Your competitiveness from the production site

“Modernize” and “Optimize”

Presented by Mitsubishi Electric.
Migration of equipment systems presented by Mitsubishi Electric!

“Modernize” and “Optimize”

Mitsubishi PLCs
- Meeting various needs
- High speed and large capacity
- Numerous actual achievements

Mitsubishi micro PLCs
- Compact and convenient
- High cost performance
- Abundant built-in functions

Mitsubishi graphic operation terminals
- High-speed drawing, operation and communication
- Extensive lineup
- Innovating the production site

Mitsubishi inverters
- Energy saving
- Long life span
- Easy maintenance

Mitsubishi industrial robots
- Production efficiency
- Improved reliability
- High added value

These are the migration of equipment systems presented by Mitsubishi Electric!
Mitsubishi Electric aims for “stable operation” “improved productivity and improved quality” “higher added value” to the customer!

Latest products and abundant migration know-how

Elaborate support

Mitsubishi Electric

These are the migration of equipment systems!

- PLCs
- Micro PLCs
- Graphic operation terminals
- Inverters
- Industrial robots
- AC servos
- Low-voltage distribution control equipment
- Latest solutions
- Support

Migration Recommendations

Production discontinuance of major FA products
Various concerns in your factory...

We do not have enough workers engaged in examination for improvements and migration.

We would like to improve the productivity and quality without changing the existing equipment.

We would like to use the existing equipment for the time being.

We cannot afford large cost required for new equipment or modifying the existing equipment.

We would like to expand automated production.

Preventive maintenance and product life

Preventive maintenance of equipment and devices is required to use FA equipment for a long time.

There are two concepts of preventive maintenance.

- Daily maintenance and inspection (Visual inspection)
  - Indicator lamps (in the equipment main body, devices and units)
  - Equipment mounting status
  - Cable connection status

- Periodic maintenance and inspection (Visual inspection)
  - Maintenance of electrical equipment
  - Ambient environment
  - Checking stored programs

Product life

- Mitsubishi Electric recommends 10 years as the service life of FA equipment.
  - Replacing a unit whose service life is expired
  - Even if a unit is operating normally, the failure rate is high because each part is worn out and damages related to the power ON time, surge, etc. are accumulated.

- Mitsubishi Electric recommends overhaul maintenance of FA equipment in 5 years since the start of operation.
  - Maintenance of units (to prevent short-circuit by removing dust and adhering substances)
  - Replacement of parts requiring periodic replacement (such as fuses, batteries and memory cards)
  - Overhaul of units incorporating parts having limited service life*

* Aluminum electrolytic capacitors, fuses, relays, etc.

In the existing facility

[Stable operation]
[Extension of equipment service life]
[Preventive maintenance]

Migration check.

- Selecting the proper latest model
- Downsizing and space saving
- Replacing existing products manufactured by other companies with Mitsubishi products
- Improving the maintainability
- Utilizing the software assets and resources
- Improving the operability
- Step-by-step migration
- Preventive maintenance realized by migration
In the existing facility
- Selecting the proper latest model
- Downsizing and space saving
- Replacing existing products manufactured by other companies with Mitsubishi products
- Improving the maintainability
- Utilizing the software assets and resources
- Improving the operability
- Step-by-step migration
- Preventive maintenance realized by migration

Mitsubishi Electric will support migration of equipment for the customer in cooperation with the sales representative.

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Migration by Mitsubishi Electric
Mitsubishi Electric will propose a variety of products and functions based on various keywords to eliminate concerns of customers.

Mitsubishi Electric will support migration of equipment for the customer in cooperation with the sales representative.

* Aluminum electrolytic capacitors, fuses, relays, etc.

We would like to reduce the stop time caused by failures.
We may not cope with failures of equipment whose production is already discontinued.
The productivity cannot be improved because the performance of the existing equipment has reached the limit.
There is much wasteful time in the maintenance work because the existing equipment are manufactured by many companies.
We are not sure whether we can replace and migrate the FA equipment by ourselves.

We would like to save energy, and be environmentally friendly.

We would like to improve the productivity and quality without changing the existing equipment.
We would like to use the existing equipment for the time being.
We cannot afford large costs required for new equipment or modifying the existing equipment.
We would like to expand automated production.

We do not have enough workers engaged in examination for improvements and migration.
We would like to improve the productivity and quality without changing the existing equipment.

