MITSUBISHI ELECTRIC

INDUSTRIAL ROBOTS SUPPORTING THE MISTSUBISHI ELECTRIC iQ Platform

MELFA RV-SQ/RH-SQH Series

MELSOFT iQ Platform

MELFANS web

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance managememt systems)
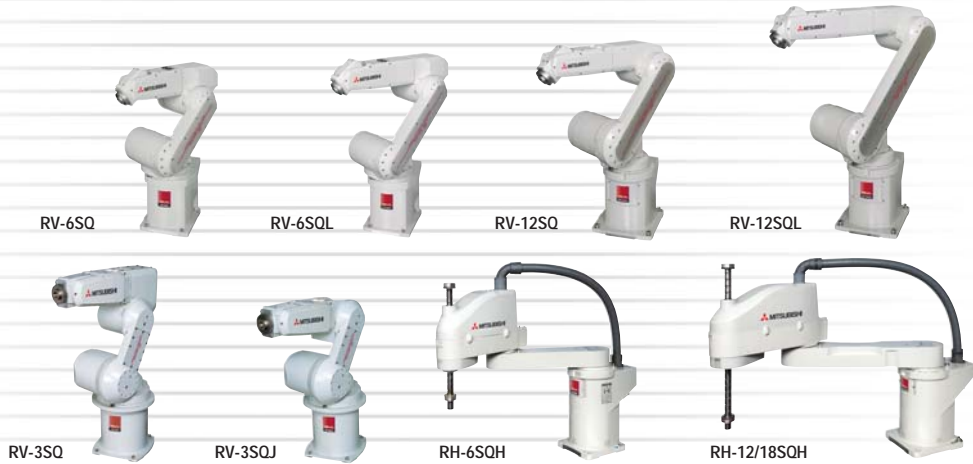
ISO 14001
JACO
CERTIFICATION ORGANIZATION FOR ENVIRONMENT AND QUALITY. JAPAN AUDIT AND CERTIFICATION ORGANIZATION
EC97J1113

UKAS ENVIRONMENTAL MANAGEMENT
051

ISO 9001
BUREAU VERITAS
Certification

BUREAU VERITAS 1828

UKAS QUALITY MANAGEMENT
008

A New Concept Only Possible by Mitsubishi Electric.

iQ Platform opens up the future of automation, by integrating, optimizing, and innovating the shop floor.
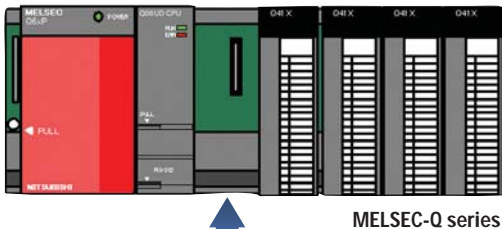
MELFA SQ series

| CR1Q-7xx | CR3Q-7xx | CR2Q-7xx |

Applicable models

| RV-6SQ | RV-6SQL | RV-12SQ | RV-12SQL |
| RV-3SQ | RV-3SQJ | RH-6SQH | RH-12/18SQH |

Features

Simply add a robot controller into the MELSEC-iQ Platform

MELSEC-Q series

iQ Platform robot CPU

The SQ series consists of models that offer even greater safety to let you build your robot system with peace of mind.
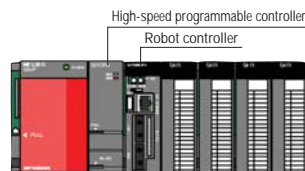
| **Greater safety** | CE | **Conforming to the Latest Machinery Directive/ ISO-10218** |

The SQ series conforms to the ISO-10218 Robot C Standard revised in 2006.
This added safety will surely help you certify your equipment under the Machinery Directive and other safety standards

1 Improved control performance

High-speed programmable controller
Robot controller

NEW!

