MITSUBISHI ELECTRIC

Changes for the Better

for a greener tomorrow

eco Changes

Mitsubishi Programmable Controllers
MES Interface Module
Quick Start Guide

Quick Start Guide

START

CONTENTS

RELEVANT MANUALS

The following manuals are also related to this product.

If necessary, order them by quoting the details in the list below.

Manual name [manual number]	Description	Available form
MES Interface Module User's Manual [SH-080644ENG]	Explains the functions, MES Interface Function Configuration Tool, DB Connection Service, parameter settings, troubleshooting, input/output, and buffer memory of MES interface module.	Print book
		PDF
GX Works2 Version 1 Operating Manual (Common) [SH-080779ENG]	Explains the system configuration of GX Works2 and the functions common to Simple project and Structured project such as parameter setting, operation method for the online function.	Print book
		PDF

1 INTRODUCTION

The MES interface enables simple, highly reliable data connectivity between automated machinery and manufacturing-related computing applications, such as Manufacturing Execution Systems (MES) and Production Control Systems (PCS). These applications depend on correct data collection and timely delivery. Compared to conventional connectivity implemented using gateway computers, direct database connectivity implemented using the MES interface will decrease system complexity, improve reliability and eliminate data loss, resulting in better agility, less maintenance and reduces total cost of ownership (TCO).

This guide aims to provide an introductory guide to setting up the MES interface module. The guide is broken down into an example system, setup, and maintenance sections. For further reading, please refer to the associated users and hardware manuals provided by Mitsubishi Electric.

1.1 Database Overview

This section explains the databases that the MES interface uses as a source or destination for information exchanged with programmable controller CPUs.

For this example, a database is defined as software which provides a virtual filing system for storing groups of related data. It also provides a set of commands that enable access, editing and manipulation of the stored data.

The following are some examples of practical functions that may occur in a database.

- During processing of a set of data items, an error occurs. ⇨In response, the user might apply a rollback command that restores the data to its original state.
- While certain stored data items are being retrieved in one process, new data arrive that need to be stored in a second process. ⇨The database should handle completion of both actions without conflict or user intervention.
- A researcher desires to retrieve a specific set of 15 data items that was originally stored in the database on July 15th at 2:30 AM 5 years ago. ⇨The user will create a "query" or command structure that the database understands as a request for data retrieval. The database will return the specified information when the query is executed.

Database type

There are various database types including relational, hierarchical, and XML. The MES interface operates with relational databases provided by Microsoft® or Oracle®.

Relational databases organize data into tables consisting of fields (columns) and records (rows). The contents in one database can range from one table to many thousands.

Part number	Production plan	Production actual
M7000	300	120
J581-583	500	500
EH10	30	30
DHC8	10	0

Database commands

All common databases implement a standardized command format called SQL (Structured Query Language). SQL defines each command action a user can apply to operate the various database functions and the syntax for the command and response messages paragraph change.

The MES interface module executes some of these commands. When acquiring data stored in a record, inserting data in a new record, or writing modified data in an existing record, use Select command, Insert command, or Update command, respectively.

Of many SQL commands available, these three cover direct data exchange between programmable controller CPUs and databases. Creation of tables, deletion of records and all other database operations must be implemented outside the MES interface.

■Adding new records and updating table information

Initial table structure

Part number	Production plan	Production actual
M7000	300	120
J581-583	500	500

1. Add a new record to the table that has fields for part number, production plan, and production actual.
(Insert command is executed via the production scheduling software.)

Part number	Production plan	Production actual
M7000	300	120
J581-583	500	500

Insert →

Part number	Production plan	Production actual
M7000	300	120
J581-583	500	500
EH10	30	0

2. After execution, add the production actual count to the record. (Update command is executed by the MES interface and the production actual is moved from the programmable controller CPU to the database.)

Part number	Production plan	Production actual
M7000	300	120
J581-583	500	500
EH10	30	0

Update →

Part number	Production plan	Production actual
M7000	300	120
J581-583	500	500
EH10	30	12

Final table structure

1.2 MES Interface Module Overview

The MES interface provides a highly reliable and easy to implement method for exchanging data between programmable controller CPUs or GOTs and common industrial quality databases. Most Manufacturing Execution Software Applications use a database to source data and deposit results. The product is named 'MES interface', because it greatly improves MES implementation and operation by providing a high quality, high function link to the factory equipment.

Setup of the MES functions is made using PC-based configuration software. For most applications, no computer language programming or control logic programming is required. The person making setup need not know SQL language or XML language, because setup is made in a menu driven format and deeper technical aspects are handled automatically. The idea is that standard engineering staff can easily handle initial setup and subsequent modification of the MES interface configuration.

Setup procedure

The general setup procedure is simple.

1. Associate (map) device data of the programmable controller CPU to the appropriate fields or records in the database table(s)

2. Set trigger conditions under which data are to be collected and transferred

3. Build transactions associating triggers with the specific data and action

Point

> The MES interface module provides enhanced functions beyond simple data transfer that provide significant benefits. Store and forward DB buffering of transactions (when the database connection is lost) supports zero data loss and guaranteed information delivery. One MES interface module can transact data with up to 32 database connections. Communications between the MES interface and the host computer system occur in a secure, encrypted format and the messages exist in SQL and XML format, which are well suited to passage through common IT infrastructure devices such as firewalls, routers and switches. Automatic time adjustment to an SNTP server keeps time stamps and database sequencing accurate.

MES interface basic system configuration

The overall system configuration when using the MES interface module is shown below.
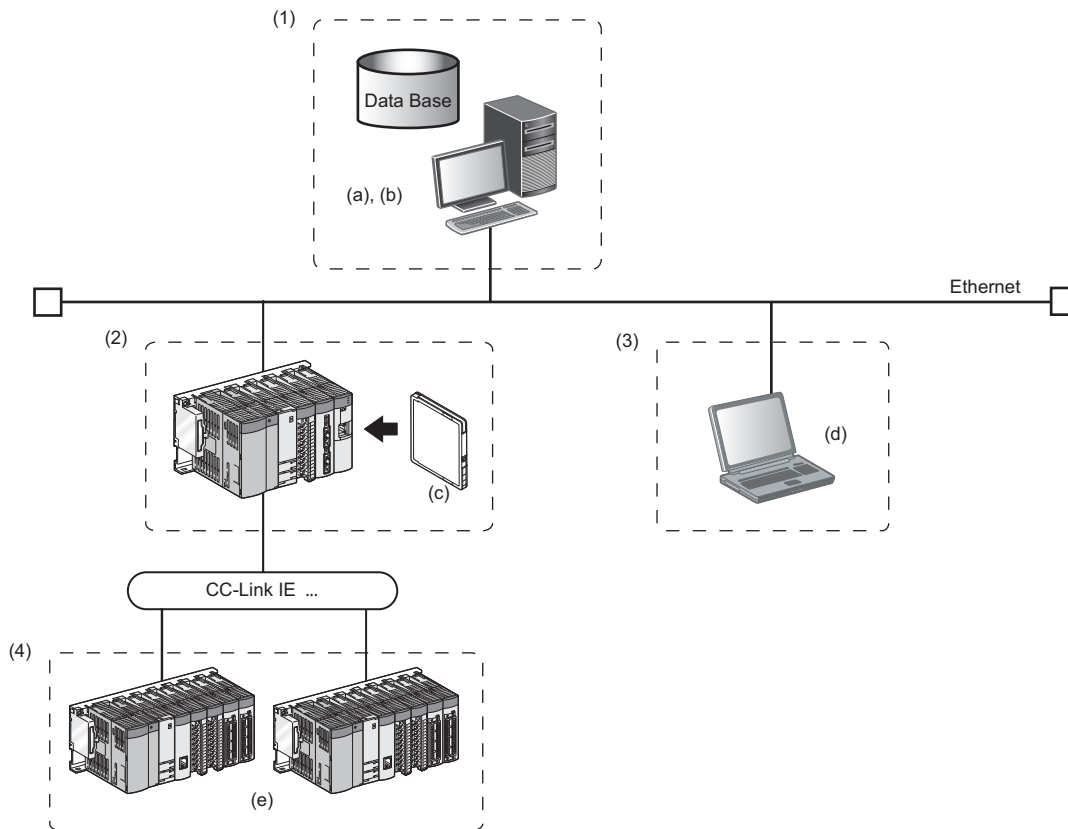
System configuration				Network connection
(1)[*1]	Server personal computer SNTP server personal computer[*4*5]	(a)[*2*3]	DB Connection Service DB Connection Service Setting Tool	Ethernet
		(b)	Oracle® Microsoft® SQL Server® Microsoft® Access® and others	
(2)	MES interface module	(c)	CompactFlash card (required)	Ethernet
(3)[*1]	Configuration personal computer	(d)[*2]	MES Interface Function Configuration Tool	Ethernet
(4)[*5]	Access target CPU	(e)	RCPU, QCPU, QnACPU, and ACPU	Supported networks

*1   The server personal computer, SNTP server personal computer, and configuration personal computer can share one personal computer.
*2   Functions provided by MX MESInterface
*3   Since this guide mentions the default setting only, the setting for DB Connection Service is not explained.
*4   MES interface module time is required when SNTP server personal computer time is used.
*5   It is not used in the example of system configuration in this guide.

2 EXAMPLE SYSTEM OUTLINE

This section explains the process of building a simple data collection system using MES interface module.
A metal parts manufacturing line automated by the programmable controller CPU and the MES interface module is used as an example.
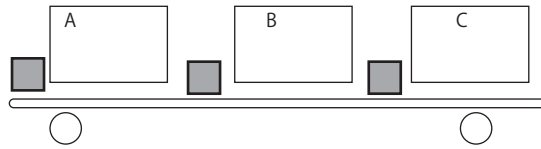
| Process		Description
A	Machining	Machines metal materials and manufactures finished parts.
B	Imprint	Imprints a lot ID code and a specific serial number on each manufactured part.
C	Inspection	Measures the weight of each completed parts.

Interactions between the control system and the production database are as follows:

1. Acquiring the manufacturing schedule information (Database ⇨ MES interface module ⇨ Programmable controller CPU)
MES interface module acquires the target manufacturing number and lot ID codes from the table of the production control database before starting the manufacture. The parts are manufactured according to the target manufacturing number.
The lot ID code is imprinted in front of the serial number on each part.

2. Delivering the actual manufacturing information (Programmable controller CPU ⇨ MES interface module ⇨ Database)
After each part exits the inspection station, the actual serial number, production time and part weight are collected by MES interface module and transferred to the production control database.

3. Modifying data to improve usability (scaling in MES interface module)
The inspection scale notifies the control system of the part weight in grams (g) in positive numbers (decimal). However, a production report from the database information should be read in kilograms. Therefore, the weight data is converted to kilograms (kg) with MES interface module to prevent control logic changes and extra processing at the database-level.
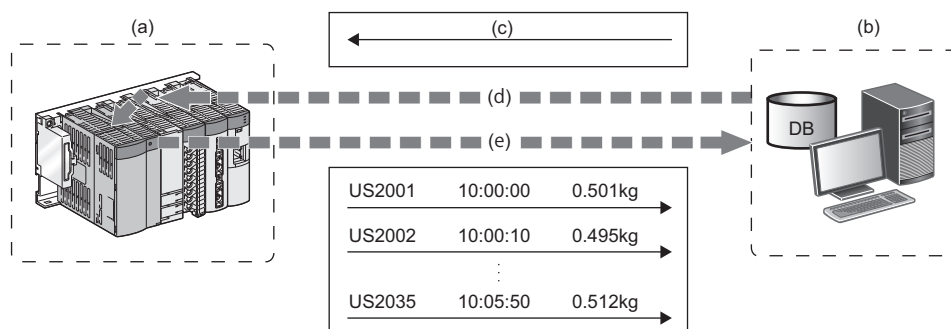
(a) Control system (CPU module, MES interface module)
(b) Production control database
(c) Target manufacturing number 35 units, lot ID code (US)
(d) Acquisition of manufacturing schedule information
(e) Delivering the actual manufacturing information

MEMO

3 REQUIRED EQUIPMENT FOR START-UP

Before creating a sample system, the following items must be prepared.

MES interface module QJ71MES96	The MES interface module provides linkage between device data of a programmable controller (production equipment) and a database of an information system (Manufacturing Execution Systems) without using a communication gateway.
CompactFlash card GT05-MEM-128MC	The MES interface module is equipped with and uses one CompactFlash card. For more on usable CompactFlash cards, please refer to the following manual. 📖 MES Interface Module User's Manual

Configuration software, MX MESInterface
SW1DNC-MESIF-E
	Only specifying necessary data allows data communications (SQL texts) without any programming. This software includes the following tools:
	• MES Interface Function Configuration Tool
	  Software that is run on a configuration personal computer and performs settings required for the MES interface function of the MES interface module. In addition to the settings, checking the operating status or working logs and stopping/restarting the MES interface function operation are also available with this software.
	• DB Connection Service
	  Software that is run on a server personal computer and is used for linking a database to the MES interface module.
	• DB Connection Service Setting Tool
	  Software that is run on a server personal computer and is used to change the settings of "DB Connection Service".

Personal computer	The personal computer is used as a server personal computer and a configuration personal computer. In this guide, Microsoft® Windows® 7 Professional Operating System is used as the operating system (OS) in explanations. For hardware requirements of the personal computer to be used, refer to the following manual. 📖 MES Interface Module User's Manual
Twisted pair cables and a hub	Used to connect the personal computer to the MES interface module, QJ71MES96. • Cables must be compliant with the standard of IEEE802.3 10BASE-T/100BASE-TX. • Use straight cables when using a hub, or use a crossover cable when not using a hub.
Microsoft® Access 2010 (32-bit)	Relational database that is run on a server personal computer. It is used to create a sample database. For the applicable relational databases, refer to the following manual. 📖 MES Interface Module User's Manual
Programmable controller CPU	A programmable controller CPU system that uses the MES interface module. For applicable CPU modules, number of modules, and base units, refer to the following manual. 📖 MES Interface Module User's Manual
GX Works2	An integrated programming tool for performing design, debugging, and maintenance of sequence programs for programmable controller CPUs. By using this, sequence program monitoring, program or data modification during program execution, and ON/OFF of inputs/outputs are also available. For the operation method, refer to the following manual. 📖 GX Works2 Version 1 Operating Manual (Common)

MEMO

4 EQUIPMENT SETUP

Components required to build a sample system are shown below:

Connection method

■Direct connection

The following shows when connecting a MES interface module to a personal computer directly.