We would like to introduce new equipment of high productivity that is easy to use?
- High-speed, high-accuracy control
- Smart wiring
- High-speed, large-capacity communication
- Networking
- Standardizing the maintenance tool
- Utilizing the GOT
- Quick recovery from machine alarms
- Supporting and implementing energy saving

Migration of equipment systems presented by Mitsubishi Electric

Before

After

| Turn the page. |

In addition,
[Productivity improvement]
[Quality improvement]
[Promotion of energy saving]

How about introducing new equipment of high productivity that is easy to use?

- High-speed, high-accuracy control
- Smart wiring
- High-speed, large-capacity communication
- Networking
- Standardizing the maintenance tool
- Utilizing the GOT
- Quick recovery from machine alarms
- Supporting and implementing energy saving

Furthermore,
[Visualization]
[Automation]
[Promotion of energy saving]

How about introducing new equipment assuring quick response, safety and security?

- Acquiring, judging and analyzing data
- Image recognition inspection
- Automating inspections and judgments
- Safety control equipment
- Automation and labor saving by robots
- Duplicating the CPU
- Constructing the MES (manufacturing execution system)
Mitsubishi Electric’s control equipment

Not only various functions, high speed, large capacity and extensive networking but also top class reliability are proved by long-term actual achievements.

Mitsubishi Electric’s drive equipment

Mitsubishi Electric’s motor control technology is advancing everyday. Mitsubishi drive equipment contribute to the realization of not only high functions and high performance but also energy saving.

Migration requires only small cost!

Migration has realized energy-saving and environment friendly.

Can be resolved by migration!
Mitsubishi Electric’s distribution control equipment

Mitsubishi Electric supports stable supply of electric power with its wide variety of products in the distribution control field, and proposes aggressive energy saving achieved by migration.
How is the current status of the existing PLC?

Mitsubishi Electric offers various tools for replacement with latest models.

Mitsubishi Electric supports migration with various tools and accumulated know-how.
Migrations of equipment systems presented by Mitsubishi Electric

Partner manufacturers

A to Q migration tool catalogs

- Migration tool catalogs

Mitsubishi Electric Engineering Co., Ltd.

Mitsubishi Electric System & Service Co., Ltd.

Tools to easily migrate from A series to Q series available.

* Refer to “Introduction of partner manufacturers” on pages 28 to 29.

For example

Network replacement!

Mitsubishi data link system “MELSECNET” can be replaced in various methods.

Benefits of migration

- 3 year warranty!
- Easy connection with multiple communication ports!
- High speed and large capacity CPU!
- Improve efficiency with various convenient instructions!
- Abundant lineup enables selection of product suitable for the required specifications.
- The control panel can be downsized.
- Enhanced program security function!

Existing system

MELSECNET(Ⅱ)/B

System being transferred

MELSECNET(Ⅱ)/B

MELSECNET/H(10)

Gateway (Relay station)

System in which replacement is completed

MELSECNET/H(10)
Mitsubishi Micro PLCs

First, how is the current status of the existing PLC?

Mitsubishi Electric offers various tools for replacement with latest models.

Concerns about the existing equipment
- The equipment is working fine, but is getting old.
- We would like to upgrade but the performance has reached the limit.
- Components from different brands are installed in the equipment which is making maintenance troublesome.

Concerns for migrating
- Need to keep the equipment running.
- Don’t know to which product to migrate to.
- Can’t read out the existing programs.

Mitsubishi Electric can eliminate these concerns!

Micro PLCs are downsized compared to legacy models, and can fit into the existing space. Programs can be replaced with FX-20P-E-FKIT for F series or with GX Works2 for FX series.

The combination “FX-20P-E + FX-20P-E-FKIT” is available.

The F (F1, F1J, F2) series can be replaced by the FX series while reading out existing programs using the combination “FX-20P-E + FX-20P-E-FKIT”. After existing programs are transferred to the FX series, they can be corrected and debugged using GX Works2.

* Contact your local dealer.
Migrations of equipment systems presented by Mitsubishi Electric

Migrate to the latest Mitsubishi PLCs!!

Mitsubishi micro PLCs

Benefits of migration

- 3 year warranty!
- Easy connection with multiple communication ports!
- Expansion boards enable expansion at low cost!
- Convenient built-in functions enable system configuration at low cost!
- Abundant lineup enables selection of product suitable for the required specifications.
- Improve efficiency with various convenient instructions!
- Enhanced program security function!
- High-function and compact extension modules are available!

