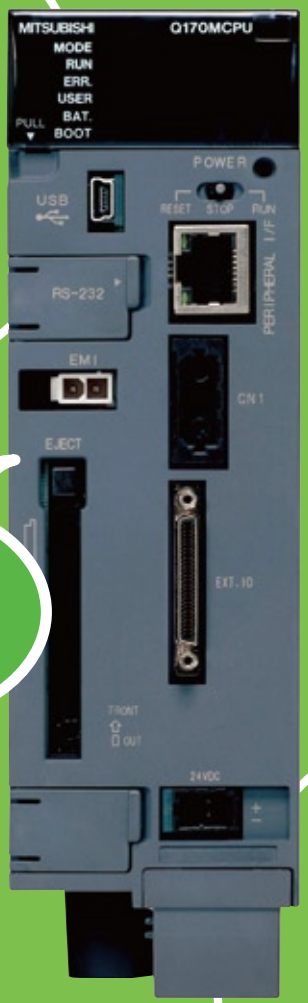
MITSUBISHI ELECTRIC

*Changes for the Better*

Mitsubishi Motion Controller
Q Series

# Stand-Alone




Ideal for complete machine control!

Plenty of axes!

This is Stand-Alone!

# Motion Controller

Compact

The high performance of iQ Platform!

Even useful for integrating equipment into the manufacturing line.

Got it! For total machine control use Stand-Alone!

# Start with Stand-Alone.

Power supply, PLC, motion controller; all integrated into a single, compact unit! This is Stand-Alone!

Simple!

More than enough axes for total machine control!

## Mitsubishi Electric's Q170MCPU simplifies model selection and improves productivity.

Whatever your system size, Mitsubishi Electric's Q170MCPU stand-alone motion controller meets your needs. The Q170MCPU integrates a power supply, PLC, and motion controller, is easy to use, and features improved motion control and flexible expandability. To obtain maximum effect with minimum investment, manage total machine control with the stand-alone motion controller!
Mitsubishi Electric's Q170MCPU meets your needs.

### Solutions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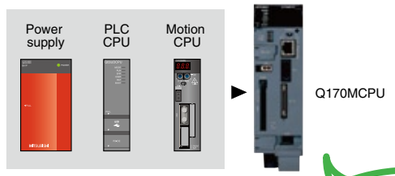
solution
# 01

## Three-in-one: Power supply, PLC, and Motion Controller.

Empowered!

# No more model selection worries!

The compact Q170MCPU integrates a power supply, PLC, and motion controller and features built-in incremental synchronous encoder and mark detection signal interfaces needed for the packaging equipment industry and others. No need to worry over which model to choose – this unit provides it all!




Simple unit with three functions

## Case Study

### Total machine control, fitting even for machines with only eight-axes. Select Stand-Alone for worry-free model selection.

Introduce servo technology quickly with ease!

**Easily introduce a controller into your machine.**

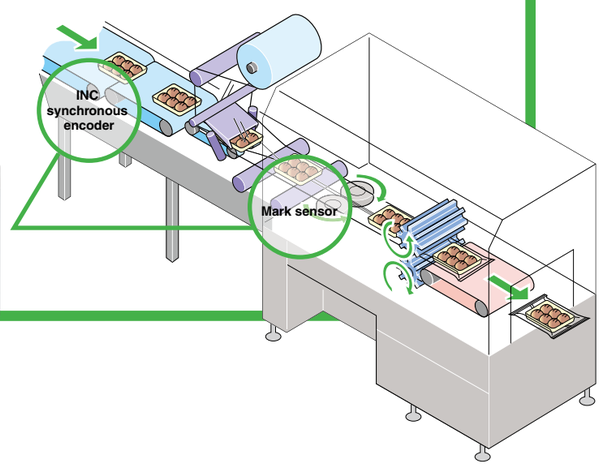
Which PLC do I choose? Future number of servo axes? Which options units? Which power supply? The integrated Q170MCPU solves all of these questions at once.

**A good choice even if the number of servo axes increases later!**

The Q170MCPU can accommodate up to 16 axes. Furthermore, the Q170MCPU makes switching pneumatic cylinders and stepping motors to higher performing servos an easy task.

**No need for additional registration mark sensors!**

The Q170MCPU has built-in inputs for an INC synchronous encoder and up to 4 registration mark sensors. It can be used for packaging equipment without adding extra I/O modules.




Built-in INC synchronous encoder interface



solution
# 02

Stand-Alone Motion Controller

## Better space-saving when combined with a 2-axes-in-1 servo amplifier.

Empowered!

# Panel and equipment size can be reduced!

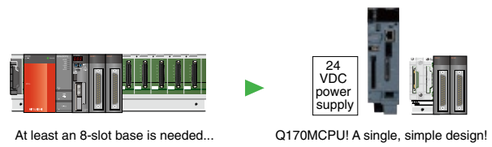
Synergistic space-saving!

The Q170MCPU is a compact 52 × 178 × 135 mm. Combining the controller with Mitsubishi's 2-in-1 MR-J3W servo amplifier saves even more space.


