External dimensions of the RH-3CRH4018

Operating range of the RH-3CRH4018

External dimensions of the RH-6CRH6020 and 7020

Operating range of the RH-6CRH6020 and 7020

• Variable dimensions

Model	A	B	C	D
RH-6CRH6020	325	R600	R162.6	492.5
RH-6CRH7020	425	R700	R232	559.4

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

![Mitsubishi Electric logo]

MITSUBISHI ELECTRIC

Changes for the Better

FACTORY AUTOMATION

MITSUBISHI ELECTRIC INDUSTRIAL ROBOT MELFA CRH Series

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

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[1]: 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**

Overall height: 520 mm

Overall height: 500 mm

RH-3CRH40
Weight: 14 kg

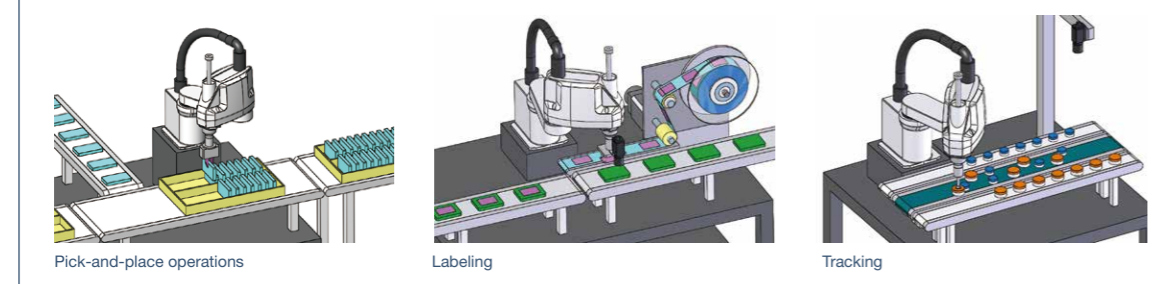RH-6CRH70
Weight: 18 kg

- **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.
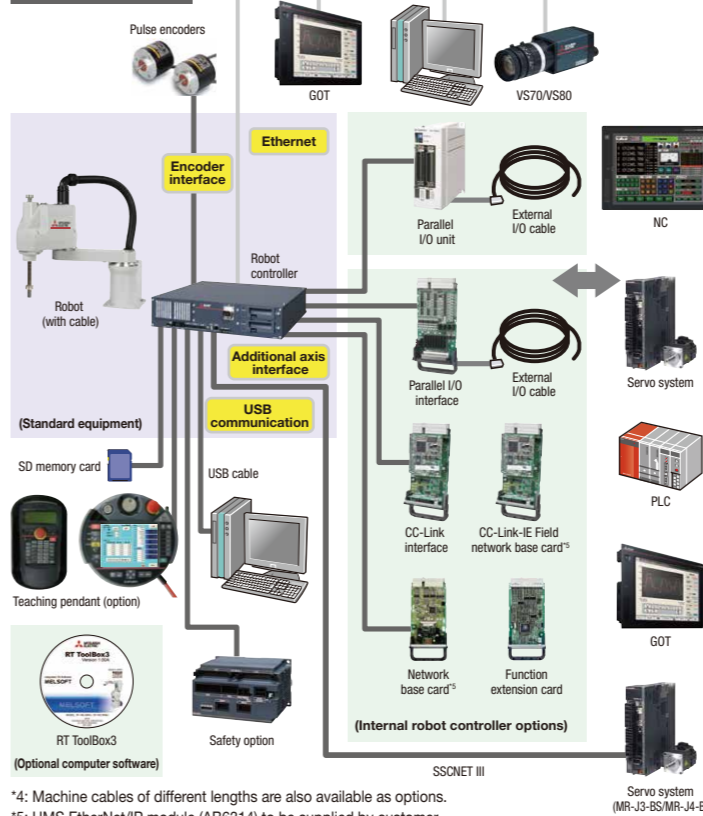
Applications

Pick-and-place operations   Labeling   Tracking

Robot arm specifications

			RH-3CRH4018-D	RH-6CRH6020-D	RH-6CRH7020-D
Payload		kg	Maximum: 3 (rated: 1)	Maximum: 6 (rated: 2)	
Arm length	Arm No. 1	mm	225	325	425
	Arm No. 2	mm	175	275	
Maximum reach		mm	400	600	700
Operating range	J1	deg	264 (±132)	264 (±132)	
	J2	deg	282 (±141)	300 (±150)	
	J3	mm	180	200	
	J4	deg	720 (±360)	720 (±360)	
Position repeatability	XY directions	mm	±0.01	±0.02	
	J3 (Z)	mm	±0.01	±0.01	
	J4 (θ)	deg	±0.01	±0.01	
Maximum speed	J1	deg/sec	720	420	360
	J2	deg/sec	720	720	
	J3 (Z)	mm/sec	1100	1100	
	J4 (θ)	deg/sec	2600	2500	
	J1+J2	mm/sec	7200	7800	
Cycle time[2]		sec	0.44	0.41	0.43
Permissible inertia	Rating	kg·m²	0.005	0.01	
	Maximum[3]	kg·m²	0.05 (0.075)	0.12 (0.18)	
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

System architecture

Pulse encoders
GOT
VS70/VS80
Encoder interface
Ethernet
Parallel I/O unit
External I/O cable
NC
Robot controller
Robot (with cable)
Additional axis interface
Parallel I/O interface
External I/O cable
Servo system
USB communication
SD memory card
USB cable
CC-Link interface
CC-Link-IE Field network base card[5]
PLC
GOT
Teaching pendant (option)
Network base card[5]
Function extension card
Servo system (MR-J3-BS/MR-J4-B)
RT ToolBox3
(Optional computer software)
Safety option
SSCNET III
(Standard equipment)
(Internal robot controller options)

