	0	0	0	0	-	NC system can collect and manage the electric power of the machine tool which measured by the energy measuring unit "EcoMonitorLight (sold separately)".
_	_	_	_	_	_	_	-	_	0	This is the interface to display the variety of NC data on GOT connected to the CNC CPU. This reads out the running machining program No., the running machining progra and the coordinate values, etc. by the device read command.
_		_	_	_		_	_	_	0	This function enables the recorded data by the data sampling function of the NC t
					_					display with a graph on the GOT, and to store the data as a file.

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M800/M80/E80/C80 SERIES SPECIFICATIONS LIST

[M800/M80/E80]S/W ver.D6 [C80]S/W ver.B0

CNC SYSTEM HARDWARE

		Control unit			Ma	achine operation pa	Inel
(Separate Separate		rol unit (Integrated on		FCU8-KB925 FCU8-KB926		ch: 55 points, LED: 55 points SHI standard key layout	KB922/925: 260 KB924/926: 290
display			Control unit	FCU8-KB922 FCU8-KB924		ch: 55 points, LED: 55 points specification key layout	
M800 M800	+W W : 90×180×380(W V : 60×180×380(W	(×D×H)		FCU8-KB941	Selective	vitch override, cutting override) switch (memory protection) cy stop button	140
Display	Keyboard	M800W Series	M800S Series	M80W Ser	ries	M80 Series	E80 Series
19-type Fouchscreen	_	365 440 Windows based	_	440 Windo base		_	_
19-type, horizontal ouchscreen	_	365 Windows based	_	365 Window based	ws	_	_
15-type ouchscreen	FCU8-KB083 Clear key Full keyboard	400 Windows- based display can be selected	400 320 140	320 320 140 320 320 320 320 320 320 320 320 320 32	ws- splay e	400 320	_
10.4-type Touchscreen	FCU8-KB047 Clear key Full keyboard	290 220 160	290 220 160	290 220 160		290 220 160	_
10.4-type fouchscreen	FCU8-KB041 Clear key ONG(XZF) layout for L system FCU8-KB046 Clear key ONG(XYZ) layout	290 140	290 140	290	140	290 140	_
10.4-type Fouchscreen	FCU8-KB048 Clear key ABC layout	220 230	290 230	290	230	290 230	_
8.4-type	FCU8-KB026 Clear key ONG(XYZ) layout FCU8-KB028 Clear key ONG(XZF) layout for L system	_	_	260	140	260 140	_
8.4-type	FCU8-KB029 Clear key ONG layout	_	_	260 200 140		260 200 140	_
8.4-type	FCU8-KB025 Sheet keys ONG(XZF) layout for L system FCU8-KB024 Sheet keys ONG(XZF) layout	_	_	_		_	260 140

CNC SYSTEM CONTROL UNIT/DISPLAY UNIT

[M800/M80 Series]

■Display unit/control unit separated-type

CNC	System
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CINC System			
Series	Model name	System type	NC control unit
M800W Series	M850W	FCA850U	FCU8-MA041-001
IVIOUUVV Series	M830W	FCA830U	FCU8-MU042-001
M80W Series	M80W	FCA80U	FCU8-MU044-001

CNC System

Classifi	ention	Туре	Remarks	Supporte	ed Series
Ciassili	callon	туре	i terrains	M800	M80W
	19-type vertical color	FCU8-DU191-75		0	-
	LCD touchscreen	FCU8-DU191-77			0
Windows-based display unit	19-type horizontal color I CD	FCU8-DU192-75	Personal computer (FCU8-PC231) and built-in disk unit (FCU8-CF001-001) are prepared at the	0	-
	touchscreen	FCU8-DU192-77	same time.	-	0
	15-type color LCD	FCU8-DU181-34		0	-
	touchscreen	FCU8-DU181-36		-	0
	15-type color LCD	FCU8-DU181-31		0	-
	touchscreen	FCU8-DU181-32		-	0
to	10.4-type color LCD	FCU8-DU141-31	Graphic control unit (FCU8-GC211-001) is prepared at the same time.	0	-
	touchscreen	FCU8-DU141-32			0
	8.4-type color LCD	FCU8-DU121-12		-	0

■Display unit/control unit integrated-type

Series	Model name	System type	NC control unit	Display unit
	M850S	FCA850H-8S		FCU8-DU181-31 (15-type color LCD touchscreen)
M800S Series	IVIBOUS	FCA850H-4S	FCU8-MA542-001	FCU8-DU141-31 (10.4-type color LCD touchscreen)
IVIOUUS Series	M830S	FCA830H-8S	FCU8-MU542-001	FCU8-DU181-31 (15-type color LCD touchscreen)
	110303	FCA830H-4S	FC08-W0342-001	FCU8-DU141-31 (10.4-type color LCD touchscreen)
		FCA80H-8A		FCU8-DU181-32 (15-type color LCD touchscreen)
	M80 TypeA	FCA80H-4A	FCU8-MU512-001	FCU8-DU141-32 (10.4-type color LCD touchscreen)
M80 Series		FCA80P-2A		FCU8-DU121-12 (8.4-type color LCD)
M80 Series		FCA80H-8B		FCU8-DU181-32 (15-type color LCD touchscreen)
	M80 TypeB	FCA80H-4B	FCU8-MU511-001	FCU8-DU141-32 (10.4-type color LCD touchscreen)
		FCA80P-2B		FCU8-DU121-12 (8.4-type color LCD)
F80 Series	E80 TypeA	FCA80P-2EA	FCU8-MU514-001	FCU8-DU121-13(8.4-type color LCD)
Eou Series	Е80 ТуреВ	FCA80P-2EB	FCU8-MU513-001	FCU8-DU121-13(8.4-type color LCD)

CONTROL UNIT/DISPLAY UNIT

CNC SYSTEM

[C80 Series]

■CNC-CPU unit

Product	Model	Remarks
CNC control module	R16NCCPU	

■GOT2000 related unit

SD card			
Product	Model	Model code	Remarks
SD card	NZ1MEM-2GBSD	1WC535	2GB SD memory card for GOT

GT27 Model

GIZII	viouei			
Pr	oduct	Model	Model code	Remarks
	GT2712	GT2712-STBA	1EA780	12.1" SVGA [800×600 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) AC100-240V User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
GT27	G12/12	GT2712-STBD	1EA781	12.1** SVGA [800×600 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) 24VDC User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
	070740	GT2710-STBA	1EA770	10.4** SVGA [800×600 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) AC100-240V User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
	GT2710	GT2710-STBD	1EA771	10.4** SVGA [800×600 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) 24VDC User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
	GT2708	GT2708-STBA	1EA740	8.4** SVGA [800×600 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) AC100-240V User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
GT27 Model	012700	GT2708-STBD	1EA741	8.4** SVGA [800×600 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) 24VDC User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
	070740	GT2710-VTBA	1EA760	10.4** VGA [640×480 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) AC100-240V User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
	GT2710	GT2710-VTBD	1EA761	10.4** VGA [640×480 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) 24VDC User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
	070700	GT2708-VTBA	1EA730	8.4** VGA [640×480 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) AC100-240V User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
	GT2708	GT2708-VTBD	1EA731	8.4** VGA [640×480 dots] TFT color LCD 65536 colors (Multimedia & Video / RGB compliant Multi-touch compliant) 24VDC User memory Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
	GT2705	GT2705-VTBD	1EA721	5.7** VGA [640×480 dots] TFT color LCD 65536 colors (Multi-touch compliant) 24VDC User memory Memory for storage (ROM): 32MB, Memory for operation (RAM): 80MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
		GT25-12PSCC	1EK307	For 12.1"" Clear type, Transparent, With a hole for the USB environmental protection cover, A set of 5 sheets.
Drotootin	abaat	GT25-10PSCC	1EK304	For 10.4" Clear type, Transparent, With a hole for the USB environmental protection cover, A set of 5 sheets.
-	Sneet	GT25-08PSCC	1EK301	For 8.4"" Clear type, Transparent, With a hole for the USB environmental protection cover, A set of 5 sheets.
		GT25-05PSCC	1EK316	For 5.7"" Clear type, Transparent, With a hole for the USB environmental protection cover, A set of 5 sheets.

GT25 Model

Prod	luct	Model	Model code	Remarks
	GT2512	GT2512-STBA	1EA580	12.1" SVGA [800×600 dots] TFT color LCD 65536 colors AC100-240V, User memory Memory for storage (ROM): 32MB, Memory for operation (RAM): 80MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
	612512	GT2512-STBD	1EA581	12.1" SVGA [800×600 dots] TFT color LCD 65536 colors 24VDC, User memory Memory for storage (ROM): 32MB, Memory for operation (RAM): 80MB GT Designer3 Version1 (GOT2000) 1.155M or later is required.
GT25 Model	070510	GT2510-VTBA	1EA560	10.4"" VGA [640×480 dots] TFT color LCD 65536 colors AC100-240V, User memory Memory for storage (ROM): 32MB, Memory for operation (RAM): 80MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
G125 MODE	GT2510	GT2510-VTBD	1EA561	10.4" VGA [640×480 dots] TFT color LCD 65536 colors 24VDC, User memory Memory for storage (ROM): 32MB, Memory for operation (RAM): 80MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
	070500	GT2508-VTBA	1EA530	8.4** VGA [640×480 dots] TFT color LCD 65536 colors AC100-240V, User memory Memory for storage (ROM): 32MB, Memory for operation (RAM): 80MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.
	GT2508	GT2508-VTBD	1EA531	8.4** VGA [640×480 dots] TFT color LCD 65536 colors 24VDC, User memory Memory for storage (ROM): 32MB, Memory for operation (RAM): 80MB GT Designer3 Version1 (GOT2000) 1.165X or later is required.

CNC SYSTEM I/O UNIT AND OTHERS

[M800/M80/E80 Series]

■List of Units

0100011	cation	Туре	Remarks	M800W				
Operation Panel I/O L	Jnit]	1			100000	10000	1000	LOU
<u></u>		FCU8-DX830	DI: 64-points 24V/0V common type, DO: 64-points source type, Manual pulse generator input: 3ch, Remote I/O 2.0 I/F, RIO occupied stations (fixed): 1 to 4 and 7 to 14, RIO extensible stations: 5, 6, 15 to 64 (For Windows-based display unit)	0	-	0	-	-
		FCU8-DX730	DI: 64-points 24V/0V common type, DO: 64-points source type, Manual pulse generator input: 3ch, Remote I/O 2.0 I/F, RIO occupied stations (fixed): 1, 2 and 7 to 12, RIO extensible stations: 3 to 6 and 15 to 64 (For non-Windows-based display unit)	0	-	0	-	-
DI 24V/0V common input	FCU8-DX750 Liput: 3dh, Remote I/O 2.0 UF, RIO occupied stations (fixed): 1 to 3 and 7 to 12, RIO extensible stations: 4 to 6 and 13 to 64		-	0	-	0	0	
		FCU8-DX760	DI: 96-points 24V/0V common type, DO: 96-points source type, Manual pulse generator input: 3ch, Remote I/O 2.0 I/F, RIO occupied stations (fixed): 1 to 4 and 7 to 12, RIO extensible stations: 5, 6 and 13 to 64	-	0	-	0	0
	UDUBIE Control Control <th< td=""></th<>							
DI 24V/0V common input Safety DI 24V/0V common input	Loss of Twen LOUID Up to the LOUID Performance of Louid Science of L	-	-					
DI 24V/0V common input Al analog input	Math Ippe Number 200 Second Status Statu							
[Remote I/O Unit]	1							
		FCU8-DX220		0	0	0	0	0
DI 24V/0V common input	Outside DB Definition Non-interval view / Voi Desite Desite at view / D Life CP, 8-obit 3 DVVD correct has D, 0 C and calculation generator 0 <td< td=""></td<>							
		FCU8-DX231	Number of occupied stations: 2	0	0	0	0	0
Al analog input	AO Analog output	FCU8-DX202		0	0	0	0	0
	DO Source output	FCU8-DX213	DI: 16-points 0V common type (3mA/point), DO: 8-points source type (2A/point),	0	0	0	0	0
Di ov common input	(large capacity)	FCU8-DX213-1	Number of occupied stations: 1	0	0	0	0	0
Thermistor input (12 points) FCU8		FCU8-DX408		0	0	0	0	0
Multi-analog input (4 p	points)	FCU8-DX409	Multi-analog input: 4 points * Voltage input, current input, thermocouple input and resistance temperature detector input are selected for each CH.	0	0	0	0	0
Safety DI 0V common	$\frac{1}{100} = \frac{1}{100} + \frac{1}$							
input		FCU8-DX654-1	Safety DO: 4-points source type (2A/point)	0	0	0	0	-
DI 24V/0V common input Safety DI 0V common input	Use OUM Dots Description Description <thdescription< th=""> Description <thdescri< td=""><td>0</td><td>-</td></thdescri<></thdescription<>	0	-					
		T	Encoder input 1ch					
I/F expansion unit	e generator)	FCU8-EX544		0	-	0	-	-
		FCU8-EX133	Smart Safety observation	-	-	-	0	-
		ECU8-EX561	CC-Link 1ch		0	0	0	
		Op/En Op/En <th< td=""></th<>						
CC-Link IE Field Master/local unit		ON DB Primate Primate<						
	adapter unit							
Safety DI 0V common Iput DI 0V		FC08-EX702		<u> </u>	0	-	0	0
EtherNet/IP scanner/a Option relay unit			For communication expansion unit 2slots (*1)	-				
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit]]	FCU8-EX703	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resin molded article), metal plate, etc.		-	0	-	-
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit		FCU8-EX703	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resin molded article), metal plate, etc.		-	0	-	-
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit [Manual Pulse Genera	itor]	FCU8-EX703 FCU8-EP201-2	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resin molded article), metal plate, etc. Exclusive for 19-type display unit	0	-		-	-
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit [Manual Pulse Genera 5V Manual pulse gene 12V Manual pulse gen	itor] erator	FCU8-EX703 FCU8-EP201-2 UFO-01-2Z9	Ippe Internation Internation Internation International status International status <thinternational status<="" th=""> International s</thinternational>					
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit Side memory I/F Unit [Manual Pulse Genera 5V Manual pulse gene 12V Manual pulse gen [Encoder]	itor] erator herator	FCU8-EX703 FCU8-EP201-2 UFO-01-229 HD60C 0SE1024-3-15-68	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resis molded article), metal plate, etc. Exclusive for 19-type display unit Input 5VDC, 100pulse/rev Input 12VDC, 25 pulse/rev Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange	0 0 0	0	0	0	0
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit [Manual Pulse Genera 5V Manual pulse gene 12V Manual pulse gene [Encoder] Synchronous feed end	itor] erator herator	FCU8-EX703 FCU8-EP201-2 UFO-01-229 HD60C 0SE1024-3-15-68 OSE1024-3-15-68-8	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resis molded article), metal plate, etc. Exclusive for 19-type display unit Input 5VDC, 100pulse/rev Input 12VDC, 25 pulse/rev Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange Input 5VDC, 1024 pulse/rev, 8000r/min, 68-square flange	0 0 0	0	0	0	0
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit [Manual Pulse Genera 5V Manual pulse gene 12V Manual pulse gene [Encoder] Synchronous feed enc [Handy Termina]]	itor] erator herator	FCU8-EX703 FCU8-EP201-2 UFO-01-2Z9 HD60C OSE1024-3-15-68 OSE1024-3-15-68-8 OSE1024-3-15-160	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resin molded article), metal plate, etc. Exclusive for 19-type display unit Input 5VDC, 100pulse/rev Input 5VDC, 100pulse/rev Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange		0		0	
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit [Manual Pulse Genera 5V Manual pulse gene	itor] erator herator	FCU8-EX703 FCU8-EP201-2 UFO-01-2Z9 HD60C OSE1024-3-15-68 OSE1024-3-15-68-8 OSE1024-3-15-160	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resin molded article), metal plate, etc. Exclusive for 19-type display unit Input 5VDC, 100pulse/rev Input 5VDC, 100pulse/rev Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange		0		0	
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit [Manual Pulse Genera 5V Manual pulse gene 12V Manual pulse gene 12V Manual pulse gene [Encoder] Synchronous feed end [Handy Terminal] [Haemistor Sets] Thermistor	itor] irator nerator coder	FCU8-EX703 FCU8-EP201-2 UFO-01-229 HD60C OSE1024-3-15-68 OSE1024-3-15-68-8 OSE1024-3-15-180 HG1TSB12UHMK1346-L5	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (riss molded article), metal plate, etc. Exclusive for 19-type display unit Input 5VDC, 100pulse/rev Input 5VDC, 100pulse/rev Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange Input 5VDC, 1024 pulse/rev, 8000r/min, 68-square flange Input 5VDC, 1024 pulse/rev, 6000r/min, 160-square flange		0 0 0 0		0 0 0 0 0	
EtherNet/IP scanner/a Option relay unit [Side Memory I/F Unit] Side memory I/F Unit [Manual Pulse Genera 5V Manual pulse gene 12V Manual pulse gene 12V Manual pulse gene 12V Manual pulse gene [Encoder] Synchronous feed enco [Handy Terminal] Handy terminal [Thermistor [Genuine Memory Car	itor] irator ierator coder rd]	FCU8-EX703 FCU8-EP201-2 UFO-01-229 HD60C OSE1024-3-15-68 OSE1024-3-15-68-8 OSE1024-3-15-160 HG1T5812UHMK1346-L5 PT3C-51F-M2 10P	SDHC 1ch, USB2.0 1ch USB communication (between side memory I/F PCB and personal computer) Unit lid (resis molded article), metal plate, etc. Exclusive for 19-type display unit Input 5VDC, 100pulse/rev Input 12VDC, 25 pulse/rev Input 5VDC, 1024 pulse/rev, 6000r/min, 68-square flange Input 5VDC, 1024 pulse/rev, 8000r/min, 68-square flange Input 5VDC, 1024 pulse/rev, 6000r/min, 160-square flange					

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CNC SYSTEM

DI: Digital input signals, DO: Digital output signals, AI: Analog input signals, AO: Analog (*1) This is required when communication expansion unit is used in M800S/M80 series.

5 CNC SYSTEM

[C80 Series]

MELSEC iQ-R Series modules

Pro		1		
	duct	Model	Model code	Remarks
		R04CPU	1FMA00	Program capacity, 40K steps; basic operation processing speed (LD instruction), 0.98 ns
		R08CPU	1FMA01	Program capacity, 80K steps; basic operation processing speed (LD instruction), 0.98 ns
PLC CPU		R16CPU	1FMA02	Program capacity, 160K steps; basic operation processing speed (LD instruction), 0.98 ns
		R32CPU	1FMA03	Program capacity, 320K steps; basic operation processing speed (LD instruction), 0.98 ns
SD memory card Extended SRAM cassette Vain base Extension base RQ extension base Extension cable Power supply AC DC(Positive Common Shared Type) Dutput Relay Transistor (Sink) Transistor (Source) CO combined DC input/		R120CPU	1FMA04	Program capacity, 1200K steps; basic operation processing speed (LD instruction), 0.98 ns
SD memory card	1	NZ1MEM-2GBSD	1WC535	SD memory card, 2G bytes
		NZ2MC-1MBS	1FMB00	1M bytes
EXIENCEU SHAIVI	Casselle			
		R35B	1FME00	5 slots, for MELSEC iQ-R Series modules
Main base		R38B	1FME01	8 slots, for MELSEC iQ-R Series modules
		R312B	1FME02	12 slots, for MELSEC iQ-R Series modules
		R65B	1FME07	5 slots, for MELSEC iQ-R Series modules
Extension base		R68B	1FME06	8 slots, for MELSEC iQ-R Series modules
		R612B	1FME05	12 slots, for MELSEC iQ-R Series modules
		RQ65B	1FME08	5 slots, for MELSEC-Q Series modules
RQ extension ba	se	RQ68B	1FME03	8 slots, for MELSEC-Q Series modules
		RQ612B	1FME04	12 slots, for MELSEC-Q Series modules
		RC06B	1FM001	0.6 m cable for extension and RQ extension base units
		RC12B	1FM002	1.2 m cable for extension and RQ extension base units
xtension cable		RC30B	1FM003	3 m cable for extension and RQ extension base units
		RC50B	1FM004	5 m cable for extension and RQ extension base units
		R61P	1FMC00	AC power supply; input, 100 to 240 V AC; output, 5 V DC/6.5 A
ower supply		R62P	1FMC02	AC power supply; input, 100 to 240 V AC; output, 5 V DC/3.5 A, 24 V DC/0.6 A
c.voi ouppiy		R63P	1FMC01	DC power supply; input, 24 V DC; output, 5 V DC/6.5 A
		R64P	1FMC03	AC power supply; input, 100 to 240 V AC; output, 5 V DC/9 A
ixtension cable ixtension	AC	RX10	1FM103	AC input, 16 points; 100120 V AC (50/60 Hz)
Extension base RQ extension base RQ extension base Extension cable Power supply nput Dutput (O combined Connector Epring clamp term Connector/terminal block conversion nodule Relay terminal mo	-	RX40C7	1FM100	DC input, 16 points; 24 V DC, 7.0 mA
nput				
		RX41C4	1FM101	DC input, 32 points; 24 V DC, 4.0 mA
		RX42C4	1FM102	DC input, 64 points; 24 V DC, 4.0 mA
	Relay	RY10R2	1FM153	Relay output, 16 points; 24 V DC/2 A, 240 V AC/2 A
	-	RY40NT5P	1FM150	Transistor (sink) output, 16 points; 12 to 24 V DC, 0.5 A
		RY41NT2P	1FM151	Transistor (sink) output, 32 points; 12 to 24 V DC, 0.2 A
Jutrout	(Sink)	RY42NT2P	1FM152	Transistor (sink) output, 64 points; 12 to 24 V DC, 0.2 A
Julpur		RY40PT5P	1FM154	
	Transistor			Transistor (source) output, 16 points; 12 to 24 V DC, 0.5 A
I/Q combined		RY41PT1P	1FM155	Transistor (source) output, 32 points; 12 to 24 V DC, 0.1 A
I/O combined	()	RY42PT1P	1FM156	Transistor (source) output, 64 points; 12 to 24 V DC, 0.1 A
I/O combined	DC input/			DC input, 32 points; 24 V DC, 4.0 mA
	transistor output	RH42C4NT2P	1FM200	Transistor (sink) output, 32 points; 12 to 24 V DC, 0.2 A
		A6CON1	13L101	Soldering 32 point-connector (40-pin connector)
Connector		A6CON2	13L102	Solderless terminal connection 32 point-connector (40-pin connector)
		A6CON3	13L103	Flat-cable pressure displacement 32 point-connector (40-pin connector)
		A6CON4	13L124	Soldering 32 point-connector (40-pin connector, bidirectional cable mountable)
Spring clamp terr	minal block	Q6TE-18SN	1W4299	For 16-point I/O modules, 0.31.5 mm ² (2216 AWG)
		A6TBX70	13L112	For positive common input modules (3-wire type)
		A6TBXY36	13L106	For positive common input modules and sink output modules (standard type)
conversion modu	lle	A6TBXY54	13L109	For positive common input modules and sink output modules (2-wire type)
		AC05TB	13L006	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 0.5 m
Connector/		AC10TB	13L007	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 1 m
		AC20TB	13L008	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 2 m
	cable	AC30TB	13L009	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 3 m
		AC50TB	13L010	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 5 m
nouule		AC80TB	13L026	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 8 m* *Common current 0.5 A or lowe
		AC100TB	13L027	
Power supply Pout Pout Pout Pout Pout Pout Pout Pout	1			For AGTRXV36 AGTRXV51 and AGTRX70 (positive common/sink type) 10 m* *Common summet 0.5 A ar low
Deley (to mail 1				
Relay terminal mo	odule	A6TE2-16SRN	13L131	For 40-pin connector 24 V DC transistor output modules (sink type)
Main base Extension base Extension base Extension cable Power supply Input Cutput Connector Spring clamp termina Connector/terminal block conversion module Relay terminal block conversion module Relay terminal mod Relay terminal module Analog input	odule	A6TE2-16SRN AC06TE	13L131 13L021	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m
	odule	A6TE2-16SRN	13L131	For 40-pin connector 24 V DC transistor output modules (sink type)
	cable	A6TE2-16SRN AC06TE	13L131 13L021	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m
Relay terminal		A6TE2-16SRN AC06TE AC10TE AC30TE	13L131 13L021 13L022 13L023	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m
Relay terminal		A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE	13L131 13L021 13L022 13L023 13L024	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m
Relay terminal		A6TE2-16SRN AC06TE AC10TE AC30TE	13L131 13L021 13L022 13L023	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m
Relay terminal		A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE	13L131 13L021 13L022 13L023 13L024	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs
Relay terminal	cable	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC50TE AC100TE	13L131 13L021 13L022 13L023 13L024 13L025	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m
Relay terminal nodule	cable Voltage input	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC100TE R60ADV8	13L131 13L021 13L022 13L023 13L024 13L025 1FM503	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs
Relay terminal nodule	cable	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC50TE AC100TE	13L131 13L021 13L022 13L023 13L024 13L025	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH
Relay terminal nodule	cable Voltage input	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC50TE AC100TE R60ADV8 R60ADI8	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs
Relay terminal nodule	cable Voltage input Current input	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC100TE R60ADV8	13L131 13L021 13L022 13L023 13L024 13L025 1FM503	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH
Relay terminal nodule	cable Voltage input Current input Voltage/ current input	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC100TE R60ADV8 R60ADV8 R60ADI8 R60AD4	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -32000; 80 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH 4 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH
Relay terminal nodule	cable Voltage input Current input Voltage/	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC50TE AC100TE R60ADV8 R60ADI8	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH 4 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH
Relay terminal nodule	cable Voltage input Current input Voltage/ current input	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC100TE R60ADV8 R60ADV8 R60ADI8 R60AD4	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH 4 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage outputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH
Relay terminal nodule	cable Voltage input Current input Voltage/ current input Voltage output	A6TE2-16SRN AC06TE AC10TE AC30TE AC30TE AC50TE AC100TE R60ADV8 R60ADV8 R60AD4 R60AD4	13L131 13L021 13L022 13L023 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM505	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 μs/CH 8 channels for current inputs 020 mA DC/032000; 80 μs/CH 4 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 μs/CH 8 channels for voltage outputs -3200032000; 020 mA DC, 032000; 80 μs/CH 8 channels for voltage outputs -300032000, -1010 V DC; 80 μs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 μs/CH
Relay terminal nodule	cable Voltage input Current input Voltage/ current input	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC100TE R60ADV8 R60ADV8 R60ADI8 R60AD4	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 μs/CH 8 channels for current inputs 020 mA DC/032000; 80 μs/CH 4 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 μs/CH 8 channels for voltage outputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 μs/CH
Nelay terminal nodule	cable Voltage input Current input Voltage/ current input Voltage output Current output	A6TE2-16SRN AC06TE AC10TE AC10TE AC50TE AC50TE AC100TE R60ADV8 R60ADV8 R60AD4 R60DAV8 R60DAV8	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM505 1FM506	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 μs/CH 8 channels for current inputs 020 mA DC/(032000; 020 mA DC, 032000; 80 μs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 μs/CH 8 channels for voltage outputs -1010 V DC, -32000
Nelay terminal nodule	cable Voltage input Current input Voltage/ current input Voltage output Current output Voltage/	A6TE2-16SRN AC06TE AC10TE AC30TE AC30TE AC50TE AC100TE R60ADV8 R60ADV8 R60AD4 R60AD4	13L131 13L021 13L022 13L023 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM505	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -32000, 30 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH 4 channels for voltage/current inputs -1010 V DC, -32000, 30 µs/CH 8 channels for voltage outputs -1010 V DC, -32000; 80 µs/CH 8 channels for voltage outputs -1010 V DC, -32000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -32000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -32000, -1010 V DC; 80 µs/CH 8 channels for voltage outputs -30000, -32000, -1010 V DC; 80 µs/CH 8 channels for current outputs 032000, 020 mA DC; 80 µs/CH 4 channels for voltage/current outputs 032000, 020 mA DC; 80 µs/CH
Nelay terminal nodule	cable Voltage input Current input Voltage/ current input Voltage output Current output Voltage/ current output	A6TE2-16SRN AC06TE AC10TE AC30TE AC30TE AC100TE R60ADV8 R60ADV8 R60AD4 R60DAV8 R60DAV8 R60DAV8	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM505 1FM506 1FM506	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH 4 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, 80 µs/CH 8 channels for voltage/current inputs -020 mA DC; 80 µs/CH 8 channels for current outputs -02000,20 mA DC; 80 µs/CH 4 channels for voltage/current outputs -0200,20 mA DC; 80 µs/CH
Relay terminal nodule	cable Voltage input Current input Voltage/ current input Voltage output Current output Voltage/ current output Patinum temperature-	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC50TE R60ADV8 R60ADV8 R60AD4 R60DAV8 R60DAV8 R60DA4 R60DA4 R60DA4	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM505 1FM506 1FM502 1FM502	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH 4 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage outputs -32000,20 mA DC; 80 µs/CH 4 channels for voltage/current outputs -32000,20 mA DC; 80 µs/CH 4 channels for voltage/current outputs -32000,20 mA DC; 80 µs/CH 4 channels for voltage/current outputs -32000,20 mA DC; 032000, 020 mA DC; 80 µs/CH RTD (Pt100, J+t00), 4 channels for input
Relay terminal nodule	cable Voltage input Current input Voltage/ current input Voltage output Current output Voltage/ current output	A6TE2-16SRN AC06TE AC10TE AC30TE AC30TE AC100TE R60ADV8 R60ADV8 R60AD4 R60DAV8 R60DAV8 R60DAV8	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM505 1FM506 1FM506	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for current inputs 020 mA DC/032000; 80 µs/CH 4 channels for voltage outputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage outputs -3200032000, 020 mA DC, 032000; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage/current outputs -3200032000, -1010 V DC; 032000, 020 mA DC; 80 µs/CH 8 channels for voltage/current outputs -3200032000, -110 V DC; 032000, 020 mA DC; 80 µs/CH RTD (Pt100, JPt100), 4 channels for input RTD (Pt100, JPt100), 4 channels for input
Relay terminal nodule	cable Voltage input Current input Voltage/ current input Voltage output Current output Voltage/ current output Patinum temperature-	A6TE2-16SRN AC06TE AC10TE AC30TE AC30TE AC50TE AC100TE R60ADV8 R60ADV8 R60AD4 R60DAV8 R60DAV8 R60DA4 R60DA4 R60TCRT4 R60TCRT4 R60TCRT4BW	13L131 13L021 13L022 13L023 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM506 1FM506 1FM506 1FM502 1FY40E 1FY40F	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 0.120 mA DC, 032000; 80 µs/CH 4 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage/current outputs 032000, -020 mA DC; 80 µs/CH 8 channels for voltage/current outputs 032000, -020 mA DC; 80 µs/CH 8 channels for voltage/current outputs -3200032000, -010 V DC; 020 mA DC; 80 µs/CH 8 TD (Pt100, JPt100), 4 channels for input RTD (Pt100, JPt100), 4 channels for input, heater disconnection detection Thermocouple (B, R, S, K, E, J, T, N, U, L, PL@, W5ReW26Re), 4 channels for input
Relay terminal nodule Analog input Analog output	cable Voltage input Current input Voltage/ current input Voltage output Current output Voltage/ current output Voltage/ current output Patinum temperature- measuring resistor	A6TE2-16SRN AC06TE AC10TE AC30TE AC50TE AC50TE R60ADV8 R60ADV8 R60AD4 R60DAV8 R60DAV8 R60DA4 R60DA4 R60DA4	13L131 13L021 13L022 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM505 1FM506 1FM502 1FM502	For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 020 mA DC, 032000; 80 µs/CH 8 channels for voltage outputs -3200032000, .020 mA DC, 032000; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage/current outputs -32000
Relay terminal module	cable Voltage input Current input Voltage/ current input Voltage output Current output Voltage/ current output Patinum temperature-	A6TE2-16SRN AC06TE AC10TE AC30TE AC30TE AC50TE AC100TE R60ADV8 R60ADV8 R60AD4 R60DAV8 R60DAV8 R60DA4 R60DA4 R60TCRT4 R60TCRT4 R60TCRT4BW	13L131 13L021 13L022 13L023 13L023 13L024 13L025 1FM503 1FM504 1FM501 1FM506 1FM506 1FM506 1FM502 1FY40E 1FY40F	For 40-pin connector 24 V DC transistor output modules (sink type) For A6TE2-16SRN, 0.6 m For A6TE2-16SRN, 1 m For A6TE2-16SRN, 3 m For A6TE2-16SRN, 5 m For A6TE2-16SRN, 10 m 8 channels for voltage inputs -1010 V DC, -3200032000; 80 µs/CH 8 channels for voltage/current inputs -1010 V DC, -3200032000; 0.120 mA DC, 032000; 80 µs/CH 4 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage/current outputs 032000, -020 mA DC; 80 µs/CH 8 channels for voltage/current outputs -3200032000, -1010 V DC; 80 µs/CH 7 channels for voltage/current outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage/current outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage/current outputs -3200032000, -1010 V DC; 80 µs/CH 8 channels for voltage/current outputs -32000

Pro	oduct	Model	Model code	Remarks
		RD62P2	1FM50B	5/12/24 V DC input, 2 channels; counting speed, max. 200k pulse/s; external output, transistor (sink type)
High-speed cou	nter	RD62D2	1FM50C	Differential input, 2 channels; max. counting speed, 8M pulse/s; external output, transistor (sink type)
		RD62P2E	1FM50D	5/12/24 V DC input, 2 channels; counting speed, max. 200k pulse/s; external output, transistor (source type)
Ethernet Serial communication MES Interface	RJ71EN71	1FM601	1 Gbps/100 Mbps/10 Mbps, 2 ports Multi-network connectivity (Ethernet/CC-Link IE)	
		RJ71C24	1FM604	Max. 230.4 kbps; RS-232, 1 channel; RS-422/485, 1 channel
High-speed counte Ethernet Serial communicati MES Interface CC-Link IE Control CC-Link IE Field CC-Link Remote I/O module	cation	RJ71C24-R2	1FM605	Max. 230.4 kbps; RS-232, 2 channels
		RJ71C24-R4	1FM606	Max. 230.4 kbps; RS-422/485, 2 channels
MES Interface CC-Link IE Control CC-Link IE Field		RD81MES96	1FTD00	1000BASE-T/100BASE-TW10BASE-T Database connection (MX MESInterface-R is required)
	trol	RJ71GP21-SX	1FM602	1 Gbps, fiber-optic cable, control/normal station
		RJ71GF11-T2	1FM600	1 Gbps, master/local station
CC-Link		RJ61BT11	1FM603	Max. 10 Mbps, master/local station, CC-Link Ver.2 supported
		AJ65SBTB1-16D	1W5131	Input 16 points: 24VDC (positive/negative common shared) 1-wire type Terminal block type Response time 1.5ms
	Screw terminal	AJ65SBTB1-32D	1W5141	Input 32 points: 24VDC (positive/negative common shared) 1-wire type Terminal block type Response time 1.5ms
	block type	AJ65SBTB1-16TE	1W5128	Output 16 points: 12/24VDC (0.1A) Transistor output (source type) 1-wire type Terminal block type
		AJ65SBTB1-32TE1	1W5452	Output 32 points: 12/24VDC (0.5A) Transistor output (source type) 1-wire type Terminal block type
modulo	Waterproof	AJ65FBTA4-16DE	1W5108	Input 24VDC (negative common) 4-wire type Thin, waterproof type Response time 1.5ms
	connector type	AJ65FBTA2-16TE	1W5103	Output 16 points: 12/24VDC (1.0A) Transistor output (source type) 2-wire type Thin, waterproof type

MELSEC Q Series modules

Pro	duct	Model	Model code	Remarks
		Q63B	1W4E07	3 slots, 1 power supply module required, for Q Series modules
Product Extension base Extension cable Power supply Output Transistor (Independent) Analog output Voltage/current output MELSECNET/H Optical loop (SI) FL-net(OPCN-2) Ver.2.00 AS-1 Ver.2.00	Q65B	1W4E03	5 slots, 1 power supply module required, for Q Series modules	
	Q68B	1W4E04	8 slots, 1 power supply module required, for Q Series modules	
Extension Dase		Q612B	1W4E05	12 slots, 1 power supply module required, for Q Series modules
		Q52B	1W4E14	2 slots, power supply module not required, for Q Series modules
		Q55B	1W4E15	5 slots, power supply module not required, for Q Series modules
		QC05B	1W4006	0.45 m cable for connecting extension base unit
		QC06B	1W4000	0.6 m cable for connecting extension base unit
Extension cable		QC12B	1W4001	1.2 m cable for connecting extension base unit
LALEI ISIOIT CADIE		QC30B	1W4002	3m cable for connecting extension base unit
		QC50B	1W4003	5m cable for connecting extension base unit
		QC100B	1W4004	10m cable for connecting extension base unit
		Q61P	1W4C11	Input voltage: 100240 V AC, output voltage: 5 V DC, output current: 6A
Power supply		Q63P	1W4C02	Input voltage: 24 V DC, output voltage: 5 V DC, output current: 6A
		Q64PN	1W4C12	Input voltage: 100240 V AC, output voltage: 5 V DC, output current: 8.5A
Output		QY68A	1W4310	8 points, 524 V DC, 2 A/point, 8 A/module, response time: 10 ms, sink/source type, 18-point terminal block, with surge suppression, all points independent
Analog output	1 V	Q62DA-FG	1W4571	2 channels, input (resolution): 012000, -1200012000, -1600016000, output: -1212 V DC, 022 mA DC, conversion speed: 10 ms/2 channels, 18-point terminal block, channel isolated
	Optical loop (SI)	QJ71LP21-25	1W4516	SI/QSI/H-PCF/broadband H-PCF fiber optic cable, dual loop, control network (control/normal station) or remote I/O network (remote mater station)
MELSECINE I/H	Coaxial bus	QJ71BR11	1W4511	3C-2V/5C-2V coaxial cable, single bus, control network (control/normal station) or remote I/O network (remote master station)
FL-net(OPCN-2)	Ver.2.00	QJ71FL71-T-F01	1W4593	10BASE-T, 100BASE-TX
AS-I		QJ71AS92	1W4524	Master station, AS-Interface Specification Version 2.11 compatible
DeviceNet		QJ71DN91	1W4518	Master station/local station combined use, for QCPU, DeviceNet(Release2.0) compatible.

Peripheral unit

Pro	oduct	Model	
	Dual-signal modules	R173SXY	IO redundant monitori
Dudding	Terminal block	FA-TBS40P	Terminal block conver
Dual signal module	Terminal block	FA-LTB40P	Terminal block conver
module	Cable	FA-CBLIIIFMV-M	Terminal block conver (separately prepared:
Signal splitter		FCU7-HN387	Option (Necessary wh

Parts

Product	Model	
Manual and a second and	UFO-01-2Z9	5V specification
Nanual pulse generator	HD60C	12V specification, for
	OSE 1024-3-15-68	6000 r/min, no straigh
Encoder	OSE 1024-3-15-68-8	8000 r/min, no straig
	OSE 1024-3-15-160	6000 r/min, no straigł
Over unding plate	Grounding plate D	With cable clamp A(2
Grounding plate	Grounding plate E	With cable clamp B(1

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I/O UNIT AND OTHERS

Remarks

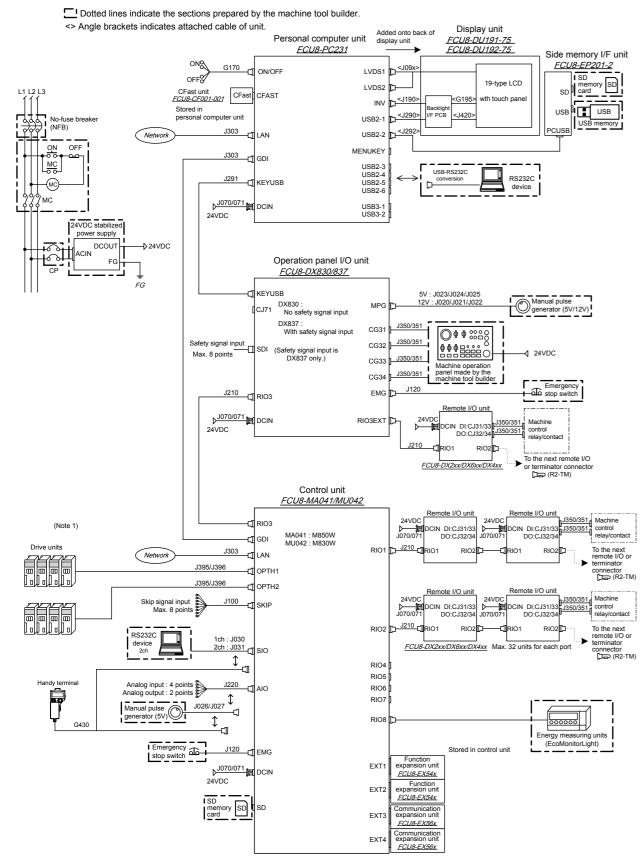
oring module (Up to three modules) ersion (separately prepared: Mitsubishi Electric Engineering) UL supported ersion (separately prepared: Mitsubishi Electric Engineering) version connection cable (length 🔲 = 05: 0.5m, 10: 1m, 20: 2m, 30: 3m, 50: 5m) d: Mitsubishi Electric Engineering) when manual pulse generator is used for two or three axes)

Remarks

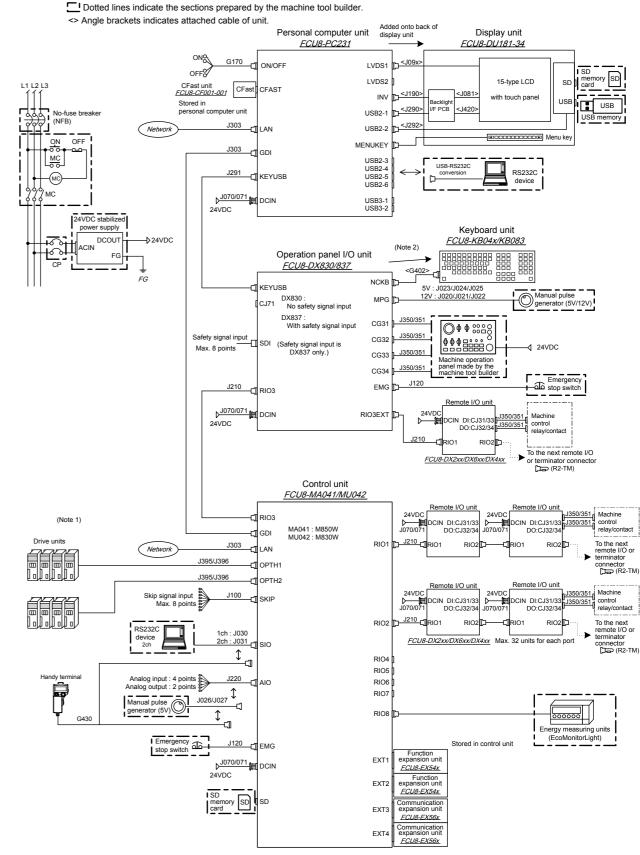
or the operation board signal splitter connection, 12V power supply separately necessary ght type connector enclosed, new JIS key, 68 square flange ght type connector enclosed, 68 square flange ght type connector enclosed, new JIS key, 160 square flange

CNC SYSTEM GENERAL CONNECTION DIAGRAM

■M800W Series Windows-based display unit (19-type)



■M800W Series Windows-based display unit (15-type)



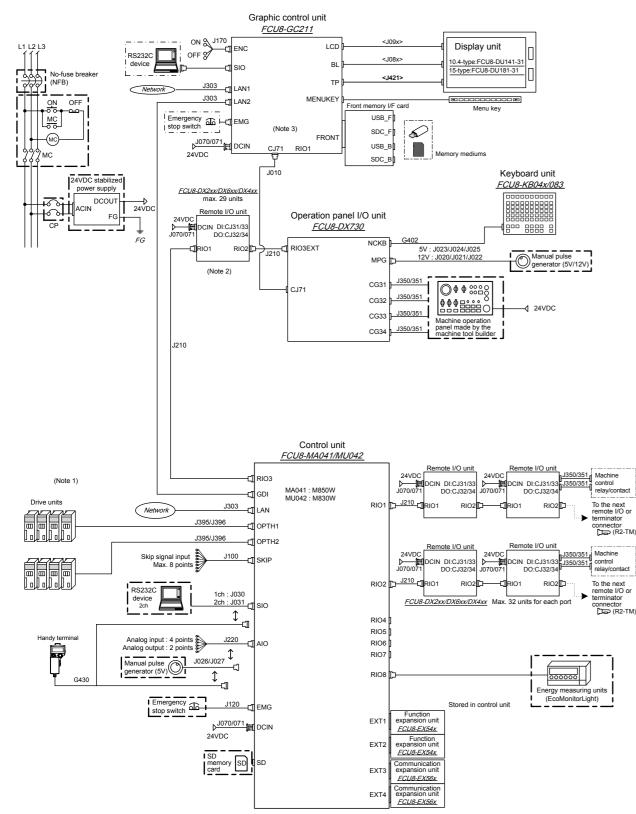
(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described. (Note 2) When using a keyboard unit, install the operation panel I/O unit on the back of the keyboard unit. (Note 3) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described (Note 2) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

GENERAL CONNECTION DIAGRAM

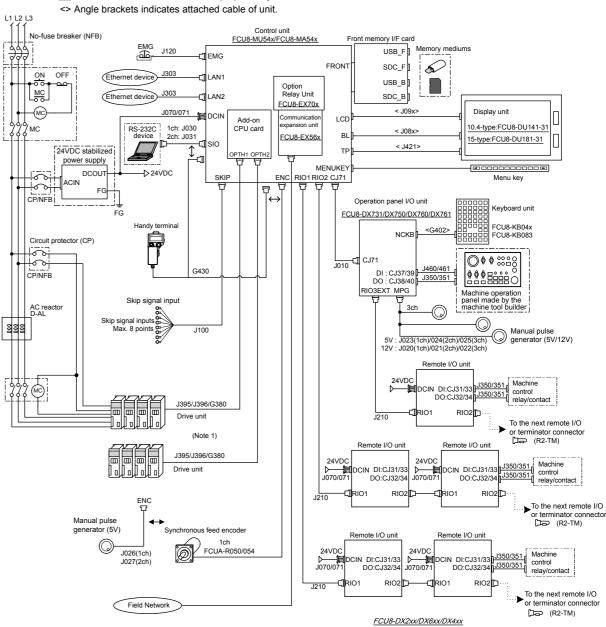
■M800W Series non-Windows-based display unit (10.4-type/15-type)

Dotted lines indicate the sections prepared by the machine tool builder. <> Angle brackets indicates attached cable of unit.



