

# Q170MCPU

## Standalone Motion Controller

## Mission Control for Motion

Everything in a single, cost effective package



SELF  
CONTAINED 

Run up to 16 axes plus PLC control from a standalone, compact unit

FLEXIBLE  
DESIGN 

Easily add System Q I/O for additional capabilities

SCALABLE  
SOLUTION 

Choose motors from 100 W up to 55 kW

RELIABLE 

Noise immune optical fibre amplifier control

# A one stop shop



Comprehensive motion solutions from a single box

## Cost effective

There are no hidden extras with the Q170M's design. As standard features, the device's connectivity directly controls up to 16 MR-J3-B amplifiers via SSCNET III with no intermediate hardware. A reliable, noise free "daisy chain" optical fibre links the amplifiers, keeping costs low while improving machine availability. The unit is no larger than an average servo amplifier, reducing panel space and costs further.



Avoid costly amplifier cabling with SSCNET III

## Fully integrated

The Q170M offers the ability to provide a complete automation solution with a single, compact device. Its main strength is the ability to control up to 16 axes over a single SSCNET connection. However, rather than just being a simple motion controller, a comprehensive PLC capability is also built in. Hence the Q170M offers the ability to address a range of applications such as more sophisticated packaging machinery, labeling and material handling applications.

## Productivity

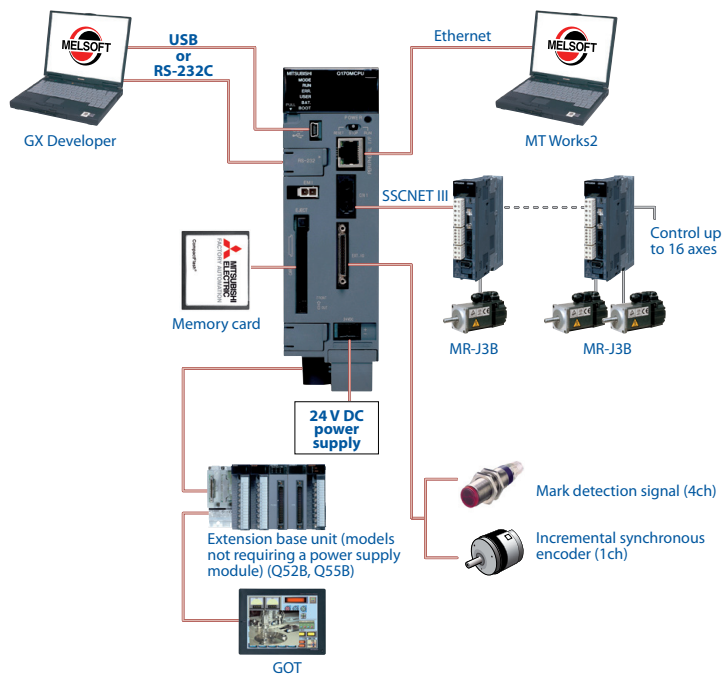
By using a single integrated controller that handles both motion and PLC control, machine operation in general benefits. The Q170M insures rapid production throughput with a high speed processor that executes up to four times faster than previous Mitsubishi designs. Hence a machine can realise higher productivity with the existing mechanical design and servos by just changing the controller. At the design stage, engineering work is simplified and reduced by using a single integrated controller, rather than making two separate devices work together.



Seamless integration in a single, compact device

## Connectivity

The built in SSCNET connection makes for simple, cost effective communication with servo amplifiers. However, the Q170M also offers a range of other connectivity benefits. Key amongst these is the ability to connect a synchronous encoder, allowing the controller to follow and synchronize its own axes with an external one. This is particularly beneficial for applications such as labeling when combined with the built-in mark detection function. The unit also offers built-in connections to Ethernet and USB for rapid system development. Support for the MC Protocol provides additional choices for communicating to third party devices. Finally, a System Q bus interface means that it is simple to connect a standard extension base unit for the use of System Q I/O modules.



Connection flexibility to meet all application needs

## Flexibility

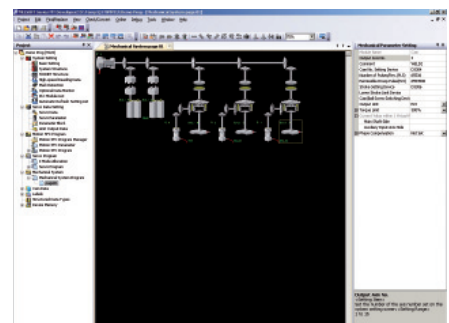
Most motion systems offer sophisticated axis control functions. However, the Q170M also opens up a huge range of PLC application possibilities by being compatible with over 100 of the System Q I/O modules. This means application challenges such as analogue I/O, high density digital I/O, networking and others can easily be tackled by the Q170M. For companies already using System Q, spare parts will be common to their other systems, reducing cost and administration tasks.



