

## FACTORY AUTOMATION

# MITSUBISHI ELECTRIC INDUSTRIAL ROBOT MELFA CRH Series



## **Excellent cost performance and a compact and lightweight design!**

#### Features

- Compact arm for space saving Overall height: 500 mm and 520 mm (3CRH and 6CRH respectively) 65% overall height reduction compared to the FR series!
  - \* Calculated by comparing the 3CRH with the 3FRH4515 and the 6CRH with the 6FRH5520
- Lightweight robot arms 14 kg, 17 kg, and 18 kg (3CRH, 6CRH6020, and 6CRH7020 respectively)
  - **50% weight reduction compared to the FR series!** \* Calculated by comparing the 3CRH with the 3FRH4515 and the 6CRH with the 6FRH5520
- High-speed operation and high performance for productivity
  Cycle time<sup>-1</sup>: 0.44 s, 0.41 s, and 0.43 s
  (3CRH, 6CRH6020, and 6CRH7020 respectively)
  Standard specifications: 32 input points and 32 output points
  In addition to the robot axes, up to eight additional axes can be controlled.

The tracking function is supported as standard.

- CC-Link IE Field Basic as standard
- Intelligent functions supported by Smart Plus



• Significantly reducing the startup time at worksites where robots are installed

The controller has been changed from CR751 to CR800. The memory function mounted on the internal circuit board eliminated the need to input origin data at startup.

## Applications



#### Robot arm specifications

			BH-3CBH4018-D	BH-6CBH6020-D	BH-6CBH7020-D	
Pavload ko		Maximum: 3 (rated: 1)	Maximum: 6 (rated: 2)			
- Ayloud	Arm No. 1	mm	225	325	425	
Arm length	Arm No. 2	mm	175	275		
Maximum reach	Maximum reach mm		400	600	700	
Operating range	J1	dea	264 (±132)	264	(±132)	
	J2	deg	282 (±141)	300 (±150)		
	J3	mm	180	200		
	J4	deg	720 (±360)	720 (±360)		
	XY directions	mm	±0.01	±0.02		
Position repeatability	J3 (Z)	mm	±0.01	±0.01		
	J4 (θ)	deg	±0.01	±0.01		
	J1	deg/sec	720	420	360	
	J2	deg/sec	720	720		
Maximum speed	J3 (Z)	mm/sec	1100	1100		
	J4 (θ)	deg/sec	2600	2500		
	J1+J2	mm/sec	7200	7800		
Cycle time <sup>*2</sup>	SE	ec	0.44	0.41	0.43	
Permissible inertia	Rating	kg·m²	0.005	0.01		
	Maximum <sup>*3</sup>	kg·m²	0.05 (0.075)	0.1	2 (0.18)	
Robot weight	Robot weight kg		14	17	18	
Hand I/O wires and hoses		D-sub 15 pins / ø6 × 2, ø4 × 1				
Robot controller			CR800-CHD			
IP rating		IP20				

\*1, 2: The cycle time was calculated from reciprocating motion of the robot arm 300 mm horizontally and 25 mm vertically with the robot in MvTune2 (high-speed operation mode) while using a 2 kg payload. The cycle time may take longer depending on the position the robot is moving to or if the workpiece needs to be positioned more accurately.

\*3: Values in parentheses indicate the maximum permissible inertia for when high inertia mode is enabled.