(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described. (Note 2) When connecting a remote I/O unit to the 3rd RIO channel, insert it between the control unit and operation panel I/O unit. (Note 3) There is no need to connect a terminator R2-TM to the graphic control unit. (Note 4) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

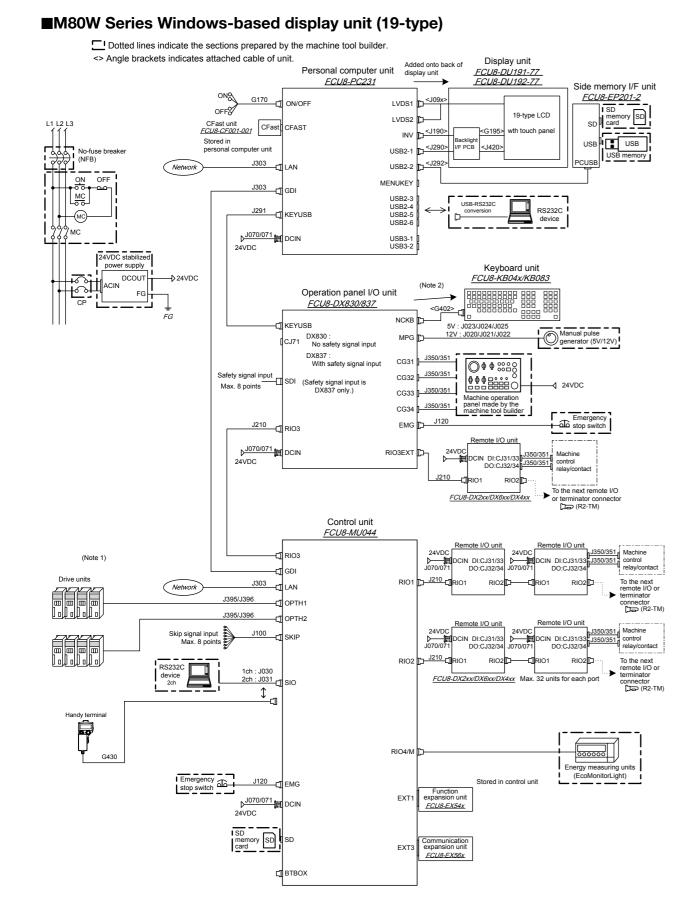
■M800S Series

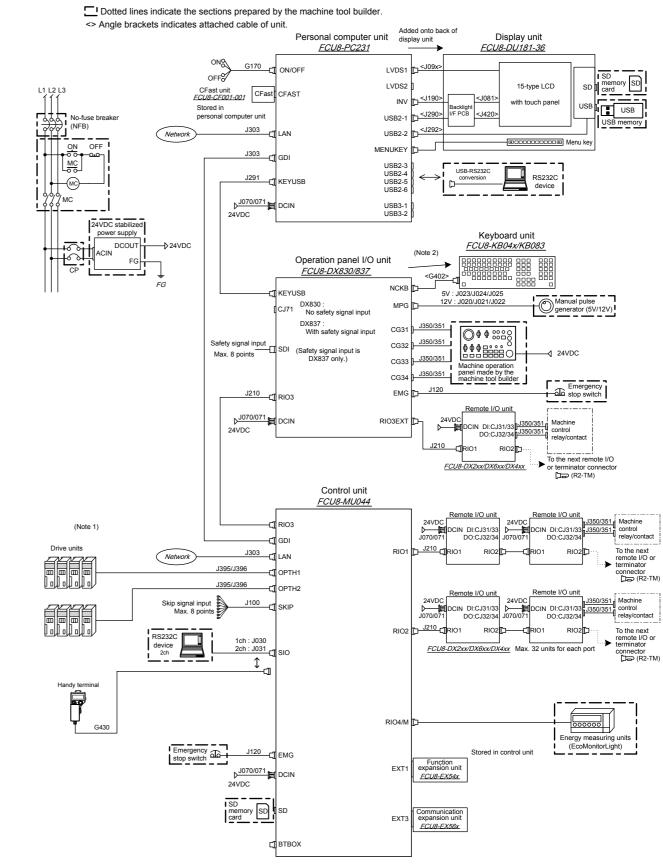




GENERAL CONNECTION DIAGRAM

Dotted lines indicate the sections prepared by the machine tool builder.





(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described. (Note 2) When using a keyboard unit, install the operation panel I/O unit on the back of the keyboard unit. When not using a keyboard unit, install the operation panel I/O unit on the back of the display unit.

(Note 3) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

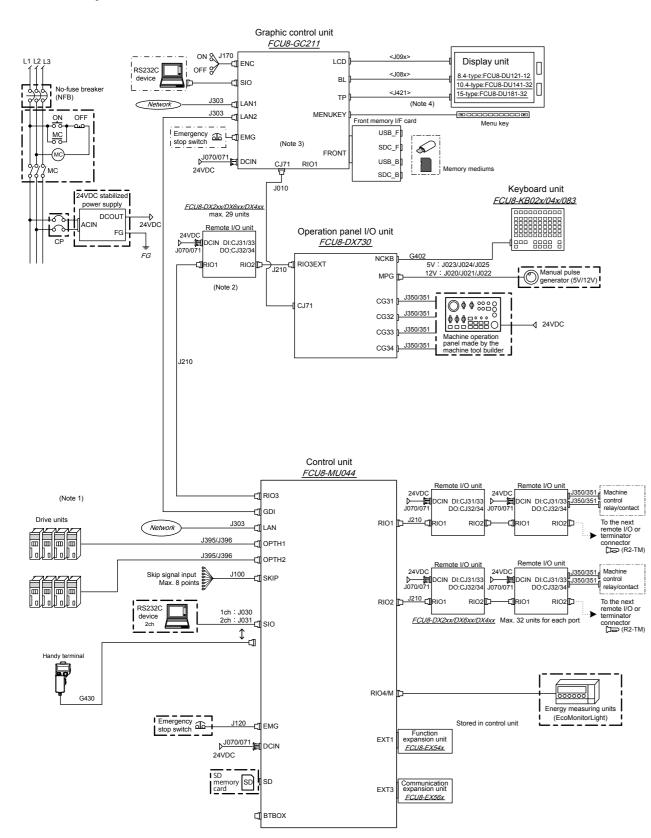
■M80W Series Windows-based display unit (15-type)

(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described. (Note 2) When using a keyboard unit, install the operation panel I/O unit on the back of the keyboard unit. (Note 3) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

GENERAL CONNECTION DIAGRAM

■M80W Series non-Windows-based display unit (8.4-type/10.4-type/15-type)

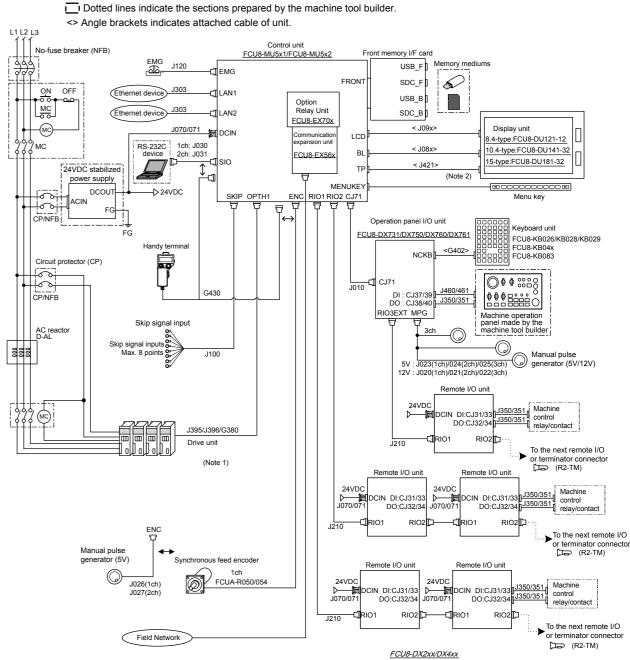
Dotted lines indicate the sections prepared by the machine tool builder. <> Angle brackets indicates attached cable of unit.



(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described. (Note 2) When connecting a remote I/O unit to the 3rd RIO channel, insert it between the control unit and operation panel I/O unit. (Note 3) There is no need to connect a terminator R2-TM to the graphic control unit. (Note 4) The 8.4-type display unit is incompatible with the touchscreen. TP connector is not used.

(Note 5) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

M80 Series without smart safety observation

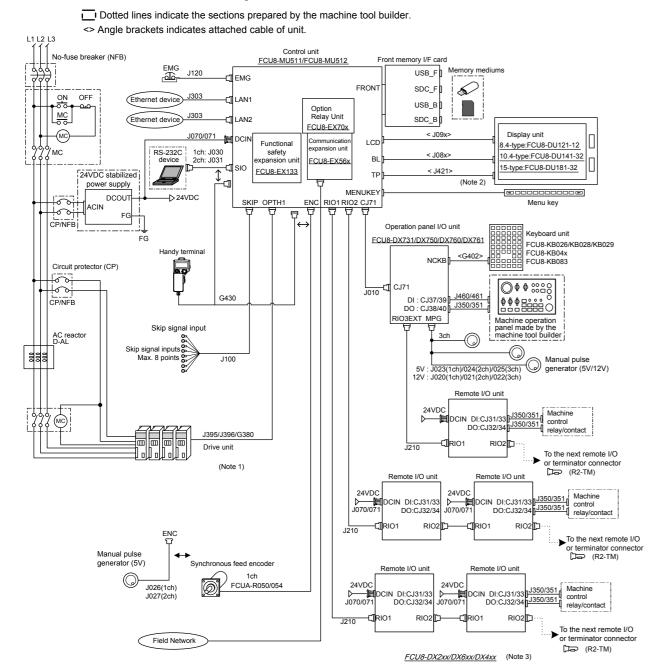


(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described. (Note 2) The 8.4-type display unit is incompatible with the touchscreen. TP connector is not used. (Note 3) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

GENERAL CONNECTION DIAGRAM

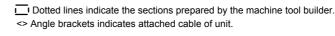
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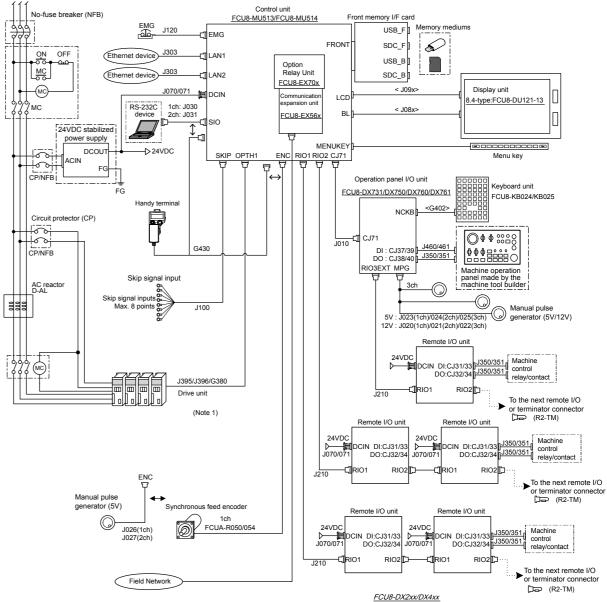
■M80 Series with smart safety observation



E80 Series

L1 L2 L3





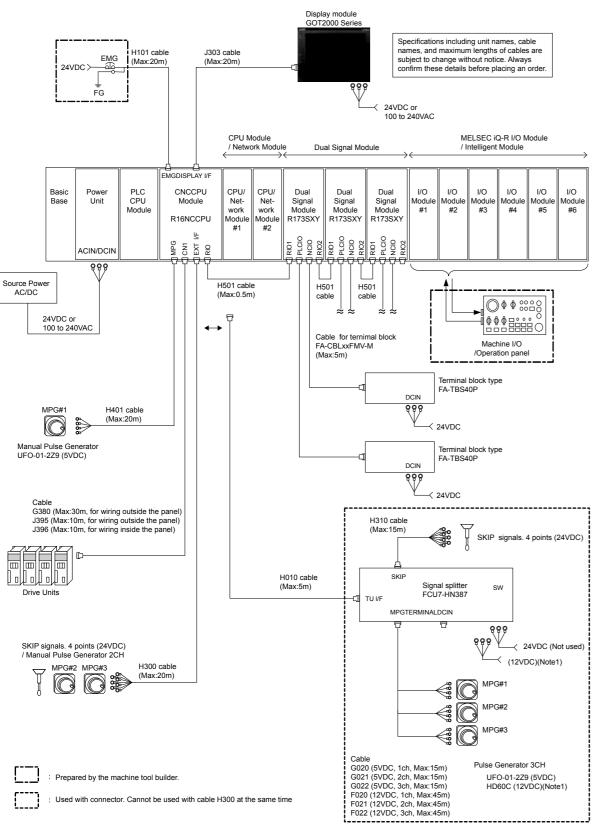
(Note 1) For connections of the drive units, refer to "DRIVE SYSTEM SYSTEM CONFIGURATION DRAWING" to be described. (Note 2) The 8.4-type display unit is incompatible with the touchscreen. TP connector is not used. (Note 3) The safety remote I/O unit is available only when the functional safety expansion unit is mounted. (Note 4) For details of the cable and the connector, refer to "CNC SYSTEM CABLES LIST" to be described.

GENERAL CONNECTION DIAGRAM

CNC SYSTEM

GENERAL CONNECTION DIAGRAM

■C80 Series



CNC SYSTEM LIST OF CABLES

[M800/M80/E80 Series]

AppCalm VP in Contention New Map			-	Length	• • •		Suppo	orted	mode	1
Decision calle balance meter balance meter and overall or series of constant or series		Application	Туре		Contents					
$ \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$		Connection coble between personal computer unit	J291 L0.15M	0.15	KEYUSB KEYUSB					
2 20000 lawy calls for MT2RB91 CN0 mother constraints 2011 Link 0.12 (2011 Link	(1)		J291 L0.5M	0.5		0	-	0	-	—
P 2000 Display date for MT3LBERH CNC markets experiment profit Control C			J291 L1.0M	1						
Image: constraint of paral Out 10.50 Out 0000 Out 00000 Out 00000 Out 00000 Out 00000 Out 00000 Out 00000 Out 000000 Out 000000 Out 000000 Out 0000000 Out 0000000 Out 00000000 Out 000000000000000000000000000000000000			G071 L0.12M	0.12	DCOUT DCIN					
ONVOF such class (NVOF such class) (NVOF su	(2)		G071 L0.5M	0.5		0	0	0	0	0
0 0x07F with instance of digitary unit 0 - - - 40 0x04F 0										
0 CMC F such cases Control (SMC) = 100000000000000000000000000000000000										
Bit Multiple backs und during bit Windows backd during und marked bit windows backd during und markdwindows backd during und markdwindows backd during										
$ \left[0 \\ Cable for connection to handy terminal \\ CG10 LIM 15 \\ CG20 LI$	(3)		G170 L5M	5		0	-		-	-
$ \begin{bmatrix} 4 \end{bmatrix} Cells for connection to handy terminal $		(
$ \left(\begin{array}{c c c c c c } \medskip	-		GI70LI5M	15	ENC					
$ \left[6 \right] \begin{array}{c c c c c c c c c c c c c c c c c c c $			G430 3M	3						
$ \begin{vmatrix} 0 \\ $			0.400 514		Handy					
C430 10M 10 ummed blok Image: C430 10M 10 ummed blok Image: C430 10M 10 ummed blok Image: C430 10M 10 Image: C430 10M 0.5 Image: C43	(4)	Cable for connection to handy terminal	G430 5M	5	sio 📳 🖂 🗳	0	0	0	0	0
$ \left[0 \\ Partial public dept of MTSLEESH CNC machine operation cable for Partial and sub panels Cable between main panel and sub panels (10) ONOFF witch cable (11) ONOFF witch cable (11) ONOFF witch cable (11) ONOFF witch cable (12) DNOFF witch cable (13) Panel public dput cable (for operation panel IO unit) (14) Panel public generator cable (120): 1ch (15) Panel public generator cable (120): 1ch (12) Manual public generator cable (120): 1ch (13) Manual public generator cable (120): 1ch (14) Manual public generator cable (120): 1ch (15) Manual public generator cable (120): 1ch (15) Manual public generator cable (120): 1ch (16) Manual public generator cable (120): 1ch (17) Manual public generator cable (120): 1ch (18) Manual public generator cable (120): 1ch (19) Manual public generator cable (120): 1ch (10) Manual public generator cable (120): 1ch (10) Manual public generator cable (120): 1ch (10) Manual public generator cable (120): 1ch (12) Manual public generator cable (120): 1ch (13) Manual public generator cable (120): 1ch ($			G430 10M	10						
$ \left[0 \right] \begin{array}{c c c c c c c c c c c c c c c c c c c $					8 2 7					
$ \left[0 \right] \begin{array}{c c c c c c c c c c c c c c c c c c c $										
$ \left[0 \right] \begin{array}{c c c c c c c c c c c c c c c c c c c $		Cable for MITSUBISHI CNC machine operation			RSW1					
$ \left[0 \right] \begin{array}{c c c c c c c c c c c c c c c c c c c $	(5)		G460 0.5M	0.5	SUBP RSW2	0	0	0	0	0
$ \left[0 \right] \begin{array}{c c c c c c c c c c c c c c c c c c c $		(Cable between main panel and sub panel)								
B) CMOCFF switch cable (MOCFF switch cable (MOCFF switch cable) (MOCFF switch cable) (MOC										
$ \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$										
$ \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$		ON/OFF switch cable								
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	(6)					0	-	0	-	—
$ \left(1 \right) \begin{array}{c} A nalog output cable \\ 1 \\ 1 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2$		(Ior non-windows-based display driftid)								
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			J170 L15M	15						
(7) Analog output cable JZ20 L3M 3 JZ20 L7M 7 JZ20 L7M 7 JZ20 L7M 7 JZ21 L2M 2 JZ21 L3M 3 JZ21 L3M 3 JZ21 L3M 7 JZ24 L3M 7 JZ24 L3M 5 JZ24 L3M 5 JZ24 L3M 7 JZ25 L3M 2 JZ25 L3M 2 JZ25 L3M 7 JZ25 L3M 7 JZ25 L3M 7 JZ25 L3M 7			J220 L2M	2	F					
$ \begin{array}{ c c c c c c c } \hline \\ \hline $										
$\left \begin{array}{c c c c c c } \hline & & & & & & & & & & & & & & & & & & $	(7)	Analog output cable	J220 L3M	3		0	-	-	-	-
$\left \begin{array}{c c c c c c } \hline & & & & & & & & & & & & & & & & & & $										
(8) Analog input/output cable (for remote I/O unit) J221 L3M 3 J221 L3M Alo (9) Analog input/output cable (for operation panel I/O unit) J221 L3M 7 (9) Analog input/output cable (for operation panel I/O unit) J224 L3M 3 J224 L3M 3 J224 L3M - <			J220 L7M	7						
(8) Analog input/output cable (for remote I/O unit) J221 L3M 3 J221 L3M Alo (9) Analog input/output cable (for operation panel I/O unit) J221 L3M 7 (9) Analog input/output cable (for operation panel I/O unit) J224 L3M 3 J224 L3M 3 J224 L3M - <			J221 L2M	2	F					
(a) Analog input/output cable (for operation panel I/O Unit) J221 L3M 3 J221 L7M 7 J221 L7M 7 J224 L1M 1 J224 L2M 2 J224 L3M 3 J224 L3M 5 J225 L3M 1 J225 L3M 5 J225			-							
J221 L7M 7 Image: Constraint of the second	(8)	Analog input/output cable (for remote I/O unit)	J221 L3M	3		0	0	0	0	0
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $.1221 I 7M	7						
(9) Analog input/output cable (for operation panel I/O inti)										
J224 L7M 7 J224 L10M 7 J225 L10M 7 J25 L10M										
Unity 1224 L10M 1 1224 L10M 10 1224 L10M 10 1224 L20M 20 1224 L20M 20 1224 L20M 20 1225 L1M 1 1225 L2M 2 1225 L2M 2 1225 L3M 3 1225 L3M 10 1225 L3M 10 1225 L3M 10 1225 L10M 10 1225 L10M 10 1225 L10M 10 1225 L10M 10 1225 L2M 2 1225 L10M 10 1225 L10M 10 1225 L10M 10 1225 L10M 10 1225 L20M 20 (for non-Windows-based display unit of M800W/ 1010.13M 1020 L1M 1 1020 L15M 15	(9)					_	0		0	0
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	(-)	unit)		+			-		-	-
J224 L20M 20 J225 L1M 1 J225 L2M 2 J225 L3M 3 J225 L1M 1 J225 L3M 3 J225 L1M 1 J225 L1M 10 J225 L20M 20 (11) Operation panel I/O interface cable (11) Manual pulse generator cable (12V): 1ch J020 L1M 1 J020 L1M 5 J020 L1M 1 J020 L1M 1 <td></td> <td></td> <td></td> <td></td> <td>+<u>_</u>+</td> <td></td> <td></td> <td></td> <td></td> <td></td>					+ <u>_</u> +					
$ (10) \ \ Analog output cable (for operation panel I/O unit) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$										
(10) Analog output cable (for operation panel I/O unit) $ \begin{array}{c} J225 L3M & 3 \\ J225 L5M & 7 \\ J225 L10M & 10 \\ J225 L10M & 10 \\ J225 L20M & 20 \end{array} $										
(10) Analog output cable (for operation panel I/O unit)										
(10) Analog output cable (for operation panel //O unit)										
J225 L15M 15 J225 L20M 20 Image: Constraint of the second sec	(10)	Analog output cable (for operation panel I/O unit)				-	0	-	0	0
J225 L20M 20 (11) Operation panel I/O interface cable (for non-Windows-based display unit of M800W// M80W) J010 L0.5M (tor 8.4/10.4+type display) 0.5 CJ71 CJ71 0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										
Operation panel I/O interface cable (for non-Windows-based display unit of M800W/ M80W) J010 L0.5M (for 8.4/10.4+type display) 0.5 (for 8.4/10.4+type display) CJ71 (for 8.4				+						
(11) (for non-Windows-based display unit of M800W/ M80W) (for 8.4/10.4-type display) 0.5 0.7 0		Operation panel I/O interface cable			CI71 C174	-				
Justicity Justicity 1 Justicity Justicity 1 Justicity Justicity 1 Justicity Justicity 2 Justicity Justicity 2 Justicity Justicity 2 Justicity Justicity 3 Justicity Justicity 3 Justicity Justicity 5 Justicity Justicity 7 Justicity Justicity 15 Justicity Justicity 20	(11)	(for non-Windows-based display unit of M800W/	(for 8.4/10.4-type display)			0	0	0	0	0
(12) Manual pulse generator cable (12V) : 1ch	<u> </u>	M80VV)				-				
(12) Manual pulse generator cable (12V) : 1ch										
(12) Manual pulse generator cable (12V) : 1ch										
J020 L10M 10 J020 L15M 15 J020 L20M 20			J020 L5M	5	MPG					
J020 L10M 10 L≤2 J020 L15M 15 J020 L20M 20	(12)	Manual pulse generator cable (12V) : 1ch				0	0	0	0	0
J020 L20M 20				+						

(Note 1) HD60C (12VDC) requires another power source12VDC.

(Note 2) A CPU module can be mounted on the CPU slot of the base unit or the slot No. 0 to 6. A slot between CPU modules can be left empty for reservation. Note that you cannot mount an I/O module or intelligent function module on a slot between CPU modules.

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LIST OF CABLES



5 CNC SYSTEM

	Application	Туре	Length	Contents			<u> </u>		mode	
	Application		(m)	Contonio		M800W	M800S	M80W	M80	E80
		J021 L1M	1							
		J021 L2M	2							
		J021 L3M	3	MPG	C=					
		J021 L5M	5							
13)	Manual pulse generator cable (12V) : 2ch	J021 L7M	7			0	0	0	0	0
		J021 L10M	10		E					
		J021 L15M	15							
(14)		J021 L20M	20							
		J021 L30M	30							
		J022 L1M	1							
		J022 L2M	2							
		J022 L3M	3	MPG						
		J022 L5M	5		===					
14)	Manual pulse generator cable (12V) : 3ch	J022 L7M	7	[jj]	₽ − ⊒	0	0	0	0	0
		J022 L10M	10		F=					
		J022 L15M	15		F					
		J022 L20M	20							
		J022 L30M	30							
		J023 L1M	1							
		J023 L2M	2							
		J023 L3M	3							
		J023 L5M	5	MPG						
5)	Manual pulse generator cable (5V) : 1ch	J023 L3M	7	[]]	⋼⋹⋑	0	0	0	0	0
		J023 L10M	10	1. etc						
		J023 L15M	15							
		J023 L20M	20							
		J024 L1M	1							
		J024 L2M	2							
		J024 L3M	3	MPG	F==					
C۱	Manual pulse generator cable (5V) : 2ch	J024 L5M	5			0	0	0	0	0
0)	Ivialidal pulse generator cable (5v) . 201	J024 L7M	7		∽┓==ਃ					0
		J024 L10M	10		E=#					
		J024 L15M	15							
		J024 L20M	20							
		J025 L1M	1							
		J025 L2M	2							
					E					
		J025 L3M	3	MPG	E					
7)	Manual pulse generator cable (5V) : 3ch	J025 L5M	5	i jj	₽₽₽	0	0	0	0	0
		J025 L7M	7		E					
		J025 L10M	10		LE Å					
		J025 L15M	15		Lõ					
		J025 L20M	20							
		J026 L1M	1							
		J026 L2M	2							
		J026 L3M	3							
-	Manual pulse generator cable (5V) : 1ch	J026 L5M	5	MPG						
8)	(for connection to control unit)	J026 L7M	7	i jij		0	0	0	0	0
		J026 L10M	10	1.00	Lī					
		J026 L15M	15							
		J026 L20M	20							
		J027 L1M	1							
		J027 L2M	2							
		J027 L2M	3	100						
	Menual pulse generative schlar (C.A., O.L.			MPG						
9)	Manual pulse generator cable (5V) : 2ch (for connection to control unit)	J027 L5M	5	[]] <u></u>		0	0	0	0	0
í	(IOF CONNECTION TO CONTROL UNIT)	J027 L7M	7	1_9KV	⊨ ≣i					
		J027 L10M	10		L					
		J027 L15M	15							
		J027 L20M	20							
		J030 L1M	1							
		J030 L2M	2	SIO	- f					
~ ,	RS-232C I/F cable: 1ch	J030 L3M	3							_
D)	(for control unit)	J030 L5M	5		SIO1	0	0	0	0	0
		J030 L7M	7	Loto /	Щ					
		J030 L10M	10		-					
									-	-
		J031 L1M	1		afi					
				/			1	1	1	
		J031 L2M	2	SIO			1	1	1	
		J031 L2M	2	sio r	SIO1					
	RS-232C I/F cable: 2ch	J031 L2M J031 L3M	2							
1)	RS-232C I/F cable: 2ch (for control unit)	J031 L3M	3			0	0	0	0	0
1)					L∎ I¶	0	0	0	0	0
1)		J031 L3M	3			0	0	0	0	0
1)		J031 L3M J031 L5M	3		L∎ I¶	0	0	0	0	0

	Application	Туре	Length	Contents			orted		_
			(m)		M800W	M800S	M80W	M80	E
		J070 L1M J070 L2M	1						
		J070 L2M	3						
		J070 L3M	5	DCIN					
(22)	24VDC power cable	J070 L7M	7		0	0	0	0	
(22)	24VDO power cable	J070 L10M	10						
		J070 L15M	15						
		J071 L20M							
		(for long distance)	20						
		J100 L1M	1		-				+
		J100 L2M	2	 0					
		J100 L3M	3	SKIP E					
		J100 L5M	5						
(23)	SKIP input cable	J100 L7M	7		0	0	0	0	
		J100 L10M	10						
		J100 L15M	15						
		J100 L20M	20						
		J120 L1M	1		-				+
		J120 L2M	2						
		J120 L3M	3						
		J120 L5M	5	EMG					
(24)	Emergency stop cable	J120 L7M	7		0	0	0	0	
	<u></u>	J120 L10M	10						
		J120 L15M	15	, i i i i i i i i i i i i i i i i i i i					
		J120 L20M	20						
		J120 L30M	30						
		J121 L1M	1						+
		J121 L2M	2						
		J121 L3M	3						
		J121 L5M	5	EMG					
(25)	Emergency stop cable for MITSUBISHI CNC	J121 L7M	7		0	0	0	0	
(20)	machine operation panel	J121 L10M	10						
		J121 L15M	15						
		J121 L20M	20						
		J121 L30M	30						
		J210 L0.3M	0.3						+
		J210 L1M	1						
		J210 L2M	2						
		J210 L3M	3						
		J210 L5M	5	RIO RIO					
(26)	Remote I/O 2.0 communication cable	J210 L7M	7		0	0	0	0	
		J210 L10M	10						
		J210 L15M	15						
		J210 L20M	20						
		J210 L30M	30						
		J303 L1M	1						+
		J303 L2M	2						
		J303 L3M	3						
		J303 L3M	5						
(27)	LAN straight cable	J303 L7M	7	LAN LAN	0	0	0	0	
()		J303 L10M	10						
		J303 L15M	15						
		J303 L20M	20						
		J303 L30M	30						
	<u> </u>	J350 L1M	1		1				+
				M800W/M80W:CJ31,CJ32,CJ33,CJ34,CG31,CG32,CG33,CG34 M800S/M80:CJ31,CJ32,CJ33,CJ34,CJ38,CJ40,CJ42					
(20)	DI/DO cable (connectors at both ande)	J350 L2M	2		0	0	0	0	
(20)	DI/DO cable (connectors at both ends)	J350 L3M	3	•					
		J350 L5M	5						
		JOOU LOIVI	5						+
				M800W/M80W:CJ31,CJ32,CJ33,CJ34,CG31,CG32,CG33,CG34					
				M800S/M80:CJ31,CJ32,CJ33,CJ34,CJ38,CJ40,CJ42					
(29)	DI/DO cable (connector at one end)	J351	3		0	0	0	0	
				PIII I					
		J460 L1M	1	CJ37,CJ39 CJ37,CJ39					Τ
		J460 L2M	2	R					
(30)	DI/DO cable (connectors at both ends)				_	0	_	0	
-	(for operation panel I/O unit)	J460 L3M	3						
		J460 L5M	5						
			-			1			+
				CJ37,CJ39					
					1	1	1	1	1
(21)	DI/DO cable (connector at one end)	1461	0			~			
(31)	DI/DO cable (connector at one end) (for operation panel I/O unit)	J461	3		-	0	-	0	

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LIST OF CABLES

CNC SYSTEM

	Application	Туре	Length	Contents		Supported model				
	Application	Type	(m)			M800S	M80W	M80	E80	
(32)	Synchronous encoder - control unit (straight, with connector) (for FCU8-EX544 (M800W/M80W))	FCUA-R050-5M	5		0	0	0	0	0	
		FCUA-R054-3M	3							
	Synchronous encoder - control unit (right angle, with connector) (for FCU8-EX544 (M800W/M80W))	FCUA-R054-5M	5	ENC						
(33)		FCUA-R054-10M	10		0	0	0	0	0	
		FCUA-R054-15M	15							
		FCUA-R054-20M	20							
(34)	Cable for emergency stop release	G123	_		0	0	0	0	0	
(35)	Terminator for remote I/O interface	R2-TM	_	One terminator is required to be installed at the final end of remote IO unit.	0	0	0	0	0	

■Cable connector sets for CNC

	Analisation	Tune		Supported model					
	Application	Туре	Cor	ntents	M800W	M800S	M80W	M80	E80
(1)	General I/O units (for SKIP,SIO,MPG,AIO)	FCUA-CS000	Connector (3M) 10120-3000PE x 2pcs.	Shell kit (3M) 10320-52F0-008 x 2pcs.	0	0	0	0	0
(2)	Emergency stop connector (for EMG)	50-57-9403 16-02-0103	Connector (MOLEX) 50-57-9403 x 1pc.	Gold contact (MOLEX) 16-02-0103 x 3pcs.	0	0	0	0	0
(3)	Connector kit for RIO2.0 unit	RIO2 CON	Connector (Tyco Electronics) 1-1318119-3 x 2pcs.	Contact (Tyco Electronics) 1318107-1 x 8pcs.	0	0	0	0	0
(-)			Connector (Tyco Electronics) 2-178288-3 x 1pc.	Contact (Tyco Electronics) 1-175218-5 x 3pcs.					
(4)	24VDC power supply connector (for DCIN)	FCUA-CN220	Connector (Tyco Electronics) 2-178288-3 x 1pc.	Contact (Tyco Electronics) 1-175218-5 x 3pcs.	0	0	0	0	0
(5)	DI/DO connector (for operation panel I/O unit) (for remote I/O unit)	7940-6500SC 3448-7940	Connector (3M) 7940-6500SC x 4pcs.	Strain relief (3M) 3448-7940 x 4pcs.	0	0	0	0	0
(6)	DI connector (for operation panel I/O unit)	7950-6500SC 3448-7950	Connector (3M) 7950-6500SC x 2pcs.	Strain relief (3M) 3448-7950 x 2pcs.	0	0	0	0	0
(7)	ON/OFF switch connector	50-57-9404 16-02-0103	Connector (MOLEX) 50-57-9404 x 1pc.	Contact (MOLEX) 16-02-0103 x 4pcs.	0	_	0		
(8)	CJ71 connector	2-1318119-4 1318107-1	Connector (Tyco Electronics) 2-1318119-4 x 1pc.	Contact (Tyco Electronics) 1318107-1 x 8pcs.	_	0		0	0
(9)	THERMISTOR connector (for thermistor input unit)	37104-2165- 000FL 10P	Connector (3M) 37104-2165-000FL x 10pcs.		0	0	0	0	0

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LIST OF CABLES

LIST OF CABLES

[C80 Series]

	Application	Туре	Length (m)	Contents	Supported model
		H101 L0.5M	0.5		
		H101 L1M	1		
		H101 L2M	2		
		H101 L3M	3	EMG	
(1)	Emergency stop cable	H101 L5M	5		Emergency stop input cable, maximum length: 20m
		H101 L7M	7		maximum length. 20m
		H101 L10M	10		
		H101 L15M	15		
		H101 L20M	20		
		J303 L1M	1		
		J303 L2M	2		
		J303 L3M	3	DISPLAY DISPLAY	
(2)	Display communication cable (Shielded twisted pair cable)	J303 L5M	5		Display interface, maximum length: 20m
		J303 L10M	10		maximamiongai. 20m
		J303 L15M	15		
		J303 L20M	20		
		H300 L0.5M	0.5		
		H300 L1M	1		
		H300 L2M	2	EXTI/F	Skip/manual pulse generator
		H300 L3M	3		input interface,
(3)	Skip/manual pulse generator input cable (For CNC CPU unit)	H300 L5M	5		maximum length: 20m (Note) This cable cannot
		H300 L7M	7		be used together
		H300 L10M	10		with the H010 cable.
		H300 L15M	15		
		H300 L20M	20		
		H310 L0.5M	0.5		
		H310 L1M	1		
		H310 L2M	2	SKIP	
		H310 L3M	3		Skip input interface when signal splitter is used,
(4)	Skip input cable (For signal splitter)	H310 L5M	5		maximum
		H310 L7M	7		length: 15m
		H310 L10M	10		
		H310 L15M	15		
		H401 L0.5M	0.5		
		H401 L1M	1		
		H401 L2M	2		
		H401 L3M	3	MPG	Manual pulse
(5)	Manual pulse generator cable (For CNC CPU unit)	H401 L5M	5		generator (1ch), maximum length: 20m
		H401 L7M	7		(5V power supply type)
		H401 L10M	10		
		H401 L15M	15		
		H401 L20M	20		
		H501 L0.1M	0.1		
(6)	Safety signal unit connection cable	H501 L0.2M	0.2	RIO RIO	Between safety signal units,
(6)		H501 L0.3M	0.3		maximum length: 0.5m
		H501 L0.5M	0.5		
		H010 L0.5M	0.5		
		H010 L1M	1	EXT I/F NC I/F	Signal splitter connection cable, maximum length: 5m
(7)	Signal splitter connection cable	H010 L2M	2		(Note) This cable cannot
		H010 L3M	3		be used together with the H300 cable.
		H010 L5M	5		WILLI LIGT IOUU GAUIC.

	Application	Туре	Length (m)	Contents	Supported model
		F020 L0.5M	0.5		
		F020 L1M	1		
		F020 L2M	2		
		F020 L3M	3		Manual pulse generato (1ch), maximum length: 4
(8)	Manual pulse generator cable (For signal splitter)	F020 L5M	5		(12V power supply type
		F020 L7M	7		12V power supply separately necessary
		F020 L10M	10		
		F020 L15M	15		
		F020 L20M	20		
		F021 L0.5M	0.5		
		F021 L1M	1	e B	
		F021 L2M	2		
	Manual audas annuatau sabla	F021 L3M	3		Manual pulse generator (2ch), maximum length: 4
(9)	Manual pulse generator cable (For signal splitter)	F021 L5M	5		(12V power supply type
		F021 L7M	7		3 12V power supply separately necessary
		F021 L10M	10		
		F021 L15M	15		
		F021 L20M	20		
		F022 L0.5M	0.5		
		F022 L1M	1		
	Manual pulse generator cable (For signal splitter)	F022 L2M	2		Manual and a second
		F022 L3M	3		Manual pulse generator (3ch), maximum length: 4
(10)		F022 L5M	5		(12V power supply type
		F022 L7M	7		12V power supply separately necessary
		F022 L10M	10		
		F022 L15M	15		
		F022 L20M	20		
		G020 L0.5M	0.5		
		G020 L1M	1		
		G020 L2M	2		
(11)	Manual pulse generator cable	G020 L3M	3		Manual pulse generator (1ch), maximum length: 1
()	(For signal splitter)	G020 L5M	5		(5V power supply type)
		G020 L7M	7		
		G020 L10M	10		
		G020 L15M	15		
		G021 L0.5M	0.5		
		G021 L1M	1		<u>م</u>
		G021 L2M	2		
(12)	Manual pulse generator cable	G021 L3M	3		Manual pulse generator (2ch), maximum length: 1
12)	(For signal splitter)	G021 L5M	5	MPG	(5V power supply type)
		G021 L7M	7		
		G021 L10M	10		5
		G021 L15M	15		
		G022 L0.5M	0.5		
		G022 L1M	1		
		G022 L2M	2		
(13)	Manual pulse generator cable	G022 L3M	3		Manual pulse generator (3ch), maximum length: 1
10)	(For signal splitter)	G022 L5M	5		(5V power supply type)
		G022 L7M	7		
		G022 L10M	10		
		G022 L15M	15		

CNC SYSTEM

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LIST OF CABLES

DRIVE SYSTEM

Drive unit



High-performance Servo/ Spindle Drive Units MDS-E/EH Series

•The servo control-dedicated core processor realizes improved control speed, leading to enhanced basic performance. When combined with a higher resolution motor sensor and advanced high-speed optical communication, this drive contributes to high-speed, high-accuracy control.

•The motor power connector is equipped with an anti-misinsertion mechanism. This helps to eliminate connection errors.

•Improved diagnostic and preventive-maintenance features

•Safe Torque Off (STO) and Safe Brake Control (SBC) are also incorporated as additional safety features.

Servo motors

High-speed Motors

HĞ Series

axes of machine tools.

•Maximum rotation speed:

2,000 to 6,000 [r/min]

•Range: 0.2 to 9 [kW]

6

DRIVE SYSTEM







Multi-hybrid **Drive Units MDS-EM/EMH Series**

•The multi-hybrid drive units are capable of driving a maximum of three servo axes and one spindle. This contributes to the downsizing of machines and offers technical advantages. •The motor power connector is equipped with an anti-misinsertion mechanism. This helps to eliminate connection errors. •Safe Torque Off (STO) and Safe Brake Control

(SBC) are also incorporated as additional safety features. •Fan unit contributes to easier fan exchange •MDS-EMH 400V system drive unit is available.



All-in-one **Compact Drive Units** MDS-EJ/EJH Series

•Ultra-compact drive units with built-in power supplies contribute to smaller control panel size.

•The 2-axis type is added for further downsizing. •The servo control-dedicated core processor realizes an increase in control speed, leading to improved basic performance. When combined with a higher resolution motor sensor and enhanced high-speed optical communication, this drive contributes to high-speed, high-accuracy control.

•Safe Torque Off (STO) and Safe Brake Control (SBC) are also incorporated as additional safety features.

•MDS-EJH 400V system drive unit is available (Note 1).



Direct-drive

with high-gain control provide guick acceleration and positioning, which makes rotation smoother.

·Suitable for rotary axes that drive tables or spindle heads

Maximum torque: 36 to 1,280 [N·m]

Spindle motors



High-performance Spindle Motors **SJ-D Series**

·Motor energy loss has been significantly reduced by optimizing the magnetic circuit. •High-speed bearings are incorporated as a standard feature, helping to achieve higher speed, lower vibration and improved durability. •Range:

<Normal> SJ-D Series: 3.7 to 26 [kW] <Compact & light> SJ-DJ Series: 5.5 to 15 [kW]

•Maximum speed: 8,000 to 12,000 [r/min]

High-output, High-torque Spindle Motors **SJ-DG Series**

•Addition of S3 rating (%ED rating) has improved output and torque acceleration/deceleration characteristics.

counter-load side for fine tuning. •Range: S3 rating: 5.5 to 15 [kW]



Built-in Spindle Motors SJ-BG Series

•The electrical design has been optimized to increase the continuous rated torque per unit volume, contributing to the downsizing of spindle units. ·Options for mold specification and cooling jacket specification are prepared.

Tool Spindle Motors HG-JR Series

•Compact tool spindle motors are designed to have the small, high-output characteristics of servo motors yet offer high-speed rotation (8,000r/min). These motors contribute to downsizing spindle size, like rotary tool spindles. •Range: 0.75 to 1.5 [kW] •Maximum rotation speed: 8,000 [r/min] •Small-sized connector allows horizontal cable connection, which helps to save space in machines. (Note 2)

(Note 1) For servo motors only (Note 2) Options supported (Flange size 90SQ only) * Use Mitsubishi CNC's dedicated drive unit and motor.

resistance. Three sensor resolutions (i.e., 1, 4 or 67 million pulses/rev) are available.

