

# iQ Platform PLC Robots

## Industrial Robots

**Modular and flexible**  
Robots with full PLC functionality



**FULL  
INTEGRATION** 

First robot controller capable of integration as a PLC module on the company's own PLC platform.

**SIMPLIFIED  
ENGINEERING** 

Programming and parameterisation of all systems from a single software package.

**HIGHER  
PRODUCTIVITY** 

Fast communication between all modules thanks to new high-speed back plane bus.

**REDUCED  
COSTS** 

More than 8192 inputs/outputs without additional robot wiring

# F-D and F-Q controller: all inclusive and extraordinarily communicative



Mitsubishi Electric robots: perfect movement, perfectly integrated.

Powerful functions, such as conveyor tracking, the control of up to 8 additional axes, the integral hand inputs and outputs and the Ethernet and USB connections provide options for flexible solutions without the need for additional components. The F-D series can be supplied with all robot kinematics from Mitsubishi Electric.

## F-Q Series – full PLC functionality in the robot

The design and implementation of a robot work cell does not necessarily have to be complicated. As robots are never installed on a stand-alone basis, the system must be easy to integrate into its working environment to enable it to communicate with PLC and motion systems as well as operating panels and other systems. Together with the modular robot CPU, the Mitsubishi Electric iQ platform provides the ideal basis for integrating the full functionality of a PLC into the robot controller - once again demonstrating the company's role as a pioneer in automation technology.

## Integrated but not limited

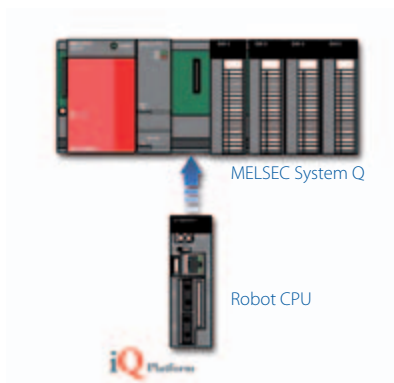
The F-Q Series' controller is added to an existing iQ system by simply plugging its CPU module into the rack. This means it can reside alongside additional CPUs that offer motion, PLC and even CNC control without any complicated engineering. Since all CPUs are in a common system, this means that the whole resources of the system (I/O, networks and specialized functions) are also available to the robot controller. Further, since the system uses a common architecture, system design is simplified, costs are reduced and spare parts are simplified. The iQ takes care of all the integration, leaving you to concentrate on your application.

## The buck stops here

For the design of robotic systems, Mitsubishi offers unrivalled choice. Our two key robot families cover all requirements no matter how complex or demanding your application. Our F-D series offers a high level of performance for maximum productivity, while our F-Q series extends these benefits with the highest level of integration available from any robotic system anywhere.

## F-D Series – no optional extras

When you are specifying a system, you don't want your budget to be slowly eaten away by a list of hidden extras to complete the solution. With the F-D series, a comprehensive list of standard features ensures it has the full capabilities from the outset.



Easily add robot control to your system

## Reduced engineering time

For system development, options are just as broad. If an iQ based system is being used, the GX Navigator programming suite allows all relevant programming tools to be accessed from a common framework. Hence only one set of system data needs to be considered and robot, PLC, motion control and even HMI screens can all be programmed with a common set of tools.

To further speed development, Mitsubishi also offers the powerful MELFA Works and MELFA Vision software. These allow automatic path code generation from existing SolidWorks CAD data, while MELFA Vision simplifies the configuration of machine vision such as that available from COGNEX.

Both packages are supported by the robot programming software RT ToolBox2 which offers a complete project set up and management by additional functions like offline and online programming and classified parameter settings. Simulating a robot program or calculating the cycle time before the application is built up is as easy as the documentation and maintenance of the project afterwards.

## Increased productivity

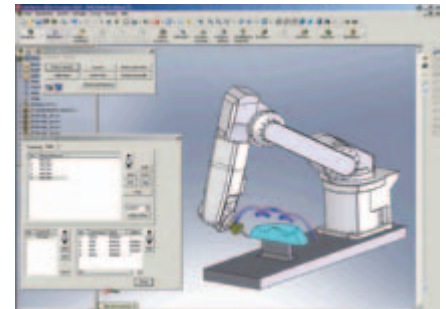
With some of the most outstanding specifications in their class, the F-D and the F-Q Series both offer significant improvements in productivity. The resulting speed of 11,300 mm/s enables cycle times of less than 0.3 seconds to be achieved for a Pick & Place operation with a repeat accuracy of 0.02 mm. The robots also provide flexible options for installing a number of end effectors such as electrical or pneumatic gripper hands.



Mitsubishi robots can handle a wide range of exacting requirements.

## Greater safety

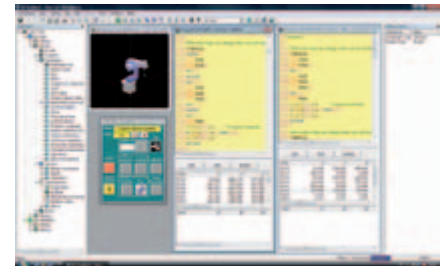
The DIN ISO-10218 safety standard is common to all robots and therefore guarantees safe operation in all applications. Mitsubishi Electric's supplementary product range with safety controllers can be connected just as easily to robot systems. Ready-made example projects make it easy for anyone to put together even complex systems quickly and effectively.



Following workpiece contours in MELFA-Works

## More than just robots

Finally, a system will require more than just a robot. Mitsubishi Electric therefore also supplies other products such as frequency converters, servos and motion controllers, control panels and remote I/O for building a complete work cell. Combine this with a wealth of robot implementation expertise and a system integrator network, and you have a powerful partner to complete robotic projects. No matter whether you are transferring parts, deburring, sealing or some other application, we have the right robot solution for your application.



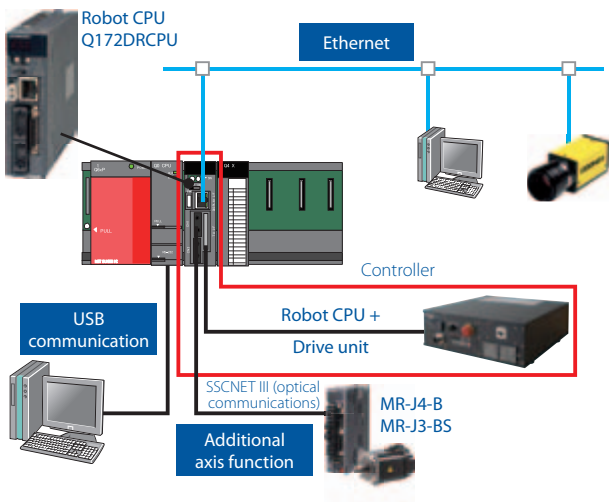
Simulating robot programs with RT ToolBox2

## MELFA F-D- & F-Q Series Overview

Series	Type	Series	No. of Axes	Payload (kg)
F-D series	RV-F	vertikal articulated-arm	6	2, 4, 7 and 13
	RH-FH	SCARA	4	3, 6, 12 and 20
F-Q series	RV-F	vertikal articulated-arm	6	2, 4, 7 and 13
	RH-FH	SCARA	4	3, 6, 12 and 20

## Controller configuration

### F-Q series



### F-D series