High-speed multi-CPU communication

■ **Shorter I/O processing time**
The high-speed communication function linking the sequencer and robot significantly reduces the I/O processing time.
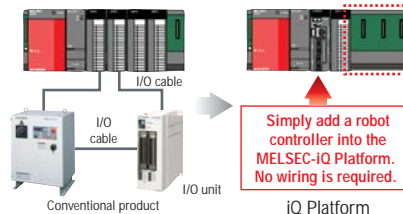
■ **Improved control performance**
The newly developed controller achieves significantly improved performance, corresponding to approximately twice the performance of a conventional controller.

■ **Improved productivity**
The improved I/O processing performance and control performance let you improve the productivity of your equipment up to 15%.

2 Less hardware and wiring

I/O cable
I/O cable
I/O unit
Conventional product

Simply add a robot controller into the MELSEC-iQ Platform. No wiring is required.
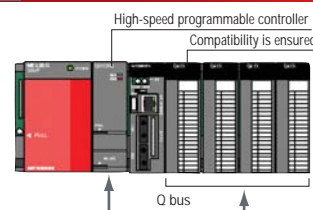iQ Platform

■ **Less hardware and wiring**
Robot programs can be easily written using MELFA-BASIC-V language no need for external I/O cable or I/O unit.

■ **Increased I/O points**
The number of I/O connections between sequencers has increased to 8,192 input points and 8,192 output points, which are 32 times more than what a conventional product offers.

3 Compatibility with conventional systems

High-speed programmable controller
Compatibility is ensured

Q bus

■ **Compatibility is ensured**
Q-bus communication is used among the sequence CPUs and various I/O units and intelligent units. You can use the MELSEC units you've been using, without changing anything.

An Evolution of the S Series.

Functions

1 New teaching pendant (optional)

Improved display performance and operability

- Simple teaching pendant **[R32TB]**
  Five times greater display performance
  (vs. R28TB)
- Ergonomic design improves operability.
- IP65 Protection

2 New high-functional teaching pendant (optional)
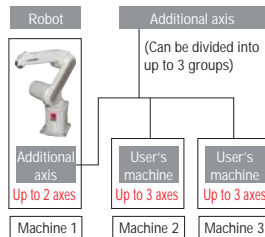
No need to bring a PC to the site

- High-functional teaching pendant **[R56TB]**
  [VGA (640 x 480) touch panel] adopted
- You can use HMI tools equivalent to the RT tool box on the teaching pendant.
- You can connect a USB memory to back up the data saved in the controller.
- IP65 Protection

3 Additional axis function

No need for dedicated control device.
Additional axes can be controlled using robot programs.

- The additional-axis I/F is a standard feature.
- Controlling the robot's traveling axes and turntable.
- Up to 8 axes can be controlled in addition to the robot.
- You can add our MELSERVO-J3 (MR-J3-☐B) units as additional axes.

Robot

Additional axis
(Can be divided into up to 3 groups)

Additional axis Up to 2 axes	User's machine Up to 3 axes	User's machine Up to 3 axes
Machine 1	Machine 2	Machine 3

4 Synchronized outputs from additional axes

Improved safety of the entire system

- A signal is output from the auxiliary contacts for the main circuit contactor in the robot controller. The auxiliary contacts allow the servo amplifier contactor of each additional axis to synchronize with the robot servo status.
- This contact signal is output redundantly, which improves the safety of your equipment and makes it easy for the entire equipment to comply with the safety standards.

5 New emergency-stop I/O function

Ensuring safety by working in pair.
Your equipment will conform to the Machinery Directive.

[Enabling-device input function]
- Allows for connection of 3-position enabling devices to protect the robot system and multiple persons from danger.
- Since multiple operators must always be coordinated, safety improves.

[Emergency-stop output function]
- Even when the robot controller power is cut off, you can still stop the peripherals by pressing the emergency stop switch on the panel or teaching pendant.
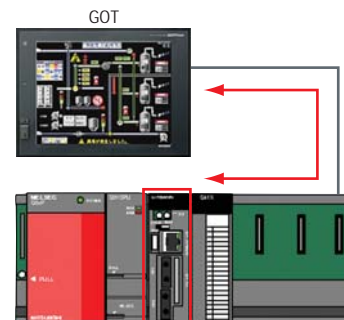
[Robot error output]
- If the robot generates an error, a safety contact signal is output in addition to an applicable I/O signal output on conventional models.