## Case Study

### Even in a jam-packed panel, the Stand-alone controller makes space-saving design possible.

**Just like this, you can squeeze everything into a packed panel!**




At least an 8-slot base is needed...

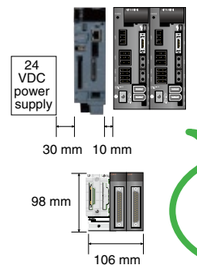
Q170MCPU! A single, simple design!

**Save even more space by combining with the 2-in-1 servo amplifier!**

The 2-in-1 MR-J3W servo amplifier has the same shape and installation area as the Q170MCPU. When comparing against two MR-J3 amps, the J3W can be installed in 25% less space. Combined with the Q170MCPU, an optimum space-saving solution can be realized. Additionally, the 2-slot expansion base is just 106 mm × 98 mm, allowing limited panel and equipment space to be used effectively.

A lot of space taken up by empty slots and additional amplifier units.

One Stand-alone, two J3W's and a 2-slot expansion base. Done!




The controller and servo amplifier share the same dimensions!

solution
# 03

## Compatible with MELSEC-Q Series modules.

Empowered!

# Flexible expansion for any control purpose!

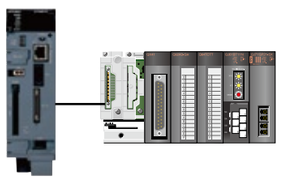
Select from over 100 different types of Mitsubishi MELSEC-Q Series units and install directly into the Q170MCPU expansion base – no power supply needed.
Flexible system expansion is an important Q170MCPU advantage.


## Case Study

### No need to do a system redesign every time you want to add or change functions!

Over 100 different types of modules for flexible expansion of functions!

Unit selection freedom!

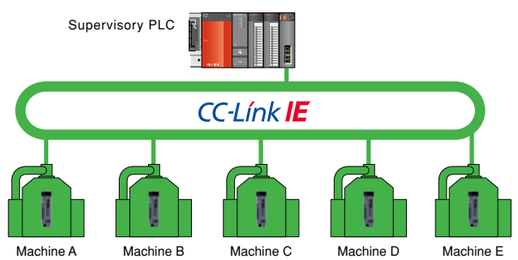


**The limitless Q170MCPU!**

From expanded I/O, A/D conversion, and temperature control to additional network communication units and more. All can be added quickly and easily. No need to redesign the system when adding or changing functions!

Even constructing large systems is incredibly easy!

The open CC-Link IE controller network can be used to develop large scale systems with ease.






solution
# 04

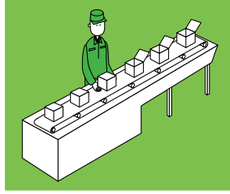
Stand-Alone Motion Controller

## The high-speed control of iQ Platform.

Empowered!

# Dramatic increases in productivity!

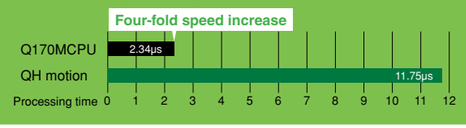
Despite being compact, the Q170MCPU contains the same high performance as Mitsubishi's industry leading iQ Platform controllers. All this performance, yet the stand-alone Q170MCPU motion controller is still easy to use.



The high performance of iQ Platform!

● Fundamental motion performance
(number of axes that can be controlled at 0.44ms motion CPU cycle time)
*With SV13 OS


● SFC motion processing time *When D800L = D802L + D804L



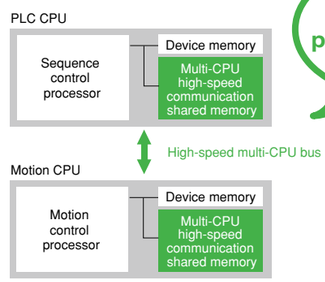

## Case Study

### High speed and high performance in a small package. Delivering the power to reduce tact time and raise productivity!

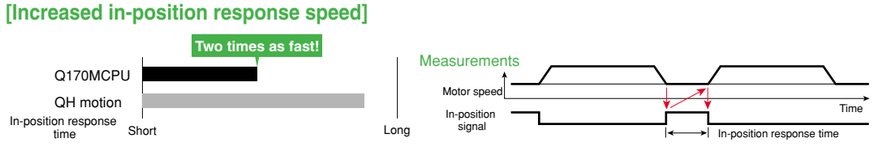
Equipped with a high-speed multi-CPU bus, worry not when increasing the number of servo axes!

Amazing performance!

The Q170MCPU uses the same high-speed multi-CPU communication as iQ Platform. With this, high-speed 0.88 ms data transfer of up to 14kW is made possible between the PLC and motion CPU. High level iQ Platform motion control is made possible without any degradation in performance even in systems with large PLC programs and scan times.




[Increased in-position response speed]



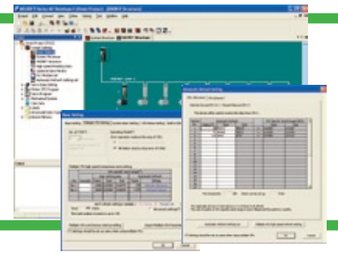
solution
05

Easy parameter setting.