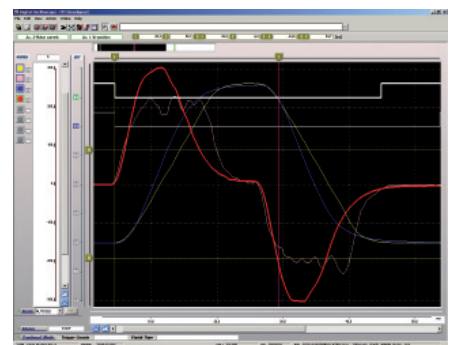
Choose from over 100 System Q I/O modules

## Development

A range of options exist for the rapid and efficient development of motion and PLC programs. MT Developer 2 is Mitsubishi's standard motion development platform and incorporates the innovative mechanical support language that allows systems to be described in terms of their equivalent mechanical components, rather than abstract programming terms. The software also offers cam profile design and built in diagnostics, such as a digital oscilloscope. For PLC development, our standard GX IEC Developer package is available, providing an industry accepted IEC 61131 programming environment.



Mechanical support language allows systems to be described with familiar mechanical components



A digital oscilloscope allows system problems to be found quickly

# Specifications ///

| Item                            | Specification   |
|---------------------------------|---|
| Power Supply                    | 24V DC +/-10%, ripple ratio 5% or less  |
| Mass [kg]                       | 0.9   |
| Dimensions [mm]                 | 178 (H) x 52 (W) x 135 (D)  |
| Digital Inputs (Mark detection) | 4   |
| Digital Outputs                 | 2   |
| Synchronous Encoder             | <ul style="list-style-type: none"> <li>• A/B-phase pulse train</li> <li>• Open-collector-type: up to 800kpps, up to 10m</li> <li>• Differential-type: up to 1Mpps, up to 30m</li> </ul> |
| Interfaces                      | 100/10Mbps Ethernet, USB, RS232   |
| Connectable servo amplifier     | MR-J3-B servo amplifiers over SSCNET III (Rotational, Linear and Fully closed loop compatible)  |
| Compatible extension base unit  | Q52B/Q55B   |
| Compatible motion modules       | Q172DLX/Q172DEX/Q173DPX   |
| Memory back up                  | Q6BAT (included with Q170MCP)   |

## Motion control specifications

| Item                                      | Specification  |
|---|--|
| Number of control axes                    | Up to 16   |
| Operation Cycle - SV13 OS (SW8DNC-SV13QG) | 0.44ms / 1 to 6 axes<br>0.88ms / 7 to 16 axes  |
| Operation Cycle - SV22 OS (SW8DNC-SV22QF) | 0.44ms / 1 to 4 axes<br>0.88ms / 5 to 12 axes<br>1.77ms / 13 to 16 axes  |
| Interpolation functions                   | Linear interpolation (Up to 4 axes), Circular interpolation (2 axes), Helical interpolation (3 axes)   |
| Control modes                             | PTP (Point to Point) control, Speed control, Speed-position control, Fixed-pitch feed, Constant speed control, Position follow-up control, Speed control with fixed position stop, Speed switching control, High-speed oscillation control, Synchronous control (SV22) |
| CAM function                              | <ul style="list-style-type: none"> <li>• Up to 256 CAM profiles can be stored internally</li> <li>• Resolution per cycle 256, 512, 1024, 2048 points</li> <li>• Stroke resolution 32767</li> <li>• Two-way CAM and Feed CAM</li> </ul>                                 |
| Programming language                      | Motion SFC, Dedicated instruction, Mechanical support language (SV22)  |

## PLC control specification

| Item                                    | Specification   |
|---|---|
| Processing speed (sequence instruction) | LD instruction: 0.02 µs<br>MOV instruction: 0.04 µs               |
| Program capacity                        | 20Ksteps (80Kbyte)  |
| Programming language                    | Ladder, IL, SFC, ST, MELSAP-L (IEC61131-3 programming compatible) |

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