

FACTORY AUTOMATION

INDUSTRIAL/COLLABORATIVE ROBOTS MELFA PRODUCT LINE INTRODUCTION



MELFA

CR Series

FR
SERIES

assista



FR SERIES

Industry-leading speed, precision, and extensive intelligent options

- Features industry-leading specifications as Mitsubishi Electric's flagship model.
- Achieves both high speed and high precision with the new control function, MELFA High Drive.
- Ensures high compatibility with Mitsubishi Electric's FA equipment such as PLCs, GOTs, and servo motors.
- Recommended for customers seeking to automate highly complex tasks and significantly reduce cycle times.

RV-FR Series

<Vertical articulated robot *2> Optimized arm length and 6 joints for a broader range of movement support complex assembly and process operations.

Model	RV-2FR	RV-2FRL	RV-4FR	RV-4FRL	RV-7FR	RV-7FRL	RV-7FRL	RV-13FR	RV-13FRL	RV-20FR	RV-20FRL*1	RV-35FR	RV-50FR	RV-80FR
Max. load capacity	3kg		4kg		7kg			13kg		20kg		35kg	50kg	80kg
Max. reach radius	504mm	649mm	515mm	649mm	713mm	908mm	1503mm	1094mm	1388mm	1094mm	1388mm	2100mm		

*1 RV-20FRL does not support MELFA High Drive.

RH-FRH Series

<Horizontal articulated robot *2> Highly rigid arms and cutting-edge servo controls, ideal for assembly work where high levels of speed and precision are required.

Model	RH-3FRH			RH-6FRH		RH-12FRH		RH-20FRH		RH-3FRHR		
Max. load capacity	3kg			6kg		12kg		20kg		3kg		
Max. reach radius	350mm	450mm	550mm	350mm	450mm	550mm	550mm	700mm	850mm	850mm	1000mm	350mm
Z-axis stroke	150mm*3			200mm	340mm	350mm	450mm	350mm	450mm	150mm*4		

*2 For the environmental resistance specifications (for pharmaceuticals and foodstuffs), contact your local sales office.

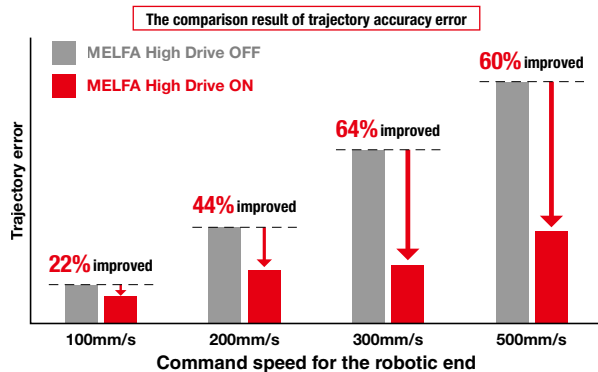
*3 Cleanroom specifications: 120 mm

*4 Cleanroom and waterproof specifications: 120 mm

FR PLUS

- Achieves reduced positioning time and improved trajectory accuracy with the MELFA High Drive function.
- With our expanded force sensor product lines, customers can flexibly select any available force sensors according to their applications.

Scan for the concept video



The trajectory error at 500 mm/s (ON) is nearly the same as that at 200 mm/s (OFF), achieving both high trajectory accuracy and high speed.

Canon U.S.A., Inc. FH-300-20

Equipped with an optical encoder, FH-300-20 achieves precise force control with a thin, lightweight design and low noise.



Scan for more information

SINTOKOGIO, LTD. ZYXer series

The ZYXer series supports force control in harsh environments with IP67-rated protection and offers an extensive product line.



Scan for more information

* For details of the specifications and installation method, refer to the standard specifications of the force sensor. If you would like more information about Canon force sensors, please contact your local Canon or distributor, or refer to the SINTOKOGIO, LTD. website.





CR Series

A simple robot designed for practical utility

- A highly cost-effective model designed for practical utility.
- Compact and lightweight for easy integration into equipment with limited space.
- Recommended for customers seeking a solution for simple transporting tasks.





RV-CR Series

<Vertical articulated robot> Complies with IP65 as standard. Features a slim arm design, with moment and inertia specifications for large hands.

		
Model	RV-8CRL	RV-12CRL
Max. load capacity	8kg	12kg
Max. reach radius	931mm	1504mm
Environmental specifications	Oil mist (IP65)	

RH-CRH Series


<Horizontal articulated robot> Features a compact design and improved continuous operation performance with fewer parts.