Empowered!

# Speedy startup! Effortless debugging!

In other multi-CPU platforms, lots of configuration must be done before the Motion CPU and PLC CPU can communicate properly. This can result in hours of wasted time for the engineers involved. The Q170MCPU changes the game by seamlessly integrating sequence and motion. Thus, setup is quick and easy without any added steps for multi-CPU settings.

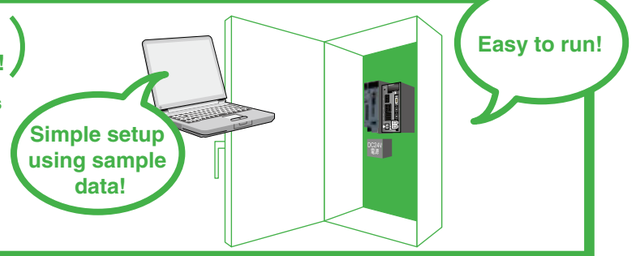


## Case Study

### Setting up multiple CPU's used to be hard work. Now, start a new project, go into RUN mode. It's that easy!

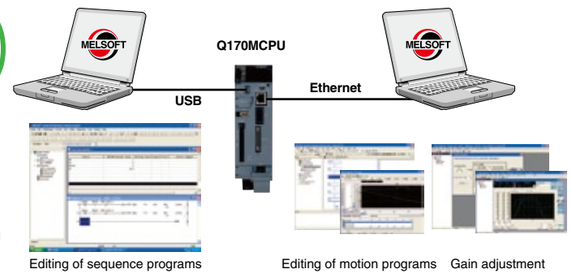
**Start the CPU in one-shot! Sample data assists startup!**

Software for the Q170MCPU comes with sample project data that pre-configures multi-CPU settings and gives the user additional benefits such as automatically adding labels to motion specific devices when used in PLC ladder.




**Debugging time reduced by using two personal computers!**

Two PCs can be connected at the same time, allowing for multiple engineers to simultaneously debug sequence programs and debug motion programs/perform gain adjustment. (Of course, one PC can do everything as well.)






solution
06

Stand-Alone Motion Controller

Use program resources efficiently.

Empowered!

# System expansion with minimum design costs!

Can a stand-alone motion controller handle future system expansion?
With the Q170MCPU, your doubts are erased. Move to the high-end iQ Platform motion controller with minimum design hours and costs.

▶ iQ Platform

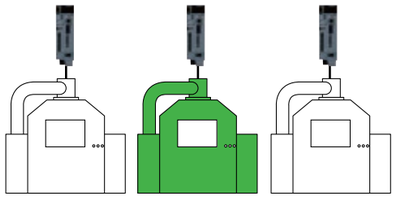
## Case Study

### Integrating individual machines into a line soon? Simplify future expansion by easily upgrading the controller!

**Flexibly integrate machines into your assembly line!**

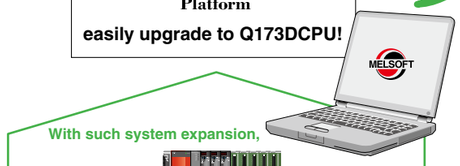
For example, a machine built with the Q170MCPU can be extended quite easily. The Q170MCPU's project files can be directly used with the iQ Platform's Q173DCPU.

Initial introduction

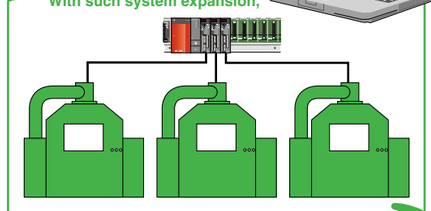



When further system expansion is required, iQ Platform easily upgrade to Q173DCPU!

The same MELSOFT MT Works2 engineering tool!



