

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 time¹: 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

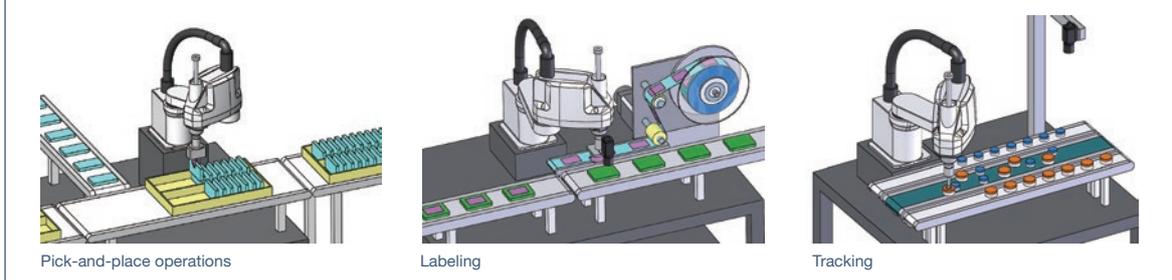


• Significantly reducing the startup time at worksites where robots are installed

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

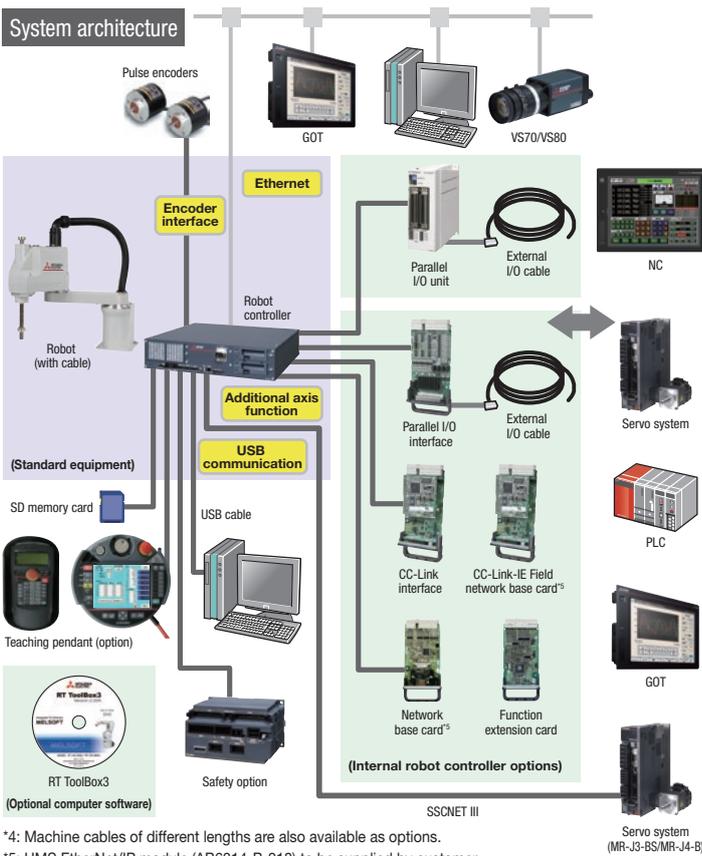
Payload	kg		RH-3CRH4018-D	RH-6CRH6020-D	RH-6CRH7020-D
	Arm No. 1	mm	Maximum: 3 (rated: 1)	Maximum: 6 (rated: 2)	
Arm length	Arm No. 2	mm	225	325	425
Maximum reach		mm	175		275
Operating range			400	600	700
	J1	deg	264 (±132)		264 (±132)
	J2	deg	282 (±141)		300 (±150)
	J3	mm	180		200
Position repeatability	J4	deg	720 (±360)		720 (±360)
	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·m ²	0.005		0.01
	Maximum ³	kg·m ²	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



*4: Machine cables of different lengths are also available as options.
 *5: HMS EtherNet/IP module (AB6314-B-218) to be supplied by customer.
 HMS PROFINET I/O 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.