				
Model	RH-3CRH	RH-6CRH	RH-10CRH	RH-20CRH
Max. load capacity	3kg	6kg	10kg	20kg
Max. reach radius	400mm	600mm 700mm	600mm 700mm 800mm	850mm 1000mm
Z-axis stroke	180mm	200mm	200mm 300mm	420mm
Environmental specifications	Standard (IP20)			

A new-generation robot enabling human-robot collaborative operation

assist a

- Automatically stops upon collision detection (TS 15066 compliance).
- Supports direct teaching and visual programming for easy usage even for beginners.
- Recommended for customers seeking human-robot collaborative operations or enhanced safety.

	
Model	RV-5AS-D
Max. load capacity	5.5kg
Max. reach radius	910mm
Environmental specifications	Oil mist (IP54)



Easy Connecting

Easy connectivity with a wide variety of components.



Easy Programming

No robot programming expertise required.



Easy Control

Easy operation with the Operation button.



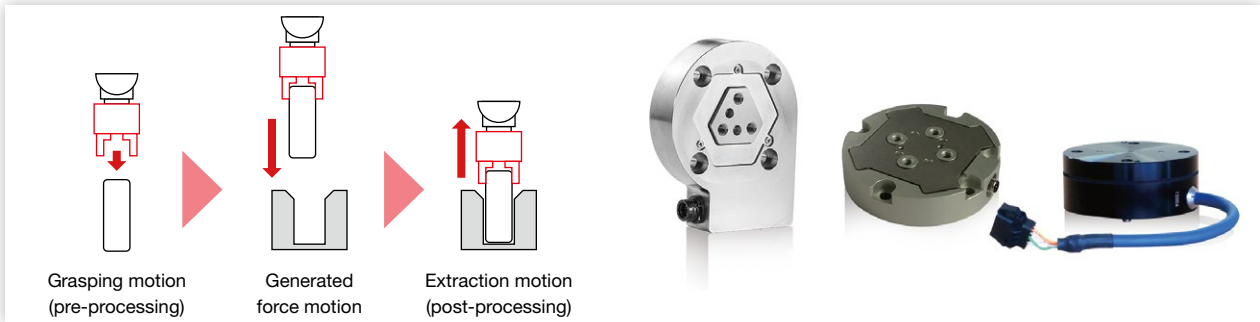
Features of MELFA

A wide range of options to expand automation potential of the shop floor

Intelligent options allow robots to perform tasks that previously required skilled workers. In addition, it is possible to reduce start-up work-hours by leaving the coordination to AI.

Force sensor

Through the use of force sensors that control the levels of force applied by robots, it is now possible to automate extremely difficult tasks that have been beyond the scope of automation in the past.

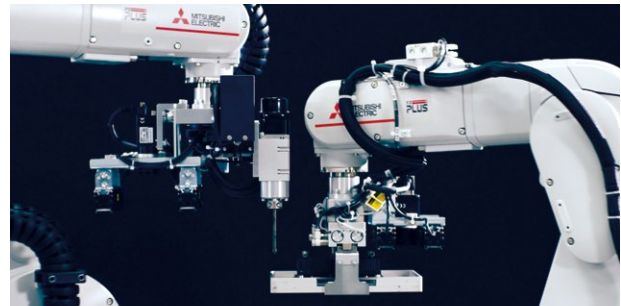
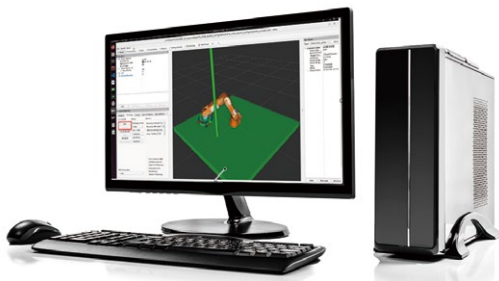


Supports ROS2

MELFA supports ROS2 Driver, enabling flexible application development from research and development to industrial deployment. Integration with cutting-edge OSS (open-source software) is also supported, allowing robotic systems to be built using the latest technologies.

AI-based robot path automatic generation

- Robot paths are automatically generated in real time without teaching. (RapidPlan)
- Robot motions are optimized during the design stage by using MELSOFT Gemini and cloud AI. (Resolver)




Supports *e-Factory* to promote plant-wide automation

MELFA can be easily connected to a wide range of equipment including our other FA devices. This not only contributes to cost reduction but also expands robot functionality, improving usability and maintainability.



MELSERVO
Expands the operating range of the robot through coordination with additional axes (drive axis, screw-tightening, etc.)