(1) MES interface module (IP: 192.168.3.3)
(2) Ethernet (twisted pair cable (crossover cable))
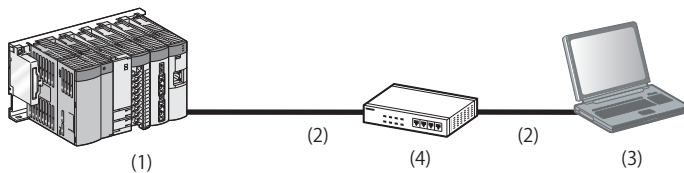(3) Personal computer (IP: 192.168.3.1)

■Connection via a hub

The following shows when connecting a MES interface module to a personal computer via a hub.

(1) MES interface module (IP: 192.168.3.3)
(2) Ethernet (twisted pair cable (straight cable))
(3) Personal computer (IP: 192.168.3.1)
(4) Hub

Setup procedures

1. Personal computer
- Install Microsoft® Access 2010 (32-bit) on the personal computer.
- Set the IP address of a personal computer to '192.168.3.1'.

This setting can be configured on the "Internet Protocol (TCP/IP) Properties" screen.
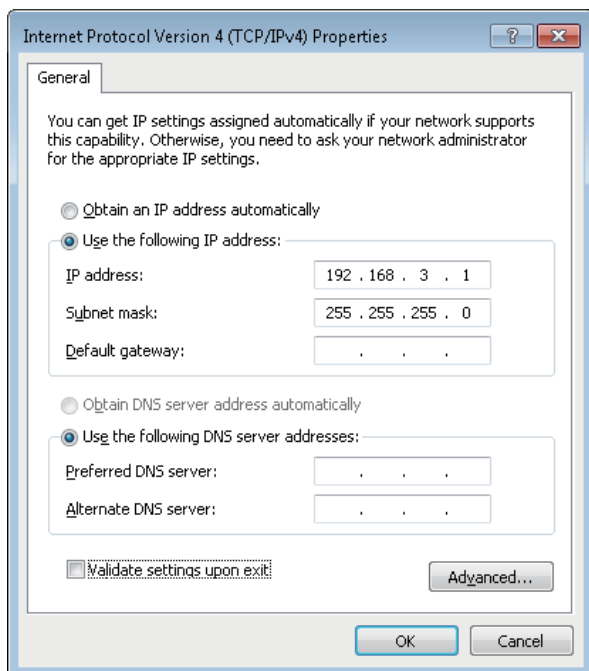
2. MES interface module (QJ71MES96)
- Mount the MES interface module on a slot other than the CPU slot on the base unit.
- Insert the CompactFlash card in the MES interface module CompactFlash card slot.
- The CompactFlash card is formatted using the format function of the MES Interface Function Configuration Tool.

Do not format the CompactFlash card with standard format commands of operating systems such as Windows®. If formatting it in Windows®, reformat by following the instructions in the CompactFlash card manual.

3. Programmable controller CPU

Write the following sequence program which simulates a metal parts manufacturing line, into the programmable controller CPU.

```
Manufacturing code setting
        SM402
  0    ─┤ ├─────────────────────────────────────────────[MOV    K2       D100   ]

Stop operation when pecified number of
modules manufactured is reached
 18   ─[>=    D0      D200   ]────────────────────────────────────────[GO END   ]

Generate a signal at intervals of 10 seconds
        SM400                                                          K50
 61    ─┤ ├───────────────────────────────────────────────────────────(T0      )

        T0
 90    ─┤ ├───────────────────────────────────────────[FF      M0      ]
           │
           └───────────────────────────────────────────[RST     T0      ]

Generate a serial number
        M0
 97    ─┤↑├───────────────────────────────────────────[INC     D0      ]
           │
           ├──────────────────────────[+       D0      K2000   D2      ]
           │
           ├─────────────────────────────────[BINDA   D2      D300    ]
           │
           └─────────────────────────────────[MOV     D202    D300    ]

Take weight measurements(emulation)
        M0
123    ─┤↑├───────────────────────────────────────────[RND     D10     ]
           │
           ├──────────────────────────[/       D10     K30     D11     ]
           │
           └──────────────────────────[+       K490    D12     D400    ]

153   ───────────────────────────────────────────────[END     ]
```
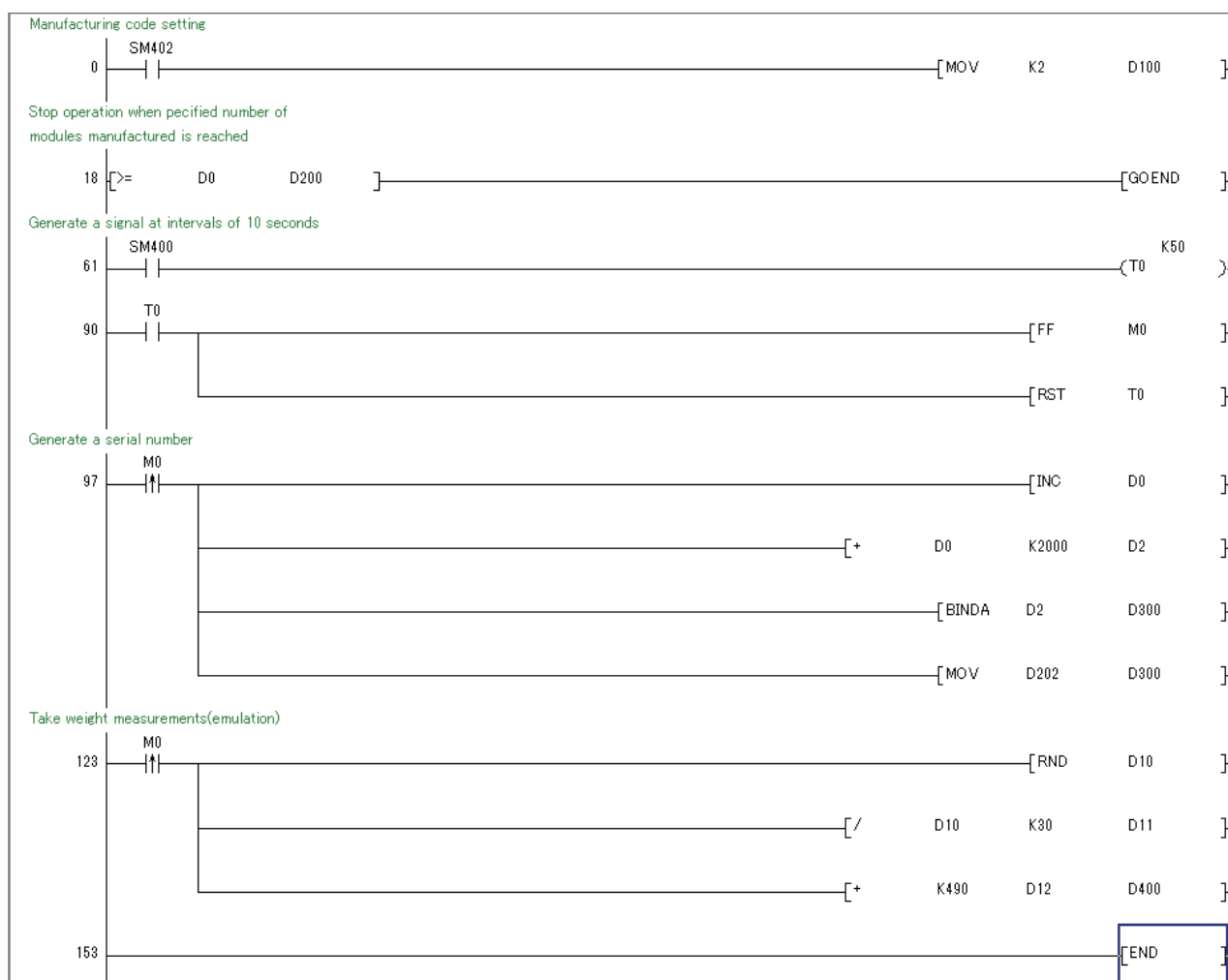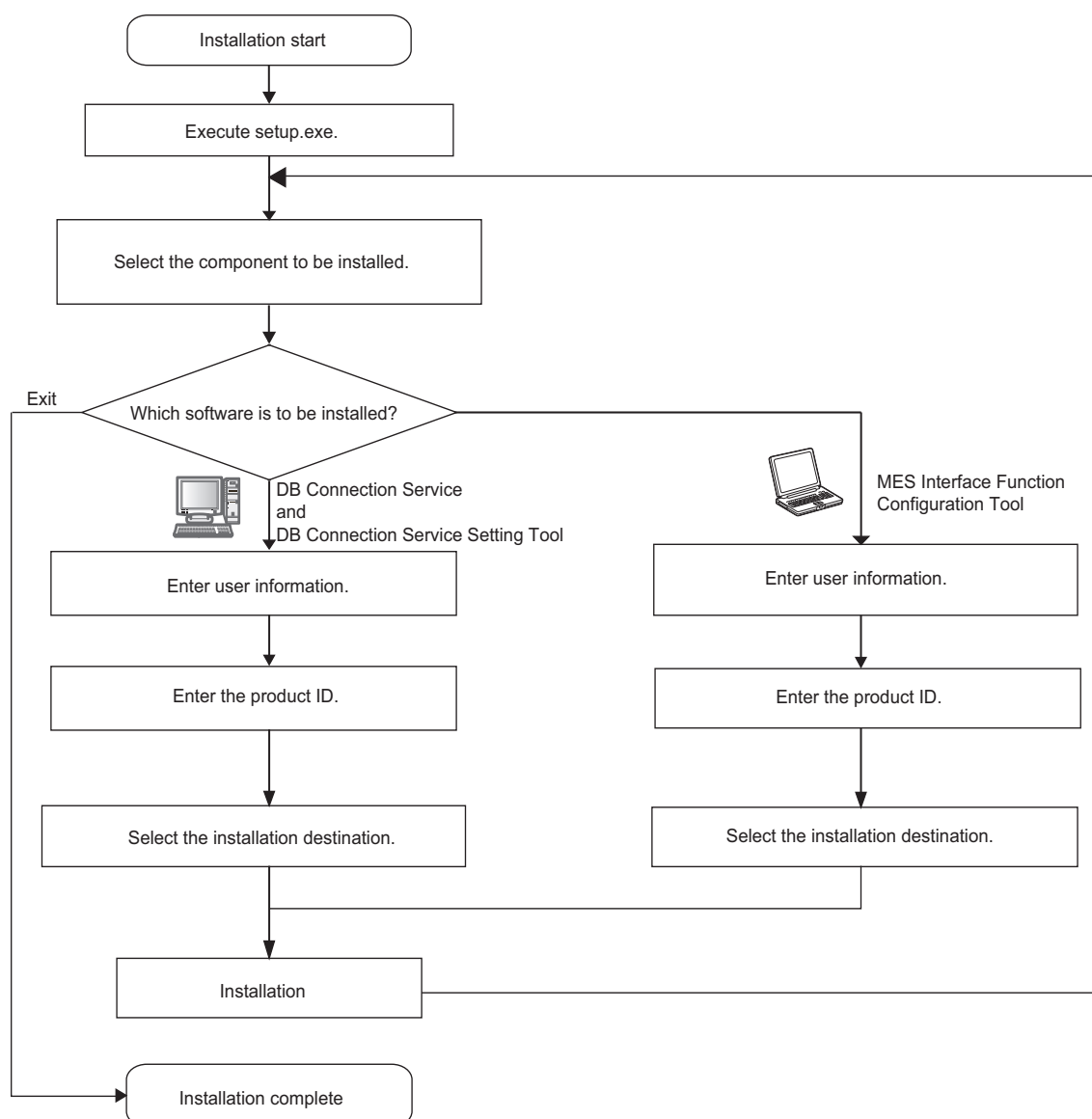
5 SOFTWARE INSTALLATION

This section explains how to install MX MESInterface function configuration software in each operating environment.
In this guide, the method when using Microsoft® Windows® 7 Professional Operating System is explained. When using other operating systems (OS), refer to the following manual.
📖 MES Interface Module User's Manual

5.1 Installation

This section explains how to install MX MESInterface.

MX MESInterface installation procedure

```
          ┌─────────────────────────┐
          │   Installation start    │
          └─────────────────────────┘
                       │
          ┌─────────────────────────┐
          │   Execute setup.exe.     │
          └─────────────────────────┘
                       │
          ┌─────────────────────────────────┐
          │ Select the component to be installed. │
          └─────────────────────────────────┘
                       │
      Exit      ◇ Which software is to be installed? ◇
                       │                              │
      DB Connection Service                  MES Interface Function
      and                                    Configuration Tool
      DB Connection Service Setting Tool
          ┌─────────────────────┐           ┌─────────────────────┐
          │ Enter user information. │        │ Enter user information. │
          └─────────────────────┘           └─────────────────────┘
                       │                              │
          ┌─────────────────────┐           ┌─────────────────────┐
          │  Enter the product ID. │         │  Enter the product ID. │
          └─────────────────────┘           └─────────────────────┘
                       │                              │
          ┌───────────────────────────────┐ ┌───────────────────────────────┐
          │ Select the installation destination. │ │ Select the installation destination. │
          └───────────────────────────────┘ └───────────────────────────────┘
                       │
          ┌─────────────────────┐
          │     Installation     │
          └─────────────────────┘
                       │
          ┌─────────────────────────┐
          │  Installation complete  │
          └─────────────────────────┘
```

> **Point**
>
> If a confirmation message for overwriting DLL files is displayed at installation, click the [Yes] button and overwrite the DLL files.
> Not overwriting the DLLs may fail to execute MX MESInterface correctly.

MX MESInterface installation

Note the following when installing MX MESInterface:

- When installing MX MESInterface, log on as a user with Administrator authority.
- Before installing MX MESInterface, close any other applications running on Windows®.
- Updates for the OS or software from other companies, such as Windows® Update or java update, automatically restart the computer and in some cases, the installer will not operate normally. Install the software after changing the settings so that updates do not automatically restart the computer.
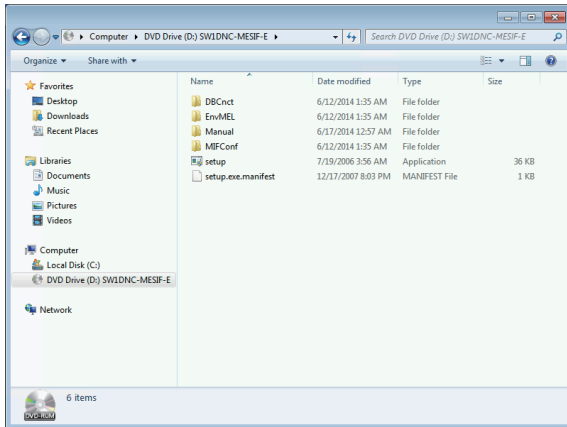
1. Start Windows Explorer, then click the drive in which the CD-ROM is loaded.