•This can also be used as a tool spindle motor. Small-sized connector allows horizontal cable connection, which helps to save space in machines. (Note 2)

·Safety support sensors are included as

standard specification. Sensor connectors are

screw-locked and have enhanced vibration

Medium-inertia, High-accuracy, Linear Servo Motors LM-F Series •Sensor resolution has been significantly •Use in clean environments is possible since improved. The servo motors, which boast

no ball screws are used, eliminating possible smooth rotation and outstanding acceleration contamination from grease. capabilities, are well-suited to serve as feed •Elimination of transmission mechanisms,

including backlash, enables smooth, quiet operation even at high speeds. Range:

•Range: Maximum thrust: 900 to 18,000 [N·m] Servo Motors **TM-RB** Series

•High-torque, direct-drive motors combined

DRIVE SYSTEM





- •Balance adjustment ring added to the
- •Maximum speed: 10,000 to 12,000 [r/min]

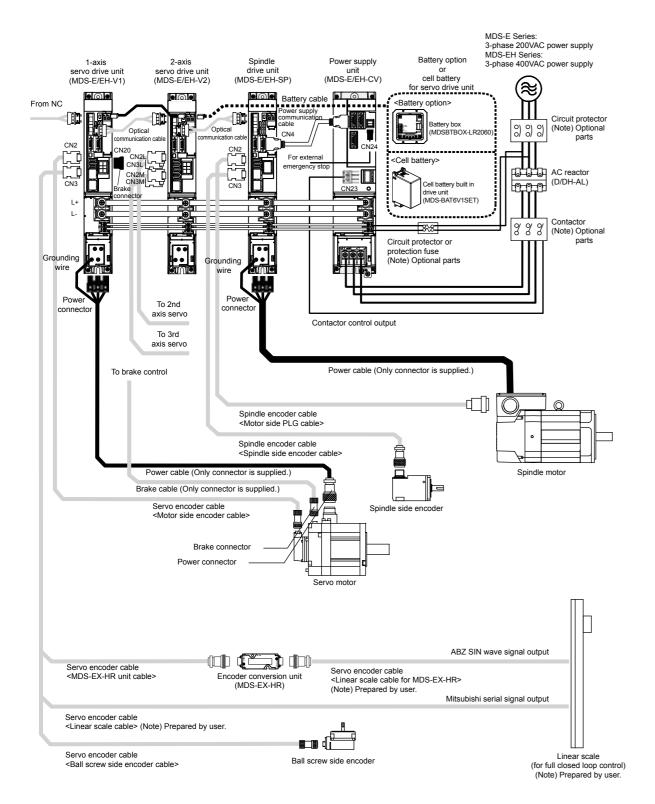
Low-inertia, High-speed Spindle Motors SJ-DL Series

- •This series of spindle motors is dedicated to use in tapping machines that require faster drilling and tapping.
- •The latest design technologies have made it possible to attain lower vibration and greater rigidity even with the lighter weight. •Range: 0.75 to 7.5 [kW]
- •Maximum speed: 10,000 to 24,000 [r/min]

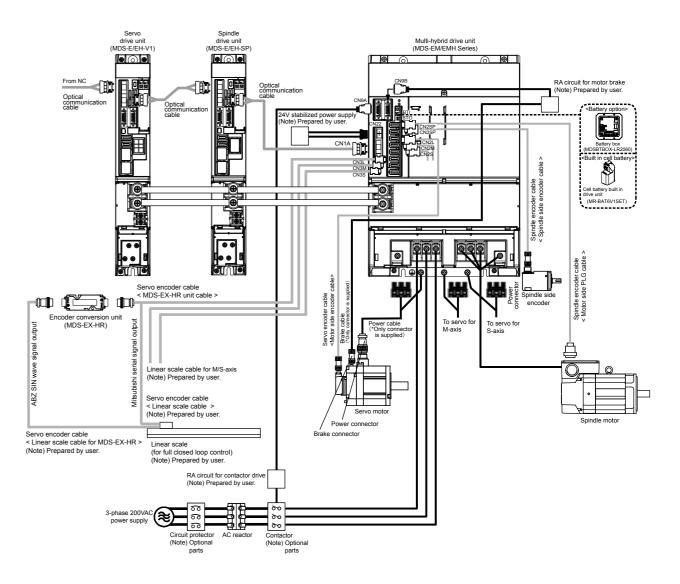


DRIVE SYSTEM SYSTEM CONFIGURATION

■MDS-E/EH Series



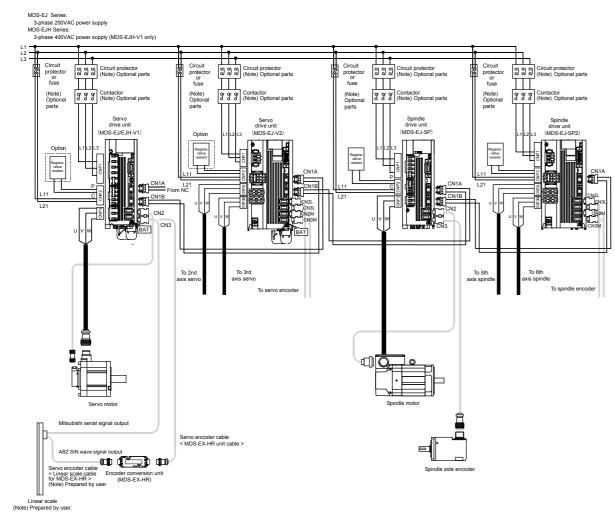
■MDS-EM/EMH Series



SYSTEM CONFIGURATION

6 DRIVE SYSTEM

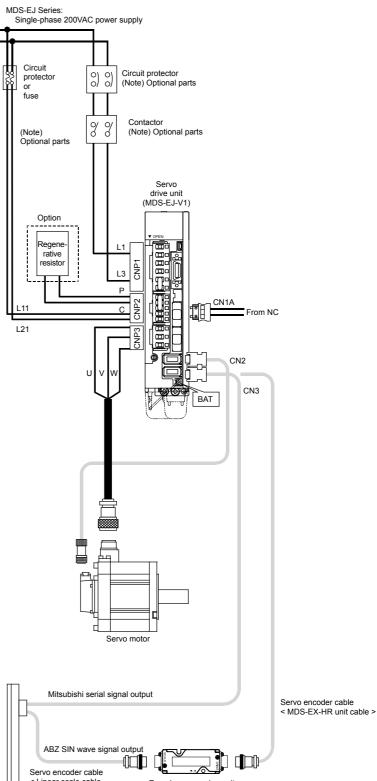
■MDS-EJ/EJH Series

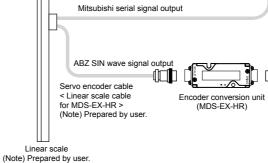


<For single-phase power supply>

L1 -

L2 -





DRIVE SYSTEM

6

SYSTEM CONFIGURATION

O DRIVE SYSTEM

DRIVE SYSTEM SPECIFICATIONS

<Servo specification>

	Item	MDS-E-V1/V2/V3	MDS-EH-V1/V2	MDS-EM/EMH-SPV3	MDS-EJ/EJH-V1	MDS-EJ-V2
	1.1 Full closed loop control	•	•	•	•	•
1 Base control	1.2 Position command synchronous control	•	•	•	•	•
functions	1.3 Speed command synchronous control	 (Note 1) 	•	-	-	•
	1.4 Distance-coded reference position control	•	•	•	•	•
	2.1 Torgue limit function (stopper function)	•	•	•	•	•
	2.2 Variable speed loop gain control	•	•	•	•	•
	2.3 Gain changeover for synchronous tapping control	•	•	•	•	•
	2.4 Speed loop PID changeover control	•	•	•	•	•
	2.5 Disturbance torgue observer	•	•	•	•	•
2 Servo control function	2.6 Smooth High Gain control (SHG control)	•	•	•	•	•
	2.7 High-speed synchronous tapping control	-	-	-		
	(OMR-DD control)	•	•	•	•	•
	2.8 Dual feedback control	•	•	•	•	•
	2.9 HAS control	•	•		•	•
	2.10 OMR-FF control	•	•	•	•	•
	3.1 Jitter compensation	•	•	•	•	•
	3.2 Notch filter	Variable frequency: 4	Variable frequency: 4	Variable frequency: 4	Variable frequency: 4	Variable frequency: 4
	3.2 Notch filter	Fixed frequency: 1	Fixed frequency: 1	Fixed frequency: 1	Fixed frequency: 1	Fixed frequency: 1
	3.3 Adaptive tracking-type notch filter	•	•	•	•	•
3 Compensation	3.4 Overshooting compensation	•	•	•	•	•
control function	3.5 Machine end compensation control	•	•		•	
	3.6 Lost motion compensation type 2	•	•	•	•	•
	3.7 Lost motion compensation type 3	•	•	•	•	•
	3.9 Real-time tuning I	•	•	•	•	•
	3.10 Full-closed torsion compensation function	•	•		•	•
	4.1 Deceleration control at emergency stop	•	•	•	•	•
	4.2 Vertical axis drop prevention/pull-up control	•	•		•	•
	4.3 Earth fault detection	•	•	•	•	•
4 Protection	4.4 Collision detection function	•	•	•	•	•
	4.5 Fan stop detection	•	•	•	•	•
function	4.8 STO (Safe Torque Off) function	•	•	(Note 2)	•	•
	4.9 SBC (Safe Brake Control) function	•	•	•	•	•
	4.10 Deceleration and stop function at power failure (Note 3)	•	•		-	-
	4.11 Retraction function at power failure (Note 4)	•	•	-	-	-
E Converse	5.2 Motor brake control function	•	•	•	•	•
5 Sequence	5.4 Specified speed output	•	•	•	-	-
function	5.5 Quick READY ON sequence	•	•	•	-	-
	6.1 Monitor output function	•	•	•	•	•
6 Diagnosis function	6.2 Machine resonance frequency display function	•	•	•	•	•
	6.3 Machine inertia display function	•	•	•	•	•

(Note 1) Always set L-axis as primary axis and M-axis as secondary axis for the speed command synchronous control using MDS-E-V3. Other settings cause the initial parameter error alarm. (Note 2) The dedicated wiring STO is not supported by MDS-EM/EMH Series. (Note 3) The power backup unit and resistor unit option are required. (Note 4) The power backup unit and capacitor unit option are required.

<Spindle specification>

	Item	MDS-E/EH-SP	MDS-E-SP2	MDS-EM/EMHSPV3	MDS-EJ-SP	MDS-EJ-SP2
	1.1 Full closed loop control	•	•	•	•	•
	1.5 Spindle's continuous position loop control			•		•
	1.6 Coil changeover control	•	•	•	-	-
	1.7 Gear changeover control	•	•	•	•	•
1 Base control	1.8 Orientation control	•	•	•	•	•
functions	1.9 Indexing control	•	•	•	•	•
lanouono	1.10 Synchronous tapping control	•	•	•	•	•
	1.11 Spindle synchronous control	•	•	•	•	•
	1.12 Spindle/C axis control	•	•	•	•	•
	1.13 Proximity switch orientation control	•	(Note 1)	•	•	●(Note 1)
	2.1 Torque limit function	•	•	•	•	•
	2.2 Variable speed loop gain control	•	•	•	•	•
	2.5 Disturbance torgue observer	•	•	•	•	•
	2.6 Smooth High Gain control (SHG control)	•	•	•	•	•
2 Spindle control	2.7 High-speed synchronous tapping control (OMR-DD control)	•	•	•	•	
functions	2.8 Dual feedback control	•	•	•	•	
	2.10 OMR-FF control	•	•	•	•	•
	2.11 Control loop gain changeover	•	•	•	•	
	2.12 Spindle output stabilizing control	•	•	•	•	•
	2.13 High-response spindle acceleration/deceleration function	•	•	•	•	
	3.1 Jitter compensation	•	•	•	•	•
	3.2 Notch filter	Variable frequency: 4				
		Fixed frequency: 1				
3 Compensation	3.3 Adaptive tracking-type notch filter	•	•	•	•	•
control function	3.4 Overshooting compensation	•	•	•	•	•
	3.6 Lost motion compensation type 2	•	•	•	•	•
	3.8 Spindle motor temperature compensation function	•	•	•	•	•
	3.9 Real-time tuning I	•	•	•	•	•
	4.1 Deceleration control at emergency stop	•	•	•	•	•
	4.3 Earth fault detection	•	•	•	•	•
4 Protection	4.5 Fan stop detection	•	•	•	•	•
function	4.8 STO (Safe Torque Off) function	•	•	●(Note 2)	•	•
	4.10 Deceleration and stop function at power failure (Note 3)	•	•	•	-	-
-	4.11 Retraction function at power failure (Note 4)	•	•	-	-	-
5 Sequence	5.4 Specified speed output	•	•	•	-	-
functions	5.5 Quick READY ON sequence	•	•	•	-	-
	6.1 Monitor output function	•	•	•	•	•
6 Diagnosis	6.2 Machine resonance frequency display function	•	•	•	•	•
functions	6.3 Machine inertia display function	•	•	•	•	•
	6.4 Motor temperature display function	•		•	•	
	6.5 Load monitor output function	•	•	•	•	

(Note 1) As for 2-axis spindle drive unit, setting is available only for one of the axes. (Note 2) The dedicated wiring STO is not supported by MDS-EM/EMH Series. (Note 3) The power backup unit and resistor unit option are required. (Note 4) The power backup unit and capacitor unit option are required.

SPECIFICATIONS

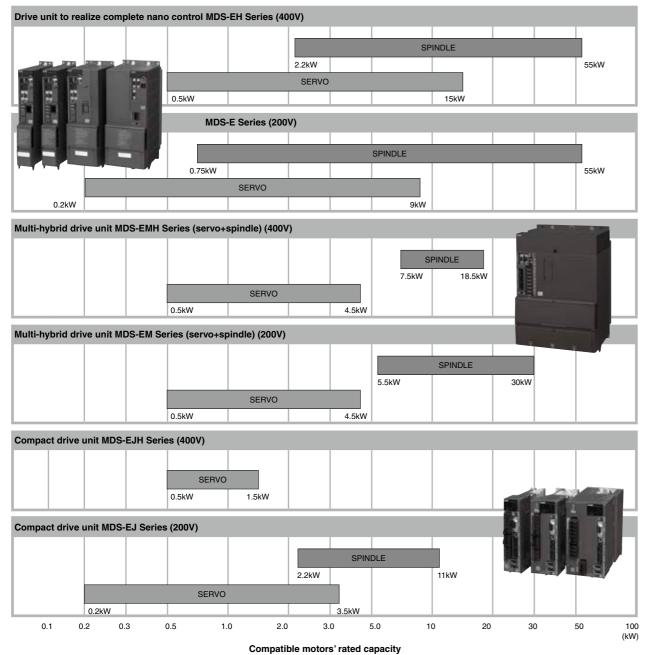
ORIVE SYSTEM

<Power Supply>

	Item	MDS-E-CV	MDS-EH-CV	MDS-EM/EMH-SPV3 built-in converter		MDS-EJH-V1 built-in converter	MDS-EJSP/SP2 built-in converter
1 Base control	1.14 Power regeneration control	•	•	•	-	-	-
functions	1.15 Resistor regeneration control	-	-	-	•	•	•
	4.6 Fan stop detection	•	•	•	•	•	•
	4.7 Open-phase detection	•	•	•	-	-	-
4 Protection function	4.8 Contactor weld detection	•	•	•	•	•	•
	4.11 Deceleration and stop function at power failure (Note 1)	•	•	-	-	-	-
	4.12 Retraction function at power failure (Note 2)	•	•	-	-	-	-
	5.1 Contactor control function	•	•	•	•	•	•
5 Sequence	5.3 External emergency stop function	•	•	•	•	•	•
function	5.5 High-speed READY ON sequence	•	•	•	-	-	-
6 Diagnosis	6.6 Power supply diagnosis display function	•	•	•	-	-	-
function	6.7 Drive unit diagnosis display function	•	•	•	•	•	•

(Note 1) The power backup unit and resistor unit option are required. (Note 2) The power backup unit and capacitor unit option are required.

■MITSUBISHI CNC DRIVE SYSTEM LINES

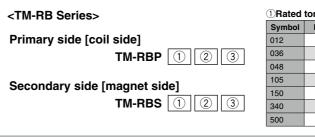


DRIVE SYSTEM TYPE

■200V HG servo motor

HG Series>										
HG	1) 2	3 - 4 -	5							
1 Rated Symbol	output and m Rated output	maximum rotation Max. rotation speed	speed Flange size (mm)							
46	0.2 kW	6000 r/min	60 SQ.							
56	0.4 kW	6000 r/min	60 SQ.							
96	0.75 kW	6000 r/min	80 SQ.							
75	0.75 kW	5000 r/min	90 SQ.							
105	1.0 kW	5000 r/min	90 SQ.							
54	0.5 kW	4000 r/min	130 SQ.							
104	1.0 kW	4000 r/min	130 SQ.							
154	1.5 kW	4000 r/min	130 SQ.							
224	2.2 kW	4000 r/min	130 SQ.							
204	2.0 kW	4000 r/min	176 SQ.							
354	3.5 kW	4000 r/min	176 SQ.							
123	1.2 kW	3000 r/min	130 SQ.							
223	2.2 kW	3000 r/min	130 SQ.							
303	3.0 kW	3000 r/min	176 SQ.							
453	4.5 kW	3500 r/min	176 SQ.							
703	7.0 kW	3000 r/min	176 SQ.							
903	9.0 kW	3000 r/min	204 SQ.							
142	1.4 kW	2000 r/min	130 SQ.							
302	3.0 kW	2000 r/min	176 SQ.							

■200V Direct-drive motor



(Note) This explains the model name system of a direct-drive motor, and all combinations of motor types listed above do not exist.

■200V Linear servo motor

	Series> ry side [coil s	side]					
		LM-FP	1 2 -	③ M-1	WW0		
1)Width	1	②Leng	th	3 Rated thrust			
Symbol	Width (nominal)	Symbol	Length (nominal)	Symbol	Rated th		
2	120 mm	А	170 mm	03	300 1		
4	200 mm	В	290 mm	06	1 000		
		D	530 mm	12	1200		
		F	770 mm	18	1800		
		н	1010 mm	24	2400		
				36	3600		
				48	4800		

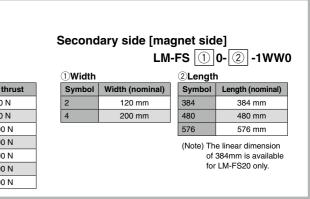
(Note) This explains the model name system of a linear servo motor, and all combinations of motor types listed above do not exist.

2 Magne	tic brake		3Shaf	t end structure						
Symbol	Magnetic brake		Symbo	I Shaft end structure						
None	None		K	With keyway (with key)						
В	With magnetic brake		S	Straight						
			T Taper							
(Note 2) "K: With keyway (with key)" is only available for HG46/56/96.										
Symbol	Connector	r								
None	Normal									
S105010	Compact (horizontal	direction)								
(Note) S105010 can only be used with HG75/105.										
5 Encod	er									
5 Encod Symbol	er Type	Detection	n method	Resolution						
		Detection	n method	Resolution 1,048,576 p/rev						
Symbol	Туре	Abso								
Symbol D47	Type OSA24RS-120	Abso		1,048,576 p/rev						

rque	(
Rated torque	
12 N · m	
36 N · m	
48 N · m	
105 N · m	
150 N · m	
340 N · m	
500 N · m	

Symbol	Dimension
С	DIA 130 mm
E	DIA 180 mm
G	DIA 230 mm
J	DIA 330 mm

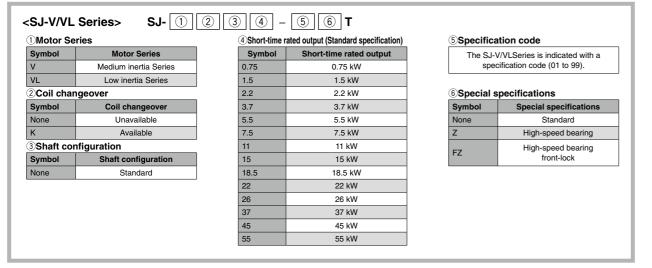
Symbol	Speed
10	100 r/min
20	200 r/min



■200V SJ-D spindle motor

1)Moto	r Series	2 Short-time (or %ED) rated output		③Maximum rotation speed	(5)Encod	ler	6 Option	(Note)
Symbol	Motor Series	Symbol	Short-time rated output	Indicates the hundreds	Symbol Type		Symbol	Option
None	Normal specifications	0.75	0.75 kW	place and higher order digits.	None	Type 1	None	Standard
G	High-output specifications	1.5	1.5 kW	④Specification code	Т	Type 2	A	With leg
J	Compact & lightweight specifications	3.7	3.7 kW	Indicates a specification			С	Shaft with key
L	Low-inertia specifications	5.5	5.5 kW	code (01 to 99).			J	Oil seal
		7.5	7.5 kW				S	Hollow shaft
		11	11 kW				x	Reversed cooling air
		15	15 kW				(Note) If mo	ore than one option is include
		18.5	18.5 kW				the symbols	s are in alphabetical order.
		22	22 kW					
		26	26 kW					

■200V SJ-V spindle motor



(Note) This explains the model name system of a spindle motor, and all combinations of motor types listed above do not exist.

■200V Flange type

Flange type	Short-time rating Max. rotation speed	0.75kW	1.5kW	2.2kW	3.7kW	5.5kW	7.5kW	11kW	15kW	18.5kW	22kW	26kW	37kW	45kW	55kW
	8,000 [r/min]								D15/ 80-01	D18.5/ 80-01	D22/ 80-01	D26/ 80-01	V37- 01ZT (6,000 [r/min])	V45- 01ZT (6,000 [r/min])	V55- 01ZT (4,500 [r/min])
Normal specifications	10,000 [r/min]			V2.2-01T	D3.7/ 100-01	D5.5/ 100-01	D7.5/ 100-01	D11/ 100-01	V22- 06ZT						
	12,000 [r/min]				V3.7- 02ZT (15,000 [r/min])	D5.5/ 120-01 D5.5/ 120-02	D7.5/ 120-01								
Wide range constant output specifications	6,000 [r/min]					V11-01T	V11-09T V15-03T (9kW)	V18.5- 03T	V22-05T	V22-09T (4,500 [r/min])	VK22-19ZT (Coil changeover)				
High-output specifications	10,000 [r/min] 12,000				DG3.7/	DG5.5/	DG7.5/	DG11/ 100-03T DG11/							
opeoinoationo	[r/min]				120-03T	120-04T	120-05T	120-03T							
Compact & lightweight	10,000 [r/min]					DJ5.5/ 100-01	DJ7.5/ 100-01	DJ11/ 100-01	DJ15/ 80-01 (8,000 [r/min])						
specifications	12,000 [r/min]					DJ5.5/ 120-01	DJ7.5/ 120-01								
Low-inertia	15,000 [r/min]	DL0.75/ 100-01 (10,000 [r/min])	DL1.5/ 100-01 (10,000 [r/min])	VL2.2- 02ZT	VL11- 02FZT	DL5.5/ 150-01T	DL7.5/ 150-01T								
specifications	20,000 [r/min]				VL11- 05FZT-S01 (3kW)	DL5.5/ 200-01T									
	24,000 [r/min]				DL3.7/ 240-01T	DL5.5/ 240-05T									

 * For SJ-D/DG/DL Series, the hollow shaft specifications motor can be provided as an option.

■200V With leg

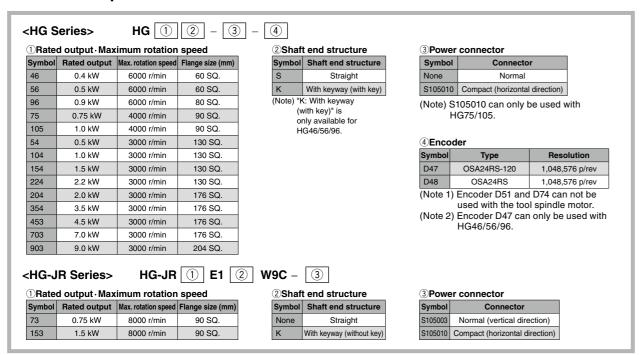
With leg	Short-time rating Max. rotation speed	1.5kW	2.2kW	3.7kW	5.5kW	7.5kW	11kW	15kW	18.5kW	22kW	26kW	37kW	45kW	55kW
	0.000							V15-	V18.5- 01ZT	V22- 01ZT	V26-	V37- 01ZT	V45- 01ZT	V55- 01ZT
	8,000 [r/min]							09ZT	V18.5-	V22-	01ZT	(6,000	(6,000	(4,500
	[]							002.	04ZT	04ZT	0.21	[r/min])	[r/min])	[r/min])
Normal	10,000		V2.2-01T	D3.7/	D5.5/	D7.5/	D11/	V22-						
specifications	[r/min]		12.2 011	100-01	100-01	100-01	100-01	06ZT						
				V3.7-	D5.5/									
	12,000			02ZT	120-01	D7.5/								
	[r/min]			(15,000	D5.5/	120-01								
				[r/min])	120-02									
Wide range constant output specifications	6,000 [r/min]				V11-01T	V11-09T V15-03T (9kW)	V18.5- 03T	V22-05T	V22-09T (4,500 [r/min])	VK22-19ZT (Coil changeover)				

■200V Built-in spindle motor

Jolator	dimensions		2 Core w	vidth (A to Z)	6Coil cl	nangeover	⑦Optior	n
Symbol	Stator dimensions			um rotation speed	Symbol	Coil changeover	Symbol	Stator dimensions
90	ø90mm		Indicates th	he hundreds	None	Unavailable	None	Standard (varnish)
110	ø110mm		place and h	higher order digits.	D	Available (Δ-2//Δ)	J	Varnish with sleeve (cooling jack
120	ø120mm		④Specifi	ication code	к	Available (人- <u></u>)	s	With sleeve (cooling jacke
150	ø150mm		(01 to 9	99)	W	Available (人-人)	5	mold without metal ring
160	ø160mm		5 Power	line			F	With sleeve (cooling jacke
180	ø180mm		Symbol	Length of lead			1	mold with metal ring
240	ø240mm		1	500mm			L	Without sleeve (cooling jacke
300	ø300mm		2	1000mm			-	mold without metal ring
			3	1500mm			G	Without sleeve (cooling
			4	2000mm				jacket), mold with metal ri
							R	Rotor inner diameter expanded specificat
2	200V		0	ø110				
4 * 400V is a	400V vailable by special order.		1 2 3 4	0128 0160 0180 0210	5Overh Symb T	eat protection sense ol Overheat protection Thermistor		
4 * 400V is a 2 Numbe	vailable by special order.		2 3	ø160 ø180	Symb T	ol Overheat protection		
4 * 400V is a 2 Numbe	vailable by special order.		2 3 4	ø160 ø180 ø210	Symb T	ol Overheat protection Thermistor	sensor	
4 * 400V is a 2 Numbe Symbol	vailable by special order. er of poles Number of poles		2 3 4 5	0160 0180 0210 0230	Symb T 6Coil cl	ol Overheat protection Thermistor	sensor	
4 * 400V is av 2)Number Symbol 2	vailable by special order. er of poles Number of poles 2 poles		2 3 4 5 6	0160 0180 0210 0230 0255	Symb T 6Coil cl Symb	Ol Overheat protection : Thermistor	sensor over	
4 * 400V is ar 2 Numbe Symbol 2 4	vailable by special order. er of poles Number of poles 2 poles 4 poles		2 3 4 5 6 7	0160 0180 0210 0230 0255 0300	Symb T 6 Coil cl Symb None	ol Overheat protection a Thermistor nangeover ol Coil changeo Unavailable	sensor vver (Δ)	
4 * 400V is ar 2 Numbe Symbol 2 4	vailable by special order. er of poles Number of poles 2 poles 4 poles		2 3 4 5 6 7 9 A B	0160 0180 0210 0230 0255 0300 0370 090 0115	Symb T 6 Coil cl Symb None D	ol Overheat protection s Thermistor nangeover ol Coil changeo Unavailable Αvailable (Δ-2//	sensor vver (Δ)	
4 * 400V is at 2 Numbe Symbol 2 4	vailable by special order. er of poles Number of poles 2 poles 4 poles		2 3 4 5 6 7 9 A B Stator out	0160 0180 0210 0230 0255 0300 0370 0990	Symb T 6 Coil cl Symb None D	ol Overheat protection s Thermistor nangeover ol Coil changeo Unavailable Αvailable (Δ-2//	sensor vver (Δ)	
4 * 400V is at 2 Numbe Symbol 2 4	vailable by special order. er of poles Number of poles 2 poles 4 poles		2 3 4 5 6 7 9 A B Stator out	0160 0210 0230 0255 0300 0370 090 0115 line (frame No.) is with 0 to 9, A, B.	Symb T 6 Coil cl Symb None D	ol Overheat protection s Thermistor nangeover ol Coil changeo Unavailable Αvailable (Δ-2//	sensor vver (Δ)	
4 * 400V is at 2 Symbol 2 4 6	vailable by special order. er of poles Number of poles 2 poles 4 poles	SJ-[2 3 4 5 6 7 9 A B Stator out	0160 0180 0210 0230 0255 0300 0370 090 0115 line (frame No.) is with 0 to 9, A, B.	Symb T 6 Coil cl Symb None D	ol Overheat protection s Thermistor nangeover ol Coil changeo Unavailable Αvailable (Δ-2//	sensor vver (Δ)	
4 * 400V is av 2 Numbe Symbol 2 4 6	vailable by special order. er of poles 2 poles 4 poles 6 poles 1B Series>	SJ-[2 3 4 5 6 7 9 A B Stator out indicated		Symb T © Coil cl Symb None D K	ol Overheat protection a Thermistor	sensor ννεr (Δ) Δ)	action sensor
4 * 400V is at 2 <u>Symbol</u> 2 4 6 : SJ-PIV	vailable by special order. er of poles 2 poles 4 poles 6 poles 1B Series> e	SJ-[2 3 4 5 6 7 9 A B Stator out indicated 1 PIN (2) Contin Indicates v		Symb T 6 Coil cl Symb None D K	ol Overheat protection a Thermistor nangeover ol Coil changeo Unavailable Available (Δ-2/ Available (Δ-2/	sensor wer (Δ) Δ) Overheat prote	
4 * 400V is av 2 Numbe Symbol 2 4 6	vailable by special order. er of poles 2 poles 4 poles 6 poles 1B Series>	SJ-[2 3 4 5 6 7 9 A B Stator out indicated 1 PN (2 Contin Indicates v For 1000		Symb T 6 Coil cl Symb None D K (4) (5) or less), the upper digit	Ol Overheat protection s Thermistor nangeover ol Coil changeo Unavailable Available (Δ-2/, Available (Δ-2/, Available (Δ-2/,	sensor wer (Δ) Δ) Overheat prote	ection sensor rheat protection sensor Thermistor
4 * 400V is at 2 2 4 6 : SJ-PIV 1 Voltag Symbol	vailable by special order. er of poles 2 poles 4 poles 6 poles 1B Series> e Voltage	SJ-[2 3 4 5 6 7 9 A B Stator out indicated 1 PN 2 Contin Indicates v For 1000 [by alphabe		Symb T 6 Coil cl Symb None D K (4) (5) or less), the upper digits	Ol Overheat protection s Thermistor nangeover ol Coil changeo Unavailable Available (Δ-2/, Available (Δ-2/, Available (Δ-2/,	sensor wer (Δ) Δ) Overheat prote	rheat protection sensor

(Note) This explains the model name system of a spindle motor, and all combinations of motor types listed above do not exist.

■200V Tool spindle motor



■400V HG-H servo motor

<hg< th=""><th colspan="10"><hg-h series=""></hg-h></th></hg<>	<hg-h series=""></hg-h>										
HG-	H 1	23	- (4) - (5)								
1 Ra	1 Rated output · Maximum rotation speed										
Symb	ol Rated output	Max. rotation speed	Flange size (mm)								
75	0.75 kW	5000r/min	90 SQ.								
105	1.0 kW	5000r/min	90 SQ.								
54	0.5 kW	4000 r/min	130 SQ.								
104	1.0 kW	4000 r/min	130 SQ.								
154	1.5 kW	4000 r/min	130 SQ.								
204	2.0 kW	4000 r/min	176 SQ.								
354	3.5 kW	4000 r/min	176 SQ.								
453	4.5 kW	3500 r/min	176 SQ.								
703	7.0 kW	3000 r/min	176 SQ.								
903	9.0 kW	3000 r/min	204 SQ.								
1502	15.0kW	2500r/min	250 SQ.								

be	be used for HG-H1502.								
3Shaft end structure									
Symbol Shaft end structure									
S	Straight								
Т	Taper								
fo	aper" is available or the motor whose ange size is 90 SQ. Im or 130 SQ. mm.								

Symbol Magne

<HQ-H Series>

HQ-H ① ② S – ③ ①Rated output · Maximum rotation speed									
Symbol	Rated output	Max. rotation speed	Flange size (mm)						
903	9.0kW	3000 r/min	220 SQ.						
1103	11 0kW	3000 r/min	220 SQ.						

2 Magr	netic brake	③Enco	③Encoder						
Symbol	Magnetic brake	Symbol	Туре	Detection method	Resolution				
None	None	D48	OSA24RS		1,048,576 p/rev				
В	With magnetic brake	D51	OSA405S5AS	Absolute position	4,194,304 p/rev				
		D74	OSA676S5AS	position	67,108,864 p/rev				

■400V Linear servo motor

<lm-f< th=""><th colspan="10">LM-F Series></th></lm-f<>	LM-F Series>									
Prima	Primary side [coil side] Secondary side [magnet side]									
		LM-FP	1 2 -	③ M-1	WW0		LM	-FS 🕕	0-② -1WW0	
1)Width		2Lengt	h	3 Rated	Rated thrust ①Width ②Length				1	
Symbol	Width (nominal)	Symbol	Length (nominal)	Symbol	Rated thrust	Symbol	Width (nominal)	Symbol	Length (nominal)	
5	240 mm	Н	1010 mm	60	6000 N	5	240 mm	480	480 mm	
								576	576 mm	

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2	Ma	gr	netic	brak	e
-					

Symbol	Magnetic brake						
None	None						
В	With magnetic brake						
(Note) Ma	(Note) Magnetic brakes cannot						
be	be used for HG-H1502.						

line.

4 Power connector						
Symbol Connector						
None	Normal					
S105010	Compact (horizontal direction)					

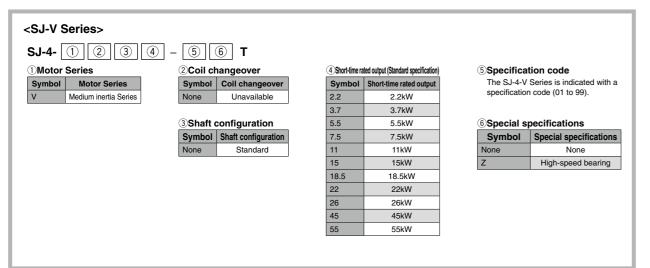
(Note) S105010 can only be used with HG-H75/105.

(5)Encoder

Elioodol										
Symbol	Туре	Detection method	Resolution							
D48	OSA24RS		1,048,576 p/rev							
D51	OSA405S5AS	Absolute position	4,194,304 p/rev							
D74	OSA676S5AS	position	67,108,864 p/rev							

3Enco	oder
<u> </u>	

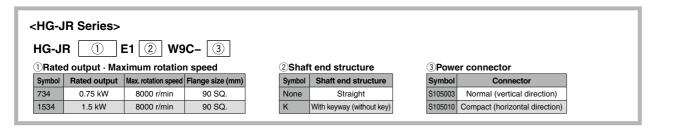
■400V SJ-4-V spindle motor



(Note 1) The built-in spindle motor is available by special order. (Note 2) This explains the model name system of a spindle motor, and all combinations of motor types listed above do not exist.

400V														
Flange type With leg	Short-time rating Max. rotation speed	2.2kW	3.7kW	5.5kW	7.5kW	9kW	11kW	15kW	18.5kW	22kW	26kW	37kW	45kW	55kW
	6,000 [r/min]						V11-18T	V18.5-14T		V22-15T		V37-04ZT	V45-02T (4,500 [r/min])	V55-03T (3,450 [r/min])
Normal	8,000 [r/min]			V5.5-07T	V7.5-12T			V22-18ZT						
specifications	10,000 [r/min]	V2.2-03T	V3.7-03T								V26-08ZT			
	12,000 [r/min]				V7.5-13ZT									
Wide range constant output specifications	6,000 [r/min]					V15-20T		V22-16T						

■400V Tool spindle motor



DRIVE SYSTEM SERVO MOTOR 200V

■HG Series

	Motor type		HG46	HG56	HG96
	1-axis type	MDS-E-V1-	20	20	20
	2-axis type	MDS-E-V2-	20	20	20 40
Compatible drive unit	3-axis type	MDS-E-V3-	20	20	20 40
	Multi-hybrid type	MDS-EM-SPV3-	-	-	10040, 16040, 16040S
	Regenerative	MDS-EJ-V1-	10	15	30
	resistor type	MDS-EJ-V2-	-	-	30
Output Stall torque Max. torque		[N·m]	2.5	5.0	2.4
Rated output		[kW]	0.2	0.4	0.75
Max. rotation	speed	[r/min]		6000	- -
Motor inertia		[×10 ⁻⁴ kg ⋅ m ²]	0.234	0.379	1.27
Motor inertia v	vith a brake	[×10 ⁻⁴ kg ⋅ m ²]	0.261	0.407	1.37
Degree of protection connector portion a	on (The shaft-through po and brake connector por	ortion, power rtion are excluded.)		IP67	
Outline dimen (Without a bra	sion drawing ke, Straight shaft)	[mm]	60 SQ.	60 SQ.	80 SQ.
Flange fitting of Shaft diamete Mass (with a b	r	[mm] [mm] [kg]	ø50 ø14 1.2(1.6)	ø50 ø14 1.6(2.0)	ø70 ø19 2.9(3.7)
Absolute position encoder compatible drive unit	1,048,576[p/rev]		E, EJ	E, EJ	E, EM, EJ

	Motor type		HG75	HG105	HG54	HG104	HG1	54
	1-axis type	MDS-E-V1-	20	20	40	40	80	-
	2-axis type	MDS-E-V2-	20	20	40	40	80	
	2-axis type	WD3-E-V2-	40	40	80	80	160	-
	2 ovio tuno	MDS-E-V3-	20	20	40	40	80	40
Compatible	3-axis type	WD3-E-V3-	40	40	80	80	80	40
drive unit			10040, 16040,	10040, 16040,	10040, 16040,	10040, 16040,	10080, 16080,	_
	Multi-hybrid type	MDS-EM-SPV3-	16040S	16040, 10040, 16040,	16040S, 10080,	16040S, 10080,	20080, 200120,	
					16080, 20080	16080, 20080	320120	
	Regenerative	MDS-EJ-V1-	30	30	30	40	80)
	resistor type	MDS-EJ-V2-	30	30	30	40	-	
							42.0	
Output								
Stall torque		[N·m]				23.3		23:
		[]	8.0	11.0	13.0		9.0	7.0
	_		2.0	3.0	2.9	5:9		7.0
Rated output		[kW]	0.75	1.0	0.5	1.0	1.	-
Max. rotation	speed	[r/min]	5000	5000	4000	4000	400	
Motor inertia		[×10 ⁻⁴ kg ⋅ m ²]	2.62	5.12	6.13	11.9	17.	-
Motor inertia v		[×10 ⁻⁴ kg·m ²]	2.70	5.20	8.26	14.0	20.0	
Degree of protecti	on (The shaft-through po	ortion is excluded.)	IP67	IP67	IP67	IP67	IPe	67
				00.00	130 SQ.	130 SQ.	130 :	SQ.
Outline dimen	sion drawing		90 SQ.	90 SQ.				<u></u>
	ike, Straight shaft,				(O)	(0)		
D48 encoder)			۳.	17 T				23
		[mm]			_	-		
	al length will be	[11111]			118.5	140.5	160	5
3.5mm longer			127.5	163.5		140.5	102.3	, T
when using a	D51or D74							⊐⊫-
encoder.					백문미			1
						U		
Flange fitting (diameter	[mm]	ø80	ø80	ø110	ø110	ø11	10
Shaft diamete		[mm]	ø14	ø14	ø24	ø24	ø2	4
Mass (with a b	orake)	[kg]	2.6(3.6)	4.4(5.3)	4.8(6.7)	6.5(8.5)	8.3(1	1.0)
Absolute position	67,108,864 [p/rev		E	E	E	E	E	
encoder compatible		,	E	E	E	E	E	E
drive unit	1,048,576 [p/rev]	(5.15)	EM, EJ	EM, EJ	EM, EJ	EM, EJ	EM, EJ	

(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

SERVO MOTOR 200V

6 **DRIVE SYSTEM**

SERVO MOTOR 200V

■HG Series

	Motor type		HG224	HG	204		HG354	
	1-axis type	MDS-E-V1-	80	-	80	-	-	160
	2-axis type	MDS-E-V2-	80 160	-	80 160	-	-	160 160W
	3-axis type	MDS-E-V3-	80	_	80	_	_	-
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-	10080, 16080, 20080, 200120, 320120	-	10080, 16080, 20080, 200120, 320120	-	200120, 320120	-
	Regenerative	MDS-EJ-V1-	80	80	-	100	-	-
	resistor type	MDS-EJ-V2-	-	-	-	-	-	-
Output Stall torque [N·m] Max. torque]		46.5 12.0	42.0	<u>47.0</u> 13.7	65.0	22.5	90.0 22.5	
Rated output		[kW]	2.2	2.0			3.5	
Max. rotation s	Max. rotation speed [r/min]		4000	40	00	3500	40	00
Motor inertia		[×10 ⁻⁴ kg·m ²]	23.7	38	3.3		75.0	
Motor inertia w	vith a brake	[×10 ⁻⁴ kg · m ²]	25.9	47	7.9		84.7	
Degree of protection	on (The shaft-through po	ortion is excluded.)	IP67	IP67			IP67	
(Without a bra D48 encoder)	,		130 SQ.	176 SQ.		176 SQ.		
(Note) The total length will be [mm] 3.5mm longer when using a D51or D74 encoder.		184.5						
Flange fitting diameter [mm]		ø110	ø11	4.3		ø114.3		
Shaft diameter [mm]		ø24	ø	35		ø35		
Mass (with a b	rake)	[kg]	10.0(12.0)	12.0(18.0)		19.0(25.0)	
Absolute position	67,108,864 [p/rev	v] (D74)	E	-	E	-	-	
encoder compatible drive unit	4,194,304 [p/rev] 1,048,576 [p/rev]		E EM, EJ	EJ	E EM	EJ	EM	E

	Motor type		HG123	HG223	HG303	HG	453
	1-axis type	MDS-E-V1-	20	40	80	-	160
	2-axis type	MDS-E-V2-	20	40	80	_	160
		WD0-L-V2-	40	80	160	_	160W
Compatible	3-axis type	MDS-E-V3-	20	40	80		_
drive unit	J-axis type	WD3-L-V3-	40	80	00	-	_
	Multi-hybrid type	MDS-EM-SPV3-	10040, 16040, 16040S	10040, 16040, 16040S, 10080, 16080, 20080	10080, 16080, 20080, 200120, 320120	200120, 320120	-
	Regenerative	MDS-EJ-V1-	40	40	80	-	_
	resistor type	MDS-EJ-V2-	40	40	-	-	
Output Stall torque Max. torque		[N·m]	7.0 17.0	32:0	64.0		122.0
Rated output		[kW]	1.2	2.2	3.0	4	.5
Max. rotation s	speed	[r/min]	3000	3000	3000	35	00
Motor inertia		[×10 ⁻⁴ kg · m ²]	11.9	23.7	75.0	11	2.0
Motor inertia w	/ith a brake	[×10 ⁻⁴ kg · m ²]	14.0	25.9	84.7	12	2.0
Degree of protection	on (The shaft-through po	ortion is excluded.)	IP67	IP67	IP67	IP67	
(Without a brain D48 encoder)	Outline dimension drawing (Without a brake, Straight shaft, D48 encoder)		130 SQ.	130 SQ.	176 SQ.	176 SQ.	
(Note) The tota 3.5mm longer when using a l encoder.	al length will be D51or D74	[mm]					
Flange fitting o	liameter	[mm]	ø110	ø110	ø114.3	ø11	4.3
Shaft diameter	r	[mm]	ø24	ø24	ø35	Ø	35
Mass (with a b	orake)	[kg]	6.5(8.5)	10.0(12.0)	19.0(25.0)	25.0	31.0)
Absolute position	67,108,864 [p/re	ev] (D74)	E	E	E	-	
encoder compatible	4,194,304 [p/rev	/] (D51)	E	E	E	EM	E
drive unit	1,048,576 [p/rev	/] (D48)	EM, EJ	EM, EJ	EM, EJ	EIVI	

(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

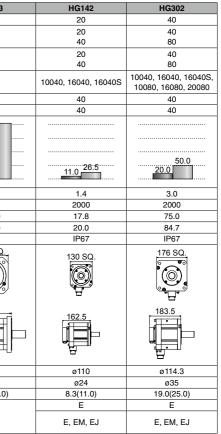
■HG Series

	Motor type		HG703	HG903
	1-axis type	MDS-E-V1-	160W	320
	2-axis type	MDS-E-V2-	160W	-
Compatible drive unit	3-axis type	MDS-E-V3-	-	-
	Multi-hybrid type	MDS-EM-SPV3-	-	-
	Regenerative	MDS-EJ-V1-	-	-
	resistor type	MDS-EJ-V2-	-	-
Output Stall torque Max. torque		[N · m]	152.0 	58.8
Rated output		[kW]	7.0	9.0
Max. rotation s	peed	[r/min]	3000	3000
Motor inertia		[×10 ^{-₄} kg · m²]	154.0	196.0
Motor inertia w	rith a brake	[×10 ⁻⁴ kg ⋅ m ²]	164.0	206.0
Degree of protection	on (The shaft-through p	ortion is excluded.)	IP67	IP67
Outline dimens (Without a brai D48 encoder) (Note) The tota 3.5mm longer when using a D encoder.	ke, Straight shaft, al length will be	[mm]		
Flange fitting d	liameter	[mm]	ø114.3	ø180
Shaft diameter		[mm]	ø35	ø42
Mass (with a b	rake)	[kg]	32.0(38.0)	43.0(49.0)
Absolute position	67,108,864 [p/re	v] (D74)		
encoder compatible	4,194,304 [p/rev]	(D51)	E	E
drive unit	1,048,576 [p/rev]] (D48)		

(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

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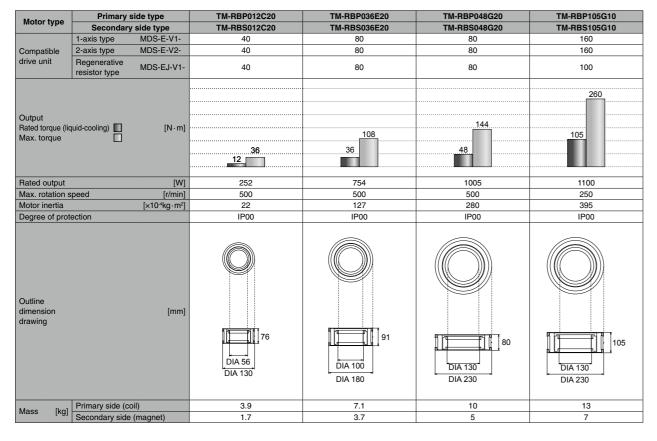
SERVO MOTOR 200V

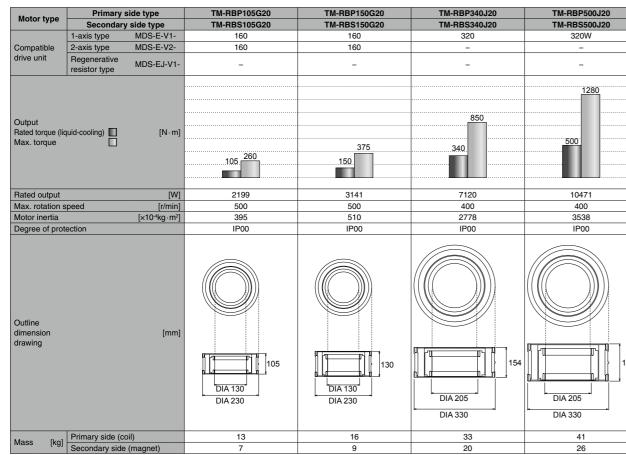


ORIVE SYSTEM

DRIVE SYSTEM DIRECT-DRIVE MOTOR 200V

■TM-RB Series





(Note 1) The encoder should be procured by the user.