- **These I/Os are all provided redundantly.**

6 GOT connection

No need for GOT connection ladder

- The robot can be controlled directly from the GOT1000. (A dedicated robot screen must be created.)
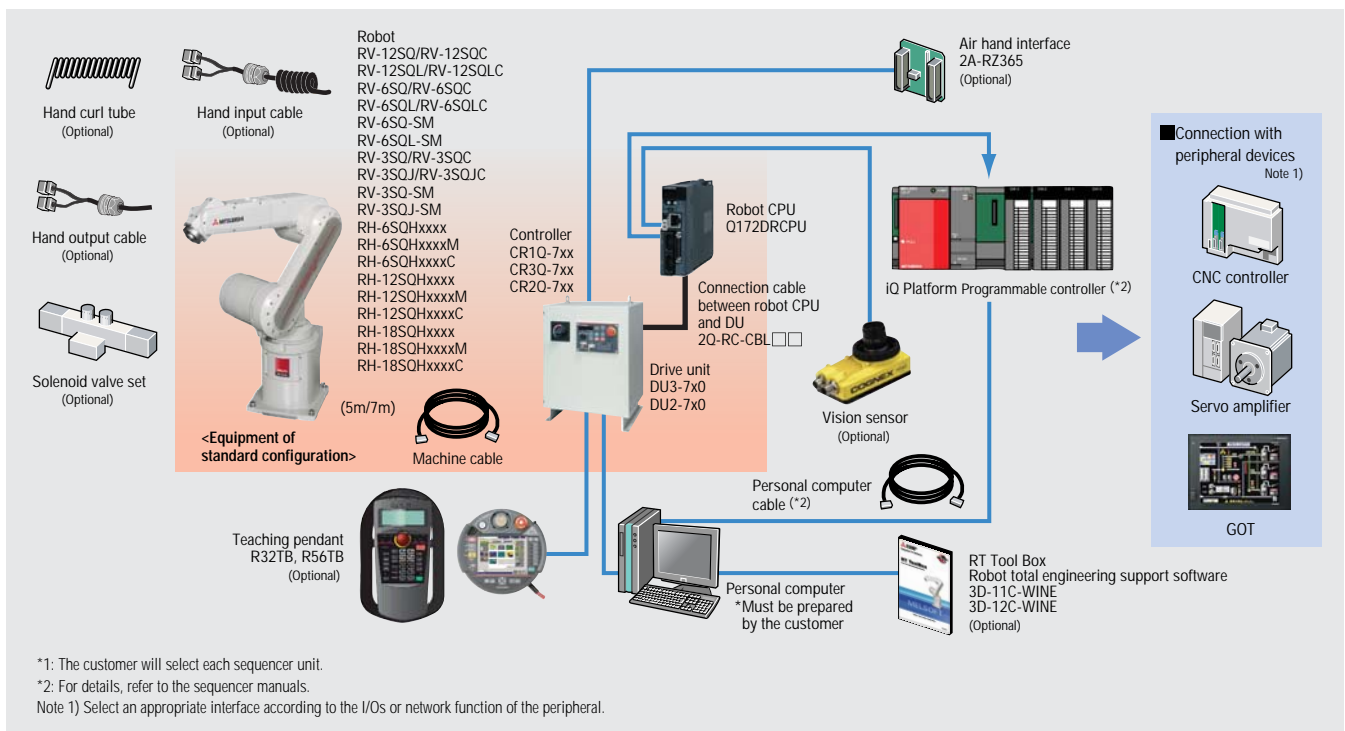
GOT