☞ Double-click "SETUP.exe". To display Windows Explorer, right-click [Start], then select [Explorer].
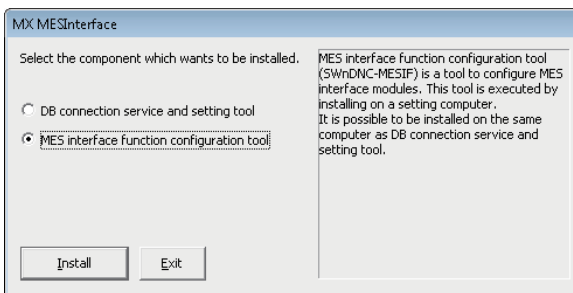
2. The dialog box for selecting the component to be installed is displayed.

☞ Select the component to be installed with the radio button, then click the [Install] button.
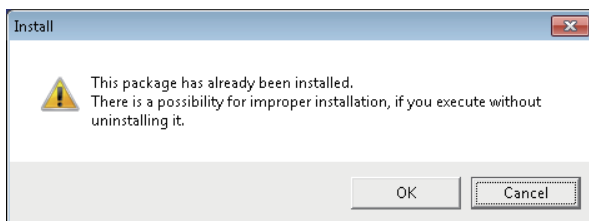
- If the left message appears, click the [Cancel] button and after uninstalling MX MESInterface, install this product.
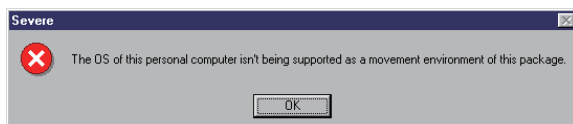
- If the left message appears, install this product on a computer to which the supported operating system (OS) is installed.
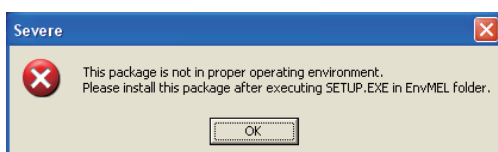
- If the left message appears, execute \EnvMEL\Setup.exe in the CD-ROM for this product.
  After executing Setup.exe, install this product. If the product is not installed correctly, restart the personal computer.
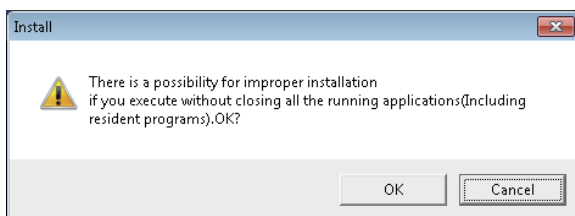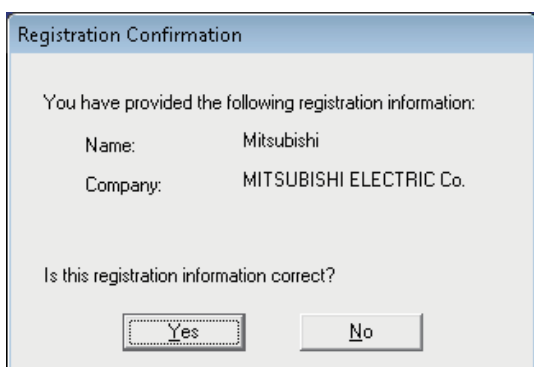
3. The left screen appears. Check that all applications have been closed, then click the [OK] button.
If any applications are running, close them all.
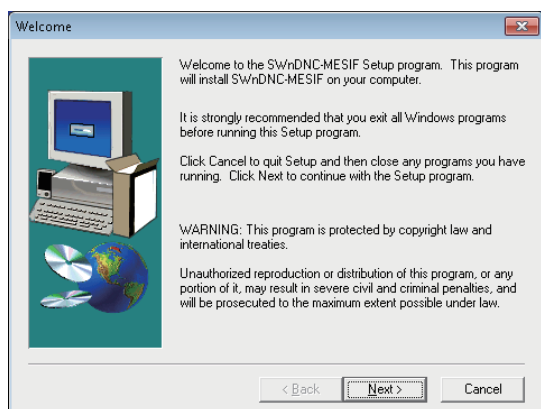
4. Setup starts.
The left screen appears. Check the description, then click the [Next] button.
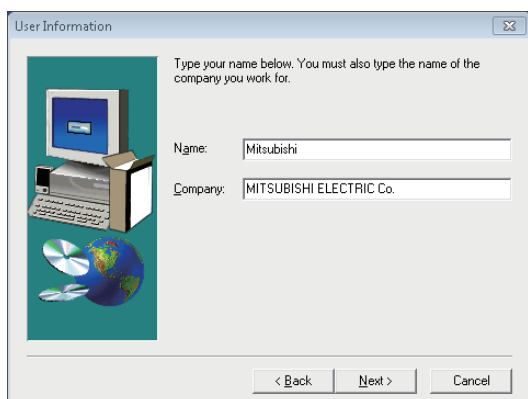
5. Enter a user name and company name, then click the [Next] button.
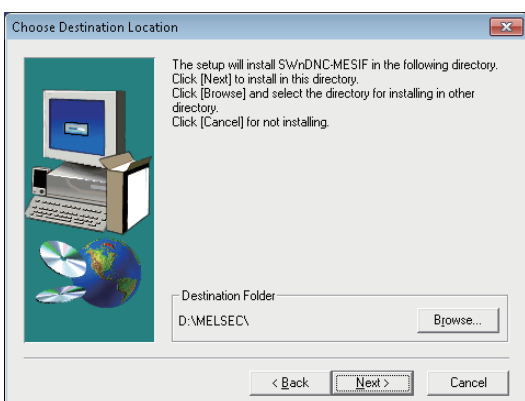

6. Check the user name and company name registered. If the registration contents are correct, click the [Yes] button. When changing the registration contents, click the [No] button to return to the previous screen.
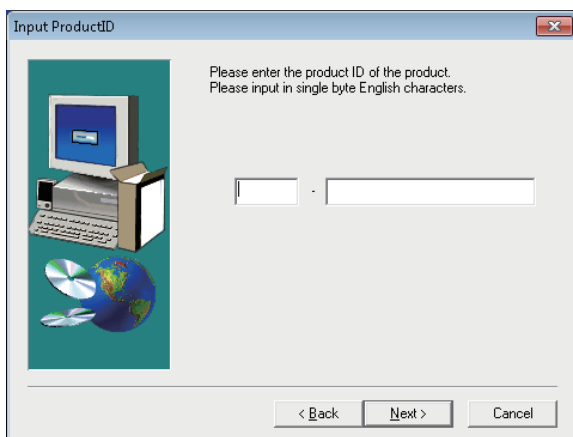
7. Register the product ID.
Enter the product ID, then click the [Next] button. The product ID is shown on the software registration card included in the product.
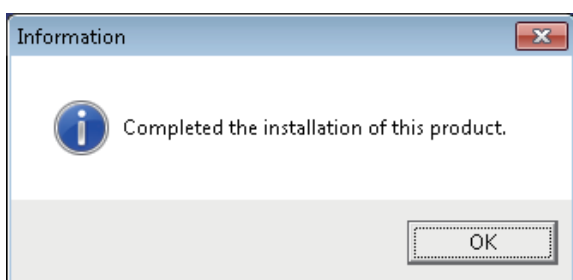
**8.** Specify the folder for installation destination.
When using the default folder, click the [Next] button. To change the folder, click the [Browse] button, then specify the drive and folder for installation destination.

Point

Up to 100 characters including '\MESIF' can be used for the installation destination.

9. When the left screen appears, installation is complete. Click the [OK] button.
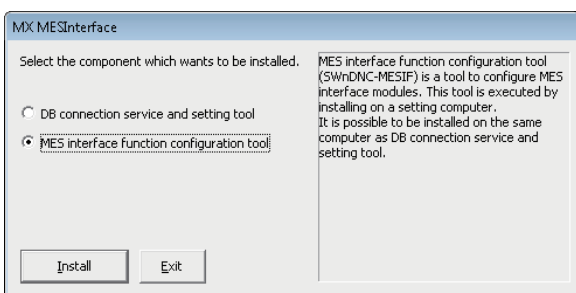
10. The dialog box for selecting the component to be installed is displayed.
When installing the other software, select the component to be installed with the radio button, then click the [Install] button.
When the installation is complete, click the [Exit] button.

Point

After installing MES Interface Function Configuration Tool and DB Connection Service Setting Tool, the icons are registered in the start menu.

6 CREATING A DATABASE TABLE

Before setting the ODBC setting and MES interface function setting, create two types of database table in Microsoft® Access® 2010.
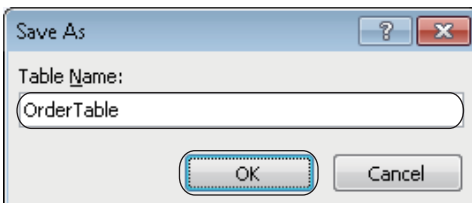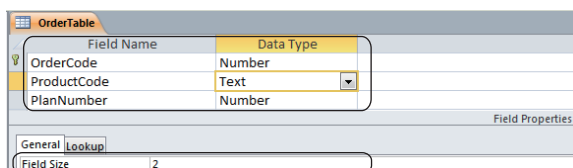
6.1 OrderTable Creation
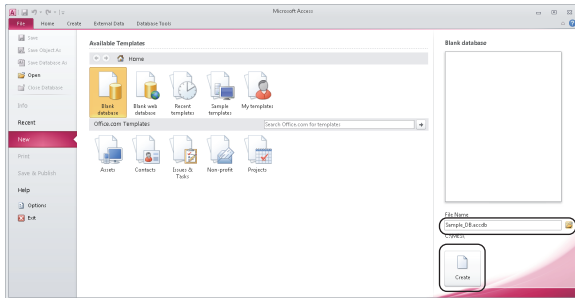
1. Start [Microsoft Access 2010] from Windows® Start.

2. Select "New" on the [File] tab and enter 'Sample_DB.accdb' in the "File Name", then click the [Create] button.
In the operation example, the save location is 'C:\MES\'.
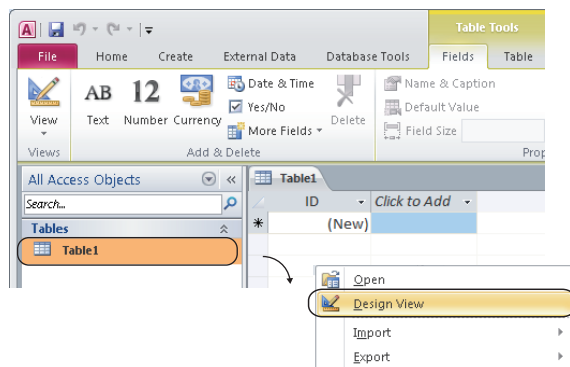
3. Right-click "Table 1" in the [Tables] and select [Design View] from the shortcut menu.
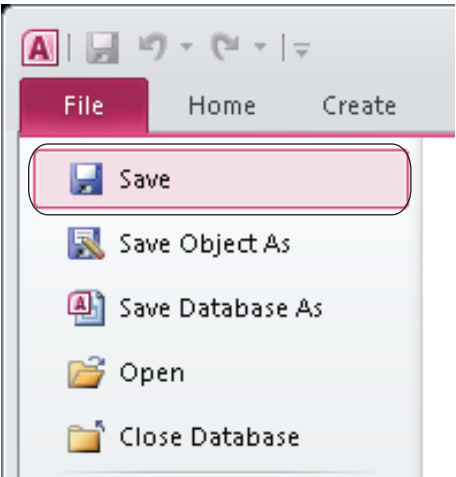
4. Enter 'OrderTable' in the "Table Name" and click the [OK] button.

5. Set each setting item on the [OrderTable] tab and the [General] tab according to the following table.

Field Name	Data Type	Field Size
OrderCode	Number	Integer
ProductCode	Text	2
PlanNumber	Number	Integer

6. Select "Save" on the [File] tab.

7. Right-click "OrderTable" in the [Tables] and select [Open] from the shortcut menu.
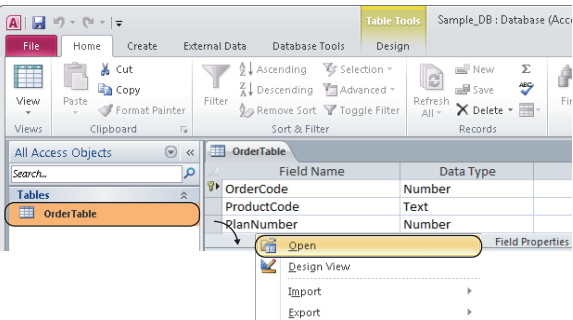
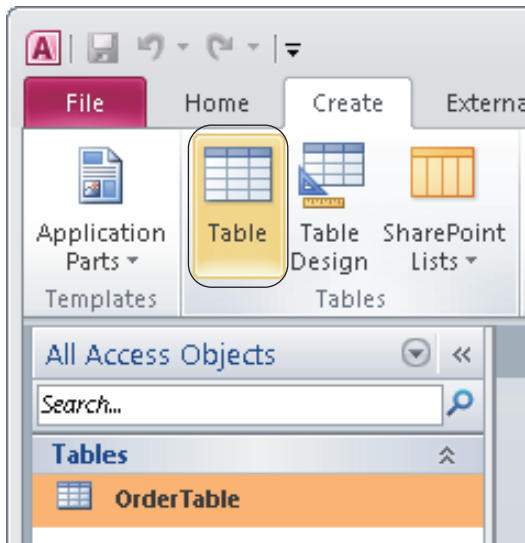**8.** Set each setting item on the [OrderTable] tab according to the following table.

OrderCode	ProductCode	PlanNumber
1	EN	20
2	US	35
3	CN	25

6.2 History Creation

Create a table in the same way as OrderTable.