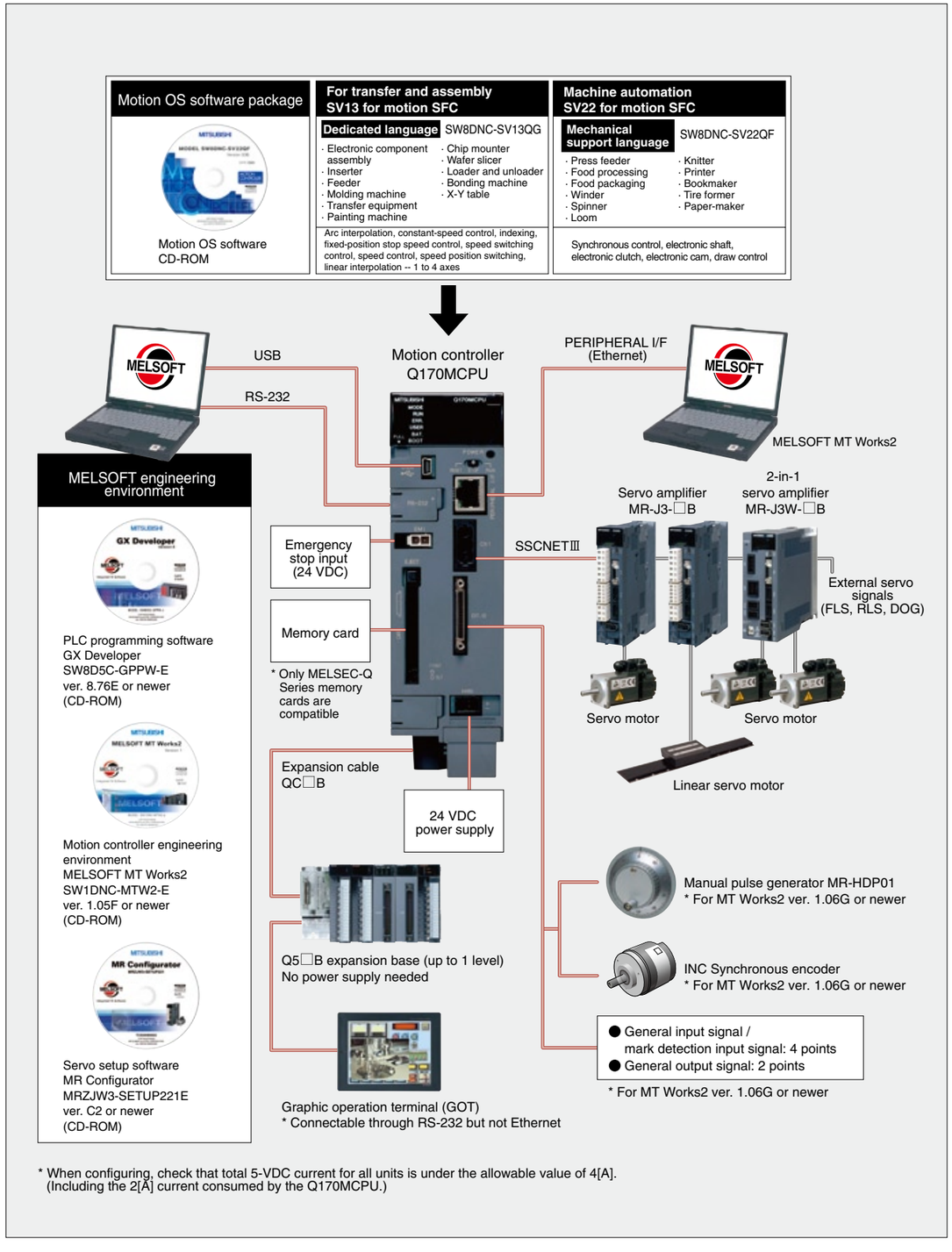

With such system expansion,



pre- and post-processing are completely integrated into your company's production line.

The programs, extension modules, and cables stay the same!

# System configuration




* When configuring, check that total 5-VDC current for all units is under the allowable value of 4[A]. (Including the 2[A] current consumed by the Q170MCPU.)

# CPU specifications

Stand-Alone Motion Controller

## ■Motion control specifications

| Item | | Q170MCPU |
|---|---|---|
| Number of axes | | 16 axes |
| Operation Cycle (default) | SV13 | 0.44 ms: 1 to 6 axes<br>0.88 ms: 7 to 16 axes |
| | SV22 | 0.44 ms: 1 to 4 axes<br>0.88 ms: 5 to 12 axes<br>1.77 ms: 13 to 16 axes |
| Interpolation | | Linear interpolation up to 4 axes, arc interpolation 2 axes, helical interpolation 3 axes |
| Control | | Point-to-point (PTP) control, speed control, speed positioning control -- external servo amplifier input signals (DOG), indexing, constant speed control, position tracking control, fixed-position stop speed control, speed switching control, high-speed oscillation control, synchronous control (SV22) |
| Acceleration\deceleration processing | | Automatic trapezoidal acceleration/deceleration, S-curve acceleration/deceleration |
| Correction functions | | Backlash correction, electronic gears, phase correction (SV22) |
| Programming language | | Motion SFC, dedicated instructions, mechanical support language (SV22) |
| Program -- dedicated instruction capacity | | 16k steps |
| Number of positioning points | | 3200 points -- indirect specification is possible |
| Peripheral equipment interface | | USB/RS-232 sequencer CPU, peripheral interface motion CPU control |
| Origin return function | | Near-point DOG -- 2 types, count -- 3 types, external servo amplifier input signals (DOG) usabled, dataset -- 2 types, dog cradle, stopper stop -- 2 types, serving also as limit switch<br>Contains origin return retry function and origin shift function |
| Jog operation | | Provided |
| Manual pulser operation | | 3 units connectable |
| Synchronous encoder operation | | 8 units connectable when SV22 is used |
| M code | | Contains M code output function and M code completion wait function |
| Limit switch output | | Output points: 32<br>Watch data: Motion control data/word device |
| ROM operation | | Provided |
| Absolute positioning | | A battery can be mounted to the servo amplifier -- absolute or incremental method can be specified for each axis |
| SSCNET III systems | | 1 |
| Motion-related extension units | | Q172DLX up to 2 can be used<br>Q173DPX up to 3 can be used *1 |

*1: Three units are possible when using an INC synchronous encoder with SV22. When a manual pulse generator is connected, only 1 can be used.