Item	Model	Specification
Machine cable (replacement)[4]	1F-□□UCBL-42	Fixed type (3m, 10m, 15m, 20m)
	1F-□□LUCBL-42	Flexible type (10m, 15m, 20m)
Simple teaching pendant	R32TB	Cable length: 7 m
	R32TB-15	Cable length: 15 m
High-performance teaching pendant	R56TB	Cable length: 7 m
	R56TB-15	Cable length: 15 m
Parallel I/O interface	2D-TZ368 (sink type) /	32 input points and 32 output points Insulated output signal (output signal: 0.1 A/24 V per output point)
	2D-TZ378 (source type)	Insulated input signal (Input signal: 9 mA/24 V per input point)
External I/O cable (for the parallel I/O interface)	2D-CBL05	5 m
	2D-CBL15	15 m
Parallel I/O unit	2A-RZ361 (sink type) /	32 input points and 32 output points Insulated output signal (output signal: 0.1 A/24 V per output point)
	2A-RZ371 (source type)	Insulated input signal (Input signal: 7 mA/24 V per input point)
External I/O cable (for the parallel I/O unit)	2A-CBL05	5 m
	2A-CBL15	15 m
CC-Link interface	2D-TZ576	Only supported with intelligent device stations and local stations
Network base card (EtherNet/IP interface)[5]	2D-TZ535	HMS Anybus CompactCom Module-connecting communication interface
Network base card (PROFINET interface)[5]	2D-TZ535-PN	HMS Anybus CompactCom Module-connecting communication interface
Network base card (CC-Link IE Field interface)[5]	2F-DQ535	HMS Anybus CompactCom Module-connecting communication interface
Network base card (EtherCAT interface)[5]	2F-DQ535-EC	HMS Anybus CompactCom Module-connecting communication interface
Function extension card	2F-DQ510	MELFA Smart Plus function added
	2F-DQ520	
	2F-DQ511	
	2F-DQ521	
Safety option	4F-SF002-01	Required for safety functions
SD memory card	2F-2GBSD	2 GB capacity
RT ToolBox3	3F-14C-WINJ	CD-ROM
RT ToolBox3 mini	3F-15C-WINJ	CD-ROM
RT ToolBox3 Pro	3F-16D-WINJ	DVD-ROM

*4: Machine cables of different lengths are also available as options.
*5: HMS EtherNet/IP module (AB6314) to be supplied by customer.
HMS PROFINET IO module (AB6489-B) to be supplied by customer.
HMS CC-Link IE Field module (AB6709) to be supplied by customer.
HMS EtherCAT module (AB6607) to be supplied by customer.

Robot controller specifications

Item		Unit	Specifications
Model			CR800-CHD
Number of axes			Four axes at a time
Memory capacity	Number of teaching positions	Position	39,000
	Number of steps	Step	78,000
	Number of programs	Program	512
Programming language			MELFA-BASIC V, VI
Position teaching method			Teaching or MDI
External I/O	I/O	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
	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
Interface	Additional axis, force sense interface	Channel	1
	Remote I/O	Channel	1
	USB[6]	Port	1
	Ethernet (CC-Link IE Field Basic)	Port	1
			1
	Option slot[7]	Slot	2
	SD memory card slot	Slot	1
	RS-422	Port	1
Power supply	Input voltage range[8]	V	Single-phase 200 to 230 V AC
	Power capacity[9]	kVA	0.5
	Power supply frequency	Hz	50 or 60
External dimensions		mm	430 (width) × 425 (depth) × 99.5 (height)
Weight		kg	About 12.5
Installation			Freestanding, open structure, vertical/horizontal
Ambient temperature	During operation	°C	0 to 40
	During transportation and storage		-15 to +70
Ambient humidity	During operation	%RH	45 to 85
	During transportation and storage		90 or less
Overvoltage category			II or less
Pollution degree			2 or less
Altitude		m	1000 or less

CR800-CHD

External dimensions

425   340   45
96   99.5
(40)   (45)
(30)   370   30   (3.5)
430
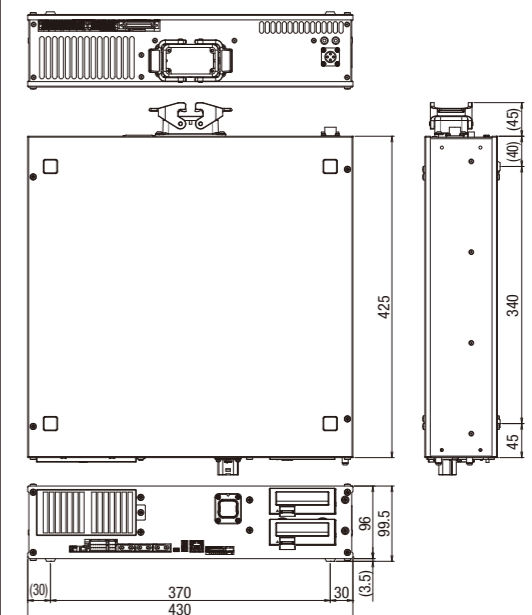
*6: Recommended USB cable (USB Type-A to Mini USB Type-B):
MR-J3USBCBL3M (manufactured by Mitsubishi Electric),
GT09-C30USB-5P (Mitsubishi Electric System & Service Co., Ltd.)
*7: For connecting option interfaces. The parallel I/O unit (2D-TZ378) is installed in SLOT1 of the robot controller from the 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.