(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

DRIVE SYSTEM LINEAR SERVO MOTOR 200V

■LM-F Series

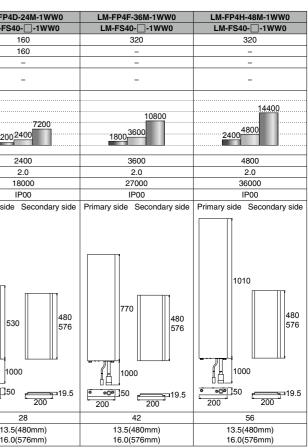
Matartur	Primary s	side type	LM-FP2A-03M-1WW0	LM-FP2B-06M-1WW0	LM-FP2D-12M-1WW0	LM-FP2F-18M-1WW0	
Motor type	Secondary	side type	LM-FS201WW0	LM-FS201WW0	LM-FS201WW0	LM-FS201WW0	
	1-axis type	MDS-E-V1-	40	40	80	160	
• ••••	2-axis type	MDS-E-V2-	40	40	80	160	
Compatible drive unit	3-axis type	MDS-E-V3-	40	40	-	-	
	Regenerative resistor type	MDS-EJ-V1-	40	40	80	-	
Thrust force Continuous (na Continuous (liq Maximum		[N]	900 150_300		3600 600	1800 900	
Rated thrust	I thrust [N]		300 600		1200	1800	
Maximum spee	ed (Note 1) [m/s		2.0	2.0	2.0	2.0	
	gnetic attraction force [N]		2500	4500	9000	13500	
	Degree of protection		IP00	IP00	IP00	IP00	
Outline dimension drawing		[mm]	170 1000 120 120 120 120 120 120 1	290 480 576 576 1000 120 19.5	530 480 576 1000 1000 120 19.5	770 480 576 1000 120 120 120 120	
	Primary side (co	oil)	5	9	18	27	
Mass [kg]	Secondary side		5.8(384mm) 7.1(480mm) 9.0(576mm)	7.1(480mm) 9.0(576mm)	7.1(480mm) 9.0(576mm)	7.1(480mm) 9.0(576mm)	

Matartur	Primary s	side type	LM-FP4B-12M-1WW0	LM-FP
Motor type	Secondary	side type	LM-FS401WW0	LM-F
	1-axis type	MDS-E-V1-	80	
O a mar a tilb la	2-axis type	MDS-E-V2-	80	
Compatible drive unit	3-axis type	MDS-E-V3-	-	
unve unit	Regenerative resistor type	MDS-EJ-V1-	80	
Thrust force Continuous (na Continuous (liq Maximum		[N]	600 1200 3600	120
Rated thrust		[N]	1200	
Maximum spee		[m/s]	2.0	
Magnetic attra		[N]	9000	
Degree of prot	ection		IP00 Primary side Secondary side	
Outline dimension drawing		[mm]	480 576 290 1000 19,5 19,5	200 ¹
			200 200	200
	Primary side (co	oil)	14	200

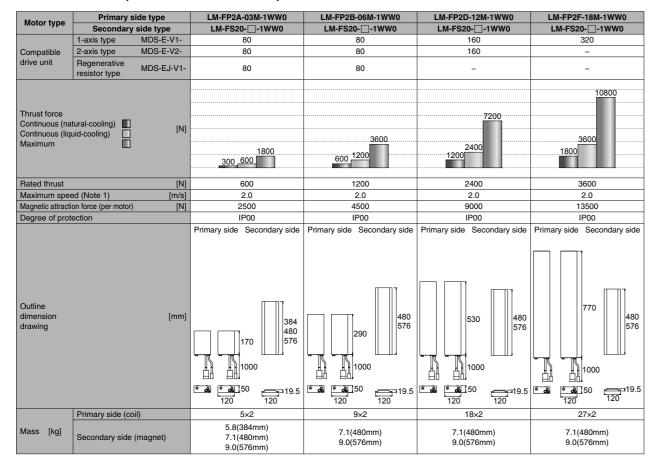
(Note 1) The maximum speed in actual use is either the linear scale's maximum speed or this specified value, whichever is smaller. (Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

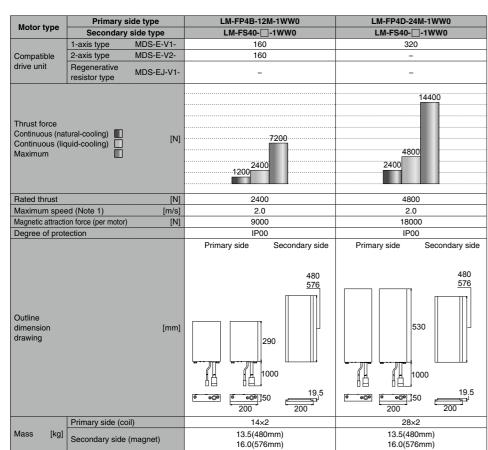
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LINEAR SERVO MOTOR 200V



■LM-F Series (Dual-axis drive unit)





(Note 1) The maximum speed in actual use is either the linear scale's maximum speed or this specified value, whichever is smaller. (Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

DRIVE SYSTEM SPINDLE MOTOR 200V

■SJ-D Series (Normal specifications)

	Motor type		SJ-D3.7/100-01	SJ-D5.5/100-01	SJ-D5.5/120-01		SJ-D5.5/120-02	
	1-axis type	MDS-E-SP-	80	80	80	-	160	200
O and a title	2-axis type	MDS-E-SP2-	80 16080(M)	80 16080(M)	80 16080(M)	-	16080(L)	-
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-	-	10040, 10080, 16040S	10040, 10080, 16040S	10040, 10080	16040, 16080, 16040S	20080, 200120
	Regenerative resistor type	MDS-EJ-SP-	80	100	100	-	-	-
Output Acceleration/Deceleration %ED rating Short-time rating Continuous rating		kW 6 2.2 0 1500 6000 10000 rmin	6 4 2 0 1500 6000 10000 r/min	kW 5.5 4 0 1500 6000 12000 r/min	kW 15 10 7.5 0 2000 2000 8000 12000 r/min	kW 15 10 5.5 0 2000 2000 6000 8000 12000 r/min	KW 15 10 5 0 1700 450 8000 12000 2800 r/min	
			Short-time (15min)	Short-time (30min)	Short-time (30min)	%ED rating (25%ED)		%ED rating (25%ED)
Standard output	t during acceleration/de	celeration [kW]	3.7	5.5	5.5	7.5	9.2	10.4
	tion/deceleration output	(Note 2) [kW]	4.4	6.6	6.6	9	11.0	12.5
Continuous b	ase rotation speed	[r/min]	1500	1500	1500		2800	
Max. rotation s	peed in constant outp	ut range [r/min]	6000	6000	6000		8000	
Maximum rota	ation speed	[r/min]	10000	10000	12000		12000	
Continuous ra	ated torque	[N·m]	14.0	23.6	23.6		12.6	
Motor inertia		[kg·m²]	0.0074	0.013	0.013		0.0074	
Degree of protect	tion (The shaft-through po	rtion is excluded.)	IP54	IP54	IP54	IP54		
Outline dimer drawing (flang		[mm]	174 SQ.	174 SQ. 417	174 SQ. 417		174 SQ.	
Flange fitting	diameter	[mm]	ø150	ø150	ø150		ø150	
Shaft diamete	ər	[mm]	ø28	ø28	ø28		ø28	
Mass		[kg]	26	39	39		26	
With leg			Possible	Possible	Possible		Possible	

	Motor type		SJ-D7.5/100-01	SJ-D7.5/120-01	SJ-D11/100-01	SJ-D15/80-01	SJ-D18	.5/80-01
	1-axis type	MDS-E-SP-	160	160	160	200	240	320
	2-axis type	MDS-E-SP2-	16080(L)	16080(L)	16080(L)	-	-	-
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-	10040, 10080, 16040S	10040, 10080, 16040S	16040, 16080, 16040S	20080, 200120	-	320120
	Regenerative resistor type MDS-EJ-SP-		120	120	160	-	-	-
Output %ED rating Short-time rating Continuous rating			KW 77.5 6 5.5 6 4 2 0 1500 6000 10000 (min	kW r7.5 6 5.5 0 1500 6000 12000 (min	kW 15 10 5 1500 4500 10000 r/min	kW 18.5 15 15 10 15 0 150 4500 6000 8000 rimin	kW 30 20 10 15 15 6000 8000 7/min	kW 30 20 18.5 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 10 10 10 10 10 10 10 10 10 10 10 10
			Short-time (30min)	Short-time (30min)	Short-time (30min)	%ED rating (25%ED) Short-time (30min)	Short-time (30min)	%ED rating (25%ED Short-time (30min
Standard output	t during acceleration/de	eceleration [kW]	7.5	7.5	11	18.5	18.5	25.0
Actual accelera	ation/deceleration outp	ut (Note 2) [kW]	9	9	13.2	22.2	22.2	30.0
Continuous b	ase rotation speed	[r/min]	1500	1500	1500	1500	15	00
Max. rotation s	peed in constant outp	ut range [r/min]	6000	6000	4500	6000	60	00
Maximum rot	ation speed	[r/min]	10000	12000	10000	8000	80	00
Continuous ra	ated torque	[N·m]	35.0	35.0	47.7	70.0	95	5.5
Motor inertia		[kg · m²]	0.023	0.023	0.031	0.086	0.	10
Degree of protect	tion (The shaft-through po	rtion is excluded.)	IP54	IP54	IP54	IP54	IP54	
Outline dimer	scion		204 SQ.	204 SQ.	204 SQ.	260 SQ.	260	SQ.
drawing (flan	Imml							
Flange fitting		[mm]	ø180	ø180	ø180	ø230	ø2	
Shaft diameter	er	[mm]	ø32	ø32	ø48	ø48		48
Mass		[kg]	53	53	64	93	1(03
With leg			Possible	Possible	Possible	under development	under dev	alanmant

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

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SPINDLE MOTOR 200V

■SJ-D Series (Normal specifications)

	Motor type		SJ-D2	2/80-01	SJ-D26/80-01		
	1-axis type	MDS-E-SP-	240	320	320		
O a man a tilb la	2-axis type	MDS-E-SP2-		- -	-		
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-		_	-		
	Regenerative resistor type	MDS-EJ-SP-	-	320120	320120		
Output %ED rating Short-time rat Continuous ra			kW 40 20 10 1500 5000 8000 r/min Short-time (30min)	kW 40 30 10 18.5 10 1500 4500 6000 8000 %ED rating (25%ED) Short-time (30min)	kW 40 20 22 10 0 1500 4500 6000 8000 minin %ED rating (25%ED)∑ Short-time (30min)		
Standard outpu	t during acceleration	/deceleration [kW]	22.0	30.0	35.0		
	ation/deceleration out		26.4	36.0	42.0		
	ase rotation speed	,	15	1500			
Max. rotation s	peed in constant ou	tput range [r/min]	60	6000			
Maximum rota	ation speed	[r/min]	80	8000			
Continuous ra	ated torque	[N·m]	1	140			
Motor inertia		[kg · m²]	0.	14	0.16		
Degree of protect	tion (The shaft-through)	portion is excluded.)	IP	254	IP54		
Outline dimer			260	260 SQ.			
(flange type)	Ŭ	[mm]					
Flange fitting		[mm]	ø2	ø230			
Shaft diamete	ər	[mm]		ø55			
Mass		[kg]		31	147		
With leg			under dev	velopment	under development		

■SJ-D Series (Hollow shaft specifications)

	Motor type			SJ-D5.5/120-02T-S				
	1-axis type	MDS-E-SP-	-	160	200			
o	2-axis type	MDS-E-SP2-	-	16080(L)	-			
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-	10040, 10080	16040, 16080, 16040S	20080, 200120			
unve unit	Regenerative resistor type	MDS-EJ-SP-	-	-	-			
Output Acceleration/Deceleration %ED rating Short-time rating Continuous rating Standard output during acceleration/deceleration [kW]			kW 15 5.5 10 7.5 3.7 2000 2800 8000 12000 r/min %ED rating (25%ED)⊠	kW 15 9.2.3.7 5.5.5.3.7 02000 2000 6000 8000 12000 r/min %ED rating (25%ED)⊠	kW 15 10 5 5 100 450 8000 12000 100 450 8000 12000 r/min %ED rating (25%ED) ∑			
Standard outpu	t during acceleration/c	deceleration [kW]	7.5	9.2	10.4			
	tion/deceleration outp		9					
	ase rotation speed	[r/min]	2800					
Max. rotation s	peed in constant out	out range [r/min]		8000				
Maximum rota	ation speed	[r/min]		12000				
Continuous ra	ated torque	[N·m]	12.6					
Motor inertia	· ·	[kg·m ²]	0.0075					
Degree of protect	ion (The shaft-through p	ortion is excluded.)	IP54					
				174 SQ.				
Outline dimer (flange type)	nsion drawing	[mm]						
Flange fitting	diameter	[mm]		ø150				
Shaft diamete	er	[mm]		ø28				
Mass		[kg]		24				
With leg				Not possible				

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

■SJ-DG Series (High-output specifications)

	Motor type		SJ-DG3.7/120-03T	SJ-DG5.5/120-04T	SJ-DG7.5/120-05T	SJ-DG11/100-03T	SJ-DG11	/120-03T
	1-axis type	MDS-E-SP-	160	160	160	200	160	200
	2-axis type	MDS-E-SP2-	-	-	-	-	16080(L)	-
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-	10040, 10080, 16040S	16040, 16080, 16040S	16040, 16080, 16040S	20080, 200120	16040, 16080, 16040S	20080, 200120
	Regenerative resistor type	MDS-EJ-SP-	-	-	-	-	-	-
Output %ED rating Short-time rati Continuous ra	· <u> </u>		KW 6 4 2 1 500 7000 10000 12000 1500 7000 10000 12000 1000 10000 10000 12000	6 4 2 0 1500 5500 7000 12000 r/min	kW 15 10 5 5.5 0 1500 5500 8000 12000 r/min	12 6 0 1500 4500 6000 10000 r/min	15 10 5 7.5 0 14001500 6000 12000 r/min	kW 20 15 15 10 111 5 150 150 150 150 150 150
			%ED rating (25%ED)⊠ Short-time (15min)□	%ED rating (25%ED) Short-time (30min)	%ED rating (25%ED) Short-time (30min)	%ED rating (25%ED) Short-time (30min)	%ED rating (25%ED) Short-time (30min)	%ED rating (25%ED) Short-time (30min) □
	t during acceleration/d		5.5	7.5	11.0	15.0	11.0	15.0
	tion/deceleration outp	ut (Note 2) [kW]	6.6	9.0	13.2	18.0	13.2	18.0
	ase rotation speed	[r/min]	1500	1500	1500	1500	1500	1500
Max. rotation sp	peed in constant outp	ut range [r/min]	10000	7000	8000	6000	60	00
Maximum rota	ation speed	[r/min]	12000	12000	12000	10000	120	000
Continuous ra	ated torque	[N · m]	14.0	23.6	35.0	47.7	47	.7
Motor inertia		[kg · m²]	0.0066	0.012	0.022	0.029	0.029	
Degree of protecti	ion (The shaft-through po	rtion is excluded.)	IP54	IP54	IP54	IP54	IP54	
Outline dimen	aion drawing		174 SQ.	174 SQ.	204 SQ.	204 SQ.	204	SQ.
(flange type)	uidwing	[mm]	327		439			
Flange fitting of	diameter	[mm]	ø150	ø150	ø180	ø180	ø1	80
Shaft diamete	er	[mm]	ø28	ø28	ø32	ø48	Øź	18
		[kg]	24	37	50	61	6	1
Mass		[Ky]		01	50	01	0	

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

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O DRIVE SYSTEM

■SJ-DJ Series (Compact & lightweight specifications)

	Motor type		SJ-DJ5.5/100-01	SJ-DJ5.5/120-01	SJ-DJ7.5/100-01	
	1-axis type	MDS-E-SP-	80	80	160	
Compatible 2-axis type		MDS-E-SP2-	80 16080(M)	80 16080(M)	16080(M)	
drive unit	Multi-hybrid type	MDS-EM-SPV3-	10040, 10080, 16040S	10040, 10080, 16040S	10040, 10080, 16040S	
	Regenerative resistor type	MDS-EJ-SP-	100	100	120	
Output %ED rating Short-time ra Continuous ra			kW 6 1 5.5 1 500 2000 4500 10000 rmin %ED rating (25%ED)	6 0 1500 4 0 1500 12000 rmin %ED rating (25%ED)	KW 7.5 6 4 2 150 2000 4500 10000 1500 2000 4500 10000 rmin Short-time (15min)	
Standard outpu	it during acceleration/c	decoloration [k]\//]	5.5	5.5	7.5	
	ation/deceleration outp		6.6	6.6	9	
Base rotation	Short-time	[r/min]	1500	1500	1500	
speed	Continuous	[r/min]	2000	2000	2000	
	peed in constant out		4500	4500	4500	
Maximum rot		[r/min]	10000	12000	10000	
Continuous ra		[N·m]	17.7	17.7	26.3	
Motor inertia		[kg · m ²]	0.0074	0.0074	0.013	
	tion (The shaft-through p		IP54	IP54	IP54	
			174 SQ.	174 SQ.	174 SQ.	
Outline dimension drawing (flange type) [n		[mm] 327		327		
Flange fitting	diameter	[mm]	ø150	ø150	ø150	
Shaft diamete	er	[mm]	ø28	ø28	ø28	
Mass		[kg]	26	26	39	
With leg			Possible	Possible	Possible	

	Motor type		SJ-DJ7.5/120-01	SJ-DJ11/100-01	SJ-DJ15/80-01
	1-axis type	MDS-E-SP-	160	160	200
Compatible	2-axis type	MDS-E-SP2-	16080(L)	16080(L)	_
drive unit	Multi-hybrid type	MDS-EM-SPV3-	10040, 10080, 16040S	16040, 16080, 16040S	20080, 200120
	Regenerative resistor type	MDS-EJ-SP-	120	160	_
Output %ED rating Short-time ra Continuous ra			^{KW} 7.5 6 1 150 2000 4500 12000 1500 2000 4500 12000 1500 2000 4500 12000	kW 16 12 4 4 500 2000 4500 10000 rmin Short-time (15min)	KW 16 12 4 1500 2000 4000 8000 1500 2000 4000 8000 5kpt-time (15%ED)
Standard outpu	it during acceleration/c	deceleration [kW]	7.5	11	15
	ation/deceleration outp		9	13.2	18
Base rotation	Short-time	[r/min]	1500	1500	1500
speed	Continuous	[r/min]	2000	2000	2000
Max. rotation s	peed in constant out	put range [r/min]	4500	4500	4000
Maximum rot		[r/min]	12000	10000	8000
Continuous ra		[N·m]	26.3	35.8	52.5
Motor inertia		[kg · m ²]	0.013	0.023	0.031
Degree of protect	tion (The shaft-through p		IP54	IP54	IP54
Outline dimer (flange type)	nsion drawing	[mm]	174 SQ. 417 417	204 SQ. 439	204 SQ. 489
Flange fitting Shaft diamete		[mm]	ø150 ø28	ø180 ø32	ø180 ø48
Mass		[kg]	39	53	64
With leg			Possible	Possible	Possible

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
 (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".
 (Note 3) %ED is a load time ratio of operating time relative to a 10-minute cycle time. At 25%ED, for example, the operating time is 2.5 minutes and non-operation time is 7.5 minutes of a 10-minute cycle time.

■SJ-DL Series (Low-inertia specifications)

	Motor type		SJ-DL0.75/100-01	SJ-DL1.5/100-01	SJ-DL3.7/240-01T
	1-axis type	MDS-E-SP-	20	40	200
A 1711	2-axis type	MDS-E-SP2-	20	40	-
	mpatible ve unit Multi-hybrid type		-	-	20080, 200120
unve unit	Regenerative resistor type	MDS-EJ-SP-	-	-	-
Output Acceleration/ Short-time ra Continuous ra	ting 🖾		KW 1.5 1.0 0.9 - 0.75 0.5 0.5 1500 1800 10000 rmin Short-time (10min) ⊠	kW 2.0 1.5 1.5 1.0 0.5 0 1500 10000 rmin Short-time (10min)⊠	kW 20 15 10 5 3.7,1.5 0 3000 8000 2000 24000 r/min Short-time (10min) ⊠
Standard output	it during acceleration/d	eceleration [kW]	0.9	1.5	15.0
	ation/deceleration outp		1.1	1.8	18.0
	ase rotation speed	[r/min]	1500	1500	3000
	speed in constant outp		10000	10000	24000
Maximum rot		[r/min]	10000	10000	24000
Continuous ra		[N·m]	2.55	4.8	4.8
Motor inertia		[kg · m ²]	0.0011	0.0019	0.0024
	tion (The shaft-through po		IP54	IP54	IP54
Outline dimer (flange type)	nsion drawing	[mm]	130 SQ. 264	130 SQ. 317	
Flange fitting	diameter	[mm]	ø110	ø110	ø110
Shaft diamete	er	[mm]	ø22	ø22	ø22
Mass		[kg]	10	14	17
With leg			Not possible	Not possible	Not possible

	Motor type		SJ-DL5.5/150-01T	SJ-DL5.5/200-01T	SJ-DL5.5/240-05T	SJ-DL7.5/150-01T
	1-axis type	MDS-E-SP-	160	160	200	160
o	2-axis type	MDS-E-SP2-	16080(L)	16080(L)	-	16080(L)
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-	16040, 16080, 16040S	-	20080, 200120	16040, 16080, 16040S
unve unit	Regenerative resistor type	MDS-EJ-SP-	-	-	-	-
Output Acceleration// Short-time rat Continuous ra	ting 🛄		kW 15 10 5.5 3.7 0 2500 3000 4200 15000 rmin Short-time (15min) (30min)	kW 15 10 5,5 1,7 1,7 1,7 1,7 1,7 1,7 1,7 1,7	kW 30 20 10 2550 6550 2000 24000 1650 3000 14000 r/min Short-time (timin) (15min) (30min)	kW 15 10 5.5 1500 1800 8000 15000 1500 1800 8000 15000 r/min Short-time(30min)
Standard outpu	t during acceleration/o	deceleration [kW]	11	11	22.0	11
	tion/deceleration out		13.2	13.2	26.4	13.2
	ase rotation speed	[r/min]	2500	2500	1650	1500
	peed in constant out	L · J	15000	20000	24000	8000
Maximum rota		[r/min]	15000	20000	24000	15000
Continuous ra	· · ·	[N·m]	14.1	14.1	14.1	35.0
Motor inertia		[kg · m²]	0.0046	0.0046	0.0042	0.016
Degree of protect	ion (The shaft-through p	ortion is excluded.)	IP54	IP54	IP54	IP54
			174 SQ.	174 SQ.	174 SQ.	204 SQ.
Outline dimer (flange type)	nsion drawing	[mm]				
Flange fitting	diameter	[mm]	ø150	ø150	ø150	ø180
Shaft diamete	er	[mm]	ø28	ø28	ø22	ø32
Mass		[kg]	30	30	27	56
With leg			Not possible	Not possible	Not possible	Not possible

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

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SPINDLE MOTOR 200V

■SJ-DL Series (Hollow shaft specifications)

Motor type			SJ-DL5.5/200-01T-S		
	1-axis type	MDS-E-SP-	160		
	2-axis type	MDS-E-SP2-	16080(L)		
Compatible drive unit	Multi-hybrid type	MDS-EM-SPV3-	-		
unve unit	Regenerative resistor type	MDS-EJ-SP-	-		
Output Acceleration/ Short-time ra Continuous ra	ting	2	kW 15 10 5.5 11 15,5 15,5 15,5 15,000 20000 2500 3000 4200 rrmin Short-time (15min) (30min)		
Standard outpu	ut during acceleration/d	eceleration [kW]	11		
Actual accelera	ation/deceleration outp	ut (Note 2) [kW]	13.2		
Continuous base rotation speed [r/min]			2500		
Max. rotation s	speed in constant outp	ut range [r/min]	20000		
Maximum rot	ation speed	[r/min]	20000		
Continuous ra	ated torque	[N·m]	14.1		
Motor inertia		[kg · m ²]	0.0046		
Degree of protec	tion (The shaft-through po	rtion is excluded.)	IP54		
Outline dimer (flange type)	nsion drawing	[mm]	174 SQ.		
Flange fitting	diameter	[mm]	ø150		
Shaft diamete		[mm]	ø22		
Mass		[kg]	28		
With leg			Not possible		

■SJ-V Series (Normal specifications)

	Motor type		SJ-V2.2-01T	SJ-V3.7-02ZT	
	1-axis type	MDS-E-SP-	40	80	
Compatible drive unit	2-axis type MDS-E-SP2-		40	80 16080(M)	
	Multi-hybrid type	MDS-EM-SPV3-	-	-	
Output Short-time rat Continuous ra			kW 6 2.2 0 1.5 0 1500 6000 10000 rmin Short-time (15min)□	kW 6 2.2 0 3000 12000 15000 rmin Short-time (15min)□	
Standard outpu	t during acceleration/o	deceleration [kW]	2.2	3.7	
Actual acceleration/deceleration output (Note 2) [kW]			2.6	4.4	
			1500	3000	
Max. rotation speed in constant output range [r/min]			6000	12000	
Maximum rota		[r/min]	10000	15000	
Continuous ra		[N·m]	9.5	7.0	
Motor inertia		[kg · m ²]	0.00675	0.00675	
Degree of pro	tection	[9]	IP44	IP44	
Outline dimer (flange type)	nsion drawing	[mm]	174 SQ.	174 SQ.	
Flange fitting diameter [mm] Shaft diameter [mm]		[mm]	0150 028 25	0150 028 25	
Mass With leg		[kg]	Possible	25 Possible	
with leg			Possible	Possible	

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

■SJ-V Series (Normal specifications)

	Motor type		SJ-V15-09ZT	SJ-V18.5-01ZT	SJ-V18.5-04ZT	SJ-V22-01ZT
	1-axis type	MDS-E-SP-	200	200	240	240
Compatible drive unit	2-axis type	MDS-E-SP2-	-	-	-	-
unve unit	Multi-hybrid type	MDS-EM-SPV3-	20080, 200120	20080, 200120	-	-
Output Short-time rat Continuous ra			kW 20 15 10 5 10 1500 6000 8000 rmin Short-time (30min) □	kW 20 15 15 10 5 1500 4500 8000 rmin Short-time (30min) □	kW 20 15 15 10 5 1500 6000 8000 rmin Short-time (30min)	kW 30 20 10 1500 4500 8000 rmin Short-time (30min)
Standard output	t during acceleration/c	deceleration [kW]	15	18.5	18.5	22
<u>.</u>	ation/deceleration outp		18	22.2	22.2	26.4
	ase rotation speed	. ,	1500	1500	1500	1500
Max. rotation s	peed in constant out	put range [r/min]	6000	4500	6000	4500
Maximum rota	ation speed	[r/min]	8000	8000	8000	8000
Continuous ra	ated torque	[N · m]	70	95.5	95.5	118
Motor inertia		[kg · m²]	0.0575	0.0575	0.0575	0.08
Degree of pro	otection		IP44	IP44	IP44	IP44
Outline dimer	nsion drawing	[mm]	250 SQ.	250 SQ.	250 SQ.	250 SQ.
(flange type)						
Flange fitting		[mm]	ø230	ø230	ø230	ø230
Shaft diameter	er	[mm]	ø48	ø48	ø48	ø55
Mass		[kg]	110	110	110	135
With leg			Possible	Possible	Possible	Possible

	Motor type		SJ-V22-04ZT	SJ-V22-06ZT	SJ-V26-01ZT	SJ-V37-01ZT
	1-axis type	MDS-E-SP-	320	240	320	400
Compatible drive unit	2-axis type	MDS-E-SP2-	-	-	-	-
drive unit	Multi-hybrid type	MDS-EM-SPV3-	-	-	-	-
Output Short-time rat Continuous ra			kW 30 20 10 1500 6000 8000 rmin Short-time (30min)	kW 20 15 10 5 0 1500 9500 10000 rmin Short-time (30min)	kW 30 20 10 1500 6000 8000 rmin Short-time (30min)	kW 60 40 20 1150 3450 6000 min Short-time (30min)
Standard outpu	t during acceleration/d	leceleration [kW]	22	15	26	37
Actual accelera	ation/deceleration outp	out (Note 2) [kW]	26.4	18	31.2	44.4
Continuous b	ase rotation speed	[r/min]	1500	1500	1500	1150
Max. rotation s	peed in constant outp	out range [r/min]	6000	9500	6000	3450
Maximum rota	ation speed	[r/min]	8000	10000	8000	6000
Continuous ra	ated torque	[N · m]	118	70.0	140	249
Motor inertia		[kg · m²]	0.08	0.0575	0.0925	0.34
Degree of pro	otection		IP44	IP44	IP44	IP44
	nsion drawing	[mm]	250 SQ.	250 SQ.	250 SQ.	320 SQ.
(flange type)						
Flange fitting	diameter	[mm]	ø230	ø230	ø230	ø300
Shaft diamete	er	[mm]	ø55	ø48	ø55	ø60
Mass		[kg]	135	110	155	300
With leg			Possible	Possible	Possible	Possible

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

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SPINDLE MOTOR 200V

■SJ-V Series (Normal specifications)

	Motor type		SJ-V45-01ZT	SJ-V55-01ZT	
Compatible	1-axis type	MDS-E-SP-	640	640	
Compatible drive unit	2-axis type	MDS-E-SP2-	-	-	
unve unit	Multi-hybrid type	MDS-EM-SPV3-	-	-	
Output Short-time rat Continuous ra			kW 60 20 1500 4500 6000 rmin Short-time (30min)	kW 60 45 0 0 1150 3450 4500 rmin Short-time (30min)	
Standard outpu	t during acceleration/d	eceleration [kW]	45	55	
	tion/deceleration outp		54	66	
	ase rotation speed	[r/min]	1500	1150	
Max. rotation s	peed in constant outp	out range [r/min]	4500	3450	
Maximum rot	ation speed	[r/min]	6000	4500	
Continuous ra	ated torque	[N·m]	236	374	
Motor inertia		[kg · m²]	0.34	0.8475	
Degree of pro	otection		IP44	IP44	
Outline dimension drawing [mm] (flange type)		320 SQ.	480 SQ. 724		
Flange fitting Shaft diamete Mass		[mm] [mm]	¢300 ¢60 300	ø450 ø75 450	
		[kg]	Possible	450 Possible	
With leg					

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

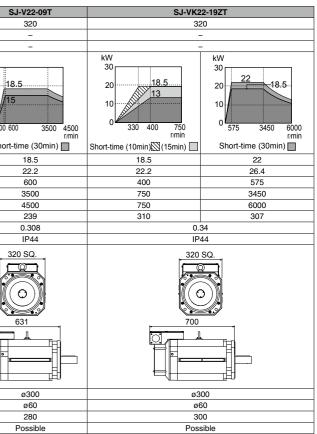
■SJ-V Series (Wide range constant output specifications)

	Motor type		SJ-V11-01T	SJ-V11-09T	SJ-V15-03T	SJ-V18.5-03T
	1-axis type	MDS-E-SP-	160	160	200	240
Compatible	2-axis type	MDS-E-SP2-	16080(L)	16080(L)	-	-
drive unit	Multi-hybrid type	MDS-EM-SPV3-	16040, 16080, 16040S	16040, 16080, 16040S	20080, 200120	-
Output Short-time rat Continuous ra			kW 15 10 5,5,5 0,750,6000 r/min Short-time (30min)	kW 15 10 7.5 5 0 750 750 6000 rrmin Short-time (30min) □	kW 15 10 5 0 750 750 8000 rmin Short-time (30min) □	kW 15 10 5 0 750 750 10 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0
Standard outpu	it during acceleration/o	deceleration [kW]	5.5	7.5	9	11
	ation/deceleration outr		6.6	9	10.8	13.2
	ase rotation speed		750	750	750	750
Max. rotation s	peed in constant out	put range [r/min]	6000	6000	6000	6000
Maximum rota	·	[r/min]	6000	6000	6000	6000
Continuous ra	ated torque	[N·m]	47.1	70.0	95.5	115
Motor inertia		[kg · m²]	0.03	0.0575	0.0575	0.08
Degree of pro	otection		IP44	IP44	IP44	IP44
Outline dimer	nsion drawing	[mm]	204 SQ.	250 SQ.	250 SQ.	250 SQ.
(flange type)						
Flange fitting		[mm]	ø180	ø230	ø230	ø230
Shaft diameter	er	[mm]	ø48	ø48	ø48	ø55
Mass		[kg]	70	110	110	135
With leg			Possible	Possible	Possible	Possible

	Motor type		SJ-V22-05T	
O a man a tilt la	1-axis type	MDS-E-SP-	320	
Compatible drive unit	2-axis type	MDS-E-SP2-	-	
unve unit	Multi-hybrid type	MDS-EM-SPV3-	-	
Output Short-time rat Continuous ra			kW 30 20 15 10 750 6000 rmin Short-time (30min)	kW 30 20 10 500 c Short
Standard outou	t during acceleration/c	locoloration [kW]	15	
	tion/deceleration outp		18	-
	ase rotation speed	[r/min]	750	
	peed in constant out		6000	
Maximum rota		[r/min]	6000	
Continuous ra	<u> </u>	[N·m]	140	
Motor inertia		[kg · m²]	0.08	
Degree of pro	tection		IP44	
Outline dimer (flange type)	ision drawing	[mm]	250 SQ.	
(
Flange fitting	diameter	[mm]	ø230	
Shaft diameter	er	[mm]	ø55	
Mass		[kg]	135	
With leg			Possible	

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

SPINDLE MOTOR 200V



■SJ-VL Series (Low-inertia specifications)

	Motor type	SJ-VL2	2-02ZT	SJ-VL11-02FZT	SJ-VL11-05FZT-S01 *1
O a man a tilt la	1-axis type MDS-E	-SP- 4	0	160	160
Compatible drive unit	2-axis type MDS-E	-SP2- 4	0	16080(L)	16080(L)
unve unit	Multi-hybrid type MDS-EN	-SPV3-		16040, 16080, 16040S	16040, 16080, 16040S
Output Acceleration// Short-time rat Continuous ra	ting 🖾 🗆 🗆	kW 3 2 1 1 0 3000	15000 r.min	kw 15 10 5 4000 10000 15000 1500 r/mir	n kw 15 11 11 10 5 5000 18000 rmin
		Short-time	(15min) 🔲	Short-time (15min)	Short-time (10min)
Standard outpu	t during acceleration/deceleration	n [kW] 2.	2	11	11
Actual accelera	tion/deceleration output (Note) [kW] 2.	6	13.2	13.2
Continuous b	ase rotation speed	r/min] 30	00	1500	5000
Max. rotation s	peed in constant output range	[r/min] 150	00	15000	20000
Maximum rota	ation speed	r/min] 150	00	15000	20000
Continuous ra	ated torque	[N·m] 4.	8	14.0	2.86
Motor inertia	۱] ا	g⋅m²] 0.00)24	0.003	0.0024
Degree of pro	otection	IP	14	IP44	IP44
Outline dimer (flange type)	nsion drawing	[mm]	SQ.	174 SQ. 441	130 SQ.
Flange fitting Shaft diamete		[mm] Ø1 [mm] Ø2		ø150 ø28	ø110 ø22
Mass		[kg] 2	0	42	20
With leg		Not po	ssible	Not possible	Not possible

*1 The acceleration/deceleration frequency is limited by the regenerative resistor.

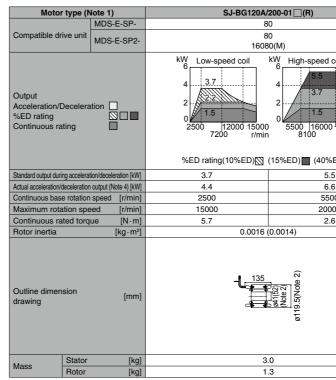
(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

DRIVE SYSTEM BUILT-IN SPINDLE MOTOR 200V

■SJ-BG Series (Normal specifications)

Motor type (N	lote 1)	SJ-BG090A/300-01 (R)	SJ-BG090B/300-03	SJ-BG090D/300-03	SJ-BG110F/240-01
	MDS-E-SP-	20	40	160	80
Compatible drive unit MDS-E-SP2-		20	40	16080(L)	80 16080(M)
Output Acceleration/Deceleration %ED rating Continuous rating Standard output during acceleration/deceleration [kW]		kW 2.0 1.5 1.5 0 5.0 7340 8350 r/min 8350 r/min 8350 r/min 8350 r/min 8001000 %ED rating(15%ED) (25%ED) ↓ (40%ED) ↓	KW 2.0 1.5 1.5 0.5 0 5000 6000 24000 30000 rmm %ED rating(10%ED)⊠ (40%ED)	KW 10 8 6 4 1 5.5 1 2000 14500 30000 r/min %ED rating(10%ED) ∏ (25%ED) ☐ (40%ED) ☐	KW 6 4 2 3.0 3000 ⁻¹ -5.5
Standard output during accelerat	tion/deceleration [kW]	1.5	1.5	9.0	5.5
Actual acceleration/deceleration	output (Note 4) [kW]	1.8	1.8	10.8	6.6
Continuous base rotation	speed [r/min]	8400	6000	12000	3000
Maximum rotation spe	ed [r/min]	30000	30000	30000	24000
Continuous rated torq	ue [N·m]	0.85	1.91	4.38	9.5
Rotor inertia	[kg · m²]	0.00021	0.0004	0.0008	0.0026
Outline dimension drawing	[mm]	(Note 2) 833(35) 889.5(Note 2)	0.001e 2) 0.001e 2) 0.001e 2)	0.00 to 2) (Note 2) (Note 2)	09.5(Note 2)
Mass Stator	[kg]	0.7	1.2	2.6	7.4
Rotor	[kg]	0.4	0.7	1.4	3.2

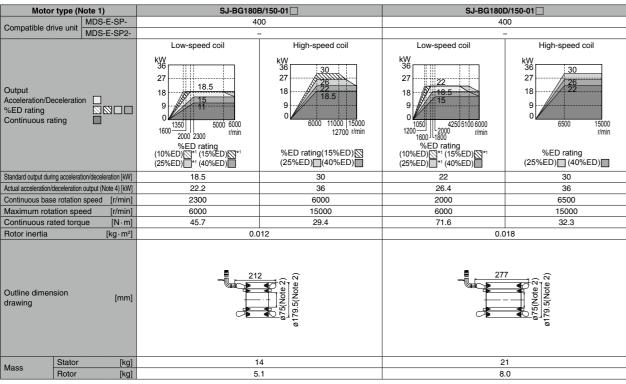


(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.
(Note 2) These dimensions are the dimensions when shipped from the plant.
(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".
(Note 5) A value in brackets is for the motor type which has (R) in the end of the type name.

	SJ-BG120C/200-01 (R)	SJ-BG150D/150-01
	80	80
	80 16080(M)	80 16080(M)
coil 20000 r/min	kW 6 4 2.2 0 1900 12000 20000 2500 r/min %ED rating(15%ED)	kW 6 4 2 0 2500 7500 15000 r/min %ED rating(40%ED)
ED)	(40%ED)	
5	3.7	5.5
6	4.4	6.6
00	2500	2500
000	20000	15000
6	8.4	14.1
	0.0032 (0.0027)	0.0057
	195 (Note 2) 19.5(Note 2)	0149.5(Note 2)
	5.9	8.1
	2.5	3.7

■SJ-BG Series (Normal specifications)

Motor type	e (Note 1)		SJ-BG160B/150-01 (R)		SJ-BG160D/150-01 (R)	SJ-BG160D/150-02 (R)
	MDS-E-SP-	40	80	160	80	160
Compatible drive u	nit MDS-E-SP2-	40	80 16080(M)	16080(L)	80 16080(M)	16080(L)
Output Acceleration/Decelerati %ED rating Continuous rating	on 	kW 6 4 2 2 2 2 2 2 2 2 3500 10000 15000 r/min	kW 6 4 2 2 2 2 2 2 2 2 3.7 1300 1500 15000 r/min	kW 6 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	kW 6 4 2 0 1500 4500 15000 r/min	kW 15 10 5 7.5 3.7 15 00 1500 1500 1700 8000 1700 11000
		%ED rating(40%ED)	%ED rating(40%ED)	%ED rating(10%ED)∑ (20%ED)⊟(40%ED) □	%ED rating(40%ED)	%ED rating(15%ED) (40%ED)
Standard output during acce	eleration/deceleration [kW]	3.7	3.7	7.5	5.5	7.5
Actual acceleration/deceler	ation output (Note 4) [kW]	4.44	4.44	9	6.6	9
Continuous base rota	tion speed [r/min]	3500	1300	1770	1500	1500
Maximum rotation	speed [r/min]	15000	15000	15000	15000	15000
Continuous rated t	orque [N·m]	6.0	16.2	20.0	23.6	23.6
Rotor inertia	[kg·m²]	0.005(0.0042)	0.005(0.0042)	0.005(0.0042)	0.0075(0.0061)	0.0075(0.0061)
Outline dimension drawing	[mm]		153 (6 anonyor 2) (8 anonyor 2) (8 anonyor 2) (9 anonyor 2		@00(Note 2) (0 70)(Note 2) 0 759.5(Note 2)	@60(Note 2) @70)(Note 5) @159.5(Note 2)
Mass	tor [kg]	7.1	7.1	7.1	10.0	11.0
Rot	or [kg]	2.9(2.3)	2.9(2.3)	2.9(2.3)	4.3(3.3)	4.3(3.3)



*1 The cycle times for 10%ED rating, 15%ED rating, and 25%ED rating (Low-speed coil) are 5 minutes.

(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.

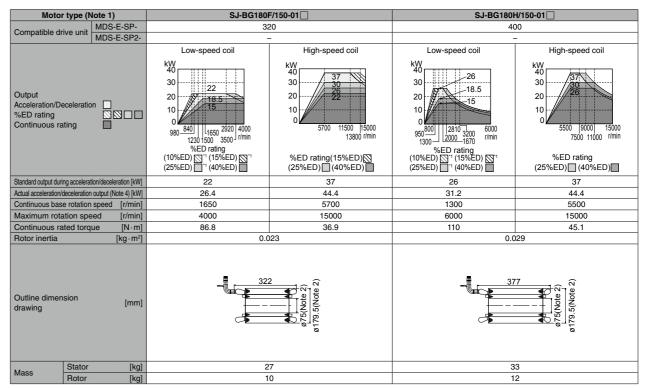
(Note 2) These dimensions are the dimensions when shipped from the plant.

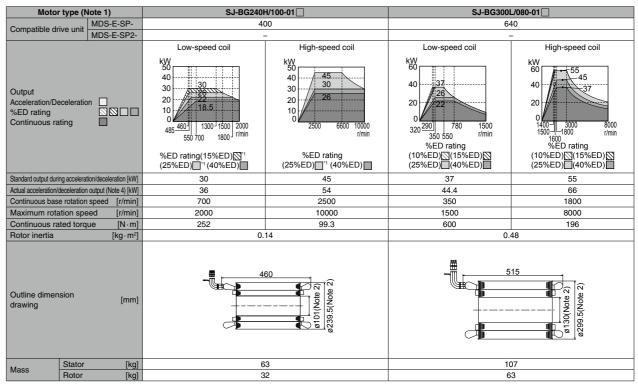
(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

(Note 5) A value in brackets is for the motor type which has (R) in the end of the type name.

SJ-BG Series (Normal specifications)





*1 The cycle times for 10%ED rating, 15%ED rating, 25%ED rating (Low-speed coil), and 25%ED rating (High-speed coil) are 5 minutes.

(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above. (Note 2) These dimensions are the dimensions when shipped from the plant.