## ■PLC control specifications

| Item | | Specifications |
|---|---|---|
| PLC CPU | | Equivalent to Q03UDCPU (20k steps) |
| Control method | | Stored program cyclic operation |
| Input/output control method | | Refresh method |
| PLC control language – (language dedicated to PLC control) | | Relay symbol language (ladder), Logic sybolic language (list), MELSAP3 (SFC), MELSAP-L, Structured text (ST) |
| Processing speed -- sequence instructions | LD instruction | 0.02μs |
| | MOV instruction | 0.04μs |
| | PC MIX value (instruction / μs) | 28 |
| | Floating-point addition | 0.12μs |
| Total instructions | | 858 |
| Real number -- floating-point -- operation instruction | | Possible |
| Character string processing instruction | | Possible |
| PID instruction | | Possible |
| Special function instruction -- trigonometric, square root, exponential operation, etc. | | Possible |
| Constant scanning | | 0.5 to 2000 ms --set in 0.5 ms units |
| Program capacity | | 20k steps (80k bytes) |
| Shared CPU memory | Standard QCPU area | 8k bytes |
| | High-speed CPU-to-CPU communication | 32k bytes |
| Input/output device points (X/Y) | | 8192 points |
| Input/output points (X/Y) *1 | | 512 points |

*1: Up to 320 input/output unit points can be used (64 points × 5 units).

# System configuration

## ■Motion-specific units

| Product | Model | Description | | Applicable overseas standard |
|---|---|---|---|---|
| Motion controller | Q170MCPU | Integrated with power supply, PLC CPU, and motion CPU<br>With battery (Q6BAT), built-in interface connector, 24 VDC power supply connector, and emergency stop input cable connector<br>Control of up to 16 axes, operation of 0.44 ms or more, built-in interface for INC synchronous encoder: 1 channel, general input signal/mark detection input signal: 4 points, general output signal: 2 points | | CE, UL |
| Emergency stop input cable *1 | Q170DEMICBL05M | Emergency stop input<br>-- order cables together with the motion controller. | 0.5 m | — |
| | Q170DEMICBL1M | | 1 m | — |
| | Q170DEMICBL3M | | 3 m | — |
| | Q170DEMICBL5M | | 5 m | — |
| | Q170DEMICBL10M | | 10 m | — |
| | Q170DEMICBL15M | | 15 m | — |
| | Q170DEMICBL20M | | 20 m | — |
| | Q170DEMICBL25M | | 25 m | — |
| | Q170DEMICBL30M | | 30 m | — |
| Connector for emergency stop input cable *2 | Q170DEMICON | Connector for emergency stop input cable provided with Q170MCPU | | — |
| SSCNETⅢ cable *3 | MR-J3BUS□M | • Q170MCPU⇔MR-J3(W)-□B<br>• MR-J3(W)-□B⇔ MR-J3(W)-□B | Standard cord for inside a panel:<br>0.15 m, 0.3 m, 0.5 m, 1 m, 3 m | — |
| | MR-J3BUS□M-A | | Standard cable for outside a panel:<br>5 m, 10 m, 20 m | — |
| | MR-J3BUS□M-B *4 | | Long-distance cable: 30 m, 40 m, 50 m | — |
| External servo signal input unit | Q172DLX | External servo signal input for 8 axes (FLS, RLS, STOP, DOG/CHANGE × 8) | | CE, UL |
| Manual pulse input unit | Q173DPX | Interface for manual pulse generator MR-HDP01/INC synchronous encoder × 3, 3 tracking input points | | CE, UL |
| Built-in interface connector set | Q170MIOCON | Connector for INC synchronous encoder/mark detection signal interface connection provided with Q170MCPU | | — |
| 24 VDC power supply connector set *2 | Q170MPWCON | 24 VDC power supply connector provided with Q170MCPU | | — |
| 24 VDC power cable | Q170MPWCBL2M | 24 VDC 2-meter power cable with crimp terminal R1.25-3.5 | | — |
| | Q170MPWCBL2M-E | 24 VDC power cable with 2-meter EMI terminal with crimp terminal R1.25-3.5<br>Cable for disabling the emergency stop input on the front of the Q170MCPU by short-circuiting the EMI terminal to the 24 VDC power supply | | — |
| Battery | Q6BAT | For retaining SRAM memory data in motion controller -- programs, parameters, absolute position data, and latch data | Nominal current capacity: 1800 mAh | — |
| Large-capacity battery | Q7BAT | | Nominal current capacity: 5000 mAh | — |
| Large-capacity battery holder | Q170MBAT-SET | Battery holder for Q7BAT provided with Q7BAT | | — |
| Manual pulse generator | MR-HDP01 | Pulse resolution: 25 PLS/rev -- 100 PLS/rev after magnification by 4<br>Allowable speed: 200 r/min in normal rotation Voltage output<br>Allowable load Radial load: 19.6 N Thrust load: 9.8 N | | — |

*1: Be sure to order the emergency stop input cable. Emergency stop cannot be canceled without this cable.
*2: Cable fabrication requires special tools. We do not supply special tools. Please obtain independently.

| | Manufacturer | Tools used |
|---|---|---|
| Connector for emergency stop input cable | Molex | Crimping tool: 57026-5000 for UL1007<br>57027-5000 for UL1015<br>Removal tool: 57031-6000 |
| 24 VDC power connector | Tyco Electronics AMP | Removal tool:1762846-1 |

*3: □ shows cable length. (015: 0.15 m, 03: 0.3 m, 05: 0.5 m, 1: 1 m, 2: 2 m, 3: 3 m, 5: 5 m, 10: 10 m, 20: 20 m, 30: 30 m, 40: 40 m, 50: 50 m)
*4: Check with Mitsubishi Electric regarding cables less than 30 m long.