MELSEC iQ-R
Enables high-speed, high-capacity visualization of various robot operations and information through iQ Platform integration

MELFA



GOT3000
Improves operability and simplifies the system by enabling robot operation from the GOT



MELSOFT Gemini
Eliminates the need for reprogramming in the actual environment by outputting programs on a 3D simulator

Enables safe system construction with both productivity and flexibility

By using our safety options for functional safety, both productivity and safety can be achieved.

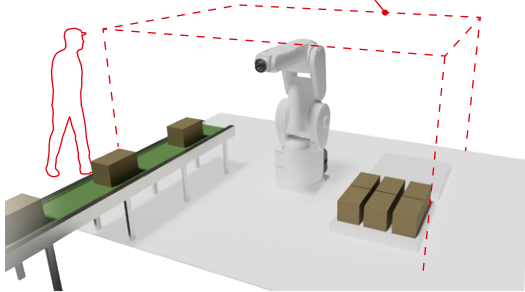
Even with industrial robots, it is possible to build a system that eliminates fences and enables collaborative work.

Prevents accidents (Position monitoring function)

Even if an issue occurs due to an operational error or program error, the robot will not move outside the specified area.

This prevents accidents in advance and enables the design of equipment without safety fences.

Not allowed to move outside the area
(without a safety signal)



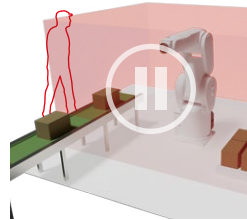
Automatically restores operation safely (Speed monitoring function)

When a person approaches, the robot automatically decelerates and stops.

Once the person moves away, the robot automatically executes its original operation and there is no need to stop or restart the equipment.

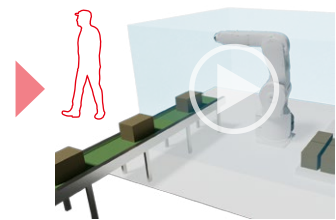
Entering the area

Decelerates or stops



Moving outside the area

Automatically starts operation



Mitsubishi Electric's global service network and convenient support

Our extensive support centers and robust support system ensure reliable assistance for customers.



Training programs







Test lab




Telephone support desk

Support for MELFA, support for you

"iQ Care MELFA Support" is a single-package after-sales service plan that provides monitoring, inspection, and warranty extension. We are committed to working closely with our customers to provide comprehensive support for production site robot automation systems, covering everything from operation and maintenance to repairs.

<p>Monitoring service</p>  <p>Daily robot operating data is automatically aggregated. It is possible to closely monitor the state of system operation and robot components.</p>	<p>Remote service</p>  <p>Easily share information on the cloud in the event of a problem or other issues.</p>
<p>Inspection service</p>  <p>Robot condition diagnosis and consumables replacement through on-site inspections by service engineers.</p>	<p>Warranty extension service</p>  <p>We offer an extended warranty. In the rare event of a failure, parts covered by the warranty are repaired free of charge.</p>



* Contact us for details on overseas support for iQ Care MELFA Support.



RV-FR Series Vertical articulated robot specifications

Model	Environmental specifications	Protection degree	Degrees of freedom	Max. load capacity [kg]	Max. reach radius [mm]	Position repeatability [mm]	Mass [kg]
RV-2FR(B)	Standard	IP30	6	Max. 3 (Rated 2)*1	504	±0.02	19
RV-2FRL(B)			6	Max. 3 (Rated 2)*1	649	±0.02	21
RV-4FR(M)(C)	Standard Oil mist Cleanroom	IP40 (standard) IP67 (oil mist)*2 ISO class3*3	6	Max. 4 (Rated 4)*1	514.5	±0.02	39
RV-4FRL(M)(C)			6	Max. 4 (Rated 4)*1	648.7	±0.02	41
RV-7FR(M)(C)			6	Max. 7 (Rated 7)*1	713.4	±0.02	65
RV-7FRL(M)(C)			6	Max. 7 (Rated 7)*1	907.7	±0.02	67
RV-7FRL(M)(C)			6	Max. 7 (Rated 7)*1	1503	±0.02	130
RV-13FR(M)(C)			6	Max. 13 (Rated 12)*1	1094	±0.05	120
RV-13FRL(M)(C)			6	Max. 13 (Rated 12)*1	1388	±0.05	130
RV-20FR(M)(C)			6	Max. 20 (Rated 15)*1	1094	±0.05	120
RV-20FRL(M)(C)			6	Max. 20 (Rated 15)	1388	±0.05	130
RV-35FR			Standard Oil mist	Wrist equivalent to IP67, Body equivalent to IP65 (standard), Whole body equivalent to IP67 (oil mist)	6	35	2100
RV-50FR	6	50			2100	±0.06	560
RV-80FR	6	80			2100	±0.06	560

*1 The maximum load capacity indicates the maximum payload when the mechanical interface is facing downward (±10° to the perpendicular).
 *2 Please contact a Mitsubishi Electric dealer since the environmental resistance may not be secured depending on the characteristics of the oil you use. Air will need to be purged from the lines. For details, refer to the specifications sheet.
 *3 Preservation of cleanliness levels depends on conditions of a downstream flow of 0.3 m/s in the cleanroom and internal robot suctioning. A ø8-mm coupler for suctioning is provided at the back of the base.