(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

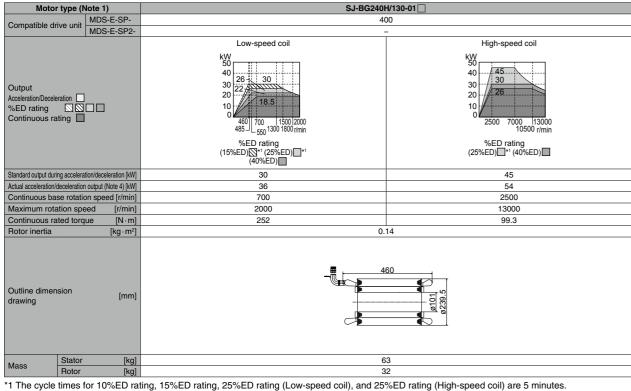
■SJ-BG Series (High-speed specifications)

Motor type (Note 1)		SJ-BG160	0/200-01	SJ-BG180F/200-01		
Compatible drive unit	MDS-E-SP- 240		40	320		
MDS-E-SP2-		-	-	· · · ·	-	
		Low-speed coil	High-speed coil	Low-speed coil	High-speed coil	
Output Acceleration/Deceleration	800	kW 15 10 5 0 2300 2700 5500 r/min	kW 27 18.5 22 18.5 22 18.5 22 18.5 22 18.5 22 15 20000 7500 14000 r/min 8500	W 40 30 18.5 22 10 840 150 1650 3500r/min 1520 1500 1600 1600 1500 1600 1600 1600 1500 1600 1600 1600 1600 1600 1600 1600	WW 40 30 26 10 5700 11500 150	
		%ED rating (10%ED)⊠*¹ (15%ED)⊠*¹ (40%ED) ∏	(10%ED)⊠ ⁺¹ (15%ED)⊠ ⁺¹ (25%ED)⊟ ⁺¹ (40%ED)⊟	*ED rating (10%ED)⊠*1 (15%ED)⊠*1 (25%ED)■*1 (40%ED)■	%ED rating (15%ED)⊠*1 (25%ED)⊒*1 (40%ED)	
Standard output during accelera		15	22	22	37	
Actual acceleration/deceleration		18.0	26.4	26.4	44.4	
Continuous base rotation speed [r/min]		2700	7500	1650	5700	
Maximum rotation speed [r/min]		5500	20000	4000	20000	
Continuous rated torque [N·m]		26.5	19.1	86.8	36.9	
Rotor inertia	[kg · m²]	0.00	062	0.0	023	
Outline dimension [mm] drawing			a159.5		8179.55 8179.55 8179.55	
Mass Stator [kg]		10		27		
Rotor	[kg]	3.4		1	0	
Motor type (N	loto 1)		SJ-BG2401	L/120_01		
wotor type (r	MDS-E-SP-					
Compatible drive unit				00		
Compatible drive unit MDS-E-SP2-				- High-speed coil		

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DRIVE SYSTEM

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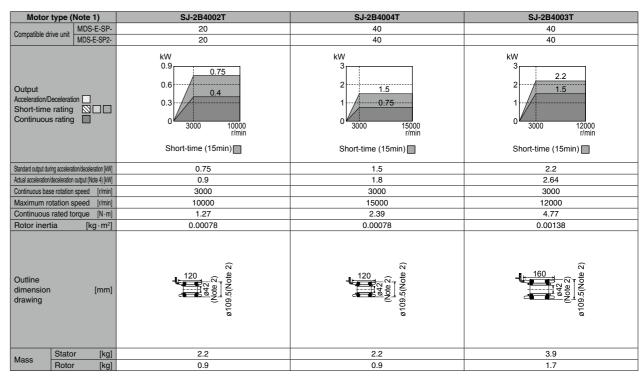
(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.

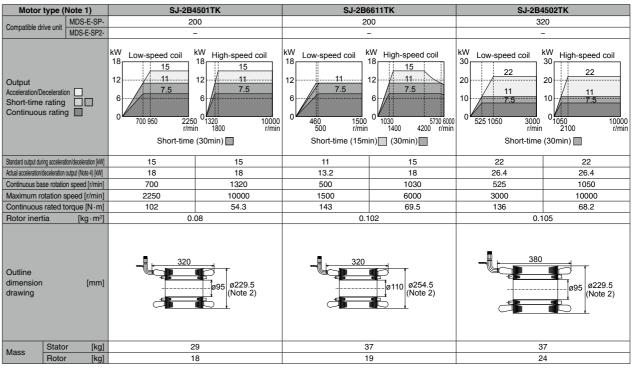
(Note 2) These dimensions are the dimensions when shipped from the plant.

(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

■SJ-B Series

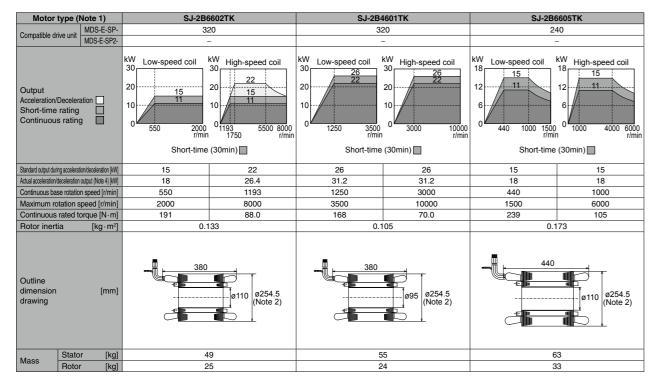


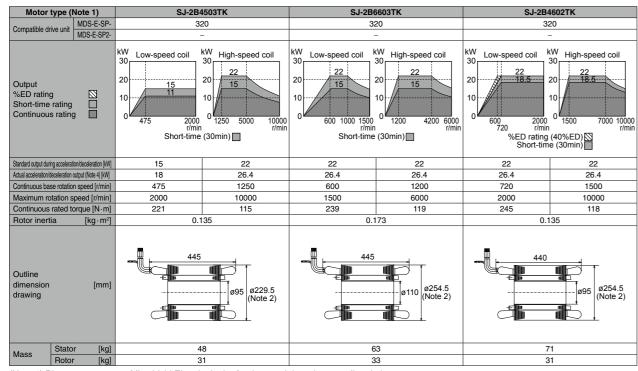


(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.
(Note 2) These dimensions are the dimensions when shipped from the plant.
(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

BUILT-IN SPINDLE MOTOR 200V

■SJ-B Series





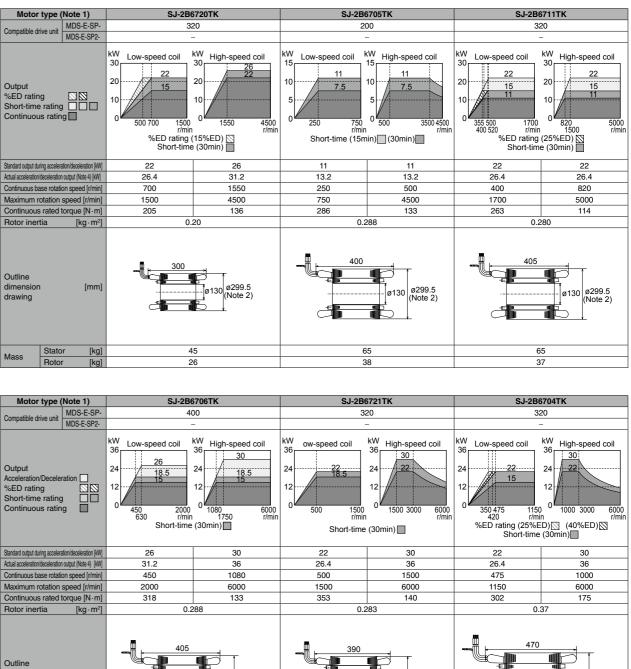
(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.

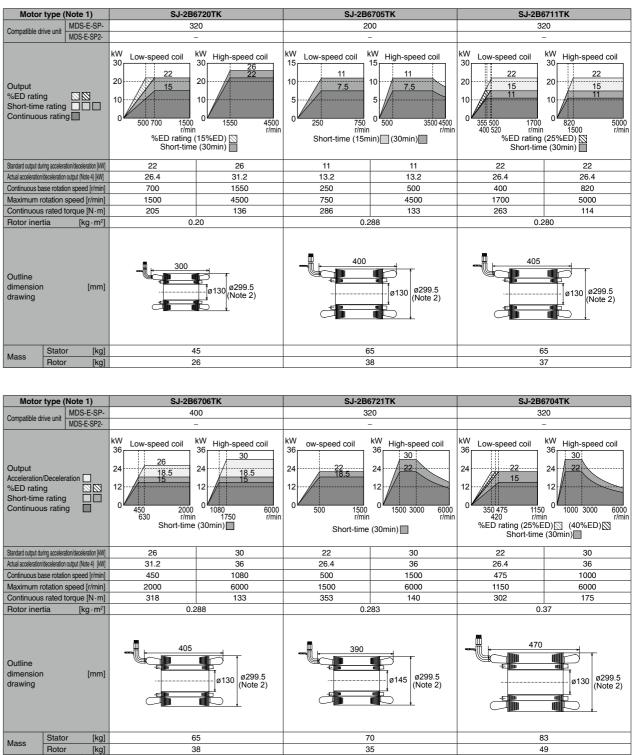
(Note 2) These dimensions are the dimensions when shipped from the plant.

(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

■SJ-B Series

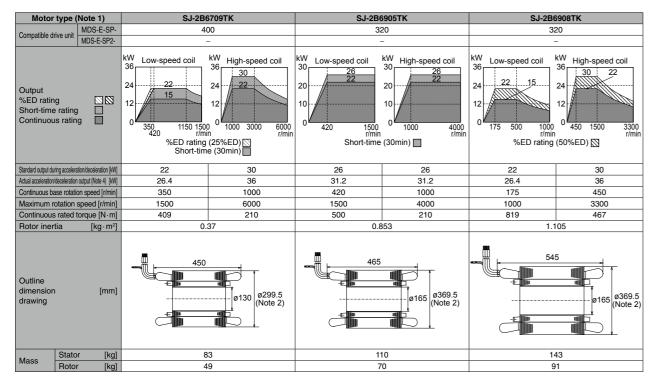




(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above. (Note 2) These dimensions are the dimensions when shipped from the plant. (Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

BUILT-IN SPINDLE MOTOR 200V

■SJ-B Series



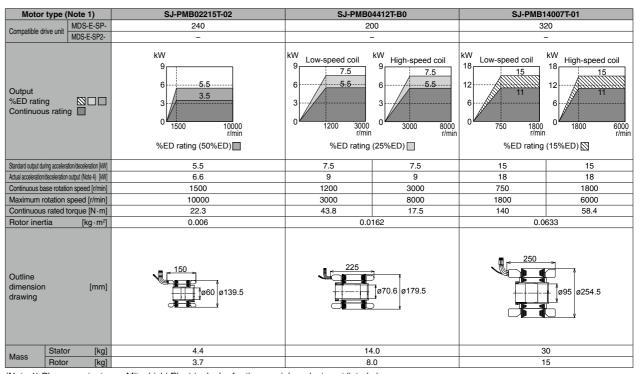
Motor type (Note 1)		SJ-2B6	906TK	SJ-2B6914TK		
Compatible drive unit	MDS-E-SP-	40	00	64	10	
MDS-E-SP2-		-	-	-	-	
Output Acceleration/Decele Short-time rating Continuous ratin		45 200 30 22 30 45 37 30 22 30 22 30 30 22 30 30 30 22 30 30 30 30 30 30 30 30 30 30 30 30 30		KW Low-speed coil 36 24 12 0 240 100		
Standard output during accelera	tion/deceleration [kW]	22	37	30	45	
Actual acceleration/deceleration	output (Note 4) [kW]	26.4	44.4	36	54	
Continuous base rotation speed [r/min]		175	600	240	470	
Maximum rotation speed [r/min]		1000	3300	1000	3300	
Continuous rated torque [N·m]		819	477	995	508	
Rotor inertia [kg·m ²]		1.105		1.105		
Outline dimension drawing	(mm)		5 0165 (Note 2)		ø369.5 (Note 2)	
Mass State	r [kg]	14	13	14	13	
Mass Stator [kg] 143 Rotor [kg] 91				91		

(Note 1) Please contact your Mitsubishi Electric dealer for the special products (Note 2) These dimensions are the dimensions when shipped from the plant. listed above

(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

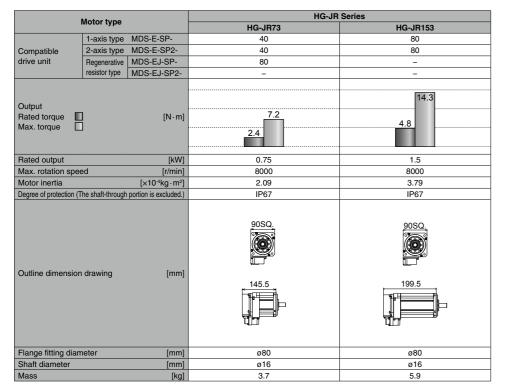
■SJ-PMB Series



(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above. (Note 2) These dimensions are the dimensions when shipped from the plant. (Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

DRIVE SYSTEM TOOL SPINDLE MOTOR 200V

■HG-JR Series



■HG Series

				HG Series	
I	Motor type			HG D47	
			HG46	HG56	HG96
	1-axis type	MDS-E-SP-	20	20	20
Commotible	2 avic tupo	MDS-E-SP2-	20	20	20
Compatible drive unit	2-axis type		20	20	40
	Regenerative		20	20	20
	resistor type	MDS-EJ-SP2-	20	20	20
				5.0	
Dutput Rated torque	1	[N · m] ······		3.0	
Rated torque 🛛 🕅 Max. torque	1	[14.11]	2.5		1.42
	1		0.64	0.8	1.43
Rated output		[kW]	0.4	0.5	0.9
Max. rotation spee	ed	[r/min]	6000	6000	6000
Motor inertia		[×10 ⁻⁴ kg ⋅ m ²]	0.234	0.379	1.27
Degree of protection (T			IP67	IP67	IP67
connector portion and b	rake connector p	portion are excluded.)	11 07	1 67	11 07
					80SQ.
			60SQ.	60SQ.	
				\odot	(©)
			'Ē'		
Dutline dimension	drawing	[mm]			
	Ŭ		117.2	138.9	147.8
					[¶====="i
			• ~•	H 23	
longo fitting diam	otor	[ø50	ø50	ø70
Flange fitting diam Shaft diameter	ietel	[mm]	ø50 ø14	ø50 ø14	ø70 ø19
		[mm]			
Mass		[kg]	1.2	1.6 num current and maximum torque a	2.9

(Note 1) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

■HG Series

	Motor type		HG75	HG105
	1 avia tura	MDS-E-SP-	20	20
	1-axis type	MD5-E-5P-		
Compatible	2-axis type	MDS-E-SP2-	20 40	20 40
drive unit	Descention	MDS-EJ-SP-	20	20
	Regenerative resistor type	MDS-EJ-SP2-	20	20
Output Rated torque		[N·m]		
Max. torque			1.8 8.0	2.4
Rated output		[kW]	0.75	1.0
Rated rotation	· · · · · · · · · · · · · · · · · · ·	[r/min]		00
Max. rotation s	speed	[r/min]	40	00
Motor inertia		[×10 ⁻⁴ kg ⋅ m ²]	2.62	5.12
Degree of protection	on (The shaft-through p	portion is excluded.)		-
			90 SQ.	90 SQ.
Outline dimens (flange type)	sion drawing	[mm]	127.5	
Flange fitting d	liameter	[mm]	ø80	ø80
Shaft diameter		[mm]	ø14	ø14
Mass		[kg]	2.6	4.4

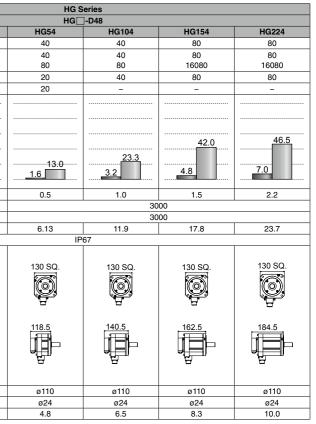
	Motor type			
			HG204	HG354
	1-axis type	MDS-E-SP-	80	160
Compatible drive unit	2-axis type	MDS-E-SP2-	80 16080	16080
anve unit	Regenerative	MDS-EJ-SP-	80	-
	resistor type	MDS-EJ-SP2-	-	-
Output				
Rated torque		[N · m]		.90
Max. torque			47.0	
			6.4	11.1
Rated output		[kW]	2.0	3.5
Rated rotation	speed	[r/min]	•	
Max. rotation s	peed	[r/min]		
Motor inertia		[×10 ⁻⁴ kg ⋅ m ²]	38.3	75.0
Degree of protection	on (The shaft-through	portion is excluded.)		
Outline dimension drawing (flange type)		[mm]	176 SQ.	176 SQ.
Flange fitting c Shaft diameter		[mm]	ø114.3 ø35	ø114.3 ø35
Mass		[kg]	12.0	19.0

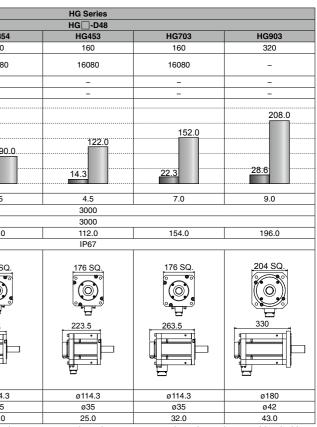
(Note 1) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

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TOOL SPINDLE MOTOR 200V





DRIVE SYSTEM SERVO MOTOR 400V

■HG-H Series

MDS-EH-V1- MDS-EH-V3- MDS-EJH-V3- MDS-EJH-V1 [N·m] [x10 ⁴ kg·m ²] [x10 ⁴ kg·m ²] portion is excluded.]	10 10 20 - - 15 8.0 2.0 0.75 50 2.62 2.70	10 10 20 - - 20 11.0 1.0 10 1.0 10 1.0 10 1.0 1.	20 20 40 40 8040, 10040 20 13.0 2.9 0.5 6.13 8.26 IP67	20 20 40 40 8040, 10040 20 23.3 5.9 1.0 4000 11.9 14.0	40 40 80 40 8040, 10040, 10060 40 42.0 9.0 9.0 1.5 17.8 20.0
MDS-EH-V3- MDS-EMH-SPV3- MDS-EJH-V1 [N·m] [k10-kg.m] [x10-kg.m2] [x10-kg.m2]	20 - - 15 	20 - - 20 11.0 10 00 5.12	40 40 8040, 10040 20 	40 40 8040, 10040 20 23.3 5.9 1.0 4000 11.9	80 40 8040, 10040, 10060 40 40 42.0 9.0 9.0 1.5 17.8
MDS-EH-V3- MDS-EMH-SPV3- MDS-EJH-V1 [N·m] [k10-kg.m] [x10-kg.m2] [x10-kg.m2]	- - 15 - 	- - 20 11.0 	40 8040, 10040 20 13.0 0.5 6.13 8.26	40 8040, 10040 20 23.3 5.9 1.0 4000 11.9	40 8040, 10040, 10060 40 42.0 9.0 9.0 1.5 17.8
MDS-EMH-SPV3- MDS-EJH-V1 [N·m] [kW] [x10 ⁴ kg·m ²] [x10 ⁴ kg·m ²]	- 15 8.0. 2.0 0.75 50 2.62	- 20 11.0 3.0 1.0 00 5.12	8040, 10040 20 13.0 2.9 0.5 6.13 8.26	8040, 10040 20 23.3 5.9 1.0 4000 11.9	8040, 10040, 10060 40 42.0 9.0 1.5 17.8
MDS-EJH-V1 [N·m] [kW] [x10 ⁴ kg·m ²] [x10 ⁴ kg·m ²]	15 	20 	20 13.0 2.9 0.5 6.13 8.26	20 23.3 5.9 1.0 4000 11.9	40 42.0 9.0 1.5 17.8
[N·m] [kW] [r/min] [×10 ⁴ kg·m ²] [×10 ⁴ kg·m ²]	8.0. 2.0 0.75 50 2.62	11.0 3.0 1.0 000 5.12	13.0 2.9 0.5 6.13 8.26	23.3 5.9 1.0 4000 11.9	42.0 9.0 1.5
[kW] [r/min] [×10 ⁻⁴ kg·m ²] [×10 ⁻⁴ kg·m ²]	0.75 50 2.62	3.0 1.0 000 5.12	13.0 2.9 0.5 6.13 8.26	5.9 1.0 4000 11.9	42.0 9.0 1.5
[r/min] [×10 ⁻⁴ kg · m ²] [×10 ⁻⁴ kg · m ²]	0.75 50 2.62	3.0 1.0 000 5.12	0.5 6.13 8.26	5.9 1.0 4000 11.9	9.0 1.5 17.8
[r/min] [×10 ⁻⁴ kg · m ²] [×10 ⁻⁴ kg · m ²]	50 2.62	5.12	6.13 8.26	4000 11.9	17.8
[×10 ⁻⁴ kg ⋅ m ²] [×10 ⁻⁴ kg ⋅ m ²]	2.62	5.12	8.26	11.9	
[×10 ⁻⁴ kg · m ²]			8.26		
	2.70	5.20		14.0	20.0
portion is excluded.)		1	IP67	•	
t, [mm] 3.5mm	90 SQ.	90 SQ.	130 SQ.	130 SQ.	130 SQ.
[mm]	ø80	ø80	ø110	ø110	ø110
[mm]					ø24
[kg]	. ,				8.3(11.0)
[p/rev] (D74) [p/rev] (D51)	EH EH, EJH	EH EH, EJH	EH EH, EMH, EJH	EH EH, EMH, EJH	EH EH, EMH, EJH
[[mm] [kg] [p/rev] (D74)	[mm] 014 [kg] 2.6(3.6) p/rev] (D74) EH p/rev] (D51) EH F IH	[mm] ø14 ø14 [kg] 2.6(3.6) 4.4(5.3) p/rev] (D74) EH EH o/rev] (D51) EH EH	[mm] Ø14 Ø14 Ø24 [kg] 2.6(3.6) 4.4(5.3) 4.8(6.7) [p/rev] (D74) EH EH EH [often] D/rev] (D51) EH EH EH EH	[mm] Ø14 Ø14 Ø24 Ø24 [kg] 2.6(3.6) 4.4(5.3) 4.8(6.7) 6.5(8.5) p/rev] (D74) EH EH EH EH o/rev] (D51) EH EH EH EH EH

	Motor type		HG-H204	HG-H354	HG-H453	HG-H703	HG-H903
	1-axis type	MDS-EH-V1-	40	80	80	80W	160
0	2-axis type	MDS-EH-V2-	40 80	80 80W	80 80W	80W	-
Compatible drive unit	3-axis type	MDS-EH-V3-	40	-	-	-	-
unve unit	Multi-hybrid type	MDS-EMH-SPV3-	8040, 10040, 10060	10060	10060	-	-
	Regenerative resistor type	MDS-EJH-V1	-	-	-	-	-
Output Stall torque	1	[N·m]				152.0	208.0
Max. torque		[]			122.0		
			47.0			49.0	58.8
			13.7	22.5			
Rated output		[kW]	2.0	3.5	4.5	7.0	9.0
Max. rotation spe	ed	[r/min]	40	00	3500	30	000
Motor inertia		[×10 ⁻⁴ kg · m ²]	38.3	75.0	112.0	154.0	196.0
Motor inertia with	a brake	[×10 ⁻⁴ kg · m ²]	47.9	84.7	122.0	164.0	206.0
Degree of protection (The shaft-through	portion is excluded.)			IP67		1
Outline dimension (flange type) (Without a brake, D48 encoder)	÷	t, [mm]	176 SQ.	176 SQ.	176 SQ.	176 SQ.	204 SQ
(Note) The total la longer when usin D74 encoder.							
Flange fitting diar	neter	[mm]	ø114.3	ø114.3	ø114.3	ø114.3	ø180
Shaft diameter		[mm]	ø35	ø35	ø35	ø35	ø42
Mass (with a brak		[kg]	12.0(18.0)	19.0(25.0)	25.0(31.0)	32.0(38.0)	43.0(49.0)
Absolute position encoder compatible drive unit	4,194,304	[p/rev] (D74) [p/rev] (D51) [p/rev] (D48)	EH EH, EMH	EH EH, EMH	EH EH, EMH	EH	EH

(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

■HG-H Series

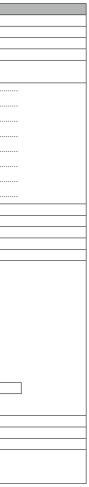
Motor type HG-H1502 I-axis type MDS-EH-V1 200 2-axis type MDS-EH-V2 - 3-axis type MDS-EH-V3 - Mult-hybrid type MDS-EH-V3 - Regenerative resistor type MDS-EJH-V1 - Output Image: Second Secon				HG-H1502
2-axis type MDS-EH-V2- - 3-axis type MDS-EH-V3- - Milt-hytrd type MDS-EMH-SPV3- - Regenerative resistor type MDS-EJH-V1 - Output Image: Comparison of the second o				
Compatible drive unit 3-axis type MDS-EH-V3- - Muli-hybrid type MDS-EMH-SPV3- - Regenerative resistor type MDS-EJH-V1 - Output Image: Second			-	
drive unit Multi-hybrid type MDS-EMH-SPV3 - Regenerative resistor type MDS-EJH-V1 - Output [N·m] 152.1 Stall torque [N·m] 152.1 Max. torque [N·m] 152.1 Rated output [kW] 15.0 Max. torque [x10*kg·m²] 489.0 Motor inertia [x10*kg·m²] - Degree of protection (The shaft-through portion is excluded) IP44 Outline dimension drawing (flange type) [mm] 476 Flange fitting diameter [mm] 6230 Shaft diameter [mm] 6230 Mass (with a brake) [kg] 120 Absolute position encoder compatible 67,108,864 [p/rev] (D74) 4,194,304 [p/rev] (D51) EH			-	
Regenerative resistor type MDS-EJH-V1 - Output Stall torque IN-m 320.0 Max. torque IN-m 152.1 Max. rotation speed [r/min] 2500 Motor inertia [x104kg·m²] - Degree of protection (The shaft-through portion is excluded.) IP44 Outline dimension drawing (flange type) [mm] 476 Flange fitting diameter [mm] 0230 Shaft diameter [mm] 0230 Mass (with a brake) [kg] 120 Absolute position encoder compatible 65,108,864 [p/rev] (D74) 4,194,304 [p/rev] (D51) EH				-
resistor type MDS-EJH-V1 - Output Image: Stall torque Image: Stall torque Image: Stall torque Image: Stall torque Max. torque Image: Stall torque Image: Stall torque Image: Stall torque Image: Stall torque Rated output [N·m] Image: Stall torque Image: Stall torque Image: Stall torque Rated output [kW] Image: Stall torque Image: Stall torque Image: Stall torque Max. rotation speed [r/min] 2500 Motor inertia [x10-4kg-m²] - Degree of protection (The shaft-through portion is excluded.) Image: Stall torque Image: Stall torque Outline dimension drawing (Itange type) [mm] 476 Image: Stall torque Flange fitting diameter [mm] e0230 e05 Shaft diameter [mm] e05 120 Absolute position 67.108,864 [p/rev] (D74) EH	arive unit		MDS-EMH-SPV3-	-
Output Stall torque [N·m] 152.1 Max. torque [N·m] 152.1 Rated output [KW] 15.0 Max. rotation speed [r/min] 2500 Motor inertia [x10*kg·m²] 489.0 Motor inertia with a brake [x10*kg·m²] - Degree of protection (The shaft-through portion is excluded.) IP44 250SO. - (flange type) [mm] 476 Flange fitting diameter [mm] 0230 Shaft diameter [mm] 065 Mass (with a brake) [kg] 120 Absolute position 67.108,864 [p/rev] (D74) EH			MDS-EJH-V1	-
Max. rotation speed [r/min] 2500 Motor inertia [x10*kg·m²] 489.0 Motor inertia with a brake [x10*kg·m²] - Degree of protection (The shaft-through portion is excluded.) IP44 - Outline dimension drawing (flange type) [mm] 476 Flange fitting diameter [mm] 065 Shaft diameter [mm] 065 Mass (with a brake) [kg] 120 Absolute position encoder compatible 67.108,864 [p/rev] (D74) (19/4) (p/rev] (D51) EH	Stall torque		[N · m]	152.1
Motor inertia [x10 ⁻⁴ kg·m ²] 489.0 Motor inertia with a brake [x10 ⁻⁴ kg·m ²] - Degree of protection (The shaft-through portion is excluded.) IP44 Quttine dimension drawing (flange type) [mm] 476 Flange fitting diameter [mm] 0230 Shaft diameter [mm] 065 Mass (with a brake) [kg] 120 Absolute position encoder compatible 67.108,864 [p/rev] (D51) EH	Rated output		[kW]	15.0
Motor inertia with a brake [x10 ⁴ kg·m ²] - Degree of protection (The shaft-through portion is excluded.) IP44 Outline dimension drawing (flange type) [mm] 250SQ. Flange fitting diameter [mm] 476 Flange fitting diameter [mm] 065 Shaft diameter [mm] 065 Mass (with a brake) [kg] 120 Absolute position encoder compatible 67,108,864 [p/rev] (D74) (4,194,304 [p/rev] (D51) EH		ed	[r/min]	2500
Degree of protection (The shaft-through portion is excluded.) IP44 Outline dimension drawing (flange type) [mm] 476 Image: state sta	Motor inertia		[×10 ⁻⁴ kg · m ²]	489.0
Outline dimension drawing (flange type) [mm] 476 Flange fitting diameter [mm] 65 Mass (with a brake) 67,108,864 [p/rev] (D74) encoder compatible 67,108,864 [p/rev] (D51)	Motor inertia with	a brake	[×10 ⁻⁴ kg · m ²]	-
Outline dimension drawing (flange type) [mm] 476 Image fitting diameter Flange fitting diameter [mm] 065 Mass (with a brake) [kg] 120 Absolute position encoder compatible 67.108,864 [p/rev] (D74) (4,194,304 [p/rev] (D51) EH	Degree of protection (T	he shaft-through	portion is excluded.)	IP44
Shaft diameter [mm] o65 Mass (with a brake) [kg] 120 Absolute position 67,108,864 [p/rev] (D74) EH		drawing	[mm]	
Mass (with a brake) [kg] 120 Absolute position 67,108,864 [p/rev] (D74) EH encoder compatible 4,194,304 [p/rev] (D51) EH	Flange fitting diam	leter	[mm]	ø230
Absolute position 67,108,864 [p/rev] (D74) encoder compatible 4,194,304 [p/rev] (D51)	Shaft diameter		[mm]	ø65
encoder compatible 4,194,304 [p/rev] (D51) EH	Mass (with a brake	e)	[kg]	120
	Absolute position	67,108,864	[p/rev] (D74)	
drive unit 1,048,576 [p/rev] (D48)		4,194,304	[p/rev] (D51)	EH EH
	drive unit	1,048,576	[p/rev] (D48)	

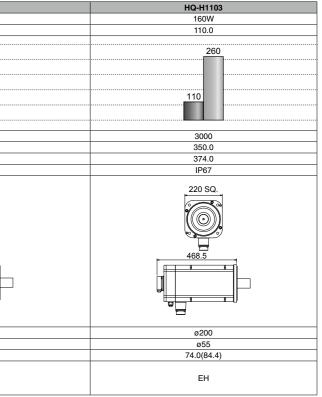
■HQ-H Series

N	Notor type		HQ-H903
Compatible drive unit	1-axis type	MDS-EH-V1-	160
Stall torque			70.0
Output Stall torque		[N·m]	70
Max. rotation spee	d	[r/min]	3000
Motor inertia		[×10 ⁻⁴ kg · m ²]	230.0
Motor inertia with a	a brake	[×10 ⁻⁴ kg · m ²]	254.0
Degree of protection (Th	ne shaft-through p	ortion is excluded.)	IP67
Outline dimension (flange type) (Without a brake, § D48 encoder) (Note) The total ler longer when using D74 encoder.	Straight shaft, ngth will be 3. a D51 or	[mm] 5mm	220 SQ.
Flange fitting diam	eter	[mm]	ø200
Shaft diameter		[mm]	ø55
Mass (with a brake	,	[kg]	51.0(61.4)
Absolute position encoder compatible	67,108,864 [4,194,304 [p		EH

(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

SERVO MOTOR 400V

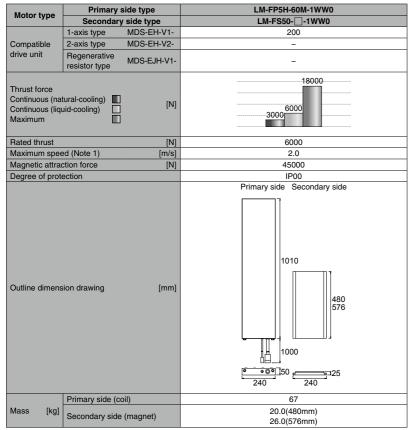




O DRIVE SYSTEM

DRIVE SYSTEM LINEAR SERVO MOTOR 400V

■LM-F Series

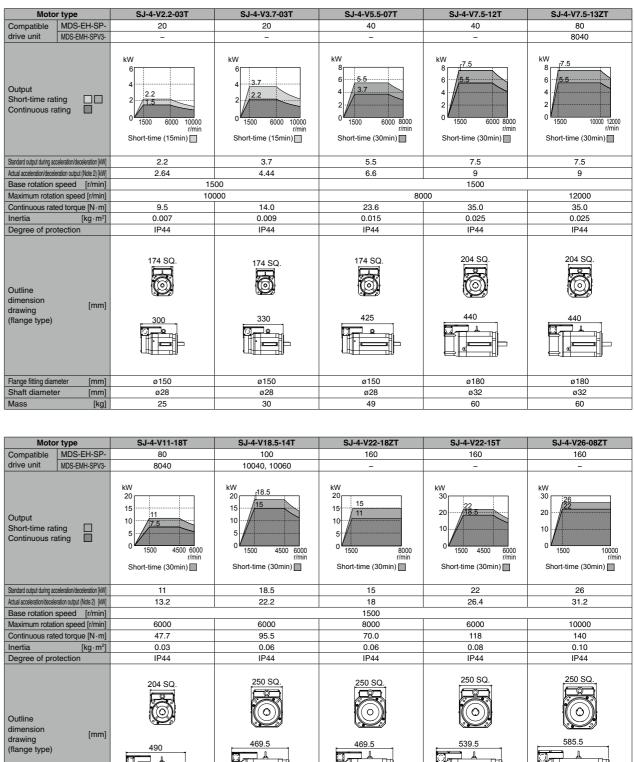


(Note 1) The maximum speed in actual use is either the linear scale's maximum speed or this specified value, whichever is smaller.

(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

DRIVE SYSTEM SPINDLE MOTOR 400V

■SJ-4-V Series (Normal)



Moto	r type	SJ-4-V11-18T	SJ-4-V18.5-14T
Compatible	MDS-EH-SP-	80	100
drive unit	MDS-EMH-SPV3-	8040	10040, 10060
Output Short-time rat Continuous ra		kW 20 15 11 10 5 0 1500 4500 6000 r/min Short-time (30min)	KW 20 15 15 15 15 15 15 15 15 15 15 15 15 15
Standard output during acc	celeration/deceleration [kW]	11	18.5
Actual acceleration/decele	ration output (Note 2) [kW]	13.2	22.2
Base rotation a			
	on speed [r/min]	6000	6000
Continuous rate	ed torque [N · m]	47.7	95.5
Inertia	[kg∙m²]	0.03	0.06
Degree of pro	tection	IP44	IP44
Outline dimension drawing (flange type)	[mm]	204 SQ. 490	250 SQ. 469.5
Flange fitting diam		ø180	ø230
Shaft diamete	· []	ø48	ø48
Mass	[kg]	70	110
(Note 1) Only	y the combina	ation designated in this m	anual can be used for the

(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output". (Note 3) The rated output is guaranteed at the rated input voltage (380 to 440VAC 50Hz / 380 to 480VAC 60Hz) to the power supply unit. If the input voltage fluctuates and drops below 380VAC, the rated output may not be attained.

SPINDLE MOTOR 400V

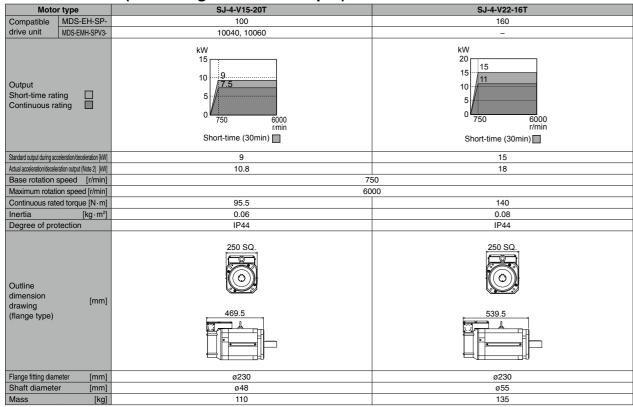
e. ø230 ø230 ø230 ø48 ø55 ø55 110 135 155 motor and drive unit. Always use the designated combination.

6 DRIVE SYSTEM

■SJ-4-V Series (Normal)

Motor	r type	SJ-4-V37-04ZT	SJ-4-V45-02T	SJ-4-V55-03T
Compatible	MDS-EH-SP-	200	320	320
drive unit	MDS-EMH-SPV3-	-	-	-
Output Short-time rati Continuous ra		kW 60 40 20 30 1150 3450 6000 7/min Short-time (30min)	kW 60 40 20 1500 4500 r/min Short-time (30min)	kW (55 40 0 0 1150 3450 r/min Short-time (30min)
Standard output during acc	eleration/deceleration [kW]	37	45	55
Actual acceleration/deceler		44.4	54	66
Base rotation s		1150	1500	1150
Maximum rotation		6000	4500	3450
Continuous rate		249	236	374
Inertia	[kg·m²]	0.34	0.34	0.85
Degree of pro	tection	IP44	IP44	IP44
Outline dimension	[mm]	320 SQ.	320 SQ.	480 SQ.
drawing (flange type)	(rum)			
Flange fitting diam	eter [mm]	ø300	ø300	ø450
Shaft diamete		ø60	ø60	ø75
Mass	[kg]	300	300	450

■SJ-4-V Series (Wide range constant output)

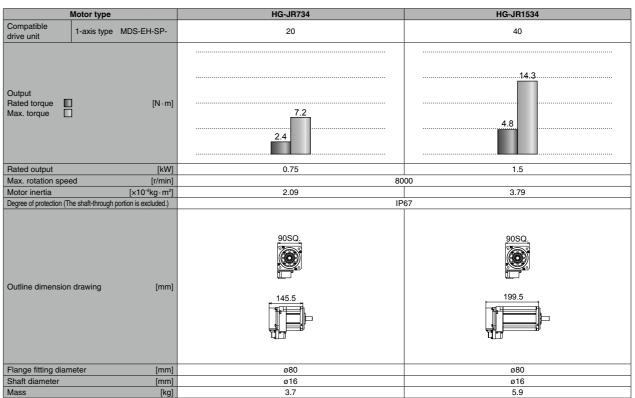


(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination. (Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output". (Note 3) The rated output is guaranteed at the rated input voltage (380 to 440VAC 50Hz / 380 to 480VAC 60Hz) to the power supply unit.

If the input voltage fluctuates and drops below 380VAC, the rated output may not be attained.

DRIVE SYSTEM TOOL SPINDLE MOTOR 400V

■HG-JR Series



(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

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TOOL SPINDLE MOTOR 400V

DRIVE SYSTEM DRIVE UNIT

■MDS-E Series

1-axis servo drive unit

Drive	unit type		MDS-E-V1-20	MDS-E-V1-40	MDS-E-V1-80	MDS-E-V1-160	MDS-E-V1-160W	MDS-E-V1-320	MDS-E-V1-320W		
Drive unit cate	gory					1-axis servo					
Nominal maximum	current (peak)	[A]	20	40	80	160	160	320	320		
Deverinent	Rated voltage	[V]				270 to 324DC					
Power input	Rated current	[A]	7.0	7.0	14	30	35	45	55		
	Voltage	[V]			200 to 240AC Tolera	ble fluctuation: betw	een +10% and -15%		-		
Control power input	Current	[A]				MAX. 0.2					
power input	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%								
Control metho	d		Sine wave PWM control method								
Dynamic brake	es		Built-in External (MDS-D-DBU)								
Machine end e	encoder					Compatible					
Degree of prot	ection				IP20	(excluding terminal	block)				
Cooling method						Forced air cooling					
Mass		[kg]	3.8	3.8	3.8	3.8	4.5	5.8	7.5		
Unit outline dimension drawing		A1	A1	A1	A1	B1	C1	D1			

2-axis servo drive unit

Drive	unit type	MDS-E-V2-20	MDS-E-V2-40	MDS-E-V2-80	MDS-E-V2-160	MDS-E-V2-160W			
Drive unit cate	gory		2-axis servo						
Nominal maximum	current (peak) [A]	20/20	20/20 40/40 80/80 160/160						
Devuer innut	Rated voltage [V]			270 to 324DC					
Power input	Rated current [A]	14	14	28	60	70			
	Voltage [V]		200 to 240AC To	plerable fluctuation: between	+10% and -15%				
Control power input	Current [A]			MAX. 0.2					
powerniput	Frequency [Hz]	50/60 Tolerable fluctuation: between +5% and -5%							
Control method	1	Sine wave PWM control method							
Dynamic brake	s	Built-in							
Machine end e	ncoder		Compatible						
Degree of protection			IP20 (excluding terminal block)						
Cooling method				Forced air cooling					
Mass	[kg]	3.8	3.8	3.8	5.2	6.3			
Unit outline dimension drawing		A1	A1	A1	B1	C1			

3-axis servo drive unit

Drive	unit type	MDS-E-V3-20	MDS-E-V3-40	MDS-E-V3-80					
Drive unit cate	gory		3-axis servo						
Nominal maximum	current (peak) [A	20/20/20	20/20/20 40/40/40						
Devuer input	Rated voltage [V		270 to 324DC						
Power input	Rated current [A	21	21	42					
	Voltage [V	200 t	o 240AC Tolerable fluctuation: between +10% an	d -15%					
Control power input	Current [A		MAX. 0.2						
power input	Frequency [Hz	50/60 Tolerable fluctuation: between +5% and -5%							
Control method	d	Sine wave PWM control method							
Dynamic brake	es	Built-in							
Machine end e	ncoder		Compatible						
Degree of protection			IP20 [over all]						
Cooling method		Forced	Forced air cooling						
Mass	[kg		3.8	6.2					
Unit outline dimer	nsion drawing		A1	B2					

■MDS-E Series

1-axis spindle drive unit

Drive	unit type		MDS-E-SP-20	MDS-E-SP-40	MDS-E-SP-80	MDS-E-SP-160	MDS-E-SP-200	MDS-E-SP-240	MDS-E-SP-320	MDS-E-SP-400	MDS-E-SP-640	
Drive unit cate	gory			1-axis spindle								
Nominal maximum	current (peak)	[A]	20	40	80	160	200	240	320	400	640	
Power input	Rated voltage	[V]					270 to 324DC	-				
Fower input	Rated current	[A]	7.0	13	20	41	76	95	140	150	210	
	Voltage	[V]		200 to 240AC Tolerable fluctuation: between +10% and -15%								
Control power input	Current	[A]					MAX. 0.2					
power input	Frequency	[Hz]			5	0/60 Tolerable fl	uctuation: betwe	en +5% and -5	%			
Control method	ł			Sine wave PWM control method								
Degree of prote	ection					IP20 (e	xcluding termina	al block)				
Cooling method					F	orced air coolin	g					
Mass		[kg]	3.8	3.8	3.8	4.5	5.8	6.5	7.5	16.5	16.5	
Unit outline dimen	ision drawing		A1	A1	A1	B1	C1	D1	D2	E1	F1	

2-axis spindle drive unit

Drive	unit type		MDS-E-SP2-20	MDS-E-SP2-40	MDS-E-SP2-80	MDS-E-SP2-16080					
Drive unit categ	gory			2-axis spindle							
Nominal maximum current (peak) [A]			20/20	20/20 40/40 80/80							
Power input	Rated voltage	[V]		270 to	324DC						
Power input	Rated current	[A]	14	26	40	61					
	Voltage	[V]	200 to 240AC Tolerable fluctuation: between +10% and -15%								
Control power input	Current	[A]	MAX. 0.2								
powerinput	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%								
Control method	Í		Sine wave PWM control method								
Degree of prote	ection		IP20 (excluding terminal block)								
Cooling method	ł			Forced air cooling							
Mass [kg]			4.5	4.5	6.5	5.2					
Unit outline dimens	sion drawing		A1	A1	B1	B1					

Power supply unit

Power s	upply unit		MDS-E-CV-37	MDS-E-CV-75	MDS-E-CV-110	MDS-E-CV-185	MDS-E-CV-300	MDS-E-CV-370	MDS-E-CV-450	MDS-E-CV-550	
30-minute rated output [kW]		3.7	7.5	11.0	18.5	30.0	37.0	45.0	55.0		
Continuous rate	ed output	[kW]	2.2	5.5	7.5	15.0	26.0	30.0	37.0	45.0	
Dower innut	Rated voltage	[V]			200 to 240A	C Tolerable fluctua	ation: between +10)% and -15%			
Power input	Rated current	[A]	15	26	35	65	107	121	148	200	
	Voltage	[V]	200 to 240AC Tolerable fluctuation: between +10% and -15%								
Control power input	Current	[A]	MAX. 0.2								
power input	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%								
Regeneration n	nethod		Power regeneration method								
Degree of prote	ection			IP20 (excluding terminal block)							
Cooling method	Cooling method			-cooling			Forced a	ir cooling			
Mass [kg]		4.0	4.0	6.0	6.0	10.0	10.0	10.0	25.5		
Unit outline dimen	sion drawing		A2	A2	B1	B1	D1	D1	D2	F1	

AC reactor

AC reactor	AC reactor model		D-AL-11K	D-AL-18.5K	D-AL-30K	D-AL-37K	D-AL-45K	D-AL-55K		
Compatible power supply unit type			110	185	300	370	450	550		
Rated capacity [kW]		7.5	11	18.5	30	37	45	55		
Rated voltage	[V]	200 to 240AC Tolerable fluctuation: between +10% and -15%								
Rated current	[A]	27	40	66	110	133	162	198		
Frequency	[Hz]			50/60 Tolerable	fluctuation: betwee	n +5% and -5%				
Mass [kg]		4.2	3.7	5.3	6.1	8.6	9.7	11.5		
Unit outline dimension drawing		R1	R1	R2	R2	R3	R3	R4		