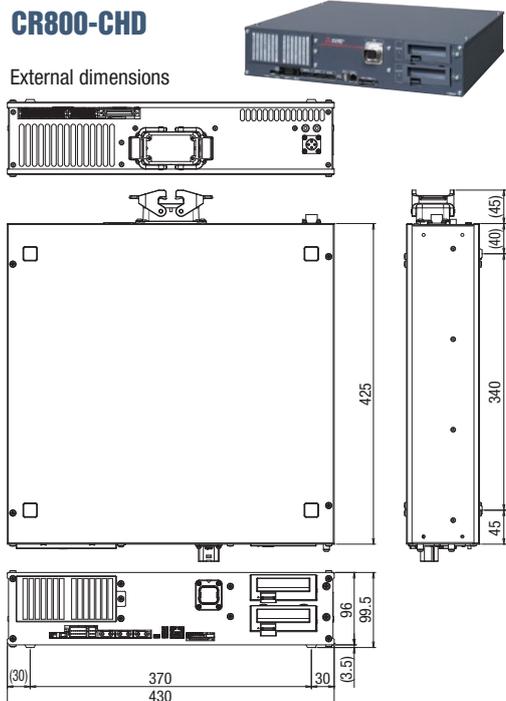
Item	Model	Specification
Machine cable (replacement) ⁴	1F-□□UCBL-42	Fixed type (3m, 10m, 15m, 20m)
	1F-□□LUCBL-42	Flexible type (10m, 15m, 20m)
Simple teaching pendant	R32TB	Cable length: 7 m
	R32TB-15	Cable length: 15 m
High-performance teaching pendant	R56TB	Cable length: 7 m
	R56TB-15	Cable length: 15 m
Parallel I/O interface	2D-TZ368 (sink type) / 2D-TZ378 (source type)	32 input points and 32 output points Insulated output signal (output signal: 0.1 A/24 V per output point) Insulated input signal (Input signal: 9 mA/24 V per input point)
	2D-CBL05 / 2D-CBL15	5 m / 15 m
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) / 2A-RZ371 (source type)	32 input points and 32 output points Insulated output signal (output signal: 0.1 A/24 V per output point) Insulated input signal (Input signal: 7 mA/24 V per input point)
	2A-CBL05 / 2A-CBL15	5 m / 15 m
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

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
Interface	Encoder input	Channel 2
	Additional axis, force sense interface	Channel 1
	Remote I/O	Channel 1
	USB ⁶	Port 1
	Ethernet (CC-Link IE Field Basic)	Port 1
	Option slot ⁷	Slot 2
	SD memory card slot	Slot 1
Power supply	RS-422	Port 1
	Input voltage range ⁸	V Single-phase 200 to 230 V AC
	Power capacity ⁹	kVA 0.5
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

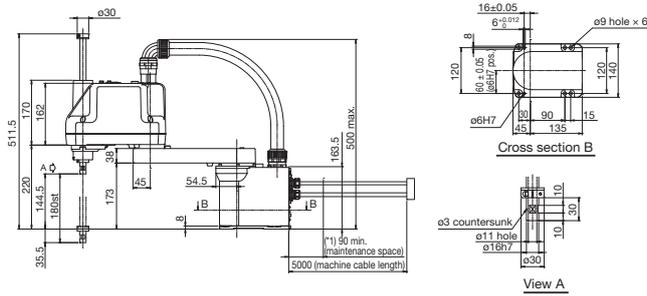
CR800-CHD

External dimensions

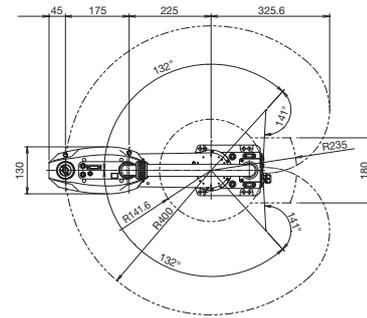


*6: Recommended USB cable (USB Type-A to Mini USB Type-B): MR-J3USBCBL3M (manufactured by Mitsubishi Electric), GT09-C30USB-5P (Mitsubishi Electric System & Service Co., Ltd.)
 *7: For connecting option interfaces. The parallel I/O interface (2D-TZ378) is installed in SLOT1 of the robot controller from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

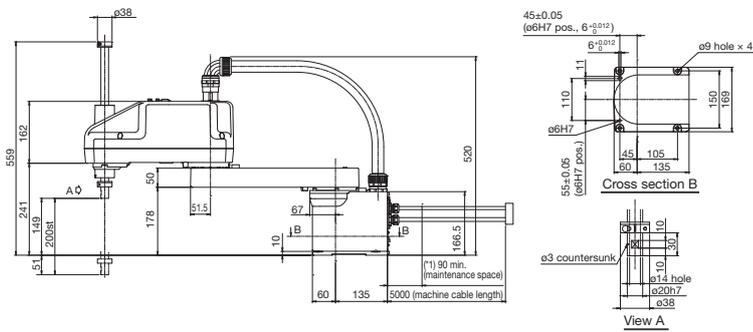
External dimensions



External dimensions of the RH-3CRH4018



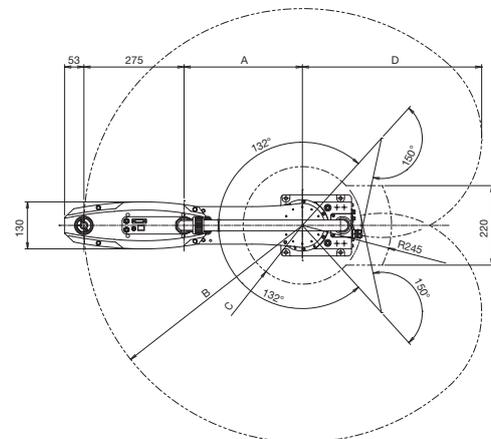
Operating range of the RH-3CRH4018



• Variable dimensions

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

External dimensions of the RH-6CRH6020 and 7020



Operating range of the RH-6CRH6020 and 7020

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

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