## ■Devices used in common with MELSEC Q Series PLC

| Product | Model | Description | Applicable overseas standard |
|---|---|---|---|
| Expansion base unit | Q52B | 2-I/O slot not requiring power supply | CE, UL |
| | Q55B | 5-I/O slot not requiring power supply | CE, UL |
| Expansion cable *1 | QC□B | Length: 0.45 m, 0.6 m, 1.2 m, 3 m, 5 m, and 10 m | — |

*1: □ shows cable length. (05: 0.45 m, 06: 0.6 m, 12: 1.2 m, 30: 3 m, 50: 5 m, 100: 10 m)

# Software

## ■Motion OS software

| Usage | Model |
|---|---|
| For transfer and assembly (SV13) | SW8DNC-SV13QG |
| For automatic equipment (SV22) | SW8DNC-SV22QF |

## ■Engineering environment

| Product | Model | Applicable version |
|---|---|---|
| Motion controller engineering environment MELSOFT MT Works2 | SW1DNC-MTW2-E | Version 1.05F or newer<br>Support main OS software |
| | SW1DNC-MTW2-EAZ (Additional license: 1) | SV13 for transfer and assembly<br>SV22 for automatic equipment |

| Product | Model | Applicable version |
|---|---|---|
| PLC programming software GX Developer | SW8D5C-GPPW-E | Version 8.76E and after |

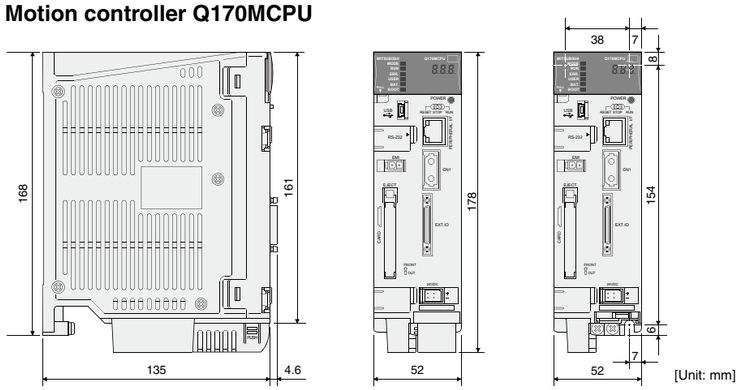
| Product | Model | Applicable version |
|---|---|---|
| Servo setup software MR Configurator | MRZJW3-SETUP221E | Version C2 and after |



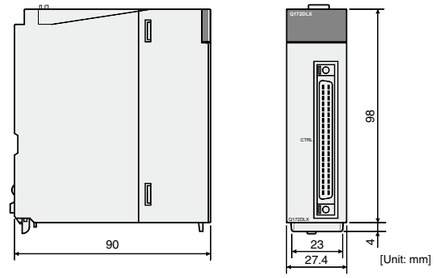
# Dimension drawings



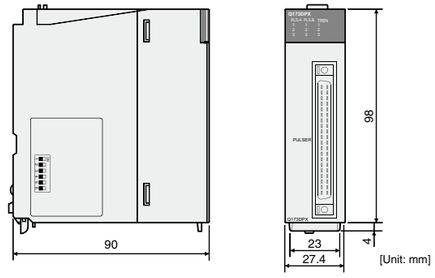
## Motion controller Q170MCPU



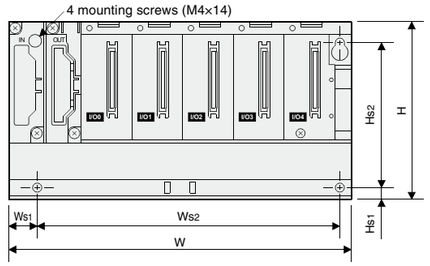

## External servo signal input Q172DLX




## Manual pulse input Q173DPX




## Expansion base Q5□B

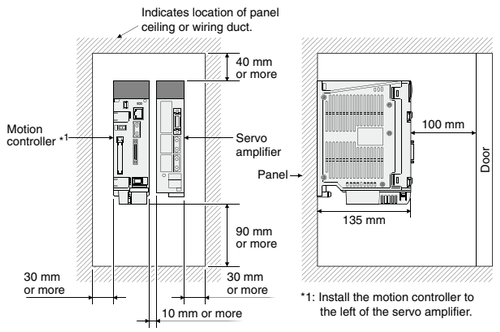



| | Q52B | Q55B |
|---|---|---|
| W | 106 | 189 |
| Ws1 | 15.5 | |
| Ws2 | 83.5±0.3 | 167±0.3 |
| H | 98 | |
| Hs1 | 7 | |
| Hs2 | 80±0.3 | |