DRIVE UNIT

■MDS-EH Series

1-axis servo drive unit

Drive	unit type		MDS-EH-V1-10	MDS-EH-V1-20	MDS-EH-V1-40	MDS-EH-V1-80	MDS-EH-V1-80W	MDS-EH-V1-160	MDS-EH-V1-160W	MDS-EH-V1-200	
Drive unit categ	gory					1-axis	servo				
Nominal maximum	current (peak)	[A]	10	20	40	80	80	160	160	200	
Power input	Rated voltage	[V]				513 to	648DC				
Fower input	Rated current	[A]	0.9	1.6	2.9	6.0	8.0	11.9	16.7	39	
Ormatural	Voltage	[V]			380 to 480A0	C Tolerable fluctua	ation: between +10)% and -15%			
Control power input	Current	[A]				MAX	. 0.1				
	Frequency	[Hz]		50/60 Tolerable fluctuation: between +5% and -5%							
Control method	ł		Sine wave PWM control method								
Dynamic brake	s				Bui	lt-in			External (M	DS-D-DBU)	
Degree of prote	ection				IP2	0 ([over all] / IP00	[Terminal block T	E1])			
Cooling method		Natural-cooling				Forced air cooling					
Mass		[kg]	3.8	3.8	3.8	3.8	4.5	5.8	7.5	16.5	
Unit outline dimen	ision drawing		A1	A1	A1	A1	B1	C1	D1	E1	

2-axis servo drive unit

Drive	unit type		MDS-EH-V2-10	MDS-EH-V2-20	MDS-EH-V2-40	MDS-EH-V2-80	MDS-EH-V2-80W		
Drive unit cate	gory				2-axis servo				
Nominal maximum	Nominal maximum current (peak) [A]		10/10	20/20	40/40	80/80	80/80		
Devuer innut	Rated voltage	[V]			513 to 648DC				
Power input	Rated current	[A]	1.8	3.2	5.8	12	16		
Ormatural	Voltage	[V]		380 to 480AC To	plerable fluctuation: between	+10% and -15%			
Control power input	Current	[A]			MAX. 0.1				
power input	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%						
Control method	1		Sine wave PWM control method						
Dynamic brake	s				Built-in				
Degree of prote	ection				IP20				
Cooling method		Natural-cooling		Forced a	ir cooling				
Mass		[kg]	3.8	3.8	3.8	5.2	6.3		
Unit outline dimen	sion drawing		A1	A1	A1	B1	C1		

3-axis servo drive unit

Drive	unit type		MDS-EH-V3-40			
Drive unit categ	Drive unit category		3-axis servo			
Nominal maximum	current (peak)	[A]	40/40/40			
Power input	Rated voltage	[V]	513 to 648DC			
Power input	Rated current	[A]	8.7			
Ormhurt	Voltage	[V]	380 to 480AC Tolerable fluctuation: between +10% and -15%			
Control power input	Current	[A]	MAX. 0.1			
power input	Frequency [H	lz]	50/60 Tolerable fluctuation: between +5% and -5%			
Control method			Sine wave PWM control method			
Dynamic brake	S		Built-in			
Degree of protection			IP20 (excluding terminal block)			
Cooling method			Natural-cooling			
Mass [kg]			6.2			
Unit outline dimen	sion drawing		B2			

1-axis spindle drive unit

nit type		MDS-EH-SP-20	MDS-EH-SP-40	MDS-EH-SP-80	MDS-EH-SP-100	MDS-EH-SP-160	MDS-EH-SP-200	MDS-EH-SP-320	MDS-EH-SP-480	MDS-EH-SP-600	
ry						1-axis spindle					
rrent (peak)	[A]	20	40	80	100	160	200	320	480	600	
Rated voltage	[V]					513 to 648DC					
Rated current	[A]	10	15	21	38	72	82	119	150	200	
Voltage	[V]			380 to	480AC Tolerable	e fluctuation: be	tween +10% and	d -15%			
Current	[A]		MAX. 0.1								
Frequency	[Hz]		50/60 Tolerable fluctuation: between +5% and -5%								
					Sine wa	ve PWM control	method				
tion					IP20 ([over al] / IP00 [Termin	al block TE1])				
					F	orced air coolin	g				
	[kg]	3.8 4.5 4.5 5.8 7.5 16.5 16.5 22.5 23							23.0		
Unit outline dimension drawing A1 A1 B1 C1 D1 E1 E1 F1						F1					
	y rent (peak) lated voltage lated current /oltage Current requency ion	y rent (peak) [A] lated voltage [V] lated current [A] /oltage [V] Current [A] irequency [Hz] ion [kg] n drawing	y rent (peak) [A] 20 lated voltage [V] lated current [A] 10 /oltage [V] Current [A] requency [H2] lion [kg] 3.8 n drawing A1	y rent (peak) [A] 20 40 lated voltage [V] lated current [A] 10 15 /oltage [V] Current [A] requency [Hz] ion [kg] 3.8 4.5 n drawing A1 A1	y	y	y 1-axis spindle rent (peak) [A] 20 40 80 100 160 lated voltage [V] 513 to 648DC 513 to 648DC lated current [A] 10 15 21 38 72 /oltage [V] 380 to 480AC Tolerable fluctuation: be MAX. 0.1 courrent [A] 50/60 Tolerable fluctuation: between the value of t	y 1-axis spindle rent (peak) [A] 20 40 80 100 160 200 lated voltage [V] 513 to 648DC 513 to 648DC 513 to 648DC lated current [A] 10 15 21 38 72 82 /oltage [V] 380 to 480AC Tolerable fluctuation: between +10% and concernent [A] MAX. 0.1 crequency [Hz] 50/60 Tolerable fluctuation: between +5% and -50 Sine wave PWM control method ion IP20 ([over all] / IP00 [Terminal block TE1]) Forced air cooling Forced air cooling [kg] 3.8 4.5 4.5 5.8 7.5 16.5 n drawing A1 A1 B1 C1 D1 E1	y 1-axis spindle rent (peak) [A] 20 40 80 100 160 200 320 lated voltage [V] 513 to 648DC 513 to 648DC lated current [A] 10 15 21 38 72 82 119 /oltage [V] 380 to 480AC Tolerable fluctuation: between +10% and -15% Durrent [A] MAX. 0.1 irequency [Hz] 50/60 Tolerable fluctuation: between +5% and -5% Sine wave PWM control method ion IP20 ([over all] / IP00 [Terminal block TE1]) Forced air cooling Forced air cooling [kg] 3.8 4.5 4.5 5.8 7.5 16.5 16.5 n drawing A1 A1 B1 C1 D1 E1 E1	y 1-axis spindle rent (peak) [A] 20 40 80 100 160 200 320 480 lated voltage [V] 513 to 648DC 514 to 61 to 61 t	

(Note) Rated output capacity and rated speed of the motor used in combination with the drive unit are as indicated when using the power supply voltage and frequency listed. The torque drops when the voltage is less than specified.

■MDS-EH Series

Power supply unit

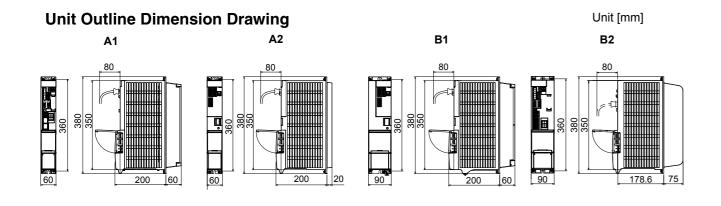
Power sup	ply unit typ	e	MDS-EH-CV-37	MDS-EH-CV-75	MDS-EH-CV-110	MDS-EH-CV-185	MDS-EH-CV-300	MDS-EH-CV-370	MDS-EH-CV-450	MDS-EH-CV-550	MDS-EH-CV-750
30-minute rated	l output	[kW]	3.7	7.5	11.0	18.5	30.0	37.0	45.0	55.0	75.0
Continuous rated output [kW]			2.2	5.5	7.5	15	26	30	37	45	55
Power input	Rated voltage	[V]			380 to	480AC Tolerabl	e fluctuation: be	tween +10% an	d -15%		
Fowerinput	Rated current	[A]	5.2	13	18	35	61	70	85	106	130
Oraclast	Voltage	[V]			380 to	480AC Tolerabl	e fluctuation: be	tween +10% and	d -15%		
Control power input	Current	[A]					MAX. 0.1				
power input	Frequency	[Hz]			5	0/60 Tolerable fl	uctuation: betwe	en +5% and -5%	%		
Main circuit me	thod					Converter wi	th power regene	eration circuit			
Degree of prote	ection					IP20 (e	xcluding termina	l block)			
Cooling method	i			Forced air cooling							
Mass		[kg]	6.0	6.0 6.0 6.0 6.0 10.0 10.0 10.0 25.5 25.5							25.5
Unit outline dimens	sion drawing		B1	B1	B1	B1	D1	D1	D1	F1	F1

AC reactor

AC reactor	model	DH-AL-7.5K	DH-AL-11K	DH-AL-18.5K	DH-AL-30K	DH-AL-37K	DH-AL-45K	DH-AL-55K	DH-AL-75K
Compatible power supply unit type	MDS-EH-CV-	37, 75	110	185	300	370	450	550	750
Rated capacity	[kW]	7.5	11	18.5	30	37	45	55	75
Rated voltage	[V]		380 to 480AC Tolerable fluctuation: between +10% and -15%						
Rated current	[A]	14	21	37	65	75	85	105	142
Frequency	[Hz]			50/60 T	olerable fluctuatio	n: between +5% a	and -5%		
Mass	[kg]	4.0	3.7	5.3	6.0	8.5	9.8	10.5	13.0
Unit outline dimension drawing		R1	R1	R2	R2	R3	R3	R5	R6

DRIVE UNIT

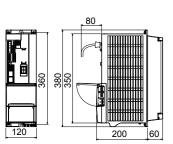
DRIVE UNIT

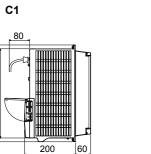


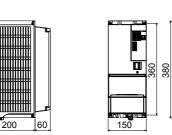
D1

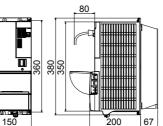
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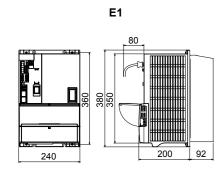


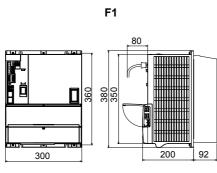




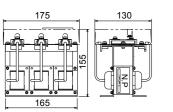


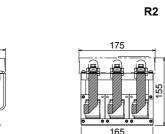
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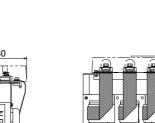


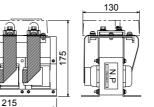


R1









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R3

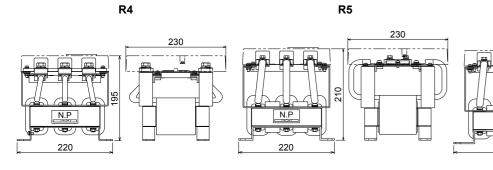
R6

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R4



■MDS-EM/EMH Series

Multi-hybrid drive unit

Drive	unit type		MDS-EM- SPV3-10040	MDS-EM- SPV3-10080	MDS-EM- SPV3-16040	MDS-EM-SPV3- 16040S	MDS-EM- SPV3-16080	MDS-EM- SPV3-20080	MDS-EM- SPV3-200120	MDS-EM- SPV3-320120
Drive unit cate	gory				3-a	xis servo, 1-axis sp	oindle (with conve	rter)		
Nominal maximum curre	nt (spindle/servo)	[A]	100/40×3	100/40×3 100/80×3 160/40×3 160/40×3 160/80×3 200/80×3 200/120×3						320/120×3
Devenient	Rated voltage	[V]			200 to 240A	C Tolerable fluctua	tion: between +10)% and -15%		
Power input	Rated current	[A]	36	36 38 45 45 48 60 65 121						
	Voltage	[V]			24DC To	plerable fluctuation	: between +10% a	and -10%		
Control power input	Current	[A]				MAX	X. 4			
power input	Frequency	[Hz]			50/60	Tolerable fluctuation	n: between +5% a	ind -5%		
Control method	ł					Sine wave PWM	l control method			
Regeneration r	nethod					Power regene	ration method			
Dynamic brake	s (servo)					Buil	t-in			
Machine end e	ncoder (serve	c)				Comp	atible			
Degree of prote	ection			IP20 (Excluding terminal block [TE1])/ IP00(Terminal block [TE1])						
Cooling metho	g method Forced air cooling									
Mass		[kg]	15	15	15	13.5	15	15	15	19.6

Drive	unit type	MDS-EMH-SPV3-8040	MDS-EMH-SPV3-10040	MDS-EMH-SPV3-10060				
Drive unit cate	gory	3-axis servo, 1-axis spindle (with converter)						
Nominal maximum curre	ent (spindle/servo) [A]	80/40×3	80/40×3 100/40×3 100/60:					
Devues innut	Rated voltage [V]	380 to	380 to 480AC Tolerable fluctuation: between +10% and -15%					
Power input Rated current [A]		27	34	37				
	Voltage [V]	24	DC Tolerable fluctuation: between +10% and -1	0%				
Control power input	Current [A]	MAX. 4						
power input	Frequency [Hz]	50/60 Tolerable fluctuation: between +5% and -5%						
Control metho	d	Sine wave PWM control method						
Regeneration	method	Power regeneration method						
Dynamic brake	es (servo)	Built-in						
Machine end e	encoder (servo)	Compatible						
Degree of prot	ection	IP20 (Excluding terminal block [TE1])/ IP00(Terminal block [TE1])						
Cooling metho	d	Forced air cooling						
Mass	[kg]	15	15	15				

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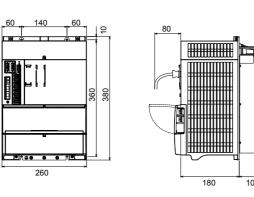
DRIVE UNIT

6 DRIVE SYSTEM

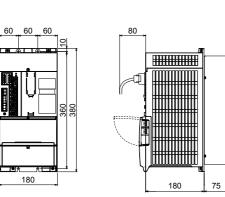
Unit outline dimension drawing

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< MDS-EMH-SPV3-8040 to 10060 >

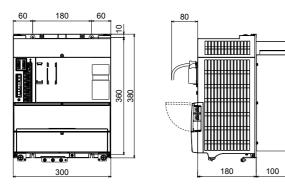


< MDS-EM-SPV3-16040S >



100

< MDS-EM-SPV3-320120 >





■MDS-EJ/EJH Series All-in-one compact servo drive unit

Drive	unit type		MDS-EJ-V1-10	MDS-EJ-V1-15	MDS-EJ-V1-30	MDS-EJ-V1-40	MDS-EJ-V1-80	MDS-EJ-V1-100	
Drive unit cate	gory		1-axis servo (with converter)						
Nominal maximum	current (peak)	[A]	10 15 30 40 80					100	
Devesionut	Rated voltage	[V]	3-phase or single-phase 200	to 240AC Tolerable fluctuation	on: between +10% and -15%	3-phase 200 to 240AC	Tolerable fluctuation: be	etween +10% and -15%	
Power input	Rated current	[A]	1.5	2.9	3.8	8.0	10.5	16	
	Voltage	[V]		Single-phase	200 to 240AC Tolerable	fluctuation: between +1	0% and -15%		
Control power input	Current	[A]		MAX. 0.2					
power input	Frequency	[Hz]		5	0/60 Tolerable fluctuatio	on: between +5% and -5	%		
Control method	ĺ				Sine wave PWM	I control method			
Regeneration r	nethod				Power regene	eration method			
Dynamic brake	s				Bui	ilt-in			
Machine end e	ncoder				Comp	patible			
Degree of prote	ection				IP	20			
Cooling metho	ł		Natural	Natural cooling Forced air cooling					
Mass		[kg]	0.8 1.0 1.4 2.1 2.1 2.3						
Unit outline dimen	sion drawing		J1a	J1b	J2a	J4	J4	J4	

MDS-EJ-V2-30 Drive unit type Drive unit category 30/30 Nominal maximum current (peak) [A] 3-phase 200 to 240A Rated voltage [V] Power input Rated current [A] 7.6 Voltage [V] Single-phase 200 to 24 Control Current [A] power input Frequency [Hz] 50/60 Tole Control method Regeneration method Dynamic brakes Machine end encoder Degree of protection Cooling method 2.0 Mass [kg] Unit outline dimension drawing J3

[Unit : mm]

Drive	unit type		MDS-EJH-V1-10	MDS-EJH-V1-15	MDS-EJH-V1-20	MDS-EJH-V1-40			
Drive unit cate	gory		1-axis servo (with converter)						
Nominal maximum	current (peak)	[A]	10	10 15 20					
Deversion	Rated voltage	[V]		3-phase 380 to 480AC Tolerable fluctuation: between +10% and -15%					
Power input Rated current [A]			1.4	7.9					
	Voltage	[V]	Si	ngle-phase 380 to 480AC Tolerable	fluctuation: between +10% and -15	%			
Control power input	Current	[A]		MAX. 0.1		MAX. 0.2			
power input	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%						
Control metho	d		Sine wave PWM control method						
Regeneration I	method			Power regene	ration method				
Dynamic brake	es			Bui	lt-in				
Machine end e	ncoder			Comp	patible				
Degree of prot	ection			IP	20				
Cooling metho	d		Natural	ir cooling					
Mass		[kg]	1.7	1.7	2.1	3.6			
Unit outline dimer	nsion drawing		J2	J5a					

[Unit : mm]

[Unit : mm]

DRIVE UNIT

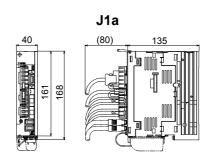
	MDS-EJ-V2-40						
2-axis servo (v	vith converter)						
	40/40						
AC Tolerable fluctuation: between +10% and -15%							
16.0							
240AC Tolerable fluctuation: between +10% and -15%							
MAX. 0.4							
erable fluctuatio	n: between +5% and -5%						
Sine wave PWN	I control method						
Power regene	ration method						
Bui	t-in						
Comp	atible						
IP	20						
Forced air cooling							
	4.6						
	J5b						

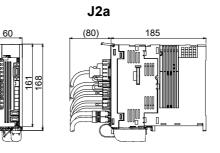
All-in-one compact spindle drive unit

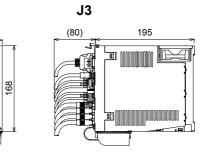
Drive	unit type	MDS-EJ-SP-20	MDS-EJ-SP-40	MDS-EJ-SP-80	MDS-EJ-SP-100	MDS-EJ-SP-120	MDS-EJ-SP-160			
Drive unit cate	gory			1-axis spindle ((with converter)					
Nominal maximum	current (peak) [A]	20	20 40 80 100 120							
Devenient	Rated voltage [V]		3-phase 20	0 to 240AC Tolerable flu	uctuation: between +10%	% and -15%				
Power input	Rated current [A]	2.6	9.0	10.5	16	26	35.4			
	Voltage [V]		Single-phase 200 to 240AC Tolerable fluctuation: between +10% and -15%							
Control power input	Current [A]		MAX. 0.2							
power input	Frequency [Hz]		50/60 Tolerable fluctuation: between +5% and -5%							
Control method	4			Sine wave PWM	I control method					
Regeneration r	nethod			Power regene	eration method					
Degree of prot	ection			IP20 (excluding	terminal block)					
Cooling metho	d		Forced air cooling							
Mass [kg] 1.4 2.1 2.3 4.0 4.0						6.2				
Unit outline dimension drawing J2a J4 J4 J5a J5a						J6				

Drive	unit type		MDS-EJ-SP2-20
Drive unit categ	gory		2-axis servo (with converter)
Nominal maximum	current (peak)	[A]	20/20
Power input	Rated voltage	[V]	3-phase 200 to 240AC Tolerable fluctuation: between +10% and -15%
Power input	Rated current	[A]	5.2
	Voltage	[V]	Single-phase 200 to 240AC Tolerable fluctuation: between +10% and -15%
Control power input	Current	[A]	MAX. 0.4
powerinput	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%
Control method	1		Sine wave PWM control method
Regeneration n	nethod		Power regeneration method
Degree of prote	ection		IP20
Cooling method	Cooling method		Forced air cooling
Mass [kg]		[kg]	2.0
Unit outline dimen	sion drawing		J3

Unit outline dimension drawing





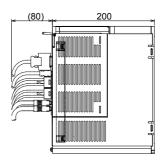


J5a

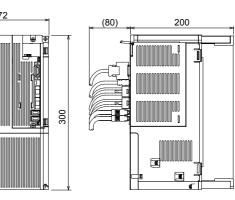
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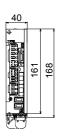
J6

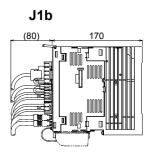


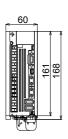
6

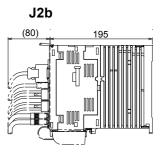
DRIVE UNIT

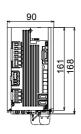
Unit [mm]



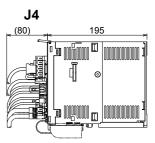




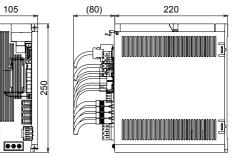




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The interface units or battery options are required depending on the type of machine end encoder in the full closed loop control system. Check the options to be required referring the following lists.

System establishment in the full closed loop control Full closed loop control for linear axis

Mac	chine side enco	der to be used	Encoder signal output	Interface unit	Drive unit input signal	Battery option	Remarks
	Rectangular wave signal	SR74, SR84 (MAGNESCALE)	Rectangular wave signal	-	Rectangular wave signal	-	
	output	Various scale	Rectangular wave signal	-	Rectangular wave signal	-	
				IBV Series (HEIDENHAIN)	Rectangular wave signal	-	
		LS187, LS487	SIN wave signal	EIB Series (HEIDENHAIN)	Rectangular wave signal	-	
		(HEIDENHAIN)	On wave signal	MDS-EX-HR-11 (Mitsubishi Electric)	Rectangular wave signal	-	
Incremental encoder	SIN wave signal output	LS187C, LS487C (HEIDENHAIN)	SIN wave signal	MDS-EX-HR-11 (Mitsubishi Electric) EIB Series (HEIDENHAIN)	Mitsubishi serial signal	(Required) (Note 1)	Distance-coded reference scale (Note 2)
		Various scale	SIN wave signal	MDS-EX-HR-11 (Mitsubishi Electric)	Mitsubishi serial signal	(Required) (Note 1)	Distance-coded reference scale is also available (Note 2)
	Mitsubishi serial signal output	SR75, SR85 (MAGNESCALE)	Mitsubishi serial signal	-	Mitsubishi serial signal	-	
		OSA405ET2AS, OSA676ET2AS (MITSUBISHI ELECTRIC)	Mitsubishi serial signal	-	Mitsubishi serial signal	Required	Ball screw side encoder
		SR27, SR77, SR87, SR67A (MAGNESCALE)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
		LIC2197M, LIC2199M (HEIDENHAIN)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	Mitsu03-4
		MC15M (HEIDENHAIN)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	Mitsu03-4
Absolute	Mitsubishi	LC195M, LC495M,LC291M (HEIDENHAIN)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	Mitsu03-4
position encoder	serial signal output	AT343, AT543, AT545, ST748, AT1143 (Mitutoyo)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
		SAM Series, SVAM Series, GAM Series, LAM Series (FAGOR)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
		RL40N Series (Renishaw)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
		AMS-ABS-3B Series (Schneeberger)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
		LMFA Series, LMBA Series (AMO)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	

Full closed loop control for rotary axis

Мас	chine side enco	oder to be used	Encoder signal output	Interface unit	Output signal	Battery option	Remarks
	Rectangular wave signal output	Various scale	Rectangular wave signal	-	Rectangular wave signal	-	
Incremental		EBM280 Series	SIN wave signal	EIB Series (HEIDENHAIN)	Mitsubishi serial signal	-	
encoder	SIN wave signal output	(HEIDENHAIN)	SIN wave signal	MDS-EX-HR-11 (Mitsubishi Electric)	Mitsubishi serial signal	(Required) (Note 1)	Distance-coded reference scale is also available (Note 2)
	ουιραι	Various scale	SIN wave signal	MDS-EX-HR-11 (Mitsubishi Electric)	Mitsubishi serial signal	(Required) Note 1	Distance-coded reference scale is also available (Note 2)
		MBA405W Series (MITSUBISHI ELECTRIC)	Mitsubishi serial signal	(Provided)	Mitsubishi serial signal	Required	
		RU77, RS87 (MAGNESCALE)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
		RCN2590M, RCN5390M, RCN5590M, RCN8390M (HEIDENHAIN)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	Mitsu03-4
Absolute position	Mitsubishi serial signal output	ROC425M, ROC2390M ECA4000 Series (HEIDENHAIN)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	Mitsu03-4
encoder		RA Series (Renishaw)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
encouer		HAM Series (FAGOR)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
		WMFA Series WMBA Series WMRA Series (AMO)	Mitsubishi serial signal	-	Mitsubishi serial signal	Not required	
	SIN wave signal output	MPRZ Series (Mitsubishi Heavy Industries Machine Tool)	SIN wave signal	ADB-K70M (Mitsubishi Heavy Industries Machine Tool)	Mitsubishi serial signal	Not required	

(Note 1) When using the distance-coded reference scale, it is recommended to use with distance-coded reference check function. In this case, the battery option is required.

(Note 2) Use the option of M800 Series for the distance-coded reference scale. It cannot be used with the speed command synchronous control.
 (Note 3) Connectable scales besides these are also marketed. Contact each scale manufacturer for details. For the specifications of the scale, including the scales shown in this manual, refer to the manuals issued by the manufacturer.

DEDICATED OPTIONS SERVO OPTIONS

System establishment in the synchronous control

Position command synchronous control

The synchronous control is all executed in the NC, and the each servo is controlled as an independent axis. Therefore, preparing special options for the synchronous control is not required on the servo side.

Speed command synchronization control

The common position control in two axes is performed by one linear scale. Basically, the multi axis integrated type drive unit (MDS-E/EH-V2/V3) is used, and the feedback signal is divided for two axes inside the drive unit. When the two 1-axis type drive units are used in driving the large capacity servo motor, the linear scale feedback signal must be divided outside.

<Required option in the speed command synchronous control>

Machine side encoder to be used	For MDS-E/EH-V2/V3	For MDS-E/EH-V1×2 units	Remarks		
SIN wave signal output scale	MDS-EX-HR-11 (Serial conversion)	Not possible			
Mitsubishi serial signal output scale	Direct connection	MDS-B-SD (Signal division)	Including the case that an interface unit of the scale manufacturer is used with SIN wave output scale.		

(Note) The distance-coded reference scale speed command synchronous control and the rectangular wave signal output scale speed command synchronous control are not available.

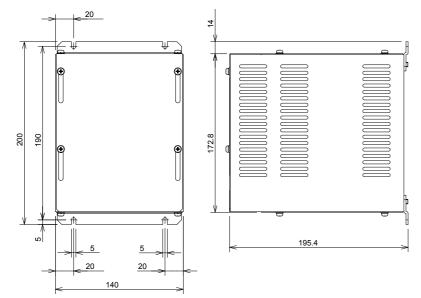
Dynamic brake unit (MDS-D-DBU)

Specifications

Туре	MDS-D-DBU
Coil specifications	DC24V 160mA
Wire size	5.5mm ² or more (For IV wire)
Compatible drive unit	MDS-E-V1-320W, MDS-EH-V1-160W or larger
Mass	3kg

Outline dimension drawing

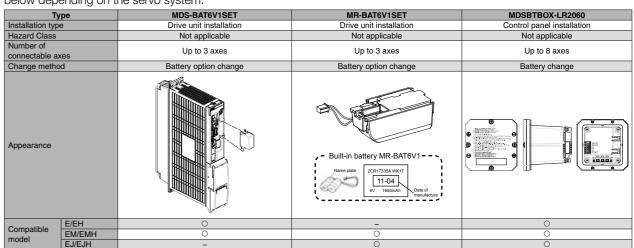
MDS-D-DBU



[Unit : mm]

■Battery option

This battery option may be required to establish absolute position system. Select a battery option from the table below depending on the servo system.



■Cell battery (MDS-BAT6V1SET)

Specifications

Detterry	antian tuna	Cell battery					
Battery option type		MDS-BAT6V1SET					
Battery model name		2CR17335A					
Nominal voltage		6V					
Number of connectable axes (Note 1)		Up to 3 axes					
Battery continuous back	up time	Up to 2 axes: Approx. 10,000 hours					
Ballery continuous back	tup unie	3 axes connected: Approx. 6,600 hours					
Back up time from batte	ery warning to alarm	Up to 2 axes: Approx. 100 hours					
occurrence (Note 2)		3 axes connected: Approx. 60 hours					
	E/EH	0					
Compatible model	EM/EMH	0					
	EJ/EJH	-					
(Note 1) When using b	all screw side encoder, bo	th ball screw side encoder and motor side encoder need to be backed up by a battery, so the load becomes					

double.

(Note 2) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning occurs. (Note 3) A battery load is generated in the axis for which the incremental control is set when a battery is connected.

■Cell battery (MR-BAT6V1SET)

Specifications

Detter	v antion tuna	Cell battery					
Battery option type		MR-BAT6V1SET					
Battery model name		2CR17335A					
Nominal voltage		6V					
Number of connectable axes (Note 1)		Up to 3 axes					
Battery continuous ba	akun tima	Up to 2 axes: Approx. 10,000 hours					
Dattery continuous Dat	ckup unie	3 axes connected: Approx. 6,600 hours					
Back up time from bat	tery warning to alarm	Up to 2 axes: Approx. 100 hours					
occurrence (Note 2)		3 axes connected: Approx. 60 hours					
	E/EH	-					
Compatible model	EM/EMH	0					
	EJ/EJH	0					
(Note 1) When using	a hall aarow aida anaadar	both ball serving side aneodor and motor side aneodor pood to be backed up by a batteny, so load becomes					

(Note 1) When using ball screw side encoder, both ball screw side encoder and motor side encoder need to be backed up by a battery, so load becomes double.

(Note 2) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery alarm occurs. (Note 3) A battery load is generated in the axis for which the incremental control is set when a battery is connected.

DEDICATED OPTIONS SERVO OPTIONS

■Battery box (MDSBTBOX-LR2060)

Specifications

Pottony	option type	Battery box			
Battery C	option type	MDSBTBOX-LR2060			
Battery model name (No	te 1)	Size-D alkaline batteries LR20×4 pieces			
Nominal voltage (Note 2)	, ,	6.0V (Unit output: BTO1/2/3)			
Nominal Voltage (Note 2))	3.6V (Unit output: BT(3.6V)			
Number of connectable a	axes (Note 3)	8 axis			
Battery continuous backu	up time (Note 4)	Approx. 10000 hours (when 8 axes are connected, cumulative time in non-energized state)			
Back up time from batter	y warning to alarm	Approx. 336 hours (when 8 axes are connected)			
occurrence (Note 4)		Approx. 550 hours (when 6 axes are connected)			
	E/EH	0			
Compatible model	EM/EMH	0			
	EJ/EJH	0			

(Note 1) Install commercially-available alkaline dry batteries into MDSBTBOX-LR2060. The batteries should be procured by customers. Make sure to use new batteries that have not passed the expiration date. We recommend you to replace the batteries in the one-year cycle. (Note 2) 3.6V output is for old-type drive unit. It is not used for MDS-E/EH, EM/EMH, and EJ/EJH Series.

(Note 3) When using ball screw side encoder, both ball screw side encoder and motor side encoder need to be backed up by a battery, so the load becomes double.

(Note 4) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning (9F) occurs.

(Note 5) A battery load is generated in the axis for which the incremental control is set when a battery is connected.

■Ball screw side encoder OSA405ET2AS, OSA676ET2AS

Specifications OSA40 Туре Encoder resolution 4,194,304 Detection method Electrical Accuracy (*1) Tolerable rotation speed at power off (*2) characteristics Encoder output data Power consumption Inertia Shaft friction torque Mechanical characteristics for Shaft angle acceleration rotation Tolerable continuous rotation speed Shaft amplitude (position 15mm from end) Tolerable load (thrust direction/radial direction) Mechanical Mass configuration Degree of protection Recommended coupling E/EH

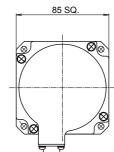
(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed. (*2) If the tolerable rotation speed at power off is exceeded, the absolute position cannot be repaired.

Outline dimension drawing OSA405ET2AS/OSA676ET2AS

FM/FMH

EJ/EJH





Twin-head magnetic encoder (MBA Series)

Specifications

Compatible model

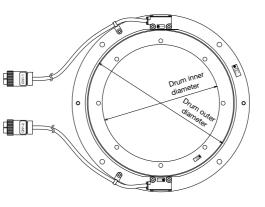
	Туре	MBA405W-BE082	MBA405W-BF125	MBA405W-BG160					
	Encoder resolution		4,000,000 pulse/rev						
	Detection method	Absolute position method (battery backup method)							
	Tolerable rotation speed at power off	3000r/min	2000r/min	1500r/min					
Electrical	Accuracy (*1) (*2)	±4 seconds	±3 seconds	±2 seconds					
characteristics	Wave number within one rotation	512 waves	768 waves	1024 waves					
	Encoder output data	Serial data							
	Power consumption	0.2A or less							
Mechanical	Inertia	0.5×10 ⁻³ kg·m ² 2.4×10 ⁻³ kg·m ²		8.7×10 ⁻³ kg ⋅ m ²					
characteristics	Tolerable angle acceleration (time of backup)		500rad/s ²						
for rotation	Tolerable continuous rotation speed	3000r/min	2000r/min	1500r/min					
	Drum inner diameter	ø82mm	ø125mm	ø160mm					
Machanical	Drum outer diameter	ø100mm	ø150.3mm	ø200.6mm					
Mechanical configuration	Drum mass	0.2kg	0.46kg	1.0kg					
	Degree of protection (*3)		IP67						
	Outline dimension	ø140mm×21.5mm	ø190mm×23.5mm	ø242mm×25.5mm					

(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.
 (*2) The user is requested to install the magnetic drum and installation ring in the encoder within the accuracy range specified herein. Even when the accuracy of the encoder when shipped and when installed by the user is both within the specified range, there is a difference in the installation position. Therefore, the accuracy at the time of our shipment may not be acquired.

(*3) It is the degree of protection when fitted with a connector.

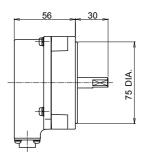
Outline dimension drawing

Encoder



DEDICATED OPTIONS SERVO OPTIONS

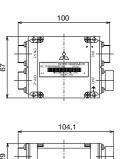
5ET2AS	OSA676ET2AS								
4pulse/rev	67,108,864pulse/rev								
Absolute position method	(battery backup method)								
±3 seconds									
500r/min									
Serial data									
0.3	3A								
0.5×10-4kg	jm ² or less								
0.1Nm	or less								
4×10⁴rad	/s² or less								
4000	r/min								
0.02mm	n or less								
9.8N/	19.6N								
0.6	ŝkg								
IP67 (The shaft-throug	h portion is excluded.)								
Bellows	coupling								
0	Ó								
0	-								
0	_								



[Unit : mm]









[Unit : mm]

According to the spindle control to be adopted, select the spindle side encoder based on the following table.

No-variable speed control (When spindle and motor are directly coupled or coupled with a 1:1 gear ratio)

			 Control possible x: Control not possible
Spindle control item	Control specifications	Without spindle side encoder	With spindle side encoder
	Normal cutting control	•	-
Spindle control	Constant surface speed control (lathe)	•	
	Thread cutting (lathe)	•	
	1-point orientation control	•	
Orientation control	Multi-point orientation control	•	This normally is not used for novariable speed
	Orientation indexing	•	control.
	Standard synchronous tap	•	
Synchronous tap control	Synchronous tap after zero point		
	return	•	
Spindle synchronous	Without phase alignment function	•	
control	With phase alignment function	•	
C-axis control	C-axis control	(Note)	

(Note) When spindle and motor are coupled with a 1:1 gear ratio, use of a spindle side encoder is recommended to assure the precision.

Variable speed control (When using V-belt, or when spindle and motor are connected with a gear ratio other than 1:1) •: Control possible x: Control not possible

		With out on india aida	With spindle side encoder					
Spindle control item	Control specifications	encoder	TS5690/ERM280/ MPCI/MBE405W Series OSE-1024 F •	Proximity switch				
	Normal cutting control	•	•	•	•			
Spindle control	Constant surface speed control (lathe)	• (Note 1)	•	•	● (Note 1)			
	Thread cutting (lathe)	×	•	•	x			
	1-point orientation control	×	•	•	 (Note 3) 			
Orientation control	Multi-point orientation control	×	•	•	х			
ononitation control	Orientation indexing	×	•	•	x			
	Standard synchronous tap	 (Note 2) 	•	•	 (Note 2) 			
Synchronous tap control	Synchronous tap after zero point return	×	•	•	×			
Spindle synchronous	Without phase alignment function	 (Note 1) 	•	•	 (Note 1) 			
control	With phase alignment function	×	•	•	x			
C-axis control	C-axis control	×	•	×	×			

(Note 1) Control not possible when connected with the V-belt.
(Note 2) Control not possible when connected with other than the gears.
(Note 3) When using a proximity switch, an orientation is executed after the spindle is stopped. As for 2-axis spindle drive unit, setting is available only for one of the axes.

Spindle side ABZ pulse output encoder (OSE-1024 Series)

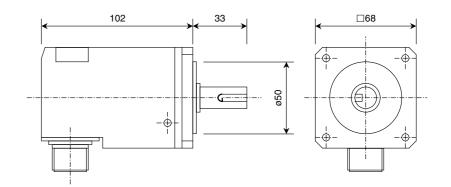
When a spindle and motor are connected with a V-belt, or connected with a gear ratio other than 1:1, use this spindle side encoder to detect the position and speed of the spindle. Also use this encoder when orientation control and synchronous tap control, etc are executed under the above conditions.

Specifications

	Туре	OSE-1024-3-15-68	OSE-1024-3-15-68-8			
Mechanical	Inertia	0.1×10 ⁻⁴ kgm ² or less	0.1×10 ⁻⁴ kgm ² or less			
characteristics for	Shaft friction torque	0.98Nm or less	0.98Nm or less			
rotation	Shaft angle acceleration	10 ⁴ rad/s ² or less	10 ⁴ rad/s ² or less			
Totation	Tolerable continuous rotation speed	6000r/min	8000r/min			
	Bearing maximum non-lubrication time	20000h/6000r/min	20000h/8000r/min			
	Shaft amplitude (position 15mm from end)	0.02mm or less	0.02mm or less			
Mechanical configuration	Tolerable load (thrust direction/radial direction)	10kg/20kg Half of value during operation	10kg/20kg Half of value during operation			
	Mass	1.5kg	1.5kg			
	Degree of protection	IP54				
	Squareness of flange to shaft	0.05mm or less				
	Flange matching eccentricity	0.05mm	n or less			
	E/EH	0	0			
Compatible model	EM/EMH	0	0			
	EJ/EJH	0	0			

(Note1) Confirm that the gear ratio (pulley ratio) of the spindle end to the encoder is 1:1. (Note2) Use a timing belt when connecting by a belt.

Outline dimension drawing



Spindle side encoder (OSE-1024-3-15-68, OSE-1024-3-15-68-8)

DEDICATED OPTIONS SPINDLE OPTIONS

[Unit : mm]

Spindle side PLG serial output encoder (TS5690, MU1606 Series)

This encoder is used when a more accurate synchronous tapping control or C-axis control than OSE encoder is performed to the spindle which is not directly-connected to the spindle motor.

Specifications

	Serie	es type	TS5690N64xx									
Sensor	xx (The end of the	Standard connector	12	12 22 32 42 52 17 27						37	47	57
	type name)	Water-proof connector	19	29	39	49	59	18	28	38	48	58
	Length of lea		400±10	800±20	1200±20	1600±30	2000±30	400±10	800±20	1200±20	1600±30	2000±30
	Lead wire lea	ad-out direction		V	ertical direction	n				Shaft directior	ı	
	Туре						MU160					
Detection	The number						6					
gear	Outer diame						ø5	-				
gear	Inner diame	ter [mm]					ø40					
	Thickness	[mm]						2				
Notched	Outer diame			ø59.4								
fitting section	Outer diame tolerance	ter [mm]	-0.070 to -0.030									
The number of output	A/B phase						6	4				
pulse	Z phase						-	1				
Detection re	esolution	[p/rev]					2 mi	llion				
Absolute ac	ccuracy at sto	0					15	0"				
Tolerable sp		[r/min]		40,000								
Signal outp	Signal output		Mitsubishi high-speed serial									
Compatible	E/EH)				
model	EM/EMH)				
model	EJ/EJH						()				

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	Serie	es type		TS5690N90xx								
Sensor	xx (The end of the	Standard connector	12	22	32	42	52	17	27	37	47	57
	type name)	Water-proof connector	19	29	39	49	59	18	28	38	48	58
	Length of lea	ad [mm]	400±10	800±20	1200±20	1600±30	2000±30	400±10	800±20	1200±20	1600±30	2000±30
	Lead wire lea	ad-out direction		V	ertical direction	on				Shaft directior	า	
	Туре		MU1606N906									
Detection	The number	of teeth					9	0				
	Outer diame	eter [mm]					ø7	3.6				
gear	Inner diame	ter [mm]		ø60H5								
	Thickness	[mm]		12								
Notched	Outer diame	eter [mm]		ø79.2								
fitting section	Outer diame tolerance	eter [mm]		-0.040 to 0								
The number of output	A/B phase						9	0				
pulse	Z phase		1									
Detection re	esolution	[p/rev]		2,880,000								
	curacy at sto							5"				
Tolerable s	beed	[r/min]		30,000								
Signal outp							Mitsubishi hig	h-speed seria				
Compatible	E/EH						()				
model	EM/EMH						(
mouel	E.I/E.IH						()				

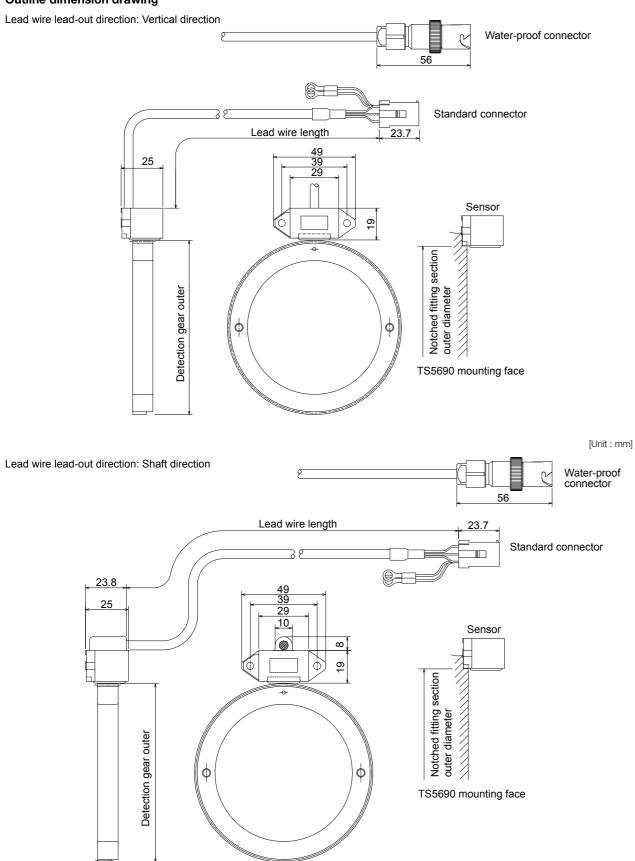
	Serie	es type					TS5690	N12xx				
	xx (The end of the	Standard connector	12	22	32	42	52	17	27	37	47	57
Sensor	type name)	Water-proof connector	19	29	39	49	59	18	28	38	48	58
	Length of lea		400±10	800±20	1200±20	1600±30	2000±30	400±10	800±20	1200±20	1600±30	2000±30
	Lead wire lea	ad-out direction		Vertical direction Shaft direction								
	Туре						MU160	6N709				
Detection	The number	of teeth					12	28				
	Outer diame	eter [mm]		ø104.0								
gear	Inner diame	ter [mm]		ø80H5								
	Thickness	[mm]		12								
Notched	Outer diame	eter [mm]					ø10	8.8				
fitting section	Outer diame tolerance	eter [mm]	-0.015 to +0.025									
The number of output	A/B phase						12	28				
pulse	Z phase		1									
Detection re	esolution	[p/rev]					4 mi	llion				
Absolute ac	curacy at sto						10	0"				
Tolerable sp	Tolerable speed [r/min]						20,					
Signal outp	ut						Mitsubishi hig	h-speed seria	l			
Compatible	E/EH						(
model	EM/EMH						(
model	EJ/EJH						()				

	O a min					-	TOFOO	NI40		-		
	Serie	es type					155690	N19xx				
	xx (The end of the	Standard connector	12	22	32	42	52	17	27	37	47	57
Sensor	type name)	Water-proof connector	19	29	39	49	59	18	28	38	48	58
	Length of lea	ad [mm]	400±10	800±20	1200±20	1600±30	2000±30	400±10	800±20	1200±20	1600±30	2000±30
	Lead wire lea	ad-out direction		Vertical direction Shaft direction								
	Туре						MU160	6N203				
Detection	The number	of teeth					19	92				
gear	Outer diame	eter [mm]					ø15	5.2				
year	Inner diame	ter [mm]		ø125H5								
	Thickness	[mm]		12								
Notched	Outer diame	eter [mm]		ø159.4								
fitting section	Outer diame tolerance	eter [mm]	-0.035 to +0.005									
The number of output	A/B phase						19	92				
pulse	Z phase		1									
Detection re	esolution	[p/rev]					6 mi	llion				
Absolute ac	curacy at sto						97	.5"				
Tolerable sp	Tolerable speed [r/min]							000				
Signal outp	Signal output						Mitsubishi hig	h-speed seria				
Compatible	E/EH						(
model	EM/EMH						(
model	EJ/EJH						()				

	Serie	es type					TS5690	N25xx				
	xx (The end of the	Standard connector	12	22	32	42	52	17	27	37	47	57
Sensor	type name)	Water-proof connector	19	29	39	49	59	18	28	38	48	58
	Length of lea	ad [mm]	400±10	800±20	1200±20	1600±30	2000±30	400±10	800±20	1200±20	1600±30	2000±30
		ad-out direction		V	ertical direction	on				Shaft directior	1	
	Туре							6N802				
Detection	The number						25					
gear	Outer diame	···· [····]					ø20					
3	Inner diameter [mm]			0160								
	Thickness	[mm]						.8				
Notched	Outer diame			ø210.2								
fitting section	Outer diame tolerance	eter [mm]		0.0 to +0.040								
The number of output	A/B phase						25	56				
pulse	Z phase						1					
Detection re	esolution	[p/rev]					8 mi	llion				
	curacy at sto						98					
Tolerable sp	plerable speed [r/min]							000				
Signal output								h-speed seria				
Compatible	E/EH						0					
model	EM/EMH						C					
	EJ/EJH						C)				

DEDICATED OPTIONS SPINDLE OPTIONS

DEDICATED OPTIONS SPINDLE OPTIONS



■Twin-head magnetic encoder (MBE Series)

	Туре	MBE405W-BE082	MBE405W-BF125	MBE405W-BG160			
	Encoder resolution						
	Detection method	Incremental					
Electrical	Accuracy (*1) (*2)	±4 seconds	±3 seconds	±2 seconds			
characteristics	Wave number within	512 waves	768 wayes	1024 waves			
	one rotation	012 114/05	100 marco				
	Encoder output data	Serial data					
	Power consumption						
Mechanical	Inertia	0.5×10 ⁻³ kg·m ²	2.4×10 ⁻³ kg·m ²	8.7×10 ⁻³ kg ⋅ m ²			
characteristics	Tolerable continuous	15000r/min	10000r/min	8000r/min			
or rotation	rotation speed	150001/11111	10000//11/1	80001/11111			
	Drum inner diameter	ø82mm	ø125mm	ø160mm			
Acchanical	Drum outer diameter	ø100mm	ø150.3mm	ø200.6mm			
Mechanical configuration	Drum mass	0.2kg	0.46kg	1.0kg			
	Degree of protection (*3)		IP67				
	Outline dimension	ø140mm×21.5mm	ø190mm×23.5mm	ø242mm×25.5mm			

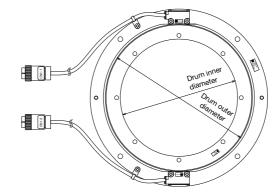
(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.