1. Click "Table" on the [Create] tab.

2. Right-click "Table 1" in the [Tables] and select [Design View] from the shortcut menu.
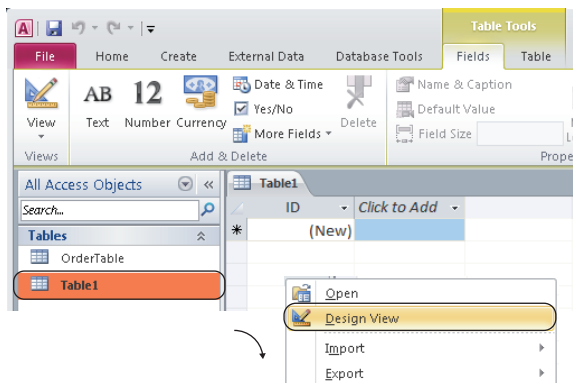
3. Enter 'History' in the "Table Name" and click the [OK] button.
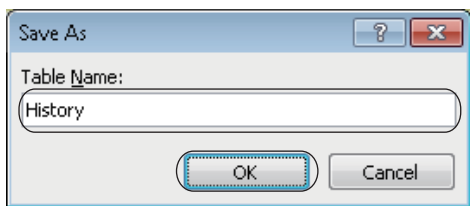
4. Set each setting item on the [History] tab and the [General] tab according to the following table.
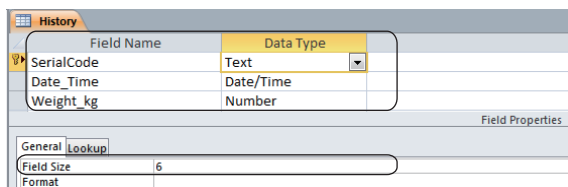
Field Name	Data Type	Field Size
SerialCode	Text	6
Date_Time	Date/Time	—
Weight_kg	Number	Single

5. Select "Save" on the [File] tab and end the database table setting.

7 ODBC SETTING

Set the ODBC setting before setting parameters with MES Interface Function Configuration Tool. This section explains the setting method for the following operating system (OS) and relational databases.

- Operating system (OS): Microsoft® Windows® 7 Professional Operating System
- Relational database: Microsoft® Access 2010 (32-bit)

When using other operating systems (OS) or relational databases, refer to the following manual.

📖 MES Interface Module User's Manual

ODBC setting procedure
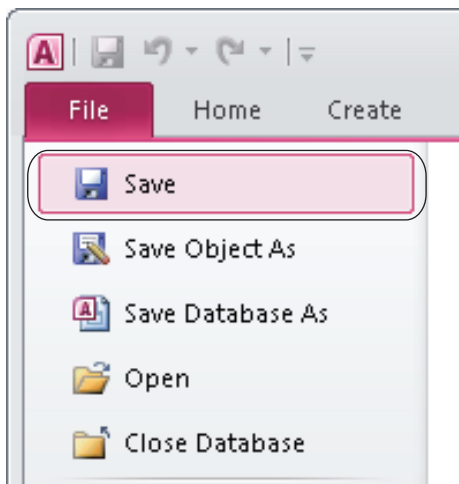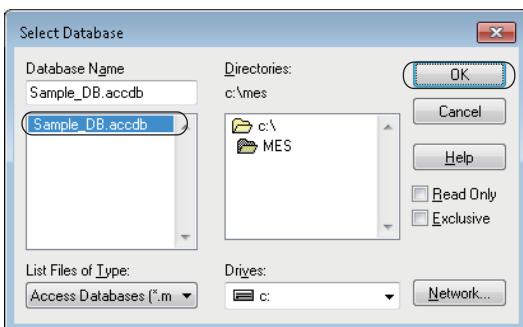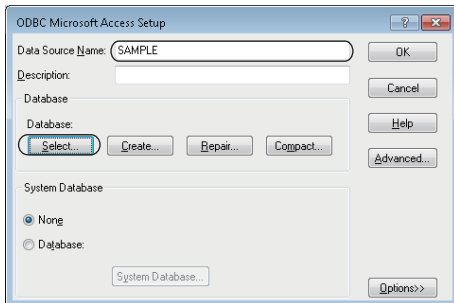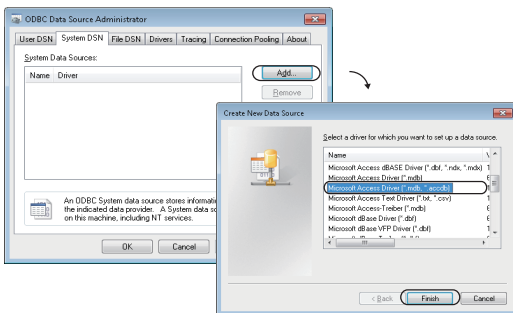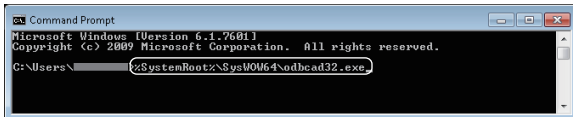

1. Start the ODBC Data Source Administrator.

Enter the following in the command prompt.

- %SystemRoot%\SysWOW64\odbcad32.exe

2. Select the [System DSN] tab, and click the [Add] button.

3. Select "Microsoft Access Driver (*.mdb, *.accdb)" and click the [Finish] button.

4. Enter 'SAMPLE' in the "Data Source Name" and click the [Select] button in the "Database".

> *Point*
>
> Any data source name can be set.
> The name set above is used for the data source name in the "Server service settings".

5. Select 'Sample_DB.accdb' in the "Database Name" and click the [OK] button.

> *Point*
>
> The database name is for accessing to Access® database.
> Specify a save destination for the created database tables.
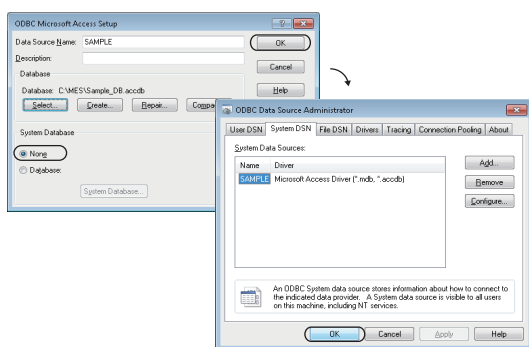
6. Select "None" in the "System Database" and click the [OK] button.

7. Click the [OK] button on the "ODBC Data Source Administrator" screen to complete the ODBC setting.

8 MES INTERFACE FUNCTION CONFIGURATION

8.1 General Description

This section explains the procedure for specifying parameters using the MES Interface Function Configuration Tool. Table below lists the parameters to be specified.

- System setting
- Access target CPU settings
- Device tag settings
- Server service settings
- Job settings

8.2 Specifying Parameters

1. Start the MES Interface Function Configuration Tool.

☞ Select [MELSOFT][2] ⇨ [MESInterface] ⇨ [MELSEC-Q series MES interface function configuration tool][3] from Windows® Start[1].

*1 Select [All apps] on the Start screen or [Start] ⇨ [All Programs].
*2 When the MX MESInterface (version 1.12N or earlier) is installed, select [MELSOFT Application].
*3 When the MX MESInterface (version 1.12N or earlier) is installed, [MES interface function configuration tool] is displayed.

2. "System setting" and "Access target CPU settings" need not be established because they take default settings.

3. Set the device tag setting.

☞ Select "Device tag settings", and click the [Add] button.
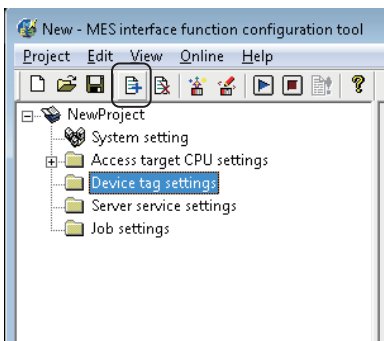
4. Enter 'GettingData' to "Device tag name", and specify parameters as shown below.
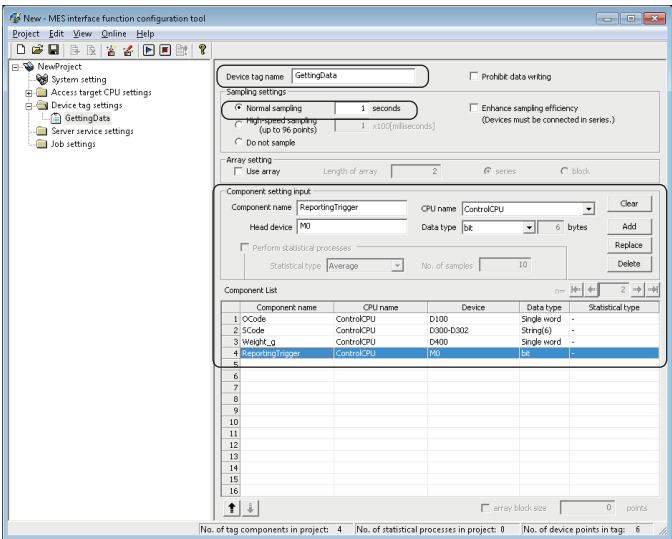
- Device tag name: GettingData
- Sampling settings: Normal sampling, 1 second
- Component setting input

Component name	CPU name	Device	Data type	Statistical type
OCode	ControlCPU	D100	Single word	—
SCode	ControlCPU	D300-D302	String, 6 characters	—
Weight_g	ControlCPU	D400	Single word	—
ReportingTrigger	ControlCPU	M0	Bit	—

5. Specify another device tag setting.

Select "Device tag settings", and click the [Add] button.
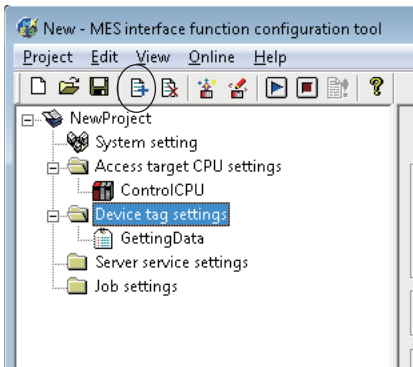
6. Enter 'PuttingData' to "Device tag name", and specify parameters as shown below.
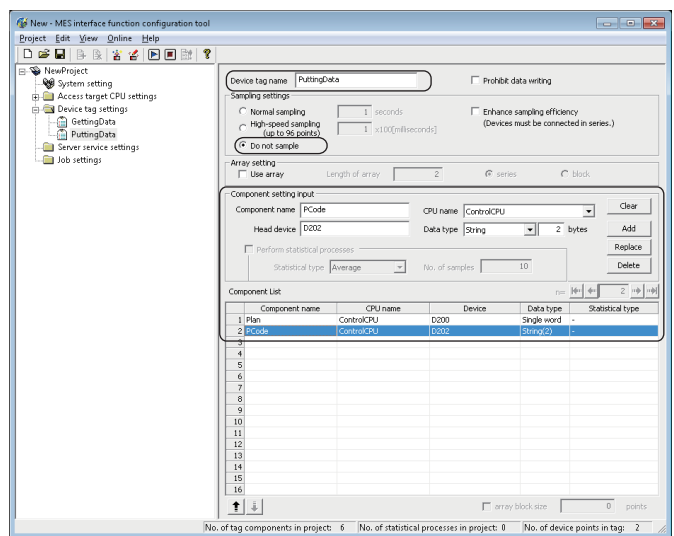
- Device tag name: PuttingData
- Sampling settings: Do not sample
- Component setting input

Component name	CPU name	Device	Data type	Statistical type
Plan	ControlCPU	D200	Single word	—
PCode	ControlCPU	D202	String, 2 characters	—

7. Set the server service setting.

Select "Server service settings", and click the [Add] button.
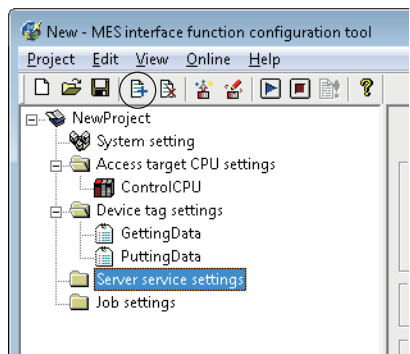
8. Enter 'SampleServer' to "Server service name", and specify parameters as shown below.

Setting item	Setting description
Server service name	SampleServer
Server type	Database server
IP address	192.168.3.1
Port No. (1024 to 65535)	5112
User name	—
Password	—
Confirm password	—
Data source name	SAMPLE
Database type	Access 2003/2007/2010/2013
Communication timeout (1 to 180)	10

9. Set the job setting.

Select "Job settings", and click the [Add] button.
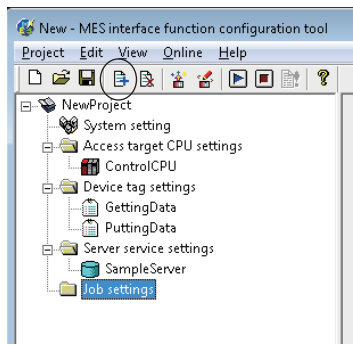
10. Enter 'GettingPlan' to "Job name", and specify trigger conditions as shown below.
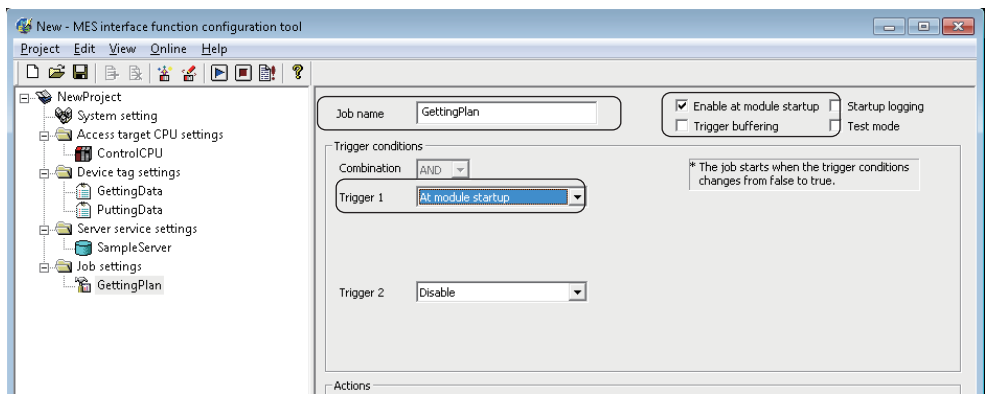
Setting item	Setting description
Job name	GettingPlan
Enable at module startup	Selected
Trigger buffering	Unselected
Trigger conditions	Trigger 1: At module startup

11. Next, specify an action.

☞ Select "Communication action", and click the [Add] button.
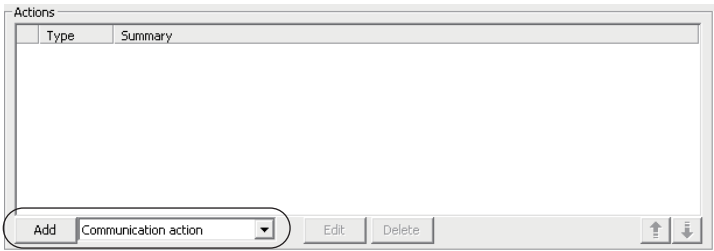
12. Select "Select" in the "Action type", and specify parameters for the communication action as shown below.
(Default setting is acceptable for the exception processing settings.)