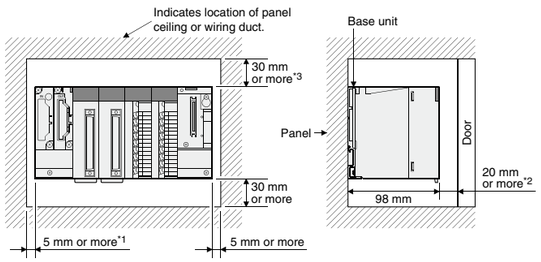
[Unit: mm]

## <Installation>

### Motion controller




### Base unit




*1: 20 mm or more when the expansion cable is connected without the adjacent unit removed.
*2: 80 mm or more when a connector is used.
*3: When the wiring duct is 50 mm or less high. In other cases, the distance must be 40 mm or more.

## GLOBAL FA CENTERS


SHANGHAI FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION (SHANGHAI) LTD.
  80 Xin Chang Road, 4th Floor,
  Shanghai Intelligence Fortune Leisure Plaza
  Huang Pu district, Shanghai 200003, China
  Tel : 86-21-6121-2460 Fax : 86-21-6121-2424

BEIJING FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION (SHANGHAI) LTD.
  BEIJING OFFICE
  Unit 917/918, 9/F Office Tower 1,
  Henderson Center, 18 Jianguomennei Dajie,
  Dongcheng District, Beijing 100005, China
  Tel : 86-10-6518-8830 Fax : 86-10-6518-8030

TIANJON FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION (SHANGHAI) LTD.
  TIANJIN OFFICE
  B-2 801/802 Youyi Building,
  No.50 Youyi Road, Hexi District,
  Tianjin 300061, China
  Tel : 86-22-2813-1015 Fax : 86-22-2813-1017

GUANGZHOU FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION (SHANGHAI) LTD.
  GUANGZHOU OFFICE
  Rm.1609, North Tower, The Hub Center, No.1068,
  Xing Gang East Road, Haizhu District, Guangzhou 510335, China
  Tel : 86-20-8923-6713 Fax : 86-20-8923-6715

HONG KONG FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION (HONG KONG) LTD. (FA DIVISION)
  10th Floor, Manulife Tower, 169 Electric Road,
  North Point, Hong Kong
  Tel : 852-2887-8870 Fax : 852-2887-7984

TAIWAN FA CENTER
- SETSUYO ENTERPRISE CO., LTD.
  6F No.105 Wu Kung 3rd RD, Wu-Ku Hsiang,
  Taipei Hsien, Taiwan
  Tel : 886-2-2299-2499 Fax : 886-2-2299-2509

KOREAN FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD.
  1480-6 Gayang-dong, Gangseo-gu, Seoul 157-200, Korea
  Tel : 82-2-3660-9607 Fax : 82-2-3663-0475

THAILAND FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION THAILAND CO., LTD.
  Bang-Chan Industrial Estate No.111
  Moo4, Serithai Road, T.kannayao A.kannayao
  Bangkok 10230, Thailand
  Tel : 66-2906-8255 Fax : 66-2906-3239

ASEAN FA CENTER
- MITSUBISHI ELECTRIC ASIA PTE, LTD.
  307 Alexandra Road #05-01/02
  Mitsubishi Electric Building, Singapore 159943
  Tel : 65-6470-2480 Fax : 65-6476-7439

NORTH AMERICAN FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION, INC.
  500 Corporate Woods Parkway, Vernon Hills, IL 60061, USA
  Tel : 1-847-478-2330 Fax : 1-847-478-2396

EUROPEAN FA CENTER
- MITSUBISHI ELECTRIC EUROPE B.V. GERMAN BRANCH
  Gothaer Strasse 8 D-40880 Ratingen, GERMANY
  Tel : 49-2102-486-2630 Fax : 49-2102-486-7170

CENTRAL AND EASTERN EUROPE FA CENTER
- MITSUBISHI ELECTRIC AUTOMATION EUROPE B.V. CZECH BRANCH
  Radlická 714/113a, 15800 Praha 5, Czech Republic
  Tel : 420-251-551-470 Fax : 420-251-551-471

UK FA CENTER
- MITSUBISHI ELECTRIC EUROPE B.V. UK BRANCH
  (Customer Technology Centre)
  Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, U.K.
  Tel : 44-1707-278843 Fax : 44-1707-278992

RUSSIAN FA CENTER
- MITSUBISHI ELECTRIC EUROPE B.V. RUSSIAN BRANCH
  Sverdlovskaya Emb.,44, Bld Sch, BC "Benua";195027,
  St.Petersburg, Russia
  Tel : 7-812-633-3496 Fax : 7-812-633-3499





## About warrantee

Before using the Product, please check our product warrantee conditions below.