Controller Configurations

Classification	Robot name	Type	Specification overview
Standard configuration	Robot arm	RV/RH-SQ	For details, refer to the list on the next page.
	Robot CPU	Q172DRCPU	Dedicated CPU unit for iQ Platform robot
	Drive unit	CR1Q-7x0/CR2Q-7x0/ CR3Q-7x0	"x" indicates the number found in the same position in the controller model name. For the details of model names, refer to the next page.
	Connection cable between robot CPU and drive unit	2Q-RC-CBL10M	Standard length: 10m. Cable x 3pcs, SSCNET III cable x 1pc.
	Machine cable	—	The standard length is 7m only for the RV-12SQ series. With all other series, the standard length is 5m.
Options (Can be installed after shipment)	Simple teaching pendant (7m, 15m)	R32TB(-**)	7m: Standard 15m: Custom ("-15" is indicated in the model name)
	High-function teaching pendant (7m, 15m)	R56TB(-**)	7m: Standard 15m: Custom ("-15" is indicated in the model name)
	Pneumatic hand interface (sink type)	2A-RZ365	8 output points (sink), used exclusively for hand control
	PC support software	3A-11C-WINE	With simulation function (CD-ROM)
	Abridged version of PC support software	3A-12C-WINE	Simple version (CD-ROM)

List of Models

List of SQ-series Models Supporting iQ Platform

Classification	Robot name	Type	Classification	Robot name	Type
Vertical articulated	RV-12SQ/RV-12SQC	CR3Q-701/CR3Q-701M	Horizontal articulated	RH-6SQHxxxx	CR1Q-761
	RV-12SQL/RV-12SQLC			RH-6SQHxxxxM/C	
	RV-6SQ/RV-6SQC	CR2Q-711		RH-6SQHxxxxM-SM	CR3Q-761M
	RV-6SQL/RV-6SQLC			RH-12SQHxxxx	CR2Q-741
	RV-6SQ-SM	CR3Q-711M		RH-12SQHxxxxM/C	
	RV-6SQL-SM	CR3Q-711M		RH-12SQHxxxxM-SM	CR3Q-741M
	RV-3SQ/RV-3SQC	CR1Q-721/731		RH-18SQHxxxx	CR2Q-751
	RV-3SQJ/RV-3SQJC			RH-18SQHxxxxM/C	
	RV-3SQ-SM	CR3Q-721M/731M		RH-18SQHxxxxM-SM	CR3Q-751M
	RV-3SQJ-SM				

System Configuration

Hand curl tube (Optional)

Hand input cable (Optional)

Hand output cable (Optional)

Solenoid valve set (Optional)

Robot
RV-12SQ/RV-12SQC
RV-12SQL/RV-12SQLC
RV-6SQ/RV-6SQC
RV-6SQL/RV-6SQLC
RV-6SQ-SM
RV-6SQL-SM
RV-3SQ/RV-3SQC
RV-3SQJ/RV-3SQJC
RV-3SQ-SM
RV-3SQJ-SM
RH-6SQHxxxx
RH-6SQHxxxxM
RH-6SQHxxxxC
RH-12SQHxxxx
RH-12SQHxxxxM
RH-12SQHxxxxC
RH-18SQHxxxx
RH-18SQHxxxxM
RH-18SQHxxxxC

(5m/7m)

<Equipment of standard configuration>

Machine cable

Controller
CR1Q-7xx
CR3Q-7xx
CR2Q-7xx

Robot CPU
Q172DRCPU

Connection cable between robot CPU and DU
2Q-RC-CBL□□

Drive unit
DU3-7x0
DU2-7x0

Air hand interface
2A-RZ365
(Optional)

iQ Platform Programmable controller (*2)

Vision sensor
(Optional)

Personal computer cable (*2)

Teaching pendant
R32TB, R56TB
(Optional)

Personal computer
*Must be prepared by the customer

RT Tool Box
Robot total engineering support software
3D-11C-WINE
3D-12C-WINE
(Optional)

■Connection with peripheral devices
Note 1)

CNC controller

Servo amplifier

GOT

*1: The customer will select each sequencer unit.
*2: For details, refer to the sequencer manuals.
Note 1) Select an appropriate interface according to the I/Os or network function of the peripheral.

Governmental export permits are required for the export of products used for strategic materials and service.

This brochure has been issued in Sep. 2008. The contents of this brochure are subject to change for improvements without notice. Contact with Mitsubishi when referring to this brochure.