(*2) The user is requested to install the magnetic drum and installation ring in the encoder within the accuracy range specified herein. Even when the accuracy of the encoder when shipped and when installed by the user is both within the specified range, there is a difference in the installation position. Therefore, the accuracy at the time of our shipment may not be acquired.

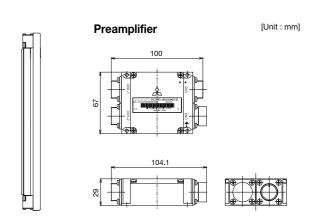
(*3) It is the degree of protection when fitted with a connector.

Outline dimension drawing

Encoder



DEDICATED OPTIONS SPINDLE OPTIONS



6 DRIVE SYSTEM

DRIVE SYSTEM ENCODER INTERFACE UNIT

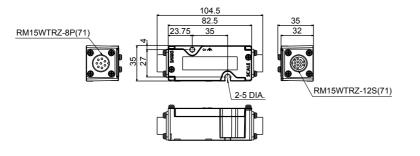
Serial output interface unit for ABZ analog encoder MDS-EX-HR

This unit superimposes the scale analog output raw waves, and generates high resolution position data. Increasing the encoder resolution is effective for the servo high-gain.

Specifications

- Tv	pe	MDS-EX-HR-11		
Compatible scale (exan		LS186 / LS486 / LS486C / LS486C (HEIDENHAIN)		
Analog signal input spe	• /	A -phase, B -phase, Z-phase (Amplitude 1Vp-p/Min.: 0.8Vp-p Max.: 1.2Vp-p)		
Compatible frequency		Analog raw waveform max.200kHz		
Scale resolution		Analog raw waveform / 16384 division		
Output communication style		High-speed serial communication		
Tolerable power voltage)	5VDC±5%		
Maximum heating value	9	2W		
Mass		0.2kg or less		
Degree of protection		IP67		
	E/EH	Ô		
Compatible model	EM/EMH	0		
	EJ/EJH	0		

Outline dimension drawing



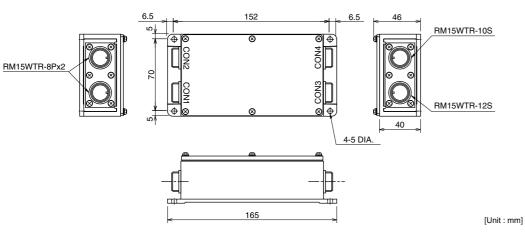
[Unit : mm]

Serial output interface unit for ABZ analog encoder MDS-B-HR

Convert the analog waves (Phase A and B) output from the relative position linear scale into the Mitsubishi-protocol serial communication (digital) signal. Add the signal from the magnetic polar detection unit to the linear scale's feedback signal.

Specifications	pecifications							
Тур	e	MDS-B-HR-11M	MDS-B-HR-11MP					
Compatible scale (examp	ole)	LS186 / LS486 / LS186C / LS486C (HEIDENHAIN)						
Analog signal input speci	ifications	A-phase, B-phase, Z-ph	nase (Amplitude 1Vp-p)					
Compatible frequency		Analog raw wavef	orm max. 200kHz					
Scale resolution		Analog raw wave	form/512 division					
Input/output communicat	ion style	High-speed serial communication I/F, RS485 or equivalent						
Magnetic pole detection		Compatible						
Tolerable power voltage		DC5V±5%						
Maximum heating value		21	N					
Mass		0.5kg (or less					
Degree of protection		IP65	IP67					
	E/EH	0	0					
Compatible model	EM/EMH	Ó	0					
	EJ/EJH	0	0					

Outline dimension drawing



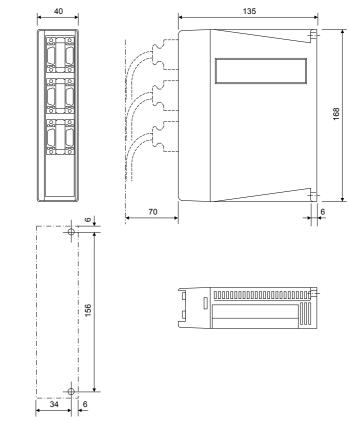
Serial signal division unit MDS-B-SD

This unit has a function to divide the position and speed signals fed back from the high-speed serial encoder and high-speed serial linear scale. This unit is used to carry out synchronized control of the motor with two MDS-E/EH-V1 drive units.

Specifications

•		
Туре)	
Compatible servo drive ur	nit	
Input/output communication	on style	High-s
Tolerable power voltage		
Maximum heating value		
Mass		
Degree of protection		
	E/EH	
Compatible model	EM/EMH	
	EJ/EJH	

Outline dimension drawing

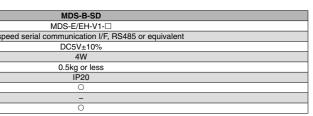


Serial output interface unit for ABZ analog encoder EIB192M (Other manufacturer's product)

Specifications

-						
Тур	e	EIB192M A4 20µm	EIB192M C4 1200	EIB192M C4 2048		
Manufacturer		HEIDENHAIN				
Input signal			A-phase, B-phase: SIN wave 1Vpp, Z-phase	9		
Maximum input frequenc	y		400kHz			
Output signal		N	litsubishi high-speed serial signal (Mitsu02-	4)		
Interpolation division nun	nber	Maximum 16384 divisions				
Compatible encoder		LS187, LS487	ERM280 1200	ERM280 2048		
Minimum detection resol	ution	0.0012µm	0.0000183°	0.0000107°		
Willing detection resol	ulion	0.0012µ11	(19,660,800p/rev)	(33,554,432p/rev)		
Degree of protection		IP65				
Outline dimension			98mm×64mm×38.5mm			
Mass			300g			
	E/EH	0	0	0		
Compatible model	EM/EMH	0	0	0		
	EJ/EJH	0	0	0		

ENCODER INTERFACE UNIT



[Unit : mm]

Serial output interface unit for ABZ analog encoder EIB392M (Other manufacturer's product)

Specifications

Ту	rpe	EIB392M A4 20µm	EIB392M C4 1200	EIB392M C4 2048			
Manufacturer	•	HEIDENHAIN					
Input signal		A-phase, B-phase: SIN wave 1Vpp, Z-phase					
Maximum input frequer	тсу		400kHz				
Output signal			Mitsubishi high-speed serial signal (Mitsu02-	4)			
Interpolation division nu	umber	Maximum 16384 divisions					
Compatible encoder		LS187, LS487	ERM280 1200	ERM280 2048			
Minimum detection res	olution	0.0012µm	0.0000183°	0.0000107°			
winimum detection res	DIULION	0.0012µIII	(19,660,800p/rev)	(33,554,432p/rev)			
Degree of protection		IP40					
Outline dimension			76.5mm×43mm×16.6mm				
Mass			140g				
	E/EH	0	0	0			
Compatible model	EM/EMH	0	0	0			
	EJ/EJH	0	0	0			

Serial output interface unit for ABZ analog encoder ADB-20J Series (Other manufacturer's product) **Specifications**

Ту	ре	ADB-20J20	ADB-	20J60			
Manufacturer		Mitsubishi Heavy Industries Machine Tool Co., Ltd.					
Maximum response spe	ed	10,000r/min	3,600m/min	5,000r/min			
Output signal			Mitsubishi high-speed serial signal				
Compatible encoder		MPCI series	MPS series	MPI series			
Minimum detection reso	lution	0.00005° (7,200,000p/rev)	0.05um				
Degree of protection		IP20					
Outline dimension		190mm×160mm×40mm					
Mass		0.9kg					
	E/EH	0	0	0			
Compatible model	EM/EMH	0	0	0			
	EJ/EJH	0	0	0			

6

DRIVE SYSTEM

Serial output interface unit for ABZ analog encoder ADB-K70M Series (Other manufacturer's product) **Specifications**

opcomodulons				
Ту	/pe	ADB-K70M		
Manufacturer		Mitsubishi Heavy Industries Machine Tool Co., Ltd.		
Maximum response sp	eed	10,000r/min		
Output signal		Mitsubishi high-speed serial signal		
Compatible encoder		MPRZ series		
Minimum detection res	olution	0.000043°		
winimum detection res	olution	(8,388,608p/rev)		
Degree of protection		IP20		
Outline dimension		120mm×50mm×30mm		
Mass		0.15kg		
	E/EH	0		
Compatible model	EM/EMH	Ô Ô		
	EJ/EJH	0		

DRIVE SYSTEM DEDICATED OPTIONS DRIVE UNIT OPTION

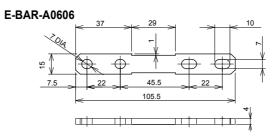
DC connection bar

When connecting a large capacity drive unit with L+L- terminal of power supply unit, DC connection bar is required. In use of the following large capacity drive units, use a dedicated DC connection bar. The DC connection bar to be used depends on the connected power supply, so make a selection according to the following table.

Specifications

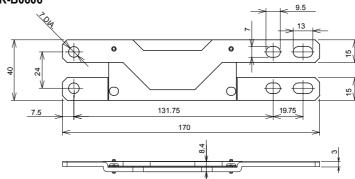
	Series	MD	S-E	MDS-EH			
Large capacity drive unit		MDS-E-SP-400 MDS-E-SP-640	MDS-E-SP-400 MDS-E-SP-640	MDS-EH-SP-200 MDS-EH-SP-320 MDS-EH-SP-480	MDS-EH-V1-200 MDS-EH-SP-200 MDS-EH-SP-320	MDS-EH-V1-200	
Power supply unit		MDS-E-CV-300 MDS-E-CV-370 MDS-E-CV-450	MDS-E-CV-550	MDS-EH-CV-550 MDS-EH-CV-750	MDS-E-CV-300 MDS-E-CV-370 MDS-E-CV-450	MDS-EH-CV-185	
Required connect	tion bar	E-BAR-B0606	E-BAR-A0606 (Two-parts set)	E-BAR-A0606 (Two-parts set)	DH-BAR-B0606	DH-BAR-C0606	
Competible	E/EH	0	0	0	0	0	
Compatible model	EM/EMH	-	-	-	-	-	
	EJ/EJH	-	-	-	-	-	

Outline dimension drawings

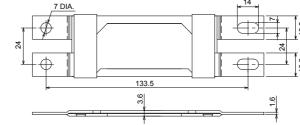


(Note) E-BAR-A0606 is a set of two DC connection bars.

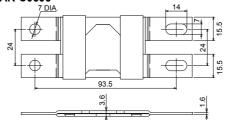
E-BAR-B0606



DH-BAR-B0606







■Side protection cover (E-COVER-1/E-COVER-2)

Install the side protection cover outside the both ends of the connected units.

DEDICATED OPTIONS DRIVE UNIT OPTION

[Unit:mm]

6 **DRIVE SYSTEM**





■Regenerative option

Confirm the regeneration resistor capacity and possibility of connecting with the drive unit. The regenerative resistor generates heats, so wire and install the unit while taking care to safety. When using the regenerative resistor, make sure that flammable matters, such as cables, do not contact the resistor, and provide a cover on the machine so that dust or oil does not accumulate on the resistor and ignite.

Combination with servo drive unit

Corresponding	Standard bu	uiltain			External o	ption regenerativ	/e resistor		
servo drive unit	regenerative r		MR-RB032	MR-RB12	MR-RB32	MR-RB30	MR-RB50	MR-RB31	MR-RB51
	Mass		0.5kg	1.1kg	2.9kg	2.9kg	5.6kg	2.9kg	5.6kg
	Unit outline dim	nension	168mm× 30mm× 119mm	168mm× 40mm× 149mm	150mm× 100mm× 318mm	150mm× 100mm× 318mm	350mm× 128mm× 200mm	150mm× 100mm× 318mm	350mm× 128mm× 200mm
			W1	W2	W3	W3	W4	W3	W4
	External option regenerative resistor		-	GZG200W 39OHMK	GZG200W120 OHMK ×3	GZG200W39 OHMK ×3	GZG300W39 OHMK ×3	GZG200W20 OHMK ×3	GZG300W20 OHMK ×3
			30W	100W	300W	300W	500W	300W	500W
	Regenerative capacity	Resistance value	40Ω	40Ω	40Ω	13Ω	13Ω	6.7Ω	6.7Ω
MDS-EJ-V1-10	10W	100Ω	0	0					
MDS-EJ-V1-15	10W	100Ω	0	0					
MDS-EJ-V1-30	20W	40Ω	0	0	0				
MDS-EJ-V1-40	100W 13Ω					0	0		
MDS-EJ-V1-80	100W 9Ω					0	0	0	0
MDS-EJ-V1-100	100W	9Ω				0	0	0	0
MDS-EJ-V2-30	100W	9Ω				0	0		
MDS-EJ-V2-40	150W	6.7Ω				0	0	0	0

								-		
Corresponding					Ext	ernal option re	generative resi			
servo drive unit	Standard bu regenerative r	regenerative resistor		FCUA-RB37	FCUA-RB55	FCUA-RB75/2	FCUA-RB55 2 units connected in parallel	FCUA-RB75/2 2 units connected in parallel	R-UNIT	R-UNIT2
	Mass		0.8kg	1.2kg	2.2kg	2.2kg	4.4kg	4.4kg	4.3kg	4.4kg
			30mm×	30mm×	40mm×	40mm×	40mm×	40mm×	355mm×	355mm×
	Unit outline dimension		60mm× 215mm	60mm× 335mm	80mm× 400mm	80mm× 400mm	80mm× 400mm	80mm× 400mm	105mm× 114mm	105mm× 114mm
			W5	W5	W6	W6	W6	W6	W7	W7
			155W	185W	340W	340W	680W	680W	700W	700W
	Regenerative capacity	Resistance value	40Ω	25Ω	20Ω	30Ω	10Ω	15Ω	30Ω	15Ω
IDS-EJ-V1-10	10W	100Ω								
IDS-EJ-V1-15	10W	100Ω								
IDS-EJ-V1-30	20W	40Ω	0							
IDS-EJ-V1-40	100W	13Ω		0	0	0		0		0
IDS-EJ-V1-80	100W 9Ω									
IDS-EJ-V1-100	100W	9Ω								
IDS-EJ-V2-30	100W	9Ω		0	0					
IDS-E.I-V2-40	150W	670					0	0		0

Corresponding	Standard bu	uilt-in	External option regenerative resistor									
servo drive unit	regenerative r		MR-RB1H-4	MR-RB3M-4	MR-RB3G-4	MR-RB5G-4 (Note 1)						
	Mass		1.1kg	2.9kg	2.9kg	5.6kg						
	Unit outline dimension		168mm×40mm×149mm	150mm×100mm×318mm	150mm×100mm×318mm	350mm×128mm×200mm						
			W2	W3	W3	W4						
			100W	300W	300W	500W						
	Regenerative capacity	Resistance value	82Ω	120Ω	47Ω	47Ω						
MDS-EJH-V1-10	20W	80Ω	0	0								
MDS-EJH-V1-15	20W 80Ω		0	0								
MDS-EJH-V1-20	100W 40Ω				0	0						
MDS-EJH-V1-40	120W	47Ω			0	0						

(Note 1) Install a cooling fan in the unit.

Combination with spindle drive unit

⚠ CAUTION

The regenerative resistor is not incorporated in the spindle drive unit. Make sure to install the external option regenerative resistor.

Corresponding			External option re	generative resistor	
spindle drive unit		MR-RB12	MR-RB32	MR-RB30	MR-RB50
	Mass	0.8kg	2.9kg	2.9kg	5.6kg
	Unit outline dimension	168mm×40mm×149mm	150mm×100mm×318mm	150mm×100mm×318mm	350mm×128mm×200mm
	Unit outline dimension	W2	W3	W3	W4
	External option	GZG200W39OHMK	GZG200W120	GZG200W39	GZG300W39
	regenerative resistor	GZG200W39OHIWK	OHMK×3	OHMK×3	OHMK×3
	Regenerative capacity	100W	300W	300W	500W
	Resistance value	40Ω	40Ω	13Ω	13Ω
MDS-EJ-SP-20	-	0	0		
MDS-EJ-SP-40	-			0	0
MDS-EJ-SP-80	-			0	0
MDS-EJ-SP-100	-			0	0
MDS-EJ-SP-120	-				0
MDS-EJ-SP-160	-				
MDS-EJ-SP2-20	-			0	0

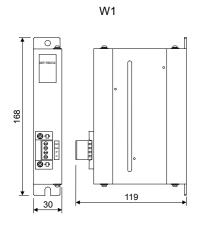
Corresponding			External option reg	generative resistor		
spindle drive unit		FCUA-RB22	FCUA-RB37	FCUA-RB55	FCUA-RB75/2 (1 unit)	
	Mass	0.8kg	1.2kg	2.2kg	2.2kg	
	Unit outline dimension	30mm×60mm×215mm	30mm×60mm×335mm	40mm×80mm×400mm	40mm×80mm×400mm	
	Unit outline dimension	W5	W5	W6	W6	
	Regenerative capacity	155W	185W	340W	340W	
	Resistance value	40Ω	25Ω	20Ω	30Ω	
MDS-EJ-SP-20	-	0	0			
MDS-EJ-SP-40	-	0	0	0	0	
MDS-EJ-SP-80	-		0	0	0	
MDS-EJ-SP-100	-			0		
MDS-EJ-SP-120	-					
MDS-EJ-SP-160	-					
MDS-EJ-SP2-20	-	0	0	0		

				External of	ption regenerativ	/e resistor		
Corresponding spindle drive unit		R-UNIT1	R-UNIT2	R-UNIT3	R-UNIT4	R-UNIT5	FCUA-RB55 2 units connected in parallel	FCUA-RB75/2 2 units connected in parallel
	Mass	4.3kg	4.4kg	10.8kg	11.0kg	15.0kg	4.4kg	4.4kg
		355mm×	355mm×	375mm×	375mm×	375mm×	40mm×	40mm×
	Unit outline dimension	105mm×	105mm×	276mm×	276mm×	276mm×	80mm×	80mm×
	Unit outline dimension	114mm	114mm	104mm	104mm	160mm	400mm	400mm
		W7	W7	W8	W8	W9	W6	W6
	Regenerative capacity	700W	700W	2100W	2100W	3100W	680W	680W
	Resistance value	30Ω	15Ω	15Ω	10Ω	10Ω	10Ω	15Ω
MDS-EJ-SP-20	-							
MDS-EJ-SP-40	-	0	0	0				0
MDS-EJ-SP-80	-	0	0	0	0	0	0	0
MDS-EJ-SP-100	-		0	0	0	0	0	0
MDS-EJ-SP-120	-		0	0	0	0	0	0
MDS-EJ-SP-160	-				0	0		
MDS-EJ-SP2-20	-							

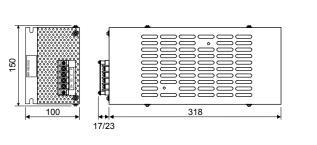
MC MC MC MC MC MC

DEDICATED OPTIONS DRIVE UNIT OPTION

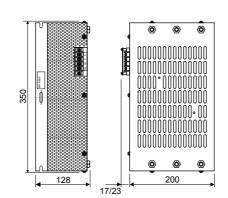
External option regenerative resistor







W5



W6

W4

149

W2

∩¶⊐ 40

20/24

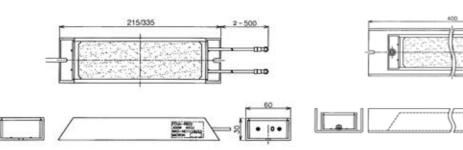
89

[Unit : mm]



6

DRIVE SYSTEM

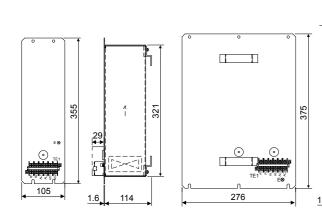


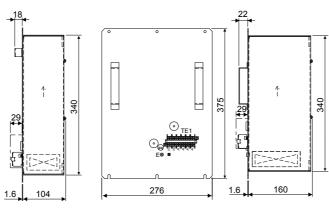






• ...



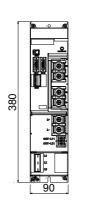


■Power backup unit MDS-D/DH-PFU

Use this unit to protect machines or drive units at power failure. Specifications

Power	backup unit typ	е	MDS-DH-PFU	MDS-D-PFU
	Rated voltage	[V]	380 to 480AC (50/60Hz) (Exclusively for earthed-star supply system) Tolerable fluctuation : between +10% and -10%	200 to 230AC (50/60Hz) Tolerable fluctuation : between +10% and -15%
AC Input	Frequency	[Hz]	50/60 Tolerable fluctuation	n : between +3% and -3%
	Rated current	[A]	2	4
DO lanut/	Rated voltage	[V]	513 to 648DC	270 to 311DC
DC Input/ Output	Rated current	[A]	Regenerative input: MAX 200A Power running output: MAX 160A	Regenerative input: MAX 300A Power running output: MAX 200A
	Voltage	[V]	Single-phase 200 to 230VAC (50Hz or 60Hz) 50Hz at backup	Single-phase 380 to 480VAC (50Hz or 60Hz) 50Hz at backup
	Current	[A]	MAX 2	MAX 4
AC output for control power	Maximum number of drive un	its to connect	6 units (except for th	e power supply unit)
backup	Switching time		Within 100ms after AC inpu	t instantaneous interruption
	Minimum backup	time	75ms or more (380VAC input, at maximum number of drive units to connect)	75ms or more (200VAC input, at maximum number of drive units to connect)
Degree of prote	ection		IP20 [except for the termina	I block and connector area]
Cooling method	ł		Natural	-cooling
Mass		[kq]	2	4

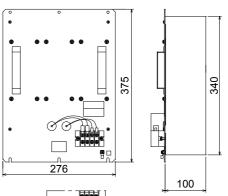
Outline dimension drawing

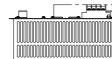


■Regenerative resistor unit for power backup unit R-UNIT-6, R-UNIT-7

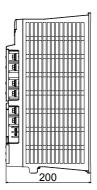
Specifications													
Regenerative resistor type		R-UNIT-6	R-UNIT-7										
Corresponding power backup unit type		MDS-DH-PFU	MDS-D-PFU										
Resistance value	[Ω]	5	1.4										
Instantaneous regeneration capacity [H	kW]	128	114										
Tolerable regeneration work amount	[kJ]	180	180										
Cooling method		Natural-cooling	Natural-cooling										
Mass	[kg]	10	10										

Outline dimension drawing





DEDICATED OPTIONS DRIVE UNIT OPTION



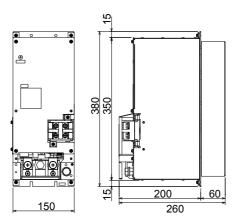
[Unit : mm]

■Capacitor unit MDS-D/DH-CU

Specifications

Consolt	or unit type	MDS-DH-CU	MDS-D-CU
Capacito	or unit type	MD3-DH-CO	MD3-D-C0
Compatible capacito	or unit type	MDS-DH-PFU	MDS-D-PFU
Capacity	[µF]	7000	28000
DC Input/Output	Rated voltage [V]	513 to 648DC	270 to 311DC
Cooling method		Natural-cooling	Natural-cooling
Mass	[kg]	11	11

Outline dimension drawing



[Unit : mm]

DRIVE SYSTEM SELECTION OF CABLES AND CONNECTORS

■MDS-E Series Power Cable/Connector and Brake Cable/Connector for Servo Motor Selection List

		Durin		h		Power Cable		Brake Cable			
	Servo motor type		/e unit f MDS-E		Single connector	Ca	ble	Single connector	Cable		
Son			WD3-E	-		Moto	r side		Moto	or side	
Servo motor type		V1	V2	V3	Drive unit side	Lead out in direction of motor shaft	Lead out in opposite direction of motor shaft	Drive unit side	Lead out in direction of motor shaft	Lead out in opposite direction of motor shaft	
	HG46		20	20	- All axes CNU01SEF (AWG14) - L-axis only						
HG Series	HG56	20	20 20	20	CNU01SEL (AWG14) - M-axis only CNU01SEM	MR-PWS1CBL M-A1-H : Length (m) 2, 3, 5, 7, 10	MR-PWS1CBL □ M-A2-H □ : Length (m) 2, 3, 5, 7, 10	CNU23S (AWG14)	MR-BKS1CBL □ M-A1-H □ : Length (m) 2, 3, 5, 7, 10	MR-BKS1CBL □ M-A2-H □ : Length (m) 2, 3, 5, 7, 10	
	HG96		40	40	(AWG14) - S-axis only CNU01SES (AWG14)						

		Driv	e unit t	type		Power Connecto	or		Brake Connec	tor
Serv	o motor type		MDS-E		Drive unit	Moto	r side	Drive unit	Moto	r side
		V1	V2	V3	side	Straight	Right angle	side	Straight	Right angle
	HG75□-S105010					CNP14-2S (12) Applicable cable	CNP14-2L (12) Applicable cable			
	HG105□-S105010	20	20	20		outline ø10 to 12 (mm)	outline ø10 to 12 (mm)			
HG10 HG12 HG14	HG75		40	40						
	HG105									
	HG123				- All axes	CNP18-10S (14)	CNP18-10L (14)			
	HG142	20			CNU01SEF	Applicable cable outline	Applicable cable outline			
	HG54				(AWG14) - L-axis only	ø10.5 to 14 (mm)	ø10.5 to 14 (mm)			CNB10-R2L (6) CNB10S-R2L (6) Applicable cable outline ø4.0 to 6.0 (mm)
	HG104				- L-axis only CNU01SEL (AWG14) - M-axis only CNU01SEM (AWG14) - S-axis only					
	HG223	40	40	40 80					CNB10-R2S (6) CNB10S-R2S (6)	
HG Series	HG302		80			CNP22-22S (16) Applicable cable outline ø12.5 to 16 (mm)	CNP22-22L (16) Applicable cable outline ø12.5 to 16 (mm)	CNU23S (AWG14)	NU23S Applicable cable	
	HG154				CNU01SES	CNP18-10S (14) Applicable cable outline	CNP18-10L (14) Applicable cable outline			
	HG224	80	80		(AWG14)	ø10.5 to 14 (mm)	ø10.5 to 14 (mm)			
	HG204		160	80		CNP22-22S (16)	CNP22-22L (16)			
	HG303					Applicable cable	Applicable cable			
	HG354	160	160			outline	outline			
-	HG453	160	160W			ø12.5 to 16 (mm)	ø12.5 to 16 (mm)			
	HG703	160W	160W	-		CNP32-17S (23)	CNP32-17L (23)			
	HG903	320	_		Terminal block connection	Applicable cable outline ø22 to 23.8 (mm)	Applicable cable outline ø22 to 23.8 (mm)			

■MDS-E Series Encoder Cable and Connector for Servo Motor Selection List

								Serv	o encoder o	able						
						Motor	side encode	er cable		Ba	Il screw side	encoder ca	ble			
Serve	o motor		e unit t MDS-E·		Ca (for D47/	ble D48/D51/	Sir	Single connector			Ball screw side encoder (OSA405ET2AS/OSA676ET2AS)					
t	уре					D74)			r side		ble		onnector			
		V1	V2	V3	Straight	Right angle	side	Straight	Right angle	Straight	Right angle	Straight	Right angle			
	HG46			20												
	HG56		20	20												
	HG96	20														
	HG75	20		20												
	HG105		20	20 40												
	HG123		40	.0												
	HG142	20														
	HG54					CNV2E-9P-□M		CNE10-R10S (9)		CNV2E-8P-□M	CNV2E-9P-□M	CNE10-R10S (9)	CNE10-R10L (9)			
	HG104	40 40 40	40				40	\Box : Length (m)		a	CNE10S-R10S (9) CN			\Box : Length (m)	CNE10S-R10S (9)	
HG Series	HG223	40	80	40 80	2, 3, 4, 5, 7,	2, 3, 4, 5, 7,	CNU2S (AWG18)			2, 3, 4, 5, 7, 2, 3, 10, 15, 20, 10, 1	2, 3, 4, 5, 7, 10, 15, 20,		Applicable cable outline ø6.0 to 9.0			
00103	HG302	1		00	10, 15, 20,	10, 15, 20,	(40010)	ø6.0 to 9.0								
	HG154				25, 30	25, 30		(mm)	(mm)		25, 30	(mm)	(mm)			
	HG224		80		1											
	HG204	80	160	80												
	HG303	1														
	HG354 160	1														
	HG453	160	160 160W													
	HG703	160W	160W	_												
	HG903	320	_													

■MDS-E Series Power Connector for Spindle Motor Selection List

Spindle	e motor type		unit type DS-E-	Power Connecto	or
Spinde	e motor type	SP	SP2	Drive unit side	Motor side
	SJ-D3.7/100-01			- All axes CNU01SEF (AWG14)	
	SJ-D5.5/100-01	80	80 16080 (M)	- L-axis only CNU01SEL (AWG14)	
	SJ-D5.5/120-01		10000 (IVI)	- M-axis only CNU01SEM (AWG14)	
	SJ-D5.5/120-02	160 200	16080 (L)		_
	SJ-D7.5/100-01	200		-	
SJ-D Series (Normal)	SJ-D7.5/120-01	160	16080 (L)		
(NOTTIAI)	SJ-D11/100-01			-	
	SJ-D15/80-01	200		-	
	SJ-D18.5/80-01	240 320		_	
	SJ-D22/80-01	240 320		Terminal block connection	
	SJ-D26/80-01	320	-	-	
SJ-D Series (Hollow shaft)	SJ-D5.5/120-02T-S	160 200	16080 (L)		
	SJ-DG3.7/120-03T	100			
	SJ-DG5.5/120-04T SJ-DG7.5/120-05T	160	-		
SJ-DG Series (High output)	SJ-DG1.5/120-03T	200	-	-	
(Fight Output)		160		-	
	SJ-DG11/120-03T	200	16080(L)		
	SJ-DJ5.5/100-01	80	80 16080 (M)	- All axes CNU01SEF (AWG14) - L-axis only CNU01SEL (AWG14) - M-axis only CNU01SEM (AWG14)	-
SJ-DJ Series (Compact & lightweight)	SJ-DJ5.5/120-01	80	80 16080 (M)	- All axes CNU01SEF (AWG14) - L-axis only CNU01SEL (AWG14) - M-axis only CNU01SEM (AWG14)	
	SJ-DJ7.5/100-01				
	SJ-DJ7.5/120-01	160	16080 (L)	Terminal block connection	
	SJ-DJ11/100-01				
	SJ-DJ15/80-01	200			_
	SJ-DL0.75/100-01	20	20	- All axes CNU01SEF (AWG14) - L-axis only CNU01SEL (AWG14)	Terminal block connection
	SJ-DL1.5/100-01	40	40	- M-axis only CNU01SEM (AWG14)	
SJ-DL Series (Low-inertia)	SJ-DL3.7/240-01T	200	-		-
(LOW INCIDE)	SJ-DL5.5/150-01T	160	16080 (L)		
	SJ-DL5.5/200-01T			_	
	SJ-DL5.5/240-05T	200		Terminal block connection	
	SJ-DL7.5/150-01T	160	16080 (L)	-	
SJ-DL Series (Hollow shaft)	SJ-DL5.5/200-01T-S	160	16080 (L)		
	SJ-V2.2-01T	40	40	- All axes CNU01SEF (AWG14)	
	SJ-V3.7-02ZT	80	80 16080 (M)	- L-axis only CNU01SEL (AWG14) - M-axis only CNU01SEM (AWG14)	
	SJ-V15-09ZT	200	_		
	SJ-V18.5-01ZT			-	
SJ-V Series (Normal)	SJ-V18.5-04ZT SJ-V22-01ZT	240	_		
(Normai)	SJ-V22-0121 SJ-V22-04ZT	320		-	
	SJ-V22-0421 SJ-V22-06ZT	240		-	
	SJ-V22-0021	320		-	
	SJ-V37-01ZT	400	-		
	SJ-V45-01ZT			1	
	SJ-V55-01ZT	640			
	SJ-V11-01T	160	16080 (L)		
	SJ-V11-09T				
SJ-V Series	SJ-V15-03T	200		-	
(Wide range	SJ-V18.5-03T	240		-	
constant output)	SJ-V22-05T	000			
	SJ-V22-09T SJ-VK22-19ZT	320			
SJ-VL Series (Low-inertia)	SJ-VL2.2-02ZT	40	40	- All axes CNU01SEF (AWG14) - L-axis only CNU01SEL (AWG14) - M-axis only CNU01SEM (AWG14)	
	SJ-VL11-02FZT	160	16080 (L)	Terminal block connection	
	SJ-VL11-05FZT-S01	100	10000 (L)		

■MDS-E Series Encoder Cable and Connector for Spindle Motor Selection List

				W/hon	connoctiv	a to a			e encode					
					connectir			Wh	nen conne	ecting to a	spindle s	side enco	der	
			e unit pe		side PLG			e side aco er TS5690		Spin	dle side e	ncoder O	SE-1024 o	cable
Orningalla			ре S-E-		Single co	onnector	encou		onnector	Ca	ble	Sing	gle conne	ctor
Spindle	motor type			Cable	Drive unit	Encoder	Cable	Drive unit	Encoder		Right	Drive unit	Encod	
		SP	SP2		side	side	Cable	side	side	Straight	angle	side	Straight	Righ angl
	SJ-D3.7/100-01		80											ungi
	SJ-D5.5/100-01	80	16080											
	SJ-D5.5/120-01	100	(M)											
	SJ-D5.5/120-02	160 200	16080 (L)											
	SJ-D7.5/100-01													
SJ-D Series (Normal)	SJ-D7.5/120-01	160	16080 (L)											
(INOTTIAI)	SJ-D11/100-01													
	SJ-D15/80-01	200 240	-											
	SJ-D18.5/80-01	320	-											
	SJ-D22/80-01	240 320	_											
	SJ-D26/80-01	320	_											
SJ-D Series	SJ-D5.5/120-02T-S	160	16080											
Hollow shaft)	SJ-DG3.7/120-03T	200	(L)											
	SJ-DG5.5/120-031	160	_											
SJ-DG Series	SJ-DG7.5/120-05T	100												
(High output)	SJ-DG11/100-03T	200	-	-										
	SJ-DG11/120-03T	160	16080											
	SJ-DJ5.5/100-01	200	(L) 80											
SJ-DJ Series (Compact & lightweight)	SJ-DJ5.5/120-01	80	16080											
	SJ-DJ7.5/100-01		(M)											
	SJ-DJ7.5/120-01	160	16080											
	SJ-DJ11/100-01		(L)				CNP2E- 1-⊡M □ : Length (m)							
	SJ-DJ15/80-01	200	-											
	SJ-DL0.75/100-01	20	20	CNP2E-1-						CNP3EZ-	CNP3EZ-		CNE20-	CNE2
	SJ-DL1.5/100-01	40	40	□M □:Length						2P-□M □ : Length 6 (m) 2, 3, 4, 5, 7, 10, 15,	3P-⊡M ⊡ · Length		29S (10) Applicable	29L (1 Applica
SJ-DL Series	SJ-DL3.7/240-01T	200		(m)	CNU2S (AWG18)	CNEPGS		CNU2S (AWG18)	CNEPGS		(m)	CNEPGS	cable	cabl
(Low-inertia)	SJ-DL5.5/150-01T SJ-DL5.5/200-01T	160	16080 (L)	2, 3, 4, 5, 7, 10, 15,	(2, 3, 4, 5, 7, 10, 15,				2, 3, 4, 5, 7, 10, 15,		outline ø6.8 to 10	outlir ø6.8 to
	SJ-DL5.5/200-011 SJ-DL5.5/240-05T	200	(H)	20, 25, 30			20,25, 30				20, 25, 30		(mm)	(mm
			16080											
	SJ-DL7.5/150-01T	160	(L)											
SJ-DL Series Hollow shaft)	SJ-DL5.5/200-01T-S	160	16080 (L)											
	SJ-V2.2-01T	40	40											
	SJ-V3.7-02ZT	80	80 16080 (M)											
	SJ-V15-09ZT		10000 (IVI)											
	SJ-V18.5-01ZT	200	-											
	SJ-V18.5-04ZT	240	_											
SJ-V Series (Normal)	SJ-V22-01ZT													
(************	SJ-V22-04ZT	320	-											
	SJ-V22-06ZT SJ-V26-01ZT	240 320	_											
	SJ-V20-0121 SJ-V37-01ZT	400												
	SJ-V45-01ZT													
	SJ-V55-01ZT	640	-											
	SJ-V11-01T	160	16080											
	SJ-V11-09T	100	(L)											
SJ-V Series (Wide range	SJ-V15-03T	200												
constant	SJ-V18.5-03T	240	-											
output)	SJ-V22-05T	200	_											
	SJ-V22-09T SJ-VK22-19ZT	320	-											
	SJ-VK22-1921 SJ-VL2.2-02ZT	40	40											
SJ-VL Series	SJ-VL11-02FZT	-	16080											
(Low-inertia)	SJ-VL11-05FZT-S01	160	(L)											

SELECTION OF CABLES AND CONNECTORS

6 DRIVE SYSTEM

■MDS-EM Series Power Cable/Connector and Brake Cable/Connector for Servo Motor Selection List

		Drive unit		Power Cable		Brake	Cable	
	Servo motor type		Single connector	Ca	ible	Ca	ble	
Servo m				Moto	or side	Motor side		
			Drive unit side	Lead out in direction of motor shaft	Lead out in opposite direction of motor shaft	Lead out in direction of motor shaft	Lead out in opposite direction of motor shaft	
HG Series	HG96	10040 16040 16040S	- All axes CNU01SEF(AWG14) - L-axis only CNU01SEL(AWG14) - M-axis only CNU01SEM(AWG14) - S-axis only CNU01SES(AWG14)	MR-PWS1CBL □- M-A1-H □ : Length (m) 2, 3, 5, 7, 10	MR-PWS1CBL M-A2-H : Length (m) 2, 3, 5, 7, 10	MR-BKS1CBL M-A1-H : Length (m) 2, 3, 5, 7, 10	MR-BKS1CBL M-A2-H : Length (m) 2, 3, 5, 7, 10	

		Drive unit		Power Connector		Brake C	onnector	
Servo m	notor type	type MDS-EM-	Drive unit side	Moto	or side	Moto	r side	
		SPV3	Drive unit side	Straight	Right angle	Straight	Right angle	
	HG75□-S105010			CNP14-2S (12)	CNP14-2L (12)			
	HG105□-S105010	400.40		Applicable cable outline ø10 to 12 (mm)	Applicable cable outline ø10 to 12 (mm)			
	HG75	10040 16040						
	HG105	16040S						
	HG123		- All axes	CNP18-10S (14)	CNP18-10L (14)			
	HG142		CNU01SEF	Applicable cable outline	Applicable cable outline			
	HG54	10040 10080 16040 16040S 16080 20080		(AWG14)	ø10.5 to 14 (mm)	ø10.5 to 14 (mm)		
	HG104				- L-axis only CNU01SEL			CNB10-R2S (6)
HG Series	HG223		(AWG14)			CNB10S-R2S (6)	CNB10S-R2L (6)	
HG Series	HG302		- M-axis only CNU01SEM (AWG14) - S-axis only	CNP22-22S (16) Applicable cable outline ø12.5 to 16 (mm)	CNP22-22L (16) Applicable cable outline ø12.5 to 16 (mm)	Applicable cable outline ø4.0 to 6.0 (mm)	Applicable cable outline ø4.0 to 6.0 (mm)	
	HG154	10080	CNU01SES	CNP18-10S (14)	CNP18-10L (14)			
	HG224	16080 20080	(AWG14)	Applicable cable outline ø10.5 to 14 (mm)	Applicable cable outline ø10.5 to 14 (mm)			
	HG204	200120						
	HG303	320120		CNP22-22S (16)	CNP22-22L (16)			
	HG354	000100	Applicable cable outline A ø12.5 to 16 (mm)	Applicable cable outline ø12,5 to 16 (mm)				
	HG453	320120		0.2.0 10 (1111)				

■MDS-EM Series Encoder Cable and Connector for Servo Motor Selection List

						Ser	/o encoder c	able			
				Motor	side encode	r cable		Ba	all screw side	encoder cat	ole
0		Drive unit	Ca	ble	Si	ngle connect	or	Ball scr	ew side enco	oder (OSA405	ET2AS)
	motor pe	type MDS-EM-	(for D47/	D48/D51)	Drive unit	Moto	r side	Ca	ble	Single co	onnector
		SPV3	Straight	Right angle	side	Straight	Right angle	Straight	Right angle	Straight	Right angle
	HG96										
	HG75	10040									
	HG105	16040									
	HG123	16040S									
	HG142]									
	HG54	10040 10080	CNV2E-8P-	CNV2E-9P-		CNE10-R10S (9)	CNE10-R10L (9)	CNV2E-8P-	CNV2E-9P-	CNE10-R10S (9)	CNE10-R10L (9)
	HG105 HG123 HG142 HG54 HG104 HG223 HG223 HG302		ШM	□M		CNE10S-	CNE10S-	□M	□M	CNE10S-	CNE10S-
HG Series	HG223	16040S 16080	□ : Length (m) 2, 3, 4, 5, 7,	□ : Length (m) 2, 3, 4, 5, 7,	CNU2S (AWG18)	R10S (9) Applicable	R10L (9) Applicable	□ : Length (m) 2, 3, 4, 5,7,	□ : Length (m) 2, 3, 4, 5, 7,	R10S (9) Applicable	R10L (9) Applicable
	HG302	20080	10, 15, 20,	10, 15, 20,	(/	cable outline	cable outline	10, 15, 20,	10, 15, 20,	cable outline	cable outline
	HG154	10080	25, 30	25, 30		ø6.0 to 9.0 (mm)	ø6.0 to 9.0 (mm)	25, 30	25, 30	ø6.0 to 9.0 (mm)	ø6.0 to 9.0 (mm)
	HG224	16080 20080					(1111)				()
	HG204	20080									
	HG303	320120									
	HG354	200120									
	HG453	320120									

■MDS-EM Series Power Connector, Encoder Cable, and Connector for Spindle Motor Selection List