### 1. Period and scope of warrantee

Should a defect or a failure (hereafter referred to as “failure”) occurs with the Product due to a reason or a cause attributable to Mitsubishi Electric Corporation (the Manufacturer), the Manufacturer will repair the Product free of charge through your local dealer or supplier.

Should Manufacturer’s service engineer need to travel to the site for repair within Japan or overseas, however, the Purchaser shall bear the actual travel expenses. The scope of warrantee shall not cover any readjustment or test operation at the site in relation to replacing the failed Product.

[Warrantee period]

The Manufacturer warrants the Product against a defect or a failure of the Product attributable to the Manufacturer for 36 months from the date of purchase or the date of Product delivery at the purchaser designated site.

Assuming the maximum logistics and/or retail period of six months after shipping the Product from the Manufacturer, the warrantee period shall not exceed 42 months. The warrantee period of the repaired Product shall not be extended beyond the warrantee period of the Product before repair.

[Scope of warrantee]

(1) Unless specified or agreed otherwise, the Purchaser is responsible for the primary failure diagnosis.
The Manufacturer or Manufacturer’s service representative or agent may perform the primary failure diagnosis for the Purchaser on a separate contract basis if so requested.
However, the primary failure diagnosis shall be free of charge should the defect or failure so revealed be attributable to the Manufacturer.

(2) The Manufacturer warrants the Product only if the Product is used correctly and properly under the normal operating conditions and environment in accordance with the conditions, precautions and instructions specified in such means as the operation manual, user’s manual and caution labels affixed to the Product.

(3) The Manufacturer’s warrantee shall not apply in the following events.
[1] The failure of the Product is attributable to the Purchaser such as incorrect, inadequate or improper storage, handling and operation or to the Purchaser’s hardware or software design;
[2] The failure is caused by any modification to the Product by the Purchaser without Manufacturer’s prior consent;
[3] Where the Product is incorporated into Purchaser’s equipment, the failure of the Product is considered to have been avoidable if the Purchaser’s equipment was equipped with the regulatory safety devices or with the functions and/or structures considered to be necessary according to the industry’s normal practice;
[4] The failure of the Product is considered to have been avoidable if the consumable items specified in the operation manual and other documents were maintained or replaced normally and properly;
[5] Replacement of consumables such as the battery and fan;
[6] Any failure of the product due to external causes such as a fire and abnormal power supply or to events beyond control such as natural disasters including an earthquake, lightening, storm or flood;
[7] Any failure that is unforeseeable by the technical or scientific level of industry at the time of the product delivery, and;
[8] Any failure due to a cause for which the Manufacturer is not held responsible or the Purchaser acknowledges as such.

### 2. Repair service availability after cease of production

(1) The Manufacturer may accept the Product for repair on a separate contract basis within seven years after the date when the Manufacturer ceases to produce this particular product. The Manufacturer may announce the cease of production through Manufacturer’s sales or service representatives.
(2) The Manufacturer does not provide any parts or spare parts for the Product after the cease of production.

### 3. Repair services outside Japan

Contact your local FA Center of the Manufacturer for product repair. Repair conditions may differ from one FA Center to another.

### 4. The Manufacturer is not liable for any loss of opportunity or consequential damage.

Regardless of the period or scope of warrantee, the Manufacturer shall in no event be liable for or warrant the Product as to any failure due to a cause not attributable to the Manufacturer, any loss of opportunity or profit to the Purchaser due to failure of the Product of the Manufacturer, any damage, consequential damage, compensation for accident, damage to any product or items other than the Manufacturer’s Product regardless of whether foreseeable or not by the Manufacturer, or any replacement by the Purchaser, readjustment or retesting or the like of Purchaser’s machines or equipment at the site.

### 5. Changes in Product specifications

The specifications or technical data specified in the product catalogs, manuals or technical documents may be subject to change without prior notice.

### 6. Application of Product

(1) The Manufacturer’s motion controller shall be used or applied on the condition that any failure or defect of the motion controller will not lead to a serious, critical or fatal accident and that a system of backup or fail-safe functions is provided by the Purchaser outside the equipment and the system works in the event of any failure or defect of the motion controller.
(2) The Manufacturer’s Motion Controllers are for general purposes and designed and manufactured for use in general industry.
The Motion Controllers therefore shall not be used for any purposes or applications such as a nuclear power plant or other power plant of an electric company in which a failure may greatly affect the public interest, or any purposes or applications such as for railway companies or public offices where a special quality assurance system is required.
The Motion Controllers shall not be used for any purposes or applications such as for aviation equipment, medical equipment, railway equipment, fuel or combustion equipment, manned transfer equipment, amusement machines and safety equipment in which a failure is expected to greatly affect human lives or properties
For such use or application described above however, the Motion Controllers may be available if the Purchaser agrees that the Products are used or applied within a specific limit and no special quality is required. Consult the representatives of the Manufacturer.

SSCNET
SERVO SYSTEM CONTROLLER NETWORK
MELSOFT

Mitsubishi Motion Controller
Q Series

MITSUBISHI ELECTRIC CORPORATION
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