An SQL text to send to the database is automatically created after setting parameters.

A created SQL text can be checked in "Generated SQL text" on the "Communication action" screen.

Configure the settings as follows:
- Action type: Select
- Table name: OrderTable
- DB-tag link settings

Field name	Tag/Type	Component
ProductCode	PuttingData	PCode
PlanNumber	PuttingData	Plan

- Select/Update/Delete conditions

Field name	Condition	Tag/Type	Component
OrderCode	=	GettingData	OCode

13. Specify another job setting.

Select "Job settings", and click the [Add] button.
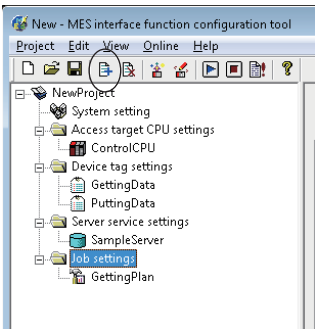
14. Enter 'Reporting' to "Job name", and specify trigger conditions as shown below.
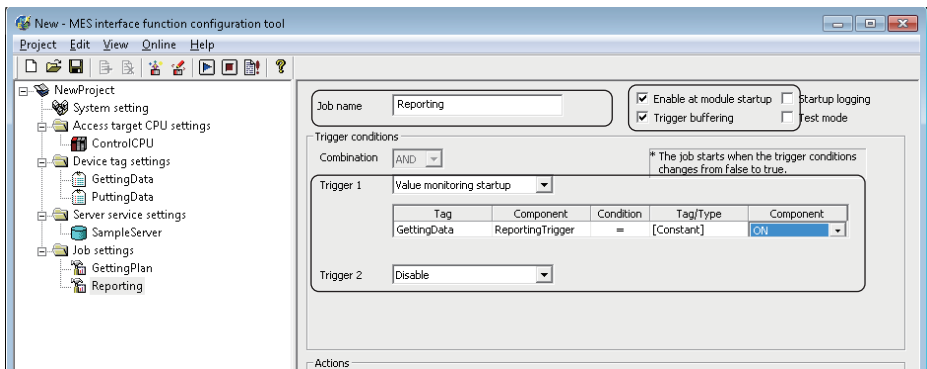
Setting item	Setting description
Job name	Reporting
Enable at module startup	Selected
Trigger buffering	Selected
Trigger conditions	Trigger 1: Value monitoring startup

Set the trigger 1 as shown below.

Tag	Component	Condition	Tag/Type	Component
GettingData	ReportingTrigger	=	[Constant]	ON

15. Next, specify an action.

☞ Select "Operation action", and click the [Add] button.

8
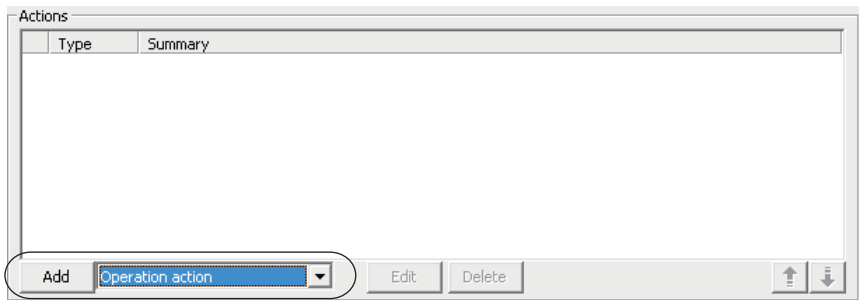
16. Set the operation action as shown below.

Setting item	Substitution tag	Component	Operation tag	Component	Operator	Operation tag	Component
Operation action	[Variable]	Conversion	GettingData	Weight_g	/	[Number]	1000

17. Specify another action.

Select "Communication action", and click the [Add] button.

18. Select "Insert" in the "Action type", and specify parameters for the communication action as shown below.

An SQL text to send to the database is automatically created after setting parameters.

A created SQL text can be checked in "Generated SQL text" on the "Communication action" screen.
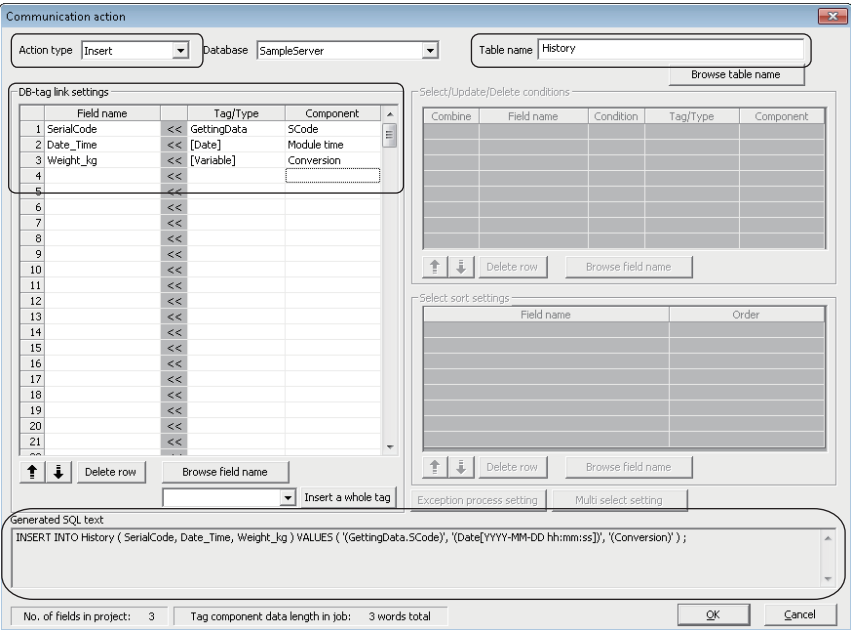
- Action type: Insert
- Table name: History
- DB-tag link settings

Field name	Tag/Type	Component
SerialCode	GettingData	SCode
Date_Time	[Date]	Module time
Weight_kg	[Variable]	Conversion

19. Upon the completion of the setting operation, save associated parameters.

☜ Select [Project] ⇨ [Save As].
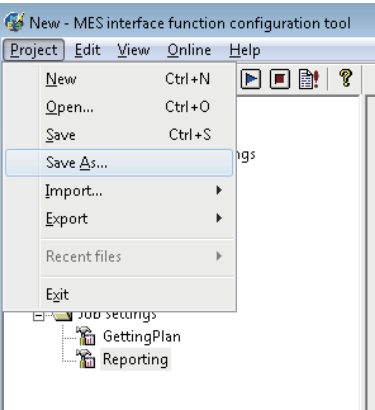
20. Enter 'Sample_Config' to "File name", and save the project.
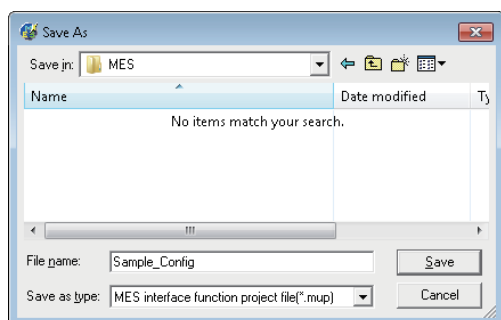
21. Select [Online] ⇨ [Remote operation].

22. When the "Transfer setup" screen appears, enter the IP address, user name, and password, then click the [OK] button. Default settings are as follows:

Setting item	Setting description
IP address	192.168.3.3
User name	QJ71MES96
Password	MITSUBISHI
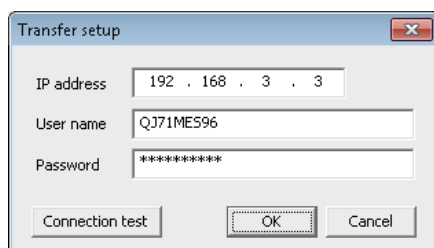
23. Select "Format" for "CompactFlash card operation", and click the [Execute] button to format the CompactFlash card.

Point

When formatting the CompactFlash card, all the data is deleted.
Back up required data before formatting the CompactFlash card.
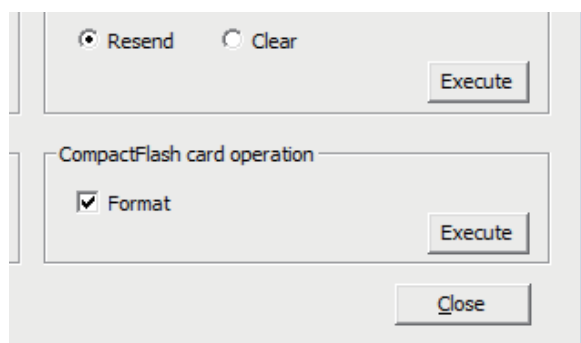
24. Once formatting is complete, click the [Close] button and close the "Remote operation" screen. Turn the power of the programmable controller CPU from OFF to ON and restart the MES interface module.

8.3 Operational Check

The following shows the writing procedure of parameters to the MES interface module and checking procedure of the writing result to a DB table.

Writing parameters to QJ71MES96 module

1. Select [Online] ⇨ [Write] to write parameter settings.
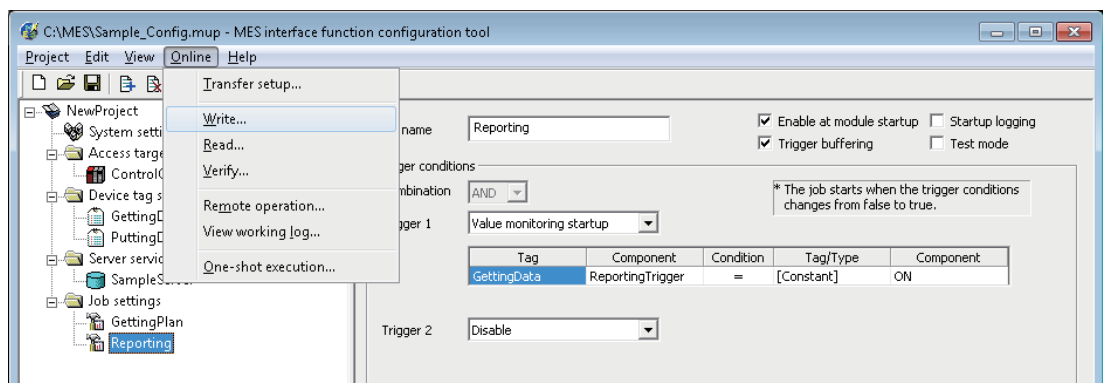
2. When the "Transfer setup" screen appears, enter a user name and password, and click the [OK] button.

Default settings are as follows:

Setting item	Setting description
User name	QJ71MES96
Password	MITSUBISHI
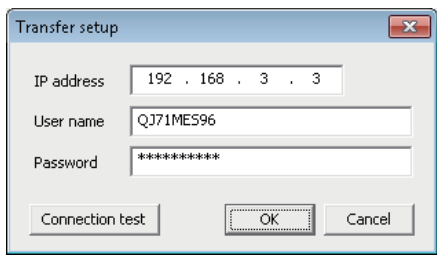
3. After completing the writing, reset the programmable controller CPU and start the QJ71MES96 module.

After resetting the programmable controller CPU , turn the status to RUN.

4. The parameters are written to the database automatically after starting the QJ71MES96 module .

Checking data written into DB table
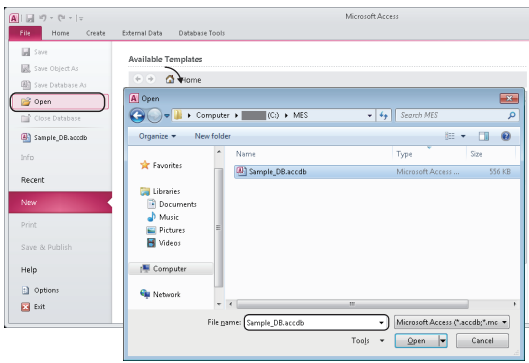
1. Select "Open" in Microsoft® Access® 2010 and open the "Sample_DB.accdb" file ("C:\MES\Sample_DB.accdb").
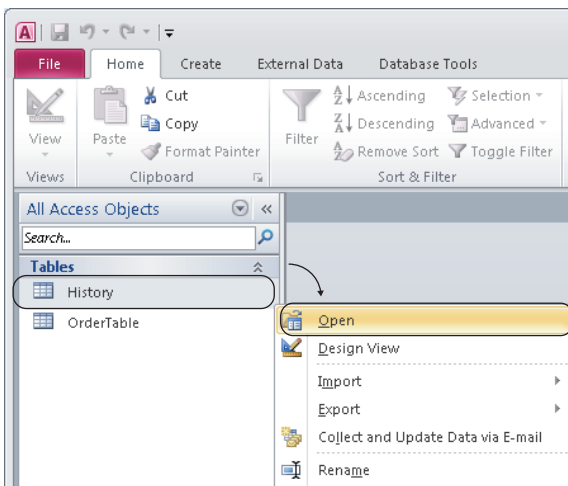
2. Right-click "History" in the [Tables] and select [Open] from the shortcut menu.

| History | | |
SerialCode	Date_Time	Weight_kg
US2001	1/5/2016 10:56:17 AM	0.491
US2002	1/5/2016 10:56:27 AM	0.508
US2003	1/5/2016 10:56:37 AM	0.511
US2004	1/5/2016 10:56:47 AM	0.5
US2005	1/5/2016 10:56:57 AM	0.505
US2006	1/5/2016 10:57:07 AM	0.496
US2007	1/5/2016 10:57:17 AM	0.503
US2008	1/5/2016 10:57:27 AM	0.496
US2009	1/5/2016 10:57:37 AM	0.505
US2010	1/5/2016 10:57:47 AM	0.5
US2011	1/5/2016 10:57:57 AM	0.511
US2012	1/5/2016 10:58:07 AM	0.508
US2013	1/5/2016 10:58:17 AM	0.491
US2014	1/5/2016 10:58:27 AM	0.49
US2015	1/5/2016 10:58:37 AM	0.505
US2016	1/5/2016 10:58:47 AM	0.506
US2017	1/5/2016 10:58:57 AM	0.515
US2018	1/5/2016 10:59:07 AM	0.518
US2019	1/5/2016 10:59:17 AM	0.507
US2020	1/5/2016 10:59:27 AM	0.512
US2021	1/5/2016 10:59:37 AM	0.503
US2022	1/5/2016 10:59:47 AM	0.51
US2023	1/5/2016 10:59:57 AM	0.503
US2024	1/5/2016 11:00:07 AM	0.504
US2025	1/5/2016 11:00:17 AM	0.499
US2026	1/5/2016 11:00:27 AM	0.51
US2027	1/5/2016 11:00:37 AM	0.507
US2028	1/5/2016 11:00:47 AM	0.49
US2029	1/5/2016 11:00:57 AM	0.511
US2030	1/5/2016 11:01:07 AM	0.496
US2031	1/5/2016 11:01:17 AM	0.497
US2032	1/5/2016 11:01:27 AM	0.514
US2033	1/5/2016 11:01:37 AM	0.509
US2034	1/5/2016 11:01:47 AM	0.498
US2035	1/5/2016 11:01:57 AM	0.503
*		

3. The result (manufacturing information), which is inserted to a history table from MES interface module, can be checked.