Options						
					1	
System architecture			Item	Model	Specification	
			Machine cable	1F-□□UCBL-42	Fixed type (3m, 10m, 15m, 20m)	
Pulse encoders			(replacement)*4	1F-DDLUCBL-42	Flexible type (10m, 15m, 20m)	
			Simple teaching	R32TB	Cable length: 7 m	
			pendant	R32TB-15	Cable length: 15 m	
	GOT VS70/VS80		High-performance	R56TB	Cable length: 7 m	
			teaching pendant	R56TB-15	Cable length: 15 m	
Ethern	et 🖌	·		2D-TZ368	32 input points and 32 output points Insulated output signal	
Encoder			Parallel I/O	(sink type) /	(output signal: 0.1 A/24 V per output point)	
interface		External I/O cable	interface	2D-TZ378	Insulated input signal	
Y-A	Evternal			(source type)	(Input signal: 9 mA/24 V per input point)	
Ame	Parallel I/O cable		External I/O cable	2D-CBL05	5 m	
Bohot	10 dint		(for the parallel I/O interface)	2D-CBL15	15 m	
controller				2A-RZ361	32 input points and 32 output points Insulated output signal	
T Dahat			Derallal I/O unit	(sink type) /	(output signal: 0.1 A/24 V per output point)	
(with cable)				2A-RZ371	Insulated input signal	
				(source type)	(Input signal: 7 mA/24 V per input point)	
Additional a function			External I/O cable	2A-CBL05	5 m	
	Parallel I/O External I/O cable	Servo system	(for the parallel I/O unit)	2A-CBL15	15 m	
USB	interface		CC Link interface	2D T7576	Only supported with intelligent	
(Standard equipment) communication			GG-LINK INTERNACE	20-12576	device stations and local stations	
			Network base card	00 77505	HMS Anybus CompactCom	
SD memory card USB cable			(EtherNet/IP interface)"5	20-12535	Module-connecting communication interface	
		PLC	Network base card	OD TTEOL DN	HMS Anybus CompactCom	
			(PROFINET interface)"5	2D-12535-PN	Module-connecting communication interface	
	interface network base card <sup>*5</sup>		Network base card		HMS Anybus CompactCom	
			(CC-Link IE Field interface)"5	2F-DQ535	Module-connecting communication interface	
		· · · · · · · · · · · · · · · · · · ·	Network base card		HMS Anybus CompactCom	
reaching pendant (option)		(CONTRACTOR OF TAXABLE CONTRACTOR OF	(EtherCAT interface)*5	2F-DQ535-EC	Module-connecting communication interface	
		GOT		2F-DQ510		
RT ToolBack			Function	2F-DQ520	MELFA Smart Plus	
	Network Function		extension card	2F-DQ511	function added	
	base card * extension card			2F-DQ521		
	(Internal robot controller options)		Safety option	4F-SF002-01	Required for safety functions	
RT ToolBox3 Safety option			SD memory card	2F-2GBSD	2 GB capacity	
(Optional computer software)	SSCNET III		RT ToolBox3	3F-14C-WINJ	CD-ROM	
*4: Machine cables of different lengths are also	Servo system	RT ToolBox3 mini	3F-15C-WINJ	CD-ROM		
	(MR-J3-BS/MR-J4-B)	DT To JD av 0 Day	OF LOD MUNIT	DVD DOM		

\*5: HMS EtherNet/IP module (AB6314-B-218) to be supplied by customer. HMS PROFINET IO module (AB6489-B) to be supplied by customer. HMS CC-Link IE Field module (AB6709-B-116) to be supplied by customer.

HMS EtherCAT module (AB6707-D-224) to be supplied by customer.

#### **Robot controller specifications**

	Item	Unit	Specifications		
Model			CR800-CHD		
Number of axes			Four axes at a time		
Memory	Number of teaching positions	Position	39,000		
	Number of steps	Step	78,000		
capacity	Number of programs	Program	512		
Programming language			MELFA-BASIC V, VI		
Position teac	hing method		Teaching or MDI		
	1/0	Point	32 input points and 32 output points		
	Dedicated I/O		Assigned to general-purpose I/Os		
	Hand I/O	Point	8 input points and 8 output points		
	Emergency stop input	Point	1		
	Emergency stop output	Point	1		
External I/O	Mode selector switch input	Point	1		
	Mode output	Point	1		
	Robot error output	Point	1		
	Additional axis synchronization output	Point	1		
	Door switch input	Point	1		
	Encoder input	Channel	2		
	Additional axis, force sense interface	Channel	1		
	Remote I/O	Channel	1		
	USB <sup>*6</sup>	Port	1		
Intorfaco	Ethornot (CC Link IE Field Pasie)	Port	1		
Internace	Eulernet (CC-Link le Field Basic)		1		
	Option slot <sup>*7</sup>	Slot	2		
	SD memory card slot	Slot	1		
	RS-422	Port	1		
Power	Input voltage range <sup>*8</sup>	V	Single-phase 200 to 230 V AC		
eupply	Power capacity <sup>*9</sup>	kVA	0.5		
Suppry	Power supply frequency	Hz	50 or 60		
External dimensions		mm	430 (width) $\times$ 425 (depth) $\times$ 99.5 (height)		
Weight		kg	About 12.5		
Installation			Freestanding, open structure, vertical/horizontal		
Ambient	During operation	°C %RH	0 to 40		
temperature	During transportation and storage		-15 to +70		
Ambient	During operation		45 to 85		
humidity	During transportation and storage	70111	90 or less		
Overvoltage category			II or less		
Pollution degree			2 or less		
Altitude		m	1000 or less		



DVD-ROM

RT ToolBox3 Pro 3F-16D-WINJ

- \*6: Recommended USB cable (USB Type-A to Mini USB Type-B): MR-J3USBCBL3M (manufactured by Mitsubishi Electric), GT09-C30USB-5P (Mitsubishi Electric System & Service Co., Ltd.)
- \*7: For connecting option interfaces. The parallel I/O interface (2D-TZ378) is installed in SLOT1 of the robot controller from the factory.
- \*8: The power voltage fluctuation rate is 10% or less.
- \*9: Recommended power capacity. Note that power-on current is not included in the power capacity. The power capacity value is for reference only. The input power
  - voltage will affect whether the robot will operate properly.

### External dimensions



\*1: This is the space required for battery replacement, and indicates the dimensions including the minimum bending radius of the machine cable.

## MITSUBISHI ELECTRIC CORPORATION

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