RH-FRH Series Horizontal articulated robot specifications

Model	Environmental specifications	Protection degree *4	Degrees of freedom	Max. load capacity [kg]	Max. reach radius [mm]	Position repeatability			Mass [kg]
						Y-X composite [mm]	J3 (Z) [mm]	J4 (θ) [deg]	
RH-3FRH3515/12C	Standard Cleanroom	IP20/ ISO class3*5	4	Max. 3 (Rated 1)	350	±0.010	±0.01	±0.004	29
RH-3FRH4515/12C			4	Max. 3 (Rated 1)	450	±0.010	±0.01	±0.004	29
RH-3FRH5515/12C			4	Max. 3 (Rated 1)	550	±0.012	±0.01	±0.004	32
RH-6FRH35XX/M/C	Standard Oil mist Cleanroom	IP20/IP65*6/ ISO class3*5	4	Max. 6 (Rated 3)	350	±0.010	±0.01	±0.004	36
RH-6FRH45XX/M/C			4	Max. 6 (Rated 3)	450	±0.010	±0.01	±0.004	36
RH-6FRH55XX/M/C			4	Max. 6 (Rated 3)	550	±0.012	±0.01	±0.004	37
RH-12FRH55XX/M/C			4	Max. 12 (Rated 3)	550	±0.012	±0.01	±0.005	65
RH-12FRH70XX/M/C			4	Max. 12 (Rated 3)	700	±0.015	±0.01	±0.005	67
RH-12FRH85XX/M/C			4	Max. 12 (Rated 3)	850	±0.015	±0.01	±0.005	69
RH-20FRH85XX/M/C			4	Max. 20 (Rated 5)	850	±0.015	±0.01	±0.005	75
RH-20FRH100XX/M/C			4	Max. 20 (Rated 5)	1000	±0.02	±0.01	±0.005	77

*4 The environmental resistance specifications (M: Oil mist specifications, C: Cleanroom specifications) are factory-set custom specifications.
 The range for vertical movement listed in the environmental resistance specifications (C: Cleanroom specifications) for the RH-3FRH is narrower than for the standard model. Keep this in mind when working with the RH-3FRH.
 *5 Preservation of cleanliness levels depends on conditions of a downstream flow of 0.3 m/s in the cleanroom and internal robot suctioning. A ø8-mm coupler for suctioning is provided at the back of the base.
 *6 Please contact a Mitsubishi Electric dealer since the environmental resistance may not be secured depending on the characteristics of the oil you use. Direct jet to the bellows is excluded.

CR Series



RV-CR Series Vertical articulated robot specifications

Model	Environmental specifications	Protection degree	Degrees of freedom	Max. load capacity [kg]	Max. reach (P-point) [mm]	Position repeatability [mm]	Mass [kg]
RV-8CRL	Oil mist	IP65*1	6	Max. 8 (Rated 7)*2	931	±0.02	41
RV-12CRL			6	Max. 12 (Rated 12)	1504	±0.04	110

*1 Electrical devices and high-speed rotating parts susceptible to the effects of dust and water inside the arm are under the protection of IP65. Refer to the standard specifications manual for details.
 *2 The maximum load capacity indicates the maximum payload when the mechanical interface is facing downward (±10° to the perpendicular).

RH-CRH Series Horizontal articulated robot specifications

Model	Environmental specifications	Protection degree	Degrees of freedom	Max. load capacity [kg]	Max. reach (Arm No. 1 + Arm No. 2) [mm]	Position repeatability			Mass [kg]
						Y-X composite [mm]	J3 (Z) [mm]	J4 (θ) [deg]	
RH-3CRH4018	Standard	IP20	4	Max. 3 (Rated 1)	400	±0.01	±0.01	±0.01	14
RH-6CRH6020			4	Max. 6 (Rated 2)	600	±0.02	±0.01	±0.01	17
RH-6CRH7020			4	Max. 6 (Rated 2)	700	±0.02	±0.01	±0.01	18
RH-10CRH60XX			4	Max. 10 (Rated 5)	600	±0.02	±0.01	±0.01	20*3
RH-10CRH70XX			4	Max. 10 (Rated 5)	700	±0.02	±0.01	±0.01	20*3
RH-10CRH80XX			4	Max. 10 (Rated 5)	800	±0.025	±0.01	±0.01	20*3
RH-20CRH8542			4	Max. 20 (Rated 10)	850	±0.025	±0.01	±0.01	54*3
RH-20CRH10042			4	Max. 20 (Rated 10)	1000	±0.025	±0.01	±0.01	57*3

*3 The weight of the machine cable is not included.