			Power C	onnector	When connecting to a spindle motor Motor side PLG cable					lle encoder					
		Drive				motor		Spindle	side accurac		ecting to a	spindle si	de encode	er	
Coind	a motor	Drive unit	Drive unit	Motor	Moto				TS5690 cabl	e	-			SE-1024 ca	
	e motor /pe	type MDS-EM- SPV3	side	Motor side	Cable	Single c Drive unit side	Encoder side	Cable	Single c Drive unit side	onnector Encoder side		ble Right angle	Sin Drive unit side	gle connec Encod Straight	er side
SJ-D Series (Normal)	SJ-D5.5/ 100-01 SJ-D5.5/ 120-01 SJ-D5.5/ 120-02 SJ-D7.5/ 120-02 SJ-D7.5/ 120-01 SJ-D11/ 120-01 SJ-D15/ 00-01 SJ-D15/ 00-01	10040 10080 16040S 10040 16040 16040 16040S 20080 200120 10040 16040S 16040S 16040S 16040S 20080													
SJ-D Series	80-01 SJ-D18.5/ 80-01 SJ-D22/ 80-01 SJ-D26/ 80-01 SJ-D5.5/	200120 320120 320120 320120 10040 10080 16040 16080													
(Hollow shaft)	120-02T-S SJ-DG3.7/ 120-03T SJ-DG5.5/	16040S 20080 200120 10040 10080 16040S													
SJ-DG Series (High output)	120-04T SJ-DG7.5/ 120-05T SJ-DG11/ 100-03T SJ-DG11/	16040 16080 16040S 20080 200120 16040 16080 16040S	Terminal block connection	Terminal block connection	7, 10, 15,	CNU2S (AWG18)	CNEPGS	CNP2E- 1-□M □ : Length (m) 2, 3, 4, 5, 7, 10, 15,	(AWG18)	CNEPGS	(m) 2, 3, 4, 5, 7, 10, 15,	7, 10, 15,	CNU2S (AWG18)	CNE20- 29S (10) Applicable cable outline ø6.8 to 10	cabl outlir
SJ-DJ Series (Compact & ightweight)	120-03T SJ-DJ5.5/ 100-01 SJ-DJ5.5/ 120-01 SJ-DJ7.5/ 120-01 SJ-DJ7.5/ 120-01 SJ-DJ11/	20080 200120 10040 10080 16040S 16040 16080			20, 25, 30			20, 25, 30			20, 25, 30	20, 25, 30		(mm)	(mr
SJ-DL Series (Low- inertia)	100-01 SJ-DJ15/ 80-01 SJ-DL3.7/ 240-01T SJ-DL5.5/ 150-01T SJ-DL5.5/ 240-05T SJ-DL7.5/	16080 16040S 20080 200120 20080 200120 16040 16040 16040S 20080 200120 16040 16080													
SJ-V Series (Normal) SJ-V Series	150-01T SJ-V15- 09ZT SJ-V18.5- 01ZT SJ-V11- 01T	16040S 20080 200120 16040													
(Wide range constant <u>output)</u> SJ-V Series (Hollow	SJ-V11- 09T SJ-V15- 03T SJ-VL11- 02FZT SJ-VL11- 05FZT-S01	16080 16040S 20080 200120 16040 16080 16040S													

SELECTION OF CABLES AND CONNECTORS

■MDS-EJ Series Power Cable/Connector and Brake Cable/Connector for Servo Motor Selection List

					Power Cable		Brake	Cable
				Single connector	Ca	ble	Ca	ble
			nit type S-EJ-		Moto	r side	Moto	r side
Servo	motor type	V1 V2		Drive unit side	Lead out in direction of motor shaft	Lead out in opposite direction of motor shaft	Lead out in direction of motor shaft	Lead out in opposite direction of motor shaft
	HG46	10	_		MR-PWS1CBL	MR-PWS1CBL	MR-BKS1CBL	MR-BKS1CBL
HG Series	HG Series HG56	15	_	Supplied for each drive unit	M-A1-H	M-A2-H	M-A1-H	M-A2-H
	HG96	30	30	each unve unit	□ : Length (m) 2, 3, 5, 7, 10	□ : Length (m) 2, 3, 5, 7, 10	□ : Length (m) 2, 3, 5, 7, 10	□ : Length (m) 2, 3, 5, 7, 10

				P	ower Connector		Brake C	onnector
Servo	motor type		nit type S-EJ-	Drive unit side	Moto	r side	Moto	r side
		V1	V2		Straight	Right angle	Straight	Right angle
	HG75□-S105010				CNP14-2S (12) Applicable cable outline	CNP14-2L (12) Applicable cable outline		
	HG105□-S105010	30	30		ø10 to 12 (mm)	ø10 to 12 (mm)		
	HG75							
	HG105							
	HG54				CNP18-10S (14)	CNP18-10L (14)		
	HG104				Applicable cable outline	Applicable cable outline		
	HG123				ø10.5 to 14 (mm)	ø10.5 to 14 (mm)		
	HG142						CNB10-R2S (6)	CNB10-R2L (6)
HG Series	HG223	40	40	Supplied for each drive unit			CNB10S-R2S (6) Applicable cable outline	CNB10S-R2L (6) Applicable cable outline
	HG302				CNP22-22S (16) Applicable cable outline ø12.5 to 16 (mm)	CNP22-22L (16) Applicable cable outline ø12.5 to 16 (mm)	ø4.0 to 6.0 (mm)	ø4.0 to 6.0 (mm)
	HG154				CNP18-10S (14) Applicable cable	CNP18-10L (14) Applicable cable		
	HG224	80	_		outline ø10.5 to 14 (mm)	outline ø10.5 to 14 (mm)		
	HG204				CNP22-22S (16)	CNP22-22L (16)		
	HG303				Applicable cable outline	Applicable cable outline		
	HG354	100	_		ø12.5 to 16 (mm)	ø12.5 to 16 (mm)		

■MDS-EJ Series Encoder Cable and Connector for Servo Motor Selection List

							Sei	rvo encoder	cable			
					Motor s	de encod	er cable		Ba	II screw side	encoder ca	ble
			e unit	Ca	ble	S	ingle conne	ctor	Ball scre	ew side enco	oder (OSA40	5ET2AS)
Servo	motor type		pe S-EJ-		D48/D51)	Drive	Moto	r side	Ca	ble	Single c	onnector
		V1	V2	Straight	Right angle	unit side	Straight	Right angle	Straight	Right angle	Straight	Right angle
	HG46	10	-									
	HG56	15	-									
	HG96											
	HG75	30	30									
	HG105	30	30				CNE10- R10S (9) CNE10S-			CNV2E-9P- □ M		CNE10- R10L (9) CNE10S-
	HG54	1		CNV2F-8P-	CNV2E-9P-			CNE10-	CNV2E-8P-		CNE10- R10S (9) CNE10S-	
	HG104			□M	□M			R10L (9) CNE10S-	□M			
HG			□: Length	□ : Length	CNU2S	R10S (9)	R10L (9)	□ : Length	□: Length	R10S (9)	R10L (9)	
Series	HG142	40	40	(m) 2, 3, 4, 5, 7,	(m) 2, 3, 4, 5, 7,	(AWG18)	Applicable	Applicable	(m) 2, 3, 4, 5, 7,	(m) 2, 3, 4, 5, 7,	Applicable	Applicable
	HG223	1		10, 15, 20,	10, 15, 20,		cable outline Ø6.0 to 9.0	cable outline Ø6.0 to 9.0	10, 15, 20,	10, 15, 20,	cable outline ø6.0 to 9.0	cable outline ø6.0 to 9.0
	HG302	1		25, 30	25, 30		(mm)	(mm)	25, 30	25, 30	(mm)	(mm)
	HG154											
	HG224	1										
	HG204	80	-									
	HG303	1										
	HG354	100	-	1								

■MDS-EJ Series Power Connector, Encoder Cable, and Connector for Spindle Motor Selection List

			Power	Cable					Spind	le encoder	cable		-		
			When co to a spine	nnecting	When con	necting to motor	a spindle					a spindle si	de encode	er	
		Drive unit			Motor	r side PLG	cable		ide accuracy TS5690 cable		Spi	indle side e	encoder O	SE-1024 ca	ıble
	e motor /pe	type	Drive unit side	Motor side		Single co	onnector		Single c	onnector	Ca	ble	Sin	gle conne	ctor
	he	MDS-EJ-	Side	Side	Cable	Drive unit		Cable	Drive unit		Straight	Right angle	Drive unit		er side
		SP				side	side		side	side	ourungine	Thight drigic	side	Straight	Right angle
	SJ-D3.7/ 100-01	80	Supplied for each drive unit												
	SJ-D5.5/ 100-01 SJ-D5.5/	100													
SJ-D Series	120-01														
(Normal)	SJ-D7.5/ 100-01 SJ-D7.5/ 120-01	120			CNP2E- 1⊡M			CNP2E- 1-⊡M			CNP3EZ- 2P-⊡M	CNP3EZ- 3P-⊡M		CNE20- 29S (10)	CNE20- 29L (10)
	SJ-D11/ 100-01	160	Terminal	Terminal block connection	□: Length (m)	CNU2S (AWG18)	CNEPGS	□ : Length (m) 2, 3, 4, 5,	CNU2S (AWG18)	CNEPGS	(m)	□ : Length (m) 2, 3, 4, 5,	CNU2S (AWG18)	Applicable cable outline	Applicable cable outline
	SJ-DJ5.5/ 100-01 SJ-DJ5.5/	100	connection	CONNECTION	2, 3, 4, 3, 7, 10, 15, 20, 25, 30			7, 10, 15, 20, 25, 30			7, 10, 15,	7, 10, 15, 20, 25, 30			ø6.8 to 10 (mm)
&	120-01 SJ-DJ7.5/ 100-01 SJ-DJ7.5/	120													
	120-01 SJ-DJ11/ 100-01	160													

SELECTION OF CABLES AND CONNECTORS

		Driv	e unit t	type		Power Connecto	or		Brake Connec	tor
Serv	o motor type	N	IDS-EF	1-	Drive unit	Moto	r side	Drive unit	Moto	r side
		V1	V2	V3	side	Straight	Right angle	side	Straight	Right angle
	HG-H75□- S105010					CNP14-2S (12) Applicable cable	CNP14-2L (12) Applicable cable			
	HG-H105⊡- S105010	10	10 20	-	- All axes CNU01SEF	outline ø10 to 12 (mm)	outline ø10 to 12 (mm)	-		
	HG-H75				(AWG14) - L-axis only					
	HG-H105				CNU01SFI	CNP18-10S (14)	CNP18-10L (14)			
	HG-H54	20	20		(AWG14)	Applicable cable outline	Applicable cable outline			
	HG-H104	20	40	40	- M-axis only	ø10.5 to 14 (mm)	ø10.5 to 14 (mm)			
HG-H	HG-H154	40	40	40	CNU01SEM (AWG14)					
Series	HG-H204	40	80		- S-axis only	CNP22-22S (16)	CNP22-22L (16)		CNB10-R2S (6) CNB10S-R2S (6)	CNB10-R2L (6) CNB10S-R2L (6)
	HG-H354	80	80		CNU01SES (AWG14)	Applicable cable	Applicable cable	CNU23S (AWG14)	Applicable cable	Applicable cable
	HG-H453	00	80W		(AVVG14)	outline	outline	(AWG14)	outline	outline
	HG-H703	80W	80W			ø12.5 to 16 (mm)	ø12.5 to 16 (mm)		ø4.0 to 6.0 (mm)	ø4.0 to 6.0 (mm)
	HG-H903	160	_	_		CNP32-17S (23) Applicable cable outline ø22 to 23.8 (mm)	CNP32-17L (23) Applicable cable outline ø22 to 23.8 (mm)			
	HG-H1502	200	—]	Terminal block	Terminal bloc	k connection			
HQ-H	HQ-H903	160	_		connection	CNP32-17S (23) Applicable cable	CNP32-17L (23) Applicable cable			
Series	HQ-H1103	160W	_			outline ø22 to 23.8 (mm)	outline ø22 to 23.8 (mm)			

■MDS-EH Series Encoder Cable and Connector for Servo Motor Selection List

								Serv	o encoder o	able			
						Motor s	side encode	er cable		Bal	I screw side	encoder ca	able
Serve	o motor		e unit t			ble	Single connector			Ball screw side encoder (OSA405ET2AS/OSA676ET2AS)			
t	ype	N	IDS-EH	-	(tor D48/	D51/D74)	Drive unit	Moto	r side	Ca	Single co	onnector	
		V1	V2	V3	Straight	Right angle	side	Straight	Right angle	e Straight Right angle		Straight	Right angle
	HG-H75	10	10										
	HG-H105	10	20	_									
	HG-H54	20	20		1								
	HG-H104	20	40	40	CNV2E-8P-	CNV2E-9P-		CNE10-	CNE10-			CNE10-	CNE10-
	HG-H154	40	40	40				R10S (9) CNE10S-	R10L (9)	10S-	CNV2E-9P-	R10S (9)	R10L (9)
	HG-H204	40	80		□M □: Length	□ : Length			CNE10S-		□ : Length	CNE10S-	CNE10S-
HG Series	HG-H354	80	80		(m)	(m)	CNU2S (AWG18)	R10S (9) Applicable	R10L (9) Applicable	(m)	(m)	R10S (9) Applicable	R10L (9) Applicable
	HG-H453	80	80W		2, 3, 4, 5, 7,	2, 3, 4, 5, 7,	(201010)	cable outline	cable outline	2, 3, 4, 5, 7,	2, 3, 4, 5, 7,	cable outline	cable outline
	HG-H703	80W	80W		10, 15, 20, 25, 30	10, 15, 20, 25, 30		ø6.0 to 9.0	ø6.0 to 9.0	10, 15, 20, 25, 30	10, 15, 20, 25, 30	ø6.0 to 9.0	ø6.0 to 9.0
	HG-H903	160	—	-	.,	.,		(mm)	(mm)	.,		(mm)	(mm)
	HG-H1502	200											
HQ	HQ-H903	160	—										
Series	HQ-H1103	160W	_										

■MDS-EH Series Power Connector for Spindle Motor Selection List

Spindle	motor type	Drive unit type MDS-EH-	Power Connector					
		SP	Drive unit side	Motor side				
	SJ-4-V2.2-03T	20						
[SJ-4-V3.7-03T	20						
[SJ-4-V5.5-07T	40	- All axes CNU01SEF (AWG14)					
	SJ-4-V7.5-12T	40	- L-axis only CNU01SEL (AWG14)					
[SJ-4-V7.5-13ZT	22]					
	SJ-4-V11-18T	80						
SJ-4-V Series (Normal)	/ Series S.I-4-V11-18T 100	100						
(INOTTIAI)	SJ-4-V22-18ZT]					
	SJ-4-V22-15T	160		Terminal block connection				
	SJ-4-V26-08ZT							
	SJ-4-V37-04ZT	200]					
	SJ-4-V45-02T	320	Terminal block connection					
	SJ-4-V55-03T	320						
SJ-4-V Series (Wide range —	SJ-4-V15-20T	100						
constant output)	SJ-4-V22-16T	160						

■MDS-EH Series Encoder Cable and Connector for Spindle Motor Selection List

							Spind	le encode	r cable		-		
				connectin			v	Vhen conn	ecting to a	a spindle s	ide encode	er	
		Drive unit type	Moto	r side PLG	cable		le side acc ler TS5690		Spi	ndle side e	encoder O	SE-1024 ca	able
Spind	le motor	MDS-EH-		Single c	onnector		Single co	onnector	Ca	ble	Sin	gle conne	
t	ype		Cable	Drive unit	Encoder	Cable	Drive unit	Encoder		Right	Drive unit	Encod	er side
		SP		side	side		side	side	Straight	angle	side	Straight	Right angle
	SJ-4-V2.2- 03T SJ-4-V3.7- 03T	20											
	SJ-4-V5.5- 07T SJ-4-V7.5- 12T	40											
	SJ-4-V7.5- 13ZT SJ-4-V11- 18T	80											
SJ-4-V Series (Normal)	SJ-4- V18.5-14T	100	CNP2E-1-			CNP2E- 1-□M			CNP3EZ- 2P-⊡M	CNP3EZ- 3P-DM		CNE20-29S (10)	CNE20-29L (10)
(Normal)	SJ-4-V22- 18ZT SJ-4-V22- 15T SJ-4-V26- 08ZT	160	□ : Length (m) 2, 3, 4, 5, 7, 10, 15, 20, 25, 30	CNU2S (AWG18)	CNEPGS	□ : Length (m) 2, 3, 4, 5, 7, 10, 15, 20, 25, 30	CNU2S (AWG18)	CNEPGS	□ : Length (m)	□ : Length (m) 2, 3, 4, 5, 7,	CNEPGS	Applicable cable outline ø6.8 to 10 (mm)	Applicable cable outline ø6.8 to 10 (mm)
	SJ-4-V37- 04ZT	200											
	SJ-4-V45- 02T SJ-4-V55- 03T	320											
SJ-4-V Series (Wide	SJ-4-V15- 20T	100											
range constant output))	SJ-4-V22- 16T	160											

SELECTION OF CABLES AND CONNECTORS

■MDS-EMH Series Power Connector and Brake Connector for Servo Motor Selection List

		Drive unit		Power Connector		Brake Co	onnector		
Serv	o motor type	type MDS-EMH-	Drive unit side	Moto	r side	Motor side			
		SPV3		Straight	Right angle	Straight	Right angle		
	HG-H54	8040	- All axes	CNP18-10S (14)	CNP18-10L (14)				
-	HG-H104	10040			Applicable cable outline				
HG-H	HG-H154	8040	- L-axis only CNU01SEL (AWG14)	ø10.5 to 14 (mm)	ø10.5 to 14 (mm)	CNB10-R2S (6) CNB10S-R2S (6)	CNB10-R2L (6) CNB10S-R2L (6)		
Series	HG-H204	10040 10060	- M-axis only	CNP22-22S (16)	CNP22-22L (16)	Applicable cable outline ø4.0 to 6.0 (mm)	Applicable cable outline ø4.0 to 6.0 (mm)		
	HG-H354	10060	- S-axis only	Applicable cable outline	Applicable cable outline	04.0 10 0.0 (1111)	04.0 to 0.0 (mm)		
	HG-H453	10080	CNU01SES (AWG14)	ø12.5 to 16 (mm)	ø12.5 to 16 (mm)				

MDS-EMH Series Encoder Cable and Connector for Servo Motor Selection List

				•		Serv	o encoder c	able				
				Motor	side encode	r cable	Ba	II screw side	encoder ca	ble		
Serve	o motor	Drive unit type	Cable (for D48/D51)		Si	ngle connect	or	Ball screw side encoder (OSA405ET2AS)				
t	уре	MDS-EMH-	(for D4	8/051)	Drive unit	Moto	r side	Ca	Cable Single of		onnector	
		SPV3	Straight	Right angle	side	Straight	Right angle	Straight	Right angle	Straight	Right angle	
	HG-H54	8040	CNV2F-8P-	CNV2F-9P-		CNE10-R10S	CNE10-R10L	CNV2F-8P-	CNV2F-9P-	CNE10-R10S	CNE10-R10L	
	HG-H104	10040				(9)	(9)			(9)	(9)	
HG-H	HG-H154	8040	🗆 : Length	□ : Length	CNU2S	CNE10S- R10S (9)	CNE10S- R10L (9)	□ : Length	□: Length	CNE10S- R10S (9)	CNE10S- R10L (9)	
Series	HG-H204	10040 10060	(m) 2, 3, 4, 5, 7,	(m) 2, 3, 4, 5, 7,	(AWG18)	Applicable cable outline	Applicable cable outline	(m) 2, 3, 4, 5, 7,	(m) 2, 3, 4, 5, 7,	Applicable cable outline	Applicable cable outline	
	HG-H354	10060	10, 15, 20,	10, 15, 20,		ø6.0 to 9.0	ø6.0 to 9.0	10, 15, 20,	10, 15, 20,	ø6.0 to 9.0	ø6.0 to 9.0	
	HG-H453	10060 25, 30	25, 30		(mm)	(mm)	25, 30	25, 30	(mm)	(mm)		

■MDS-EMH Series Power Connector, Encoder Cable, and Connector for Spindle **Motor Selection List**

						Spindle encoder cable										
			Power	Cable		connectii indle mot	•		Whe	en conne	cting to a	spindle	side enco	oder		
		Drive			Motor	Motor side PLG cable			Spindle side accuracy encoder TS5690 cable			lle side e	ncoder O	SE-1024	cable	
	motor	unit type MDS- EMH-	Drive unit	Motor		Single connector			Single connector		Ca	ble	Single connector			
IJ			side	side	Cable Driv	Drive	Encoder	Cable	Drive	Drive Encoder		Right	Drive	Encod	er side	
		SPV3				unit side side			unit side side		Straight	angle	unit side	Straight	Right angle	
SJ-4-V Series (Normal)	SJ-4- V7.5- 13ZT SJ-4- V11-18T SJ-4- V18.5-	8040	Terminal		CNP2E-1- □M □ : Length	CNU2S		CNP2E- 1-□M □ : Length	CNU2S		CNP3EZ- 2P-□M □ : Length		CNU2S		CNE20- 29L (10) Applicable	
SJ-4-V Series (Wide	14T SJ-4-	10060	block connection	block connection	(m) 2, 3, 4, 5, 7, 10, 15, 20, 25, 30	(AWG18)	CNEPGS	(m) 2, 3, 4, 5, 7, 10, 15, 20, 25, 30	(AWG18)	CNEPGS	(m) 2, 3, 4, 5, 7, 10, 15, 20, 25, 30	7, 10, 15,	(AWG18)	cable outline ø6.8 to 10 (mm)	cable outline ø6.8 to 10 (mm)	
range constant output)	V15-20T	10060														

■MDS-EJH Series Power Connector and Brake Connector for Servo Motor Selection List

		Drive unit		Power Connector		Brake Connector Motor side			
Ser	vo motor type	type MDS-EJH-	Drive unit side	Moto	r side				
		V1		Straight	Right angle	Straight	Right angle		
	HG-H75□-S105010	15		CNP14-2S (12)	CNP14-2L (12)				
	HG-H105□-S105010	20		Applicable cable outline	Applicable cable outline				
	HG-H103L-3103010	20		ø10 to 12 (mm)	ø10 to 12 (mm)				
HG-H	HG-H75	15	Cumplied for			CNB10-R2S (6)	CNB10-R2L (6)		
Series	HG-H105		Supplied for each drive unit	CNP18-10S (14)	CNP18-10L (14)	CNB10S-R2S (6) Applicable cable outline	CNB10S-R2L (6) Applicable cable outline		
	HG-H54	20		Applicable cable outline	Applicable cable outline	ø4.0 to 6.0 (mm)	ø4.0 to 6.0 (mm)		
	HG-H104			ø10.5 to 14 (mm)	ø10.5 to 14 (mm)				
	HG-H154	40							

■MDS-EJH Series Encoder Cable and Connector for Servo Motor Selection List

						Serv	o encoder c	able		-		
				Motor	side encode	r cable		Ba	II screw side	encoder ca	ble	
Serve	o motor	Drive unit type	Cable (for D48/D51)		Si	ngle connect	or	Ball screw side encoder (OSA405ET2AS)				
t	уре	MDS-EJH-	(TOP D4	8/051)	Drive unit	Moto	r side	Ca	ble	Single co	onnector	
		V1	Straight	Right angle	side	Straight	Right angle	Straight	Right angle	Straight	Right angle	
	HG-H75	15	CNV2E-8P-	CNV2E-9P-		CNE10-R10S	CNE10-R10L	CNV2E-8P-	CNV2E-9P-	CNE10-R10S	CNE10-R10L	
	HG-H105		□M □:Length	□M □: Length		(9) CNE10S-	(9) CNE10S-	□M □ : Length	□M □ : Length	(9) CNE10S-	(9) CNE10S-	
HG-H Series	HG-H54	20	(m)	(m)	CNU2S (AWG18)	R10S (9) Applicable	R10L (9) Applicable	(m)	(m)	R10S (9) Applicable	R10L (9) Applicable	
	HG-H104		2, 3, 4, 5, 7, 10, 15, 20,	2, 3, 4, 5, 7, 10, 15, 20,		cable outline	cable outline ø6.0 to 9.0	2, 3, 4, 5, 7, 10, 15, 20,	2, 3, 4, 5, 7, 10, 15, 20,	cable outline ø6.0 to 9.0	cable outline ø6.0 to 9.0	
	HG-H154	40	25, 30	25, 30		(mm)	(mm)	25, 30	25, 30	(mm)	(mm)	

SELECTION OF CABLES AND CONNECTORS

DRIVE SYSTEM LIST OF CABLES

[Manufacturer (Column and figure on the left show drive unit side.)]

a : Honda Tsushin Kogyo b : Japan Aviation Electronics Industry c : Hirose Electric d : 3M e : J.S.T. f : DDK g : Tyco Electronics

<Optical communication cable>

	Item	Model	Length	Contents	Ma	nu-	Con	npatible m	odel
	Rem	woder	(m)	Contents	fact	urer	E/EH	EM/EMH	EJ/EJH
		J396 L0.3M	0.3						
		J396 L0.5M	0.5						
	Optical communication cable	J396 L1M	1		a	a	0	0	0
	For wiring between drive units (inside panel)	J396 L2M	2		ª	a		Ŭ	
		J396 L3M	3						
		J396 L5M	5						
For	Optical communication cable	J395 L3M	3						
CN1A/		J395 L5M	5		a	a	0	0	0
CN1A/	For wiring between NC-drive units	J395 L7M	7		ª	a		Ŭ	
OPT1A	T of wining between NC-drive drifts	J395 L10M	10						
OFTIA		G380 L5M	5						
		G380 L10M	10						
	Optical communication cable	G380 L12M	12						
	For wiring between drive units (outside panel)	G380 L15M	15		g	g	0	0	0
	I of winning between unive units (outside parier)	G380 L20M	20						
		G380 L25M	25						
		G380 L30M	30						

(Note1) For details on the optical communication cable, refer to the section "Optical communication cable specification" in Specifications Manual of each drive unit.

<Battery cable and connector>

	Item	Model	Length	Contents	Ma	inu-	Compatible r		odel
	item	woder	(m)	Contents	fact	turer	E/EH	EM/EMH	EJ/EJH
		DG30-0.3M	0.3						
		DG30-0.5M	0.5						
	Battery cable	DG30-1M	1.0						
	(For drive unit - battery box,	DG30-2M	2.0	n			0	0	
	For drive unit - drive unit)	DG30-3M	3.0		e	e	0		-
For drive		DG30-5M	5.0						
unit		DG30-7M	7.0						
		DG30-10M	10.0						
	Battery cable	MR-BT6V2CBL0.3M	0.3						0
	(For drive unit - drive unit)	MR-BT6V2CBL1M	1	₹₹	e	e	-	_	

<Power supply communication cable and connector>

	Item	Model	Length	Contents	Ma	nu-	Com	patible m	odel
	nem	iniodei	(m)	Contents	fact	urer	E/EH	EM/EMH	EJ/EJH
For CN4/9	Power supply communication cable	SH21	0.35 0.5 1 2 3		d	d	0	- -	-
	Power supply communication cable connector set	FCUA-CS000	-	• 4	d	d	0	-	-
For CN23	Contactor control output connector Applicable cable outline: 0.85mm ² to 3.5mm ²	CNU23SCV2 (AWG14) These connectors are			e	9	0	-	-
FOI GIN23	Finish outside diameter: to ø4.2mm	supplied for each power supply unit.	-		e	e	0	-	-
For CN24	External emergency stop input connector	CNU24S (AWG24)	-		1	f	0	-	-

<Power backup unit connector>

	Item	Model	Length	Contents	Ma			ole model
			(m)		fact	urer	D-PFU	DH-PFU
For CN43	Input/output connector for power backup unit	CNU43S (AWG22)	-		f	f	0	0
For TE1	Power connector for power backup unit	CNU01SPFU	-		e	9		0
		(AWG14)	-	(C.T)	e)	0	0

<STO input connector>

	lite and	Madal	Length	Contonto	Manu-	Compatible model		
	Item	Model	(m)	Contents	facturer	E/EH	EM/EMH	EJ/EJH
	STO cable	MR-D05UDL3M-B	-		g	0	-	0
or CN8	STO short-circuit connector	These connectors are supplied for each drive unit.	-	Required when not using dedicated wiring STO function.	b	0	-	0

<DI/O analog output connector>

Item		Model		Contents	Manu-	Compatible model			
	men Model (m) Co		Contents	facturer	E/EH	EM/EMH	EJ/EJH		
For CN0	DI/O analog output connector (MDS-E/EH,EM/EMH,EJ/EJH-V1/EJ-SP)	FCUA-CS000	-		d	0	0	0	
For CN9	DI/O analog output connector (MDS-EJ-V2/SP2)	FCUA-DJ200	-		d	-	-	0	

LIST OF CABLES

6 DRIVE SYSTEM

<Servo motor/Tool spindle motor cable and connector>

Item		Model	Length	Contents	Manu-		Manu- Compatible mode		
		wodei	(m)	Contents		urer	E/EH	EM/EMH	EJ/EJH
		CNV2E-8P-2M	2						
		CNV2E-8P-3M	3						
		CNV2E-8P-4M	4						
		CNV2E-8P-5M	5						
		CNV2E-8P-7M	7	ſ <u>`</u>]∎@D	d	f	0	0	0
		CNV2E-8P-10M	10		l u	'	0		0
		CNV2E-8P-15M	15						
For		CNV2E-8P-20M	20						
CN2/3	For HG/HG-H, HQ-H, HG-JR	CNV2E-8P-25M	25						
For	Motor side encoder cable (for D47/D48/D51/D74)	CNV2E-8P-30M	30		<u> </u>				
CN3L/	Ball screw side encoder cable (OSA405ET2AS)	(side appeder cable (OSA405ET2AS) CNV2E-9P-2M 2							
CN3M/		CNV2E-9P-3M	3		d				
CN3S		CNV2E-9P-4M	4			f			
		CNV2E-9P-5M	5						
		CNV2E-9P-7M					0	0	0
		CNV2E-9P-10M	10	-					
		CNV2E-9P-15M	15						
		CNV2E-9P-20M	20						
		CNV2E-9P-25M CNV2E-9P-30M	25 30						
			30		+		~		~
For motor	For HG/HG-H, HQ-H, HG-JR	CNE10-R10S(9)	-			f	0	0	0
encoder/ Ball	Motor side encoder connector (for D47/D48/D51)/ Ball screw side encoder connector (OSA405ET2AS)	CNE10-R10L(9)	-			f	0	0	0
screw side		CNE10S-R10S(9)	-			f	0	0	0
encoder	Applicable cable outline ø6.0 to 9.0mm	CNE10S-R10L(9)	-			f	0	0	0

Item		Model	Length	Contents	Manu-				
	item		(m)	Contents	facturer		E/EH	EM/EMH	EJ/EJH
		CNV2E-HP-2M	2						
		CNV2E-HP-3M	3						
		CNV2E-HP-4M	4						
		CNV2E-HP-5M	5						
CN3	MDS-EX-HR/MDS-B-HR unit cable	CNV2E-HP-7M	7		d	c	0	0	0
		CNV2E-HP-10M	10						
		CNV2E-HP-15M	15						
		CNV2E-HP-20M	20						
		CNV2E-HP-25M	25						
		CNV2E-HP-30M	30		<u> </u>				
For MDS- EX-HR/ MDS-B- HR unit	MDS-EX-HR/MDS-B-HR connector (For DRIVE, CON1, 2: 1) (For SCALE, CON3: 1) Applicable cable outline ø8.5 to 11mm	CNEHRS(10)	-	ЪÞ		с	0	0	0
	· · · · · · · · · · · · · · · · · · ·	CNV2E-D-2M			<u> </u>				
		CNV2E-D-2M CNV2E-D-3M	2						
		CNV2E-D-3M CNV2E-D-4M	4						
		CNV2E-D-4M CNV2E-D-5M	5						
		CNV2E-D-7M	7						
For CN3	MDS-B-SD unit cable	CNV2E-D-10M	10		d	d	0	-	-
		CNV2E-D-15M	15						
		CNV2E-D-20M	20						
		CNV2E-D-25M	25						
		CNV2E-D-30M	30						
For MDS- B-SD unit	MDS-B-SD connector (Two-piece set)	FCUA-CS000	-	• •	d	d	0	-	-
For CN2/3	Encoder connector	CNU2S(AWG18)	-	Ē		d	0	0	0

<Brake cable and connector>

	Item	Model	Length	Contents	Manu-	Com	odel	
	nem	woder	(m)	Contents	facturer	E/EH	EM/EMH	EJ/EJH
	Brake connector for	CNB10-R2S(6)	-		f	0	0	0
	<200V Series> HG (Except for HG46, 56, 96)	CNB10-R2L(6)	-		f	0	0	0
	<400V Series> HG-H, HQ-H	CNB10S-R2S(6)	-	(B)	f	0	0	0
For	Applicable cable outline ø4.0 to 6.0mm	CNB10S-R2L(6)	-		f	0	0	0
motor brake	Brake cable for HG46/56/96 Lead out in direction of motor shaft	MR-BKS1CBL 2M-A1-H MR-BKS1CBL 3M-A1-H MR-BKS1CBL 5M-A1-H MR-BKS1CBL 7M-A1-H MR-BKS1CBL 10M-A1-H	2 3 5 7 10	<u>_</u>	b	0	0	0
	Brake cable for HG46/56/96 Lead out in opposite direction of motor shaft	/96		<u>_</u>	b	0	0	0
For CN20	Brake connector for motor brake control output	CNU23S(AWG14)	-		f	0	-	-

<Power connector>

	Item	Model	Length (m)	Contents	Manu- facturer	Com E/EH	patible n EM/EMH	
	Power connector for <200V Series> HG75, 105, 54, 104, 154, 224, 123, 223, 142 HG-JR73, 153D-S105003	CNP18-10S(14)	-	0-1	f	0	0	0
	 <400V Series> HG-H75, 105, 54, 104, 154 HG-JR734, 1534□-S105003 Applicable cable outline ø10.5 to 14mm 	CNP18-10L(14)	-	ũ - San	f	0	0	0
	Power connector for <200V Series> HG204, 354, 303, 453, 302 <400V Series>	CNP22-22S(16)	-		f	0	0	0
	HG-H204, 354, 453, 703 Applicable cable outline ø12.5 to 16mm	CNP22-22L(16)	-		f	0	0	0
For	Power connector for <200V Series> HG703, 903 <400V Series>	CNP32-17S(23)	-		f	0	-	-
motor power	HG-H903 HQ-H903,1103 Applicable cable outline ø22 to 23.8mm	CNP32-17L(23)	-		f	0	-	-
	Power connector for <200V Series> HG75, 105⊡-S105010	CNP14-2S(12)	-	07	f	0	0	0
	HG-JR73, 153⊡-S105010 <400V Series> HG-H75, 105⊡-S105010 HG-JR734, 1534⊡-S105010	CNP14-2L(12)	-		f	0	0	0
	Power cable for HG46/56/96 Lead out in direction of motor shaft	MR-PWS1CBL 2M-A1-H MR-PWS1CBL 3M-A1-H MR-PWS1CBL 5M-A1-H MR-PWS1CBL 7M-A1-H	2 3 5 7		b	0	-	0
	Power cable for HG46/56/96 Lead out in opposite direction of motor shaft	MR-PWS1CBL 10M-A1-H MR-PWS1CBL 2M-A2-H MR-PWS1CBL 3M-A2-H MR-PWS1CBL 5M-A2-H MR-PWS1CBL 7M-A2-H	10 2 3 5 7		b	0	-	0
	Power connector for MDS-E-V1-20 to 160 MDS-E-V2-20 to 160 MDS-E-V3-20 to 80 MDS-E-SP-20 to 80	MR-PWS1CBL 10M-A2-H - All axes CNU01SEF(AWG14) - L-axis only CNU01SEL(AWG14)	10		e	0		
For TE1	MDS-E-SP2-20 to 80 MDS-E-SP2-16080 (L-axis) MDS-EH-V1-10 to 80W MDS-EH-V2-10 to 80W MDS-EH-V3-40 MDS-EH-SP-20 to 80	M-axis only CNU01SEM(AWG14) S-axis only CNU01SES(AWG14)	_	هد ال ع	е		_	_
	Power connector for MDS-E-CV-37/75	CNU01SECV(AWG14)	-		e	0	-	-
For CN31	Power connector for MDS-EM/EMH Series	All axes CNU01SEF(AWG14) L-axis only CNU01SEL(AWG14)			e		0	
For CN31 L/M/S		· M-axis only CNU01SEM(AWG14) · S-axis only CNU01SES(AWG14)	_		e			
	Control power connector for MDS-EM/EMH Series Applicable cable outline ø0.5 to 1.25mm	RCN22	-	=	f	_	0	_
For CN22	Control power connector for MDS-EM/EMH Series Applicable cable outline Ø1.25 to 2.2mm	RCN22S	-	=	f	_	0	_

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LIST OF CABLES

<Drive unit side main circuit connector>

	••	Mardal	Length	Questionte	Manu-	Con	odel	
Item		Model	(m)	Contents	facturer	E/EH	EM/EMH	
	<200V series> For MDS-EJ-V1-10, 15, 30 For MDS-EJ-SP-20		-		e	-	-	0
		These connectors are supplied for	-		e	-	-	0
	Applicable cable outline: 0.8mm2 to 2.1mm ² Finish outside diameter: to ø3.9mm	each drive unit.	-		е	-	-	0
			-	F	е	-	-	0
	<200V series> For MDS-EJ-V1-40, 80 For MDS-EJ-V2-40		-	000000 1	е	-	-	0
	Applicable cable outline: (For CNP1, for CNP3/CNP3L/CNP3M) 1.25mm ² to 5.5mm ² (For CNP2) 0.14mm ² to 2.1mm ² Finish outside diameter: (For CNP1, for CNP3/CNP3L/CNP3M) to ø4.7mm (For CNP2) to ø3.9mm ²	These connectors are supplied for each drive unit.	-		е	-	-	0
			-		e	-	-	0
For drive			-		е	-	-	0
unit	<200V series> For MDS-EJ-V2-30	These connectors are supplied for each drive unit.	-		e	-	-	0
			-		е	-	-	0
	For MDS-EJ-SP2-20		-		e	-	-	0
			-		e	-	-	0
		These connectors are supplied for each drive unit.	-	<u>100000</u>	e	-	-	0
	<400V series> For MDS-EJH-V1-10,15,20,40 Applicable cable outline:0.8mm ² to 2.1mm ²		-		e	-	-	0
	Finish outside diameter: to ø3.9mm		-		e	-	-	0
			-	Ţ	e	-	-	0

<Spindle encoder cable and connector>

	Item	Model	Length	Contents		anu-		patible m	
	nem	iniodel (r	(m)	Contents		turer	E/EH	EM/EMH	EJ/EJH
		CNP2E-1-2M	2						
		CNP2E-1-3M	3						
		CNP2E-1-4M	4						
	Motor side PLG cable	CNP2E-1-5M	5						
For CN2	Spindle side accuracy encoder	CNP2E-1-7M	7	F-1	d	g	0	0	0
TOTON2	TS5690 cable	CNP2E-1-10M	10		l u	y			~
	133090 cable	CNP2E-1-15M	15						
		CNP2E-1-20M	20						
		CNP2E-1-25M	25						
		CNP2E-1-30M	30						
		CNP3EZ-2P-2M	2						
		CNP3EZ-2P-3M	3						
		CNP3EZ-2P-4M	4						
		CNP3EZ-2P-5M	5						
		CNP3EZ-2P-7M	7	a~1ncmm	d	f	0	0	0
		CNP3EZ-2P-10M	10		a	1'			0
		CNP3EZ-2P-15M	15						
		CNP3EZ-2P-20M	20						
		CNP3EZ-2P-25M	25						
For CN3	Spindle side encoder	CNP3EZ-2P-30M	30						
For CN3	OSE-1024 cable	CNP3EZ-3P-2M	2						
		CNP3EZ-3P-3M	3						
		CNP3EZ-3P-4M	4						
		CNP3EZ-3P-5M	5						
		CNP3EZ-3P-7M	7		Ι.		0	0	0
		CNP3EZ-3P-10M	10		d	f		0	0
		CNP3EZ-3P-15M	15	_					
		CNP3EZ-3P-20M	20						
		CNP3EZ-3P-25M	25						
		CNP3EZ-3P-30M	30						
	Motor side PLG connector								
	Spindle side accuracy encoder	CNEPGS	-			g	0	0	0
For	TS5690 connector					5			
spindle	Spindle side encoder			0 ~~1 00					-
motor	OSE-1024 cable	CNE20-29S(10)	-			f	0	0	0
	Applicable cable outline ø6.8 to 10mm	CNE20-29L(10)	-			f	0	0	0
					-				
For CN2/3	Spindle encoder drive unit side connector	CNU2S(AWG18)	-	Ē		d	0	0	0

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6 DRIVE SYSTEM

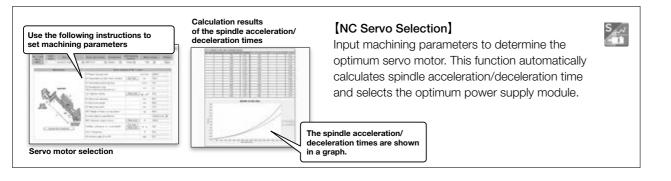
For details on each software tool, refer to the software tools catalog (BNP-A1224).

SOFTWARE TOOLS

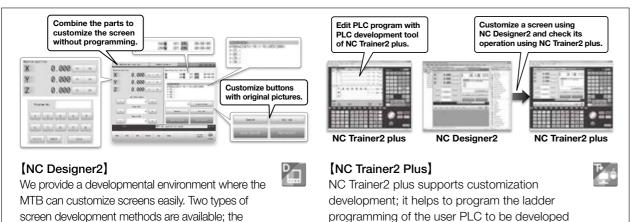
Process flow from machine design and development to operation and maintenance

	Machine design	Electrical circuitry design	Machine assembly and adjustment	Operation and maintenance
•NC	-related processes	6		
	Servo selection	Custom screen creation	Parameter creation	Training
S	NC Servo Selection	NC Designer2	NC Configrator2	NC Trainer2
		Debug	Servo/spindle adjustment	Operation
		NC Trainer2 plus	Machine adjustment	Maintenance
			NC Analyzer2	NC Explorer
				NC Monitor2

Machine design



Electrical circuitry design



SOFTWARE TOOLS

7

Check the contents of the parameters n the help section Check and setup the para list using a compute NC Configurator2

interpreter system (programming without C++) for

with a complex controller (programming with C++).

Machine assembly and adjustment

simple screen development, and the compiler system

[NC Configurator2]

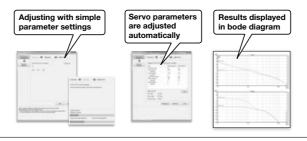
NC parameters required for NC control or machine operation can be edited on a computer. It is also possible to create initial parameters simply by inputting the machine configuration.

by machine tool builders and debug it and check

the operations of customized screens.

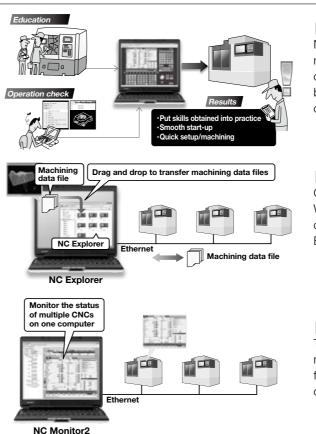
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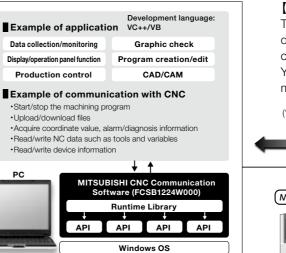


Operation and maintenance

•Machine assembly and adjustment



Application development support





SOFTWARE TOOLS

[NC Analyzer2]

Servo parameters can be adjusted automatically by measuring and analyzing machine characteristics. Measurement and analysis can be done by running a servo motor using the machining program for adjustment, or using the vibration signal. This function can sample various types of data.

[NC Trainer2]

NC Trainer2 plus supports customization development; it helps to program the ladder programming of the user PLC to be developed by machine tool builders and debug it and check the operations of customized screens.

[NC Explorer]

CNC machining data can be managed using Windows® Explorer on a computer when the computer is connected to multiple CNCs via Ethernet.

[NC Monitor2]

Taking advantage of connection with a factory network, CNC operation status can be monitored from remote locations. Several CNCs can be connected and monitored simultaneously.

[Mitsubishi CNC Communication Software (FCSB1224W000)]

This software provides a bunch of API functions. They facilitate development of an Windows application which requires connection and communication with Mitsubishi CNC(*). You can use the common interfaces for any Mitsubishi CNC model, which leads to high efficiency in development.

(*) The compatible model is Mitsubishi CNCs after M700/M70.

Ethernet











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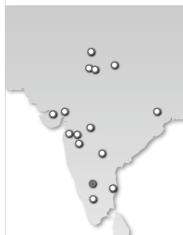


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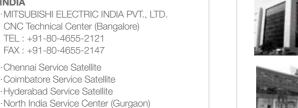
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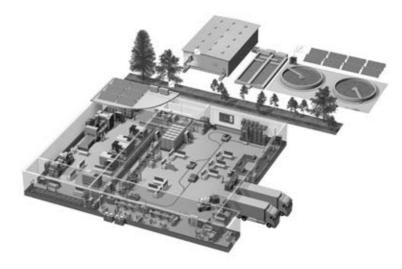


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▲ Safety Warning

To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.