8

9 FAQs

9.1 Troubleshooting by Symptom

When using MES Interface Function Configuration Tool

This section explains troubleshooting information on the setting of MES Interface Function Configuration Tool.

Common to all settings

Symptom	Checked item	Corrective action
Unable to connect MES Interface Function Configuration Tool to the MES interface module.	Is there any disconnection in the connection route?	• Connect the cables properly.
	Is the IP address setting correct?	• Review the IP address setting.
	Is the user name and password setting correct?	• Review the user name and password setting.
	Is the IP address duplicated?	• Review the IP address setting.
	Is there a firewall and/or a proxy server in the connection route?	• Consult your network administrator about the firewall setting and/or the setting contents of the proxy server.
	Is the MES interface module connected to the network? (Network connection status (X4) = ON)	• Connect the MES interface module to the network.
	Is it in "Online" mode?	• Change the mode to "Online".
	Is there any problem on the personal computer?	• Replace it with another personal computer.
MES Interface Function Configuration Tool does not start.	Have five MES Interface Function Configuration Tools already started?	• Up to five MES Interface Function Configuration Tools can be started in a personal computer. • Terminate the other MES Interface Function Configuration Tools and then start it.
	Is the memory or the system resources on the personal computer sufficient?	• Increase the necessary memory on the personal computer. • Close other programs and restart MES Interface Function Configuration Tool.
The screen of MES Interface Function Configuration Tool is not displayed correctly.	Is the memory or the system resources on the personal computer sufficient?	• Increase the necessary memory on the personal computer. • Close other programs and restart MES Interface Function Configuration Tool.
Cannot operate MES Interface Function Configuration Tool.		
Forced to terminate MES Interface Function Configuration Tool.		
Unable to import a project file.	The specified project file is incorrect or corrupted.	• Specify a correct project file.
	Is there any inconsistency in the setting?	• Review the setting and correct it if any.
	Did the number of settings exceed the upper limit?	• Review the number of settings.
Unable to import a CSV file.	Is the CSV file description correct?	• Review the CSV file description.
	Is there any inconsistency in the setting?	• Review the setting and correct it if any.
	Did the number of settings exceed the upper limit?	• Review the number of settings.
"Device tag name" is not displayed for the setting item by which data are written to a tag.	Is the tag set to data-write-disabled?	• Set the tag to data-write-enabled.
All the text is not displayed in a table. (The text display is truncated.)	Is the column to narrow?	• Adjust the column width of the table.
The MESInterface folder in Start menu is not deleted behind the uninstallation.	Is the MESInterface folder empty?	• Delete the MESInterface folder manually.

System setting

Symptom	Checked item	Corrective action
A desired device tag name is not displayed in "DB buffering settings".	Is the tag set to data-write-disabled?	• Set the tag to data-write-enabled.

Access target CPU settings

Symptom	Checked item	Corrective action
Unable to change or delete an item in "Access target CPU settings".	Is it the first item?	• Since the control CPU is set as the first item, deletion or setting change is not allowed for it. (Only the CPU name can be changed.) • If it is any item other than the first one, change the item or add an item.
	Is the selected item used in "Device tag settings"?	• An item used for another item is unable to be deleted. • As the error dialog box appears, identify the location, stop using it for another item, and then delete the item.

Device tag settings

Symptom	Checked item	Corrective action
Unable to change or delete an item in "Device tag settings".	Is the selected item used in "Job settings"?	• An item used for another item is unable to be deleted. • As the error dialog box appears, identify the location, stop using it for another item, and then delete the item.
	Is the selected item used in "DB buffering settings" of "System setting"?	
	Is the selected item used in "Access error notification setting" of "Server service settings"?	
Unable to set or change "Device tag name".	Is the same name used for "Server service name" or another "Device tag name"?	• Because a unique name must be used for "Server service name" and "Device tag name", use a different name.
Unable to select "High-speed sampling".	Is "High-speed sampling" selected in another "Device tag settings"?	• Registration of "High-speed sampling" is limited to one tag only. • Unselect "High-speed sampling" in "Device tag settings".
	Is any other than the first item (Control CPU) in "Access target CPU settings" selected in "CPU name" in "Component setting input"?	• If "High-speed sampling" is selected, only the first item in "Access target CPU settings" (Control CPU) can be selected for the tag component. • Delete the component setting with selection of any other than the first item, or change the setting so that the first item will be used for it.
	Is the number of device points set in the tag setting more than 96?	• Reduce the number of device points in the tag setting to 96 or less. • hen "High-speed sampling" is selected, set tag component devices within the total of 96 points.
Unable to change the "Prohibit data writing" setting.	Is the tag used for a setting item by which data are written to the tag? • "Completion notification" of "Handshake operation", and substitution tags for "Select" on the "Communication action" screen	• If the tag is used for a setting item by which data are written to the tag, "Prohibit data writing" cannot be unselected. • Stop using the tag for the setting item by which data are written to the tag, before changing the setting.

Server service settings

Symptom	Checked item	Corrective action
Unable to set or change "Server service name".	Is the same name used for another "Server service name" or "Device tag name"?	• Because a unique name must be used for "Server service name" and "Device tag name", use a different name.
Unable to change "Server type".	Is the "Server service name" same as the existing one?	• Review the server service name.
A desired device tag name is not displayed in "Access error notification setting".	Is the tag set to data-write-disabled?	• Set the tag to data-write-enabled.

Job settings

Symptom	Checked item	Corrective action
Unable to set "DB buffering settings".	Is there any Select action set for the job?	• Do not use Select actions in the job where DB buffering is enabled. • The DB buffering is not available for jobs performing Select actions.
Unable to set a new variable.	Are there 64 variables that were already defined in the job?	• Delete any unnecessary variable settings of the job. • Up to 64 variables can be set for one job.
Unable to select "Trigger 2" in "Trigger conditions".	Is "Handshake operation" selected for "Trigger 1"?	• When "Handshake operation" is selected, selection is not allowed for "Trigger 2". • Select any other than "Handshake operation" for "Trigger 1".
A desired device tag name is not displayed in "Completion notification" of "Handshake operation".	Is the tag set to data-write-disabled?	• Set the tag to data-write-enabled.
A desired device tag name for "Select" is not displayed in "DB-tag link settings" on the "Communication action" screen.		
A desired device tag name for "Exception processing" is not displayed on the "Communication action" screen.		
A desired device tag name is not displayed in "Substitution tag" on the "Operation action" screen.		
A desired device tag name is not displayed under "Notify errors (job cancellation) that occur during job execution".		
Unable to set the settings in "Exception processing" on the "Communication action" screen.	Is the DB buffering enabled?	• Disable the DB buffering.
	Is "Insert", or "Stored procedure" set for "Action type"?	• Set any other than "Insert" and "Stored procedure" for "Action type".

Online

Symptom	Checked item	Corrective action
Unable to write a project to the MES interface module.	Is the total number of fields in the project more than 8192?	• Up to 8192 fields can be set within one project. • Delete any unnecessary field settings.
Failed in online operation.	Is the IP address set in [Online] ⇨ [Transfer setup] correct?	• Select [Online] ⇨ [Transfer setup], and review the setting. • Perform the online operation for the MES interface module selected from [Online] ⇨ [Transfer setup].
	Send a PING request from the configuration personal computer to the IP address of the MES interface module. Is there a response?	• If no response is returned, check if the module is powered up or if the network is properly connected.
	Has the account set in [Online] ⇨ [Transfer setup] been registered to the MES interface module?	• Select [Online] ⇨ [Transfer setup], and review the setting. • Specify the account that is registered in the MES interface module.
	Is the firewall function of the operating system or security software enabled on the configuration personal computer?	• Check the firewall setting.
Unable to select [Online] ⇨ [One-shot execution].	Was the job for one-shot execution selected?	• Select the job for one-shot execution, and then select [Online] ⇨ [One-shot execution].
Failed to perform [Online] ⇨ [One-shot execution].	During one-shot execution, was the power of the programmable controller turned OFF ⇨ ON, or was the programmable controller CPU reset?	• Write a project again and perform "Update settings".
	Has a communication error occurred during one-shot execution?	
	Is there any difference between the system settings being used on the MES interface module and the system settings of the MES Interface Function Configuration Tool?	• Set the same settings for the system settings being used on the MES interface module and the system settings of the MES Interface Function Configuration Tool.

Symptom	Checked item	Corrective action
Failed to format the CompactFlash card.	Check for an error code in "System monitor" of GX Works2.	• By the error code, check the error details and take corrective actions. • Format the CompactFlash card again.
	Is the MES interface module operation in the "Stop" state?	• Stop the MES interface module operation, and then execute formatting.
It takes time to write the settings to the MES interface module.	Is the MES interface module operation in the "Stop" state?	• Stop the MES interface module operation, and then write the settings.
The latest table name, field name, or procedure name is not displayed in the list displayed by clicking the [Browse table name], [Browse field name], or [Browse procedure name] button on the "Communication action" screen.	Is the information of the database updated while opening the "Communication action" screen?	• Click the [Browse table name], [Browse field name], or [Browse procedure name] button on the "Communication action" screen again. • Change the database on the "Communication action" screen, and click the [Browse table name] or [Browse procedure name] button again. • Change the database and the table name on the "Communication action" screen, and click the [Browse field name] button again.
	Is an inapplicable character used for the table name, field name, or stored procedure name?	• Change the table name, field name, or stored procedure name to the name which does not include an inapplicable character.
	Does the table name or field name name exceed 32 characters?	• Change the table name or field name to a name which does not exceed 32 characters.
	Does the stored procedure name exceed 32 characters?	• Change the stored procedure name to a name which does not exceed 32 characters.
	Is there a stored procedure whose arguments are more than 256?	• Change the arguments of the stored procedure to 256 or less.
	Are a large number of tables, fields, or stored procedures registered to the database?	• Set the DB access time much longer.
The table name/field name/procedure name cannot be browsed properly when [Browse table name]/[Browse field name]/[Browse procedure name] on the "Communication action" screen is executed.	Is there a response from the IP address of the server personal computer when a PING is sent from the configuration personal computer?	• If there is no response, check if the power of the server personal computer is ON, or the network connection status is correct.
	Is a personal computer restarted after installing relational database?	• Restart the personal computer.
	Is the port number set in "Service port" of DB Connection Service Setting Tool same as the one set in "Port No." in "Server service settings" of MES Interface Function Configuration Tool?	• Set the same value.
	Is the firewall function of the operating system or security software enabled on the configuration personal computer or server personal computer?	• Check the firewall setting.
	Is the port specified in "Service port" of DB Connection Service Setting Tool being used for the database or any other application?	• Change the port number to another that is not being used for the database or any other application.
	Has any Check Point software been installed in the server personal computer?	• Uninstall the Check Point software.
	Is the ODBC setting of the database correct?	• Review the ODBC setting of the database.
	Is "Limit IP addresses permit to connect" of DB Connection Service Setting Tool selected?	• If it is set, add the IP address of the configuration personal computer to "Permitted IP addresses list".
	[Browse table name] or [Browse field name] button Is the version of DB Connection Service 1.09K or later?	• When the installed software version is 1.08J or earlier, update the software.
	[Browse procedure name] button Is the version of DB Connection Service 1.10L or later?	• When the installed software version is 1.09K or earlier, update the software.
	Has the ODBC setting been changed after the table name, field name, or stored procedure name was successfully browsed?	• Restart MES Interface Function Configuration Tool, and then click the [Browse table name], [Browse field name], or [Browse procedure name] button.
Failed to acquire the return values and arguments when Stored procedure is selected on the "Stored procedure list" screen.	Is the information of the database updated while opening the "Communication action" screen?	• Change the database on the "Communication action" screen, and click the [Browse procedure name] button again.

Symptom	Checked item	Corrective action
The elements cannot be added on the tag setting screen. (Device range is incorrect.)	Was the device of RCPU which does not exist in the range of QCPU or C Controller module specified?	• Specify the device number within the range that can be specified in QCPU or C Controller module.

When using DB Connection Service Setting Tool

This section explains troubleshooting information on the setting of DB Connection Service Setting Tool.