For example

Legacy FX series replacement!

Legacy FX series program can be transferred to the latest product using PC type change function of GX Works2.

Programming software
GX Works2

For example

Replacing wiring!

In case the product size is large and the wiring is short

Large size legacy product can be replaced easily with connector type FX series PLC and terminal block product of partner vendors. (Connector type requires 24 V DC power supply)
How is the current status of the existing GOT?

Mitsubishi graphic operation terminals

- **GOT-A900 series**
- **GOT-F900 series**

### Concerns about the existing equipment
- The product is getting old and is not well maintained.
- Screen datas are not backed up.
- Components from different brands are installed in the equipment which is making maintenance troublesome.

### Concerns for migrating
- Do we have to drill holes to replace?
- Can the screen data be replaced?
- Can we replace other brand HMI with GOT1000 or GOT2000 series products?

### Mitsubishi Electric can eliminate these concerns!

- **GOT series has same panel-cut dimensions when the screen size is the same.** Screen data can easily be replaced using GT Works3. GOT with the latest functions can reduce loads on the PLC, and can back up data.

### Migration documents
- Technical Bulletin for replacement of GOT-A900 with GOT1000
- Technical Bulletin for replacement of GOT-1000 with GOT2000

### Migration tool
- Optional attachment is available for replacing GOT-900 to GOT1000 series with different screen size.

### For example
- Replacing of a Mitsubishi legacy product or other brand HMI!
Migrate to the latest Mitsubishi Graphic Operation Terminals!!

GT Works3 comes with the following software to convert screen data from GOT-900 series to GOT1000, GOT2000 series.

- **GT Designer2 classic**
- **GT Designer3**
- **GT Works3**
- **GT Works3+plus**
- **GT Converter2**

**GT Works3** comes with **GT Converter2** to convert screen data of legacy models and other brand HMI to GOT1000/GOT2000 series.

**GOT Mobile**

Monitor your worksite anytime, anywhere.
Check the equipment status using a web browser.

**Benefits of migration**

- 3 year warranty!
- Front side USB port enables easy maintenance*
- Can be connected to various networks!
- Easy connection with multiple communication ports!
- Decentralize control to GOT to assure stable operation!
- Improves visibility with brilliant color LCD!
- Abundant lineup enables selection of product suitable for the required specifications.
- Logging function to improve quality!

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Documents for migrating GOT-F900 series
- **GOT-F900 Migration Guide**
- **Replacement Guide**

Migra
Mitsubishi inverters

First,

How is the current status of the existing inverter?

Mitsubishi Electric offers various tools for replacement with latest models.

Concerns about the existing equipment

- Replacement of service life limited components may be needed soon.
- Need to manage and control many units.
- Need improve energy efficiency.

Concerns for migrating

- Are there compatible products to the existing obsolete products?
- How can we replace the parameters?
- We are using coil type motor, eddy current joint type motor (AS), direct current (DC) motor, and have difficulty in daily and preventive maintenances.

Mitsubishi Electric offers various tools for replacement with latest models.

Mitsubishi Electric can eliminate these concerns!

Abundant tools and documents to support migration are available.
Parameters can be converted easily using FR Configurator2.
Mitsubishi inverters with the latest functions considerably improves energy saving and ease of maintenance!
The FREQROL-F800 series is compatible with the IPM motor.
- Replacement is easy due to frame number being the same as that of the standard three-phase motor.

Energy level meets "IE4 (super premium efficiency)" of international standard IEC 60034-30. (As of March 2013)

Improved ease of maintenance
Latest series use long service-life components and most advanced life diagnosis which improves ease of maintenance.

- Approximate life of limited service life components

<table>
<thead>
<tr>
<th>Part name</th>
<th>Approximate service life</th>
<th>Service life specified by JEMA</th>
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</thead>
<tbody>
<tr>
<td>Cooling fan</td>
<td>10 years</td>
<td>2 to 3 years</td>
</tr>
<tr>
<td>Capacitor for smoothing main circuit</td>
<td>10 years</td>
<td>5 years</td>
</tr>
<tr>
<td>Smoothing capacitor on PC Board</td>
<td>10 years</td>
<td>5 years</td>
</tr>
</tbody>
</table>

- Deterioration degree of main circuit capacitors, control circuit capacitors and rush current suppression circuits can be monitored.
- Self-diagnosis function sounds alarm for components having limited service life to prevent failures.

It is economical to use Mitsubishi inverters for drive when Mitsubishi PLCs are used for control. CC-Link and RS-485 communication enable precise control of multiple inverters.
How is the current status of the existing robot?

Concerns about the existing equipment

- Want to improve productivity of the equipment.
- Maintenance is hard due to increased failures.
- Want to visualize all standalone robots.

SQ series supports iQ Platform and enables higher speed control.

Mitsubishi industrial robots

- P series
- EN series
- M series
- A series
- E series
- S series

Mitsubishi Electric can eliminate these concerns!

For example:

**Loading/Unloading of parts to a processing machine**
(A lathe, a machining center, a press machine, and a make-up machine, etc.)

- Touch panel GOT2000
- Conveyor for unloading/finished products
- Processing machine
- Vertical, multiple-joint type robot
- Pneumatic chuck system double-hand
- Work loading conveyor

**Assembly of electric components** (switch)

- Touch panel GOT2000
- Machine vision camera COGNEX In-Sight
- Pallet for loading and unloading parts
- Programmable controller (iQ Platform)
- Small horizontal, multiple-joint type
- Small vertical, multiple-joint type robot
- Assembly stand (Rotary table)

**Conveyor alignment for packed food products**

- Pulse encoder
- System control panel
- Manual entry-type puls module
- Programmable controller (iQ Platform)
- Conveyor to upload workpieces
- Case conveyor
- Horizontal, multiple-joint type robot
- Three-suction hand

For example:

First, how is the current status of the existing robot?

It contributes to productivity, the improvement in reliability, and total cost reduction.

Mitsubishi Electric can eliminate these concerns!
Migrate to the latest Mitsubishi robots!!

Mitsubishi industrial robots
MELFA
F-SERIES

Points for the employment of robots
A vertical, multiple-joint type robot realizes high-speed loading and unloading of parts to a processing machine. (Oil mist proof) Additional traveling shaft improves the operating rate of a robot and efficiently utilizes the facility.
Advantages
• Improvement of environmental resistance
• Smooth hand-over of products with various processing machines
• Higher operating rate of robot
• Shorter cycle time

Points for the employment of robots
High-speed parts kitting with a horizontal, multiple-joint type robot, fine assembly with a vertical, multiple-joint type robot, and the ability to handle a variety of workpieces with a high-functioning hand (a multi-hand and an electric hand)
Advantages
• High-speed kitting
• Capable of handling a wide variety of workpieces using only a small space
• No need to change hands to switch a kind of work
• Complicated assembly process
• Reduction of cycle time

Points for the employment of robots
High-speed vision-tracking of horizontal, multiple-joint type robot realizes non-stopping alignment process. It also processes simultaneous tracking for multiple conveyors.
Advantages
• High-speed tracking
• No need of alignment device
• Reduction of cycle time
• Stable quality due to automated process

Benefits of migration
High-speed control improves tact time!
Robot CPU in iQ Platform saves wiring
Multiple robots can be controlled together.
Robot can be controlled using PLC language!
Downsized robot saves installation space.
Improved operability with easy connection of GOT

Migrations of equipment systems presented by Mitsubishi Electric
Mitsubishi AC servos

First,

How is the current status of the existing AC servo?

Mitsubishi AC servos

Concerns about the existing equipment

<table>
<thead>
<tr>
<th>Concerns for migrating</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC servos is not tuned correctly and generates large noise.</td>
</tr>
<tr>
<td>Takes time to complete positioning.</td>
</tr>
<tr>
<td>Motor seems to be okay but the amplifier is a concern.</td>
</tr>
</tbody>
</table>

Mitsubishi Electric can eliminate these concerns!

Abundant tools to support easy migration are available.
In multi-axis control, combining the motion controller contributes to function upgrade and space saving!

Various tools are available to migrate to the latest products.

Replacement support documents

- MR-J2-Super series migration catalog
- Cautions on replacement of the MR-J/MR-H series
- Migration Guide from MR-J2 Super/J2M series to MR-J4 series
- New Product Newsletter for MR-J2S-B SSCNET conversion unit

MR-J4-B is recommended for replacing legacy Mitsubishi products and other manufacturers products.

- SSCNET III/H enables a simple system with less wiring.
- MR Configurator2 enables easy adjustment, monitor display, parameter setting, etc.
Partner manufacturer

- Migration tools available from Mitsubishi Electric System & Service Co. Ltd.
- For replacing MR-J series
- For replacing MR-J2S series
- For replacing MR-H series
- For replacing MR-SA series

**For example**

In case of MR-J2S series

Servo can be replaced with MR-J3A type using the migration tool.

**Migrate**

Benefits of migration

- Easy servo adjustment to fit the equipment!
- Easy wiring with SSCNET III/H or SSCNET III.
- High-response control improves tact time!
- Easy setting of electronic gear.
- Smooth operation due to reduced cogging torque
- Easy tuning function
- Abundant lineup enables selection of product suitable for the required specifications!
- Space saving design allows close contact installation

Migrate to the latest Mitsubishi AC servos!!

0.05 kW to 22 kW
Mitsubishi low-voltage distribution control equipment

First, How is the current status of the existing low-voltage distribution control equipment?

Low-voltage circuit breakers

- No-fuse circuit breaker
  - NF225-SS series
  Need to replace the breaker because the current capacity has changed. Concerned about aging products malfunctioning. Need to replace the large obsolete products to save space.

- No-fuse circuit breaker
  - NF2000 series

Electromagnetic switches

- Electromagnetic contactors
  - MS-K series
  Concerned about aging products malfunctioning. Want to save space by migrating to the latest products.

Power management measuring unit

- Mechanical measuring unit
  Concerned about aging products malfunctioning. Need to reduce measuring work.

Migrate to the latest Mitsubishi low-voltage distribution control equipment!!

- No-fuse circuit breaker
  - NF225-SS series
  Need to replace the breaker because the current capacity has changed. Concerned about aging products malfunctioning. Need to reduce measuring work.

- Low-voltage air circuit breaker

Downsized products allows panel space saving. Functions can be upgraded just by replacing. Can prevent unnecessary operations of the earth-leakage circuit breaker by high function IC.

- Electromagnetic contactors
  - MS-T series
  Terminal cover installed for added safety. Downsized products allows panel space saving.

- Electronic multi-measuring instruments
  - ME96SS series
  LCD improves visibility. Easy data collection with communication function. Various options facilitate setting changes for the display and output devices. (electronic measuring instrument).
Mitsubishi low-voltage distribution control equipment

Migrations by Mitsubishi Electric

Product catalogs
- Mitsubishi WS-V Series Molded Case Circuit Breakers and Earth-leakage Circuit Breakers
- Mitsubishi WS-AE Series Low Voltage Air Circuit Breakers

Product catalogs
- Mitsubishi MS-T Series Electromagnetic switches

Product catalogs
- Mitsubishi Super-S Series Electronic Multi-measuring Instrument ME96SS

Furthermore, Mitsubishi’s migration can:

- Energy measuring unit EcoMonitorLight
  - Single-circuit measuring unit, display unit, and setting unit integrated into a single measuring unit. Allows easy and low cost energy “visualization”. Built-in MODBUS® communication allows system upgrade.
- MDU breaker
  - In addition to circuit breaker function, this product continuously monitors the electric circuit information (power amount, load current, leakage current, etc.) and enables centralized monitoring through communication.
- No-fuse circuit breaker/earth-leakage circuit breaker equipped with leakage current indication
  - These products monitors leakage current data and investigate causes of electric leakage.
  *These equipment are not sold in the USA.

Mitsubishi FA products can “visualize” power management equipment and of production equipment.

Directly connected to Q series PLC.

Electric power measuring unit [QE84WH]
PLC measures power information up to 4 channels which enables standard data control and state monitoring in each production equipment.

Insulation monitoring unit [QE821LG]
PLC continuously monitors the insulation status and supports preventive maintenance of the production equipment.

Benefits of migration

Low-voltage circuit breakers
- Downsized to save panel space.
- New circuit breaking technology allows higher performance.
- Contribute to energy saving and preventive maintenance through monitoring of the electric circuit information using the MDU breaker and others.

Electromagnetic switches
- Safe and easy wiring with CAN terminal.
- Detachable arc cover makes inspection easy.
- Save energy with low power consumption coil.

Electronic multi-measuring instrument
- Wide viewing angle LCD improves visibility.
- Set data transceiver allows easy setting and management.
The production capability of your factory

The MES interface is the key to realize the visual platform “e-F@ctory”. A broad lineup of MES interface products of Mitsubishi Electric enables direct connection between the MES (manufacturing execution system) database and the shop floor equipment without communication gateways such as personal computers.

“Aggressive energy conservation”

Mitsubishi Electric’s Fukuyama Works adopted “visible management”, and is now practicing “aggressive energy conservation” efforts. Fukuyama Works has realized an economical and ecological “eco factory”, and uses its eco expertise to engage in the energy conservation business.

- Performance in 2006 compared to 1990
  - Conventional energy conservation: 23.7 million yen in basic power cost
  - Aggressive energy conservation: 27.3% reduction in standard data

* The numeric value is estimated by Mitsubishi Electric based on the elimination of personal computers and programs from the conventional system.

- System construction cost can be reduced by more than 65%.
- MES interface is the key to realize the visual platform “e-F@ctory”.
- Mitsubishi Electric's Fukuyama Works adopted “visible management”, and is now practicing “aggressive energy conservation” efforts.
- Fukuyama Works has realized an economical and ecological “eco factory”, and uses its eco expertise to engage in the energy conservation business.
Mitsubishi Electric’s simple, convenient and compact EcoWebServerIII is advanced to support visible management of energy.

What is EcoWebServer?
EcoWebServer is an all-in-one type data collection server having excellent functions essential in energy-saving management of alarm units and machines.

Two types selectable

Mitsubishi Energy-saving Data Collection Server EcoWebServer III

Migrations of equipment systems presented by Mitsubishi Electric
Power measurement and insulation monitoring together with PLC migration realize energy saving and preventive maintenance!

**Before**

Promoting energy saving in existing production equipment...  
While minimizing the chance of failure of existing production equipment...

**Energy Measuring Module Installation Example**

- Specific energy consumption can be managed in detail according to individual items or processes to assist in reducing the power consumption of production equipment and realize energy savings.
- Constantly measuring current (or power) consumption can help prevent serious faults and equipment failure, ultimately resulting in reduced production losses.

**Insulation Monitoring Module Installation Example**

- Maintenance man-hours can be reduced by improving the efficiency of periodic inspection work.
- The resistive-component leakage current (Ior) can be measured so that a leakage current caused by insulation deterioration can be identified.

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**Constant measurement of the electrical current**

**Point 1**

Preventive maintenance measures are taken before equipment stoppage.

**Constant monitoring of the current value**

**Point 2**

Timing of production line control can be synchronized based on energy.

**Constant measurement of the Leakage current value, and constant monitoring for insulation deterioration for each unit/load**

**Point 3**

Prevention of sudden failure of machines and lines / Detection of insulation deterioration (earth leakage) at early stage.

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Latest solutions from Mitsubishi Electric
Maximizing that will change your factory

Migrations by Mitsubishi Electric

Maximizing that will change your factory

Latest solutions from Mitsubishi Electric
Easily accessibility to the FA information of Mitsubishi Electric all over the world!

From “Worldwide” provided at the upper right corner of the top page, you can easily access to the FA web sites all over the world. On the pages for each country, you can check not only products purchasable all over the world but also the information on products developed specially for the region, catalogs and manuals in each language and various regional services.

Please utilize “Worldwide” for expanding your business overseas.

Global web site

Business support

◆ Dictionaries
These dictionaries contain references to more than 4000 words related to the world of FA. Use them to support and improve the communication between colleagues and local staff.

◆ Glossaries
These glossaries contain more than 750 specialized technical terms associated with the use and operation of FA products helping to improve understanding and communication between businesses and local staff.

◆ Phrasebook
These phrasebooks can be used to support communication between local staff and Japanese engineers. The phrasebooks contain many everyday phrases as well as numerous examples related to the manufacturing environment.

◆ On-site lexicon
These lexicon’s are designed to support the on-site communication between Japanese engineers and local staff. For each word a relevant FA explanation and example sentence are provided.
FA e-Learning

This site supports 16 languages (English, Chinese, Korean, Thai, Indonesian, Vietnamese, Malay, Spanish [for Central and South America], Portuguese [for South America], Russian, Polish, Czech, Slovakian, Hungarian, Hindi and Turkish) will support other languages. (coming soon)

Please utilize this site for improving basic skills of local workers in overseas production sites.

Supported languages

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<th>Language</th>
<th>FA e-Learning</th>
<th>Dictionaries</th>
<th>Glossaries</th>
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3-year guarantee

[Subjected models] PLCs and graphic operation terminals

<table>
<thead>
<tr>
<th>PLCs</th>
<th>Micro PLCs</th>
<th>Motion controllers</th>
<th>Graphic operation terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELSEC series</td>
<td>MELSEC series</td>
<td>GOT 2000 series</td>
<td>GOT 1000 series</td>
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<tr>
<td>iQ-R series</td>
<td>IQ-F series</td>
<td>iQ-R series</td>
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<tr>
<td>QnAS series</td>
<td>QnU series</td>
<td>Q series</td>
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<tr>
<td>L series</td>
<td>FX3 series</td>
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</tbody>
</table>

* The free guarantee period of a product shall be 3 years after the purchase or after it is delivered to the specified place (within 42 months after manufacturing under consideration that the circulation period after shipment from Mitsubishi Electric’s factory is 6 months maximum). The free guarantee policy shall be specified by Mitsubishi Electric.

Training school

Mitsubishi Electric offers training from basic operation to application programming in local language using actual products. In addition, Mitsubishi Electric offers individual menus and training visits based on requests from customers.

Global FA Centers

Migrations of equipment systems presented by Mitsubishi Electric

- Support, △ Partially supported

<table>
<thead>
<tr>
<th>Operation</th>
<th>Japanese</th>
<th>Showroom</th>
<th>Training</th>
<th>Field service (Field investigation and dispatch of engineers)</th>
<th>Technical consultation</th>
<th>Failure inspection</th>
<th>Repair</th>
<th>Spare part sales</th>
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<tbody>
<tr>
<td>FA Center (key service operation)</td>
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<td>○</td>
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<tr>
<td>Overseas sales office /representative</td>
<td>△</td>
<td>△</td>
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</tbody>
</table>
Mitsubishi Electric Engineering Co., Ltd. designs and sells peripheral components of Mitsubishi PLCs including PLC upgrade support equipment, wiring saving equipment and man-hour saving equipment.

**PLC migration (upgrade) tools**

Mitsubishi Electric Engineering Co., Ltd. offers migration (upgrade) tools for replacing the MELSEC-A series with the MELSEC-Q series and replacing the MELSEC-AnS series with the MELSEC-L/Q series. The migration work time and wiring mistakes are considerably reduced by utilizing the existing wiring (including terminal blocks and connectors).

**FA merchandise (FA goods)**

Wiring saving equipment and man-hour saving equipment support the wiring of the PLCs. These equipment reduce man-hours for wiring inside and outside the panel and wiring mistakes, and realize safety backed up by high reliability.

For the acquisition of Upgrade Tool and FA merchandise (FA goods), please contact your local Mitsubishi Electric sales office or sales representative.
This migration tool is used to replace the MELSEC-AOJ2 with the Q series. It consists of the interface module (to which the wired terminal block of the existing I/O module can be directly mounted), Q series PLC mounting members and connection cables. Either of three types of installation methods can be selected in accordance with the installation space. This migration tool utilizes the existing wiring to reduce wiring mistakes and work time.

This migration tool is used to replace the MR-J2Super series with the MR-J4 series. Because the existing mounting dimensions and cables are compatible, replacement can be performed in a short time. This migration tool is available also for step-by-step migration consisting of primary replacement (in which only the amplifier is replaced) and secondary replacement (in which the motor is replaced). It utilizes your assets effectively.

Mitsubishi Electric System & Service Co., Ltd. offers various network cables and wiring equipment for the controller network “CC-Link IE Control”, field network “CC-Link IE Field” and motion network “SSCNET III/H” to correspond with various applications.

- This cable enables relay connection, and is available in a case in which the AC servo should be separated from the machine side during transportation or installation, a case in which a highly flexible part should be adopted partially in the AC servo, and other cases.
- Mitsubishi Electric System & Service Co., Ltd. produces cables (increment: 1 m) for Mitsubishi MR-J4/J3/JN series servo encoders, power supplies and electromagnetic brakes.
- Mitsubishi Electric System & Service Co., Ltd. produces cables other than cables of standard length sold by Mitsubishi Electric Corporation.
Below is the repair acceptance period of major models and series in which production of the main unit are already discontinued. Production may be discontinued even in other models and series not shown below, and production may be discontinued before the date shown below or may be continued in some models and series shown below. Refer to the Mitsubishi Electric’s website or contact Mitsubishi Electric sales representatives for further information.

### Mitsubishi PLCs and micro PLCs

<table>
<thead>
<tr>
<th>Model</th>
<th>Repair acceptance period</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELSEC-A/QnA (large type) series</td>
<td>From September 2006 Until September 2013 (From September 2008 only in some models)</td>
</tr>
<tr>
<td>MELSEC-A/QnA (small type) series</td>
<td>From September 2014 Until September 2021</td>
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<tr>
<td>MELSEC-F (F1, F1J) series</td>
<td>From September 2000 Until September 2007</td>
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<tr>
<td>MELSEC-F (FX1, FX2) series</td>
<td>From June 2002 Until June 2009</td>
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<tr>
<td>MELSEC-F (FX1N, FX1S) series</td>
<td>From January 2006 Until January 2013</td>
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<tr>
<td>MELSEC-F (FX1N, FX2N, FX1NC) series</td>
<td>From September 2012 Until September 2019</td>
</tr>
<tr>
<td>MELSEC-F (FX1S, FX1N, FX1NC) series</td>
<td>From December 2015 Until December 2022</td>
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### Mitsubishi graphic operation terminals

<table>
<thead>
<tr>
<th>Model</th>
<th>Repair acceptance period</th>
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</thead>
<tbody>
<tr>
<td>GOT-A800 series</td>
<td>From September 2002 Until September 2009</td>
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<tr>
<td>GOT-A900 series</td>
<td>From December 2009 Until December 2016</td>
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<tr>
<td>FX-DU series</td>
<td>From September 2002 Until September 2009</td>
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<tr>
<td>GOT-F900 series</td>
<td>From March 2011 Until March 2018</td>
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### Mitsubishi inverters

<table>
<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>FREQROL-F500J series</td>
<td>From April 2012 Until September 2019</td>
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<tr>
<td>FREQROL-F500 (L) series</td>
<td>From May 2006 Until May 2013</td>
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<tr>
<td>FREQROL-S500 series</td>
<td>From May 2006 Until May 2013</td>
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<tr>
<td>FREQROL-S500E series</td>
<td>From August 2010 Until August 2017</td>
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<tr>
<td>FREQROL-A500 (L) series</td>
<td>From April 2007 Until April 2014</td>
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<td>FREQROL-E500 series</td>
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<td>FREQROL-F700P series</td>
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### Mitsubishi AC servos

<table>
<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>MR-J series</td>
<td>From December 2001 Until December 2006</td>
</tr>
<tr>
<td>MR-H series</td>
<td>From November 2005 Until November 2012</td>
</tr>
<tr>
<td>MR-J2 series</td>
<td>From November 2005 Until November 2012</td>
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<tr>
<td>MR-J2S series</td>
<td>From August 2015 Until August 2022</td>
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</tbody>
</table>
Mitsubishi motion controllers

A27UH3CPU

- From September 2006 - Until September 2013

Mitsubishi industrial robots

EN series
- From September 2001 - Until September 2008

E series
- From March 2002 - Until March 2009

A series
- From March 2005 - Until March 2012

S series
- From September 2009 - Until September 2016

Mitsubishi distribution control product

Model | Recommended migration time (after start of use)
--- | ---
Molded-case circuit breaker, Earth-leakage circuit breaker | 15 years or specified number of times of switching
Electromagnetic switch | 10 years or specified number of times of switching

Safety precautions

- To properly use the products described in this document, make sure to read the relevant manuals before use.
- These products have been manufactured as general-purpose products for general industrial purposes, and have not been designed or manufactured to be incorporated in equipment or system used in situations that can affect or endanger human life.
- When considering using these products for special purposes such as equipment or system for nuclear power, electric power, aerospace, medical care or riding mobile object, consult the contact point in charge of sales in Mitsubishi Electric.
- These products have been manufactured under strict quality control. However, it is strongly advised to install a backup or fail-safe function in the system when using these products in facilities where a failure of these products may cause a serious accident or loss.

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