RH-FRHR Series Horizontal articulated (ceiling mounted) robot specifications

Model	Environmental specifications	Protection degree	Degrees of freedom	Max. load capacity [kg]	Max. reach radius [mm]	Position repeatability			Mass [kg]
						Y-X composite [mm]	J3 (Z) [mm]	J4 (Θ) [deg]	
RH-3FRHR3515	Standard	IP20	4	Max. 3 (Rated 1)	350	±0.01	±0.01	±0.01	24
RH-3FRHR3512C	Cleanroom	ISO class5*7	4	Max. 3 (Rated 1)	350	±0.01	±0.01	±0.01	28
RH-3FRHR3512W	Waterproof	IP65*8	4	Max. 3 (Rated 1)	350	±0.01	±0.01	±0.01	28

*7 Preservation of cleanliness levels depends on conditions of a downstream flow of 0.3 m/s in the cleanroom and internal robot suctioning. A ø8-mm coupler for suctioning is provided at the back of the base.

*8 Direct jet to the bellows is excluded.

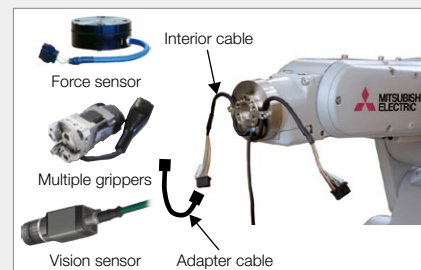
Improved usability with custom specifications

Mounting cable specifications*9

Devices that can be mounted	Model (machine no.)				
	-SH01	-SH02	-SH03	-SH04	-SH05
Air ø4	✓(x4)	—	—	✓(x2)	✓(x2)
Gripper input 8 points	✓	✓	—	✓	✓
Vision sensor	—	✓	✓	—	✓
Force sensor	—	✓	✓	✓	—
Electric gripper	—	✓ (may be used for either device)	✓	—	—

*9 The J6 axis range of motion is ±200deg. Protection level is IP40. Some models are not supported.

✓: Supported —: Not supported



Pharmaceutical and food environment specifications *10

Item	Pharmaceutical environment specifications	Food environment specifications	Food-grade grease specifications
Stainless steel flange	✓	✓	—
Specially shaped SUS bolts	✓	—	—
Food-grade machine grease	✓	✓	✓
Chemically resistant surface coating	✓	—	—
J3 axis bellows (FRH series only)	✓ (PTFE)	✓ (Urethane)	—
IP performance	IP65	RV: IP67/RH: IP65	IP54

*10 Some models are not supported.

✓: Supported —: Not supported



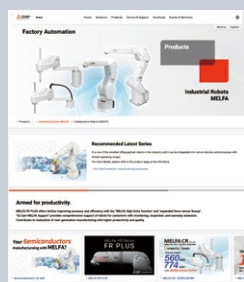
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ASSISTA Collaborative robot specifications

Model	Environmental specifications	Protection degree	Degrees of freedom	Max. load capacity [kg]	Maximum reach (P-point) [mm]	Position repeatability [mm]	Mass [kg]
RV-5AS-D	Oil mist	IP54	6	Maximum 5.5 (Rated 5)*1	910	±0.03	32

*1 The maximum load capacity indicates the maximum payload when the mechanical interface is facing downward (±10° to the perpendicular).



Mitsubishi Electric FA global website/ Industrial robot MELFA

For detailed specifications of the industrial/collaborative robots MELFA, refer to the Mitsubishi Electric FA global website.

MELFA

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e-F@ctory

Mitsubishi Electric's e-F@ctory concept utilizes both FA and IT technologies, to reduce the total cost of development, production and maintenance, with the aim of achieving manufacturing that is a "step ahead of the times". It is supported by the e-F@ctory Alliance Partners covering software, devices, and system integration, creating the optimal e-F@ctory architecture to meet the end users needs and investment plans.



**e-F@ctory
Alliance**

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