Symptom	Checked item	Corrective action
Unable to start DB Connection Service Setting Tool.	Has another DB Connection Service Setting Tool been already started?	• Only one DB Connection Service Setting Tool can be activated. • Terminate the already started DB Connection Service Setting Tool.
	Is the memory or the system resources on the personal computer sufficient?	• Increase the necessary memory on the personal computer. • Close other programs and restart DB Connection Service Setting Tool.
	Is not the tool being installed, without uninstalling?	• Restart the personal computer.
The screen of DB Connection Service Setting Tool is not displayed correctly.	Is the memory or the system resources on the personal computer sufficient?	• Increase the necessary memory on the personal computer. • Close other programs and restart DB Connection Service Setting Tool.
Cannot operate DB Connection Service Setting Tool.		
Forced to terminate DB Connection Service Setting Tool.		
Unable to reflect the setting.	Was a user ID having the administrator authority used for the login?	• Log in again with a user ID having the administrator authority.
	Is there no permitted IP address?	• Clear the "Limit IP addresses permit to connect" checkbox, or add an IP address for which connection is permitted.
Unable to export a file.	Is there no permitted IP address?	• Clear the "Limit IP addresses permit to connect" checkbox, or add an IP address for which connection is permitted.
An access log output error is recorded in "Event Viewer" of "Administrative Tools" in Windows®.	Is the file set in "Output destination" read-only?	• Review the file specification.
	Is the access to the folder containing the file set in "Output destination" authorized?	• Check the right of access to the folder.
	Is the drive space of the server personal computer full?	• Check the free space on the drive.
An SQL failure log output error is recorded in "Event Viewer" of "Administrative Tools" in Windows®.	Is the file set in "Output destination" read-only?	• Review the file specification.
	Is the access to the folder containing the file set in "Output destination" authorized?	• Check the right of access to the folder.
	Is the drive space of the server personal computer full?	• Check the free space on the drive.
"The DBConnector service failed to start due to the following error: The system cannot find the file specified." is recorded in "Event Viewer" of "Administrative Tools" in Windows®.	Does the following file exist in the installing destination directory of DB Connection Service and DB Connection Service Setting Tool? "MESIF\DBConnector.exe"	• Uninstall DB Connection Service and DB Connection Service Setting Tool, and restart the personal computer before reinstallation.
	Is the personal computer restarted after uninstalling DB Connection Service and DB Connection Service Setting Tool?	
Oracle's data source driver is not located although "%SystemRoot%\SysWOW64\odbcad32.exe" was executed on 64-bit version Windows®.	Has the 32-bit version of Oracle Client been installed?	• Install the 32-bit version of Oracle Client, and then execute "%SystemRoot%\SysWOW64\odbcad32.exe" again.
The "MESInterface" folder in Start menu is not deleted behind the uninstallation.	Is the "MESInterface" folder empty?	• Delete the "MESInterface" folder manually.

When operating the MES interface module

This section shows the troubleshooting of problems that may arise during operation of the MES interface module.

Troubleshooting about LED indication and I/O signals

Symptom	Checked item	Corrective action
The RUN LED does not turn on.	Is the module in preparation?	• Wait for startup of the module.
	Is the Watchdog timer error (X1F) ON?	• If a watchdog timer error is identified, please consult your local Mitsubishi representative.
The ERR. LED is on or flashing.	Is the battery connected? Or, has the battery voltage dropped?	• Check the battery connection. • Replace the battery.
	Is any of the error detection signals (X11, X12, X16 and X1C) ON? X11: Sampling error X12: Information linkage error X16: Access target CPU error X1C: Another error	• According to the error code obtained by the error detection shown on the left, identify the error cause and take corrective actions.
	Check the error code in "System monitor" of GX Works2.	• By the error code, identify the error and take corrective actions.
Module READY (X0) does not turn ON, or it takes time to turn ON.	Is the module in preparation?	• Depending on the number of items set in "Access target CPU settings", it may take several minutes until X0 turns ON.
	Are there many files in the installed CompactFlash card?	• If many files are stored in the CompactFlash card, it takes time to turn X0 ON. • Delete unnecessary files from the CompactFlash card.
CompactFlash card status (X1) does not turn ON, or it takes time to turn ON.	Is file access stopped? (X2 is ON?)	• Cancel the file access stop.
	Are there many files in the installed CompactFlash card?	• If many files are stored in the CompactFlash card, it takes time to turn X1 ON. • Delete unnecessary files from the CompactFlash card.

Troubleshooting about network connection

Symptom	Checked item	Corrective action
Unable to access the MES interface module.	Is it in "Online" mode?	• Change the mode to "Online".
	Is the MES interface module connected to the network? (X4 = ON)	• Connect the MES interface module to the network.
	Is there any disconnection in the connection route?	• Connect the cables properly.
	Is the IP address duplicated?	• Review the IP address setting.
	Is there a firewall and/or a proxy server in the connection route?	• Consult your network administrator about the firewall setting and/or the setting contents of the proxy server.
	Is there any problem on the personal computer?	• Replace it with another personal computer.

Troubleshooting about communication with access target CPUs

Symptom	Checked item	Corrective action
Unable to access another station via Q series E71.	Is a remote password set for the GX Works2 communication port (UDP/IP) of the Q series E71 on the target or relay station?	• Remove the remote password set for the GX Works2 communication port (UDP/IP) of the Q series E71 on the target or relay station.
An error occurs when accessing the Redundant CPU.	Is MES interface accessing the Redundant CPU of other station?	• The MES interface cannot access the Redundant CPU of other station. • Mount a MES interface module to the extension base unit of the Redundant CPU that is access target and access it.
	Is system switching consecutively occurring?	• Review the system so that system switching will not occur consecutively.
When the MES interface module is started up, "Errors detected by the access target CPU" (error code: 4B00h) occurs.	Is the MES interface module accessing other CPU, or accessing the other station via a network module controlled by other CPU, in the multiple CPU module?	• Clear the error in the MES interface module after starting up the CPU module in the multiple CPU system.

Troubleshooting about the DB interface function

Symptom	Checked item	Corrective action
The DB interface function does not work.	Is "Running" displayed for "Operation status" in "Module status" on the "Remote operation" screen?	• If "Stopped" is displayed, execute "Restart" on the "Remote operation" screen, turn the power OFF ⇨ ON, or reset the programmable controller CPU.
Communication has not been established with the server personal computer.	Was the personal computer restarted after installing relational database?	• Restart the personal computer.
	Is the port number set in "Service port" of DB Connection Service Setting Tool same as the one set in "Port No." in "Server service settings" of MES Interface Function Configuration Tool?	• Set the same value. • Communication is not available if different port numbers are set.
	Is the firewall function of the operating system (OS) or security software enabled on the server personal computer?	• Check the firewall setting.
	Is the port specified in "Service port" of DB Connection Service Setting Tool being used for the database or any other application?	• Change the port number to another that is not being used for the database or any other application.
	Has any Check Point software been installed in the server personal computer?	• Uninstall the Check Point software.
	Is the ODBC setting of the database correct?	• Review the ODBC setting of the database.
In the tag component where statistical processing is set, the average, maximum or minimum value to be calculated is reset.	Is there any setting that enables data writing to the tag component where statistical processing is set?	• Disable the write setting. • Writing data to the tag component where statistical processing is set will reset the statistical values.
The database is not updated.	Has an error occurred in "Error log" on the "Working log" screen?	• If an error has occurred, identify the error cause and take corrective actions.
	Is the startup log identified in "Event log" on the "Working log" screen, when the trigger condition of the job for which "Startup logging" is selected is met?	• If no startup data is logged, refer to the following: Refer to the symptom item "Job will not start up."
	If the startup log is identified in the above case, has an error occurred in "Error log" on the "Working log" screen?	• If an error has occurred, identify the error cause and take corrective actions.
	Is "Disable writing to database" selected in "Change job status" on the "Remote operation" screen?	• Enable writing to the database.
	Has an error occurred in the access log of DB Connection Service?	• If an error has occurred, identify the error cause and take corrective actions.
	Are the relevant records or table locked on the database when inserting, updating or deleting data?	• Unlock them on the database and execute it. • If they are locked, the execution is delayed until they are unlocked.
	Is "Connected" displayed under "Result" in "Connection result of previous job execution" on the "Remote operation" screen?	• If "Disconnected" is displayed, review the setting of "Server service settings". • Check the network connection route to the database server personal computer.
	Is the database type setting in "Server service settings" of MES Interface Function Configuration Tool correct?	• Set the database being used.
	Is the DB buffering whose Manually resend buffer is enabled occurred?	• When the DB buffering occurs, resend the buffered data by the DB buffering function.
	Is the number of updated, inserted, or deleted records 0 in the access log of DB Connection Service?	• Check if select/update/delete conditions are met. • Check if there is any missing field into which a value is to be inserted. • Check if the uniqueness constraint of the database (PRIMARY KEY constraint) is violated. • Check if the value to be stored exceeds the number of characters defined for the field.
	Is an SQL text called from the processing (such as stored procedure) executed in the database?	• When using SQL Server® and calling an SQL text from the processing (such as stored procedure) executed in the database, specify "SET NOCOUNT ON" before calling.

Symptom	Checked item	Corrective action
Database values will not be stored in programmable controller devices.	Has an error occurred in "Error log" on the "Working log" screen?	• If an error has occurred, identify the error cause and take corrective actions.
	Is the startup log identified in "Event log" on the "Working log" screen, when the trigger condition of the job for which "Startup logging" is selected is met?	• If no startup data is logged, refer to the following: Refer to the symptom item "Job will not start up."
	Is "Disable writing to PLC device" selected in "Change job status" on the "Remote operation" screen?	• Enable writing to programmable controller devices.
	Has an error occurred in the access log of DB Connection Service?	• If an error has occurred, identify the error cause and take corrective actions.
	Is the number of selected records indicated as 0 in the access log of DB Connection Service?	• Check if select/update/delete conditions are met.
	Is the relevant device value manipulated in the programmable controller CPU?	• Do not manipulate the device value in the programmable controller CPU at the time of writing from the MES interface module.
	Is the number of databases set for the database server personal computer sufficient?	• Review the set number of databases, or review the number of settings in "Server service settings" according to the set number of databases. • One database connection must be used for one item of the server service setting.
	When using "Select" and "MultiSelect" for a field whose data type is single type or double type, is "Microsoft Access Driver (*.mdb, *.accdb)" selected in the ODBC setting? (for Microsoft® Access® 2007, Microsoft® Access® 2010, and Microsoft® Access® 2013)	• Select "Microsoft Access Driver(*.mdb)" in the ODBC setting.
	Is an SQL text called from the processing (such as stored procedure) executed in the database?	• When using SQL Server® and calling an SQL text from the processing (such as stored procedure) executed in the database, specify "SET NOCOUNT ON" before calling.

Symptom	Checked item	Corrective action
Job will not start up.	Has an error occurred in "Error log" on the "Working log" screen?	• If an error has occurred, identify the error cause and take corrective actions.
	Did the trigger condition change from false to true completely?	• Review the trigger condition. • Start the job when trigger conditions change from false to true.
	Did the combination of the trigger condition change from false to true completely?	• Review the trigger condition. • Start the job when the combination of the trigger condition change from false to true.
	When "Value monitoring startup" is set for "Trigger conditions", is the time for the monitoring target device value change long enough for the sampling interval of the device tag?	• Lengthen the time for the monitoring target device value change. (Latch it in the sequence program.) • Shorten the sampling interval of the device tag.
	Are the device tags used for trigger conditions of jobs sampled normally?	• If an error has occurred, identify the error cause and take corrective actions.
	Is "Enable job" selected in "Change job status" on the "Remote operation" screen?	• Select "Enable job" in "Change job status" on the "Remote operation" screen. • To enable the job at startup of the module, select "Enable at module startup" in "Job settings".
	Is there any other job that is being executed?	• If a job uses the same server service setting item that is currently used for another job, the job is not executed until another job execution is completed. • Terminate the job that is in execution, or use another server service setting item.
	Has an error or job cancellation occurred during job execution?	• If an error has occurred, identify the error cause and take corrective actions. • When the job uses a tag component for which "Moving average", "Moving maximum" or "Moving minimum" is specified, check if sampling for the specified number of times is completed.
	Is there any setting that enables data writing to the tag component for which statistical processing of "Moving average", "Moving maximum", or "Moving minimum" is specified in the job?	• Review the job setting and disable data writing to the relevant tag component.
Job will not start up after the one-shot execution.	During one-shot execution, was the power of the programmable controller turned OFF⇨ON, or was the programmable controller CPU reset?	• Write a project again, and update the settings.
	Has a communication error occurred during one-shot execution?	
The program specified by the program execution function is not executed.	Has an error occurred in "Error log" on the "Working log" screen?	• If an error has occurred, identify the error cause and take corrective actions.
	Was the Windows® account specified in "Server service settings" used to log on the application server personal computer once or more?	• Use the account that has been used to log on once or more.
	Was the password of the Windows® account specified in "Server service settings" set empty?	• Set a password of the account, or use another account that does not have an empty password.
	Is the program that needs to be run with administrator authority (a user in Administrators group) executed?	• Specify a program that does not need to be run with administrator authority.
	Was execution of a program including displays attempted with the application server personal computer logged off?	• To execute a program including displays, set the application server personal computer into the logon status.
	Was execution of the program including displays attempted while multiple users have logged on to the application server personal computer?	• When a program including displays is executed, the program screen is displayed for only one user who has logged on to the application server personal computer. • Make all of the users log off the application server personal computer once, and execute the program with a single user logged on.

Symptom	Checked item	Corrective action
Job startup is delayed.	Were the trigger conditions for multiple jobs met concurrently?	• If the trigger conditions for multiple jobs are met concurrently, startup of some job may be delayed.
	Has an error occurred in "Error log" on the "Working log" screen?	• If an error has occurred, identify the error cause and take corrective actions.
	Was the job execution time prolonged?	• If the job execution time is prolonged, startup of the next job may be delayed.
	Was the value in the monitoring interval timeout count area (buffer memory address: 11510) increased?	• Review the number of job settings or trigger condition settings.
Job execution is slow.	Is the processing overload of the server personal computer high?	• Check if the processing overload of the application software in the personal computer is high.
	Is data amount in the database within the specified capacity of the personal computer?	• Review data amount in the database.
	Are the number of selected/updated records extreme at the selection or update.	• Review the select/update/delete conditions that apply appropriate records only.
Even when selecting "Resend" in "DB buffering operation" on the "Remote operation" screen, SQL texts of the job for which the manual resend is selected are not resent.	Is there any problem on the connection routes to all of the database server personal computers?	• When buffered SQL texts are to be sent to more than one destination, unless the communication with all the database server personal computers is recovered, resending is not started. • Check the connections with all of the database server personal computers.
	Are the DB Connection Services in all the database server personal computers operating normally?	• Check each of the DB Connection Services in all the database server personal computers. • When buffered SQL texts are to be sent to more than one destination, unless DB Connection Services in all the database server personal computers are operating, resending is not started.
Data such as DB buffering status, number of DB bufferings, DB buffer full, or DB buffer utilization will not be stored in the tag component which is selected in "DB buffering settings" of "System setting".	Was the setting that enables data writing to the relevant tag component set in "Job settings"?	• Select another tag component, or review the job setting, and disable data writing to the relevant tag component.
	Was the device value of the relevant tag component manipulated in the programmable controller CPU?	• Specify another device. Or do not manipulate the relevant device value in the programmable controller CPU.
Failed to communicate with the server personal computer several times after module startup.	Was the programmable controller powered ON immediately after OFF?	• Turn OFF the programmable controller, and after several minutes, turn it ON.
	Is there any problem on the server personal computer?	• Restart the server personal computer.
Though the job is cancelled, rollback is not executed.	Was the stored procedure created in Oracle 10g/11g/12c committed?	• Do not commit in the stored procedure created in Oracle 10g/11g/12c.
Failed to the stored procedure execution.	Has the stored procedure execution error occurred?	• Check that the settings of the stored procedure name, return values, and arguments are correct. • Check that reserved terms of the database are not used for the stored procedure name.
Return value, output argument, and input/output argument of the stored procedure cannot be acquired.	Is the stored procedure which returns a result set executed by SQL Server 2008/2012/2014?	• Modify the stored procedure not to return the result set. (Return value, output argument, and input/output argument of a stored procedure which returns a result set cannot be acquired.)
The data of the specific term is not stored in the database.	Does the buffered data exist in the manually resend buffer? When "Immediate sending" is selected under "Operation of recovery from network disconnection" in "DB buffering settings" in "System setting", the data whose trigger condition is met is sent regardless of whether the buffered data exist.	• When the DB buffering occurs, resend the buffered data by the DB buffering function.

Symptom	Checked item	Corrective action
The communication between the database is slow.	Is the proper driver for ODBC data source selected when using Microsoft SQL Server?	• Select any of the following on the "Create New Data Source" screen. SQL Server® 2000: "SQL Server" SQL Server® 2005, SQL Server® 2008: "SQL Server Native Client" SQL Server® 2012, SQL Server® 2014: "SQL Server Native Client 11.0"

Troubleshooting about the XML processing function

Symptom	Checked item	Corrective action
The XML processing function does not work.	Is "Running" displayed for "Operation status" in "Module status" on the "Remote operation" screen?	• If "Stopped" is displayed, execute "Restart" on the "Remote operation" screen, turn the power OFF ⇨ ON, or reset the programmable controller CPU.

Troubleshooting about the time synchronization function

Symptom	Checked item	Corrective action
Time is not synchronized with the SNTP server personal computer.	Is the setting of "SNTP server address" correct?	• Review the setting of "SNTP server address".

Troubleshooting about the CompactFlash card

Symptom	Checked item	Corrective action
Settings were erased while the power was OFF.	Is there a problem with the type of CompactFlash card?	• Replace with one of the CompactFlash cards.
	Was the power turned OFF or the control CPU reset during writing to the CompactFlash card?	• Stop file access before turning OFF the power or resetting the control CPU. • Format the CompactFlash card again.
Cannot recognize the CompactFlash card.	Is the CompactFlash card inserted correctly?	• Eject the CompactFlash card once and insert it again.
	Was the power turned OFF or the control CPU reset during writing to the CompactFlash card?	• Stop file access before turning OFF the power or resetting the control CPU. • Format the CompactFlash card again.

Troubleshooting about RCPU

Symptom	Checked item	Corrective action
When RCPU is the control CPU for the MES interface module, the 'errors detected by the access target CPU' (error code: 4001h) occurs.	Is the MES interface module whose first 5 digits of serial number are '16071' or lower used?	• Use the MES interface module whose first 5 digits of serial number are '16072' or higher.
Tag collection error occurs.	Were the devices of RCPU which do not exist in the range of QCPU or C Controller module collected?	• Access the device within the range that can be collected for QCPU or C Controller module.

10 CONCISE ERROR CODE LIST

10.1 Viewing MES Interface Module Error Codes

Check MES interface module error codes with MES Interface Function Configuration Tool.

1. Select [Online] ⇨ [View working log].

2. The "Working log" screen appears.

Proceed referring to the explanation below.
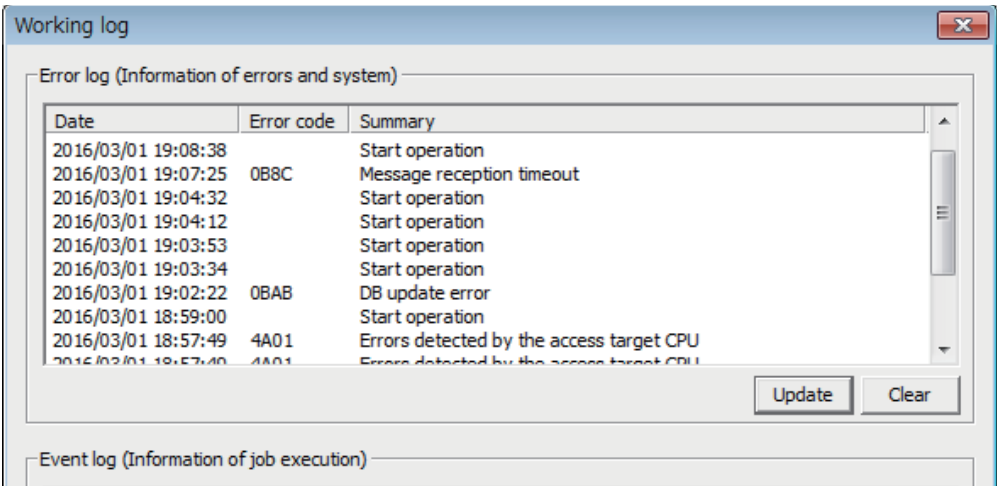
Error log

Refer to "Error log (Information of errors and system)", and check the error codes.

Item	Description
Date[*1],[*2]	The date and time of the error (information) occurrence is displayed.
Error code[*3]	The error code for error occurred is displayed.
Summary	An error message and system information is displayed.

*1 When using SNTP with synchronized time, the time of the CPU No.1 will displayed for the interval from module startup until the time query to the SNTP server succeeds.

*2 Date will not be displayed for errors (information) occurring before the time from the CPU No.1 is obtained.

*3 Error codes will not be displayed in the case of system information.

Error log update

☞ The error log is updated by clicking the [Update] button.

Error log clear

☞ The error log is cleared by clicking the [Clear] button.

10.2 Viewing Server Personal Computer Error Codes

The method of checking server personal computer error codes is shown below.

DB connection service access log

Open the log file below with a text editor, and check the error codes.

C:\MELSEC\MESIF\dbConnector.log

DB connection service SQL failure log

Open the log file below with a text editor, and check the error codes.

C:\MELSEC\MESIF\sqlFailed.log

Windows® event log

1. Select [Control Panel] from Windows® Start[*1] to display the Control Panel.

2. Select [Administrative Tools] to display Administrative Tools.

3. Double-click "Event Viewer", check the DB connection service error codes, and check the error and take corrective action.

*1 Select [All apps] on the Start screen or [Start] ⇨ [All Programs].

Log format

The log format used in the explanations in this section is shown below.

[Date] [Error code] Message Line feed

Item				Description
Output character	[Date]	Year	1st to 4th bytes at the head of the line	Four-digit integer for year (Numbers)
		Year — Month delimiter	5th byte at the head of the line	"/" (Slash: 2Fh)
		Month	6th and 7th bytes at the head of the line	2-digit integer (01 to 12) (Numbers)
		Month — Day delimiter	8th byte at the head of the line	"/" (Slash: 2Fh)
		Day	9th and 10th bytes at the head of the line	2-digit integer (01 to 31) (Numbers)
		Day — Hour delimiter	11th byte at the head of the line	" " (Space: 20h)
		Hour	12th and 13th bytes at the head of the line	2-digit integer (00 to 23) (Numbers)
		Hour — Minute delimiter	14th byte at the head of the line	":" (Colon: 3Ah)
		Minute	15th and 16th bytes at the head of the line	2-digit integer (00 to 59) (Numbers)
		Minute — Second delimiter	17th byte at the head of the line	":" (Colon: 3Ah)
		Second	18th and 19th bytes at the head of the line	2-digit integer (00 to 59) (Numbers)
		Second — Millisecond delimiter	20th byte at the head of the line	"." (Period: 2Eh)
		Millisecond	21th and 23th bytes at the head of the line	3-digit integer (000 to 999) (Numbers)
	Millisecond — Error code delimiter		24th byte at the head of the line	" " (Space: 20h)
	[Error code]		25th and 34th bytes at the head of the line	Alphanumeric character of "0x" + 8-digit hexadecimal
	Error code — Message delimiter		35th byte at the head of the line	" " (Space: 20h)
	Message		36th byte at the head of the line or later	According to the specifications of each log
	Line feed		End of line	CR+LF (0Dh, 0Ah)

Access log

Internal communication between the MES interface module and the DB connection service is output in the access log.
Access log details are shown below.

Service start/end

■Start

Item	Description
Output log format	[Date] [Error code] Service Start
Example	2005/07/01 12:00:00.000 0x00000000 Service Start

■End

Item	Description
Output log format	[Date] [Error code] Service Stop
Example	2005/07/01 12:00:00.000 0x00000000 Service Stop

Connection/disconnection from MES interface module

■Connection

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:MIFWS Connected:[Source IP]:[Target data source]:[Connection User Name]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:MIFWS Connected:192.168.3.3:DataSource:ID

■Disconnection

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:MIFWS Disconnected:[Source IP]:[Target data source]:[Connection User Name]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:MIFWS Disconnected:192.168.3.3:DataSource:ID

Connection/disconnection to a database

For details on [Database error number] and [Database error message] in the output log format in the case of failure, refer to the manual for each database.
Depending on the [Error code], the contents after 'Database Message' are not be output.
According to the error code, check the error contents and take corrective actions.

■Connection

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:DBConnect:[Target data source]:[Connection User Name]:Success
	When failed	[Date] [Error code] SID [Session ID]:DBConnect:[Target data source]:[Connection User Name]:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:DBConnect:DataSource:ID:Success
	When failed	2007/10/01 12:00:00.000 0x20400022 SID 00000001:DBConnect:DataSource:ID:Failed Database Message 0x000003f9[Oracle][ODBC][Ora]ORA-01017:invalid username/password;logon denied

■Disconnection

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:DBDisconnect:[Target data source]:[Connection User Name]:Success
	When failed	[Date] [Error code] SID [Session ID]:DBDisconnect:[Target data source]:[Connection User Name]:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:DBDisconnect:DataSource:ID:Success

SQL text reception/processing results

For details on [Database error number] and [Database error message] in the output log format in the case of failure, refer to the manual for each database.

Depending on the [Error code], the contents after 'Database Message' are not be output.

According to the error code, check the error contents and take corrective actions.

■SELECT

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Success([No. of selected records])
	When failed	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:SQL<SELECT COL from TABLE;>:Success(1)
	When failed	2007/10/01 12:00:00.000 0x20600023 SID 00000001:SQL<SELECT COL from TABLE;>:Failed Database Message 0x00000388[Oracle][ODBC][Ora]ORA-00904:"COL":invalid identifier

■UPDATE

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Success([No. of updated records])
	When failed	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:SQL<UPDATE TABLE SET COL = '1';>:Success(1)
	When failed	2007/10/01 12:00:00.000 0x20600023 SID 00000001:SQL<UPDATE TABLE SET COL = 'COL';>:Failed Database Message 0x000006ba[Oracle][ODBC][Ora]ORA-01722:invalid number

■INSERT

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Success([No. of inserted records])
	When failed	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:SQL<INSERT INTO TABLE(COL)VALUES('1');>:Success(1)
	When failed	2007/10/01 12:00:00.000 0x20600023 SID 00000001:SQL<INSERT INTO TABLEE(COL)VALUES('1');>:Failed Database Message 0x000003ae[Oracle][ODBC][Ora]ORA-00942:table or view does not exist

■COMMIT

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:COMMIT:Success
	When failed	[Date] [Error code] SID [Session ID]:COMMIT:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:COMMIT:Success

■ROLLBACK

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:ROLLBACK:Success
	When failed	[Date] [Error code] SID [Session ID]:ROLLBACK:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:ROLLBACK:Success

■GetNext (Request for next record)

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:GetNext:Success
	When failed	[Date] [Error code] SID [Session ID]:GetNext:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:GetNext:Success

■DELETE

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Success([No. of deleted records])
	When failed	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:Failed Database Message [Database error number] [Database error message]
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 SID 00000001:SQL<DELETE FROM TABLE;>:Success(1)
	When failed	2007/10/01 12:00:00.000 0x20600023 SID 00000c60:SQL<DELETE FROM table1;>:Failed Database Message 0x000003ae [Oracle][ODBC][Ora]ORA-00942:table or view does not exist.

Stored procedure reception/processing results

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:Procedure<[Procedure name] ([Value in argument 1][, Value in argument 2][, ...])>:Success ([Return value])
	When failed	[Date] [Error code] SID [Session ID]:Procedure<[Procedure name] ([Value in argument 1][, Value in argument 2][, ...])>:Failed ([Return value]) Database Message [Database error number] [Database error message]
Example	When succeeded	2013/10/01 12:00:00.000 0x00000000 SID 00000e14:Procedure<StoredProcedure1 ('10', '0', ...,'0')>:Success(0)
	When failed	2013/10/01 12:00:00.000 0x20f00007 SID 00000794:Procedure<StoredProcedure1>:Failed Database Message 0x00000afc [Microsoft][ODBC SQL Server Driver][SQL Server]Could not find stored procedure 'StoredProcedure1'.

Program execution reception/processing results

Item		Description
Output log format	When succeeded	[Date] [Error code] SID ProgramExec:[Source IP]:<[Command line]>Success ([Return value])
	When failed	[Date] [Error code] SID ProgramExec:[Source IP]:<[Command line]>Failed
Example	When succeeded	2007/10/01 12:00:00.000 0x00000000 ProgramExec:192.168.3.3:<hoge.exe>:Success(0)

Table name/field name/stored procedure name browsing results

■Table name browsing

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:Table Get:Success
	When failed	[Date] [Error code] SID [Session ID]:Table Get:Failed
Example	When succeeded	2012/06/27 12:00:00.000 0x00000000 SID 0:Table Get:Success
	When failed	2012/06/27 12:00:00.000 0x00000000 SID 0:Table Get:Failed

■Field name browsing

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:Field Get:[Table name]:Success
	When failed	[Date] [Error code] SID [Session ID]:Field Get:[Table name]:Failed
Example	When succeeded	2012/06/27 12:00:00.000 0x00000000 SID 0:Field Get: TableName:Success
	When failed	2012/06/27 12:00:00.000 0x00000000 SID 0:Field Get: TableName:Failed

■Stored procedure name browsing

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:Procedure Get:Success
	When failed	[Date] [Error code] SID [Session ID]:Procedure Get:Failed
Example	When succeeded	2013/10/01 12:00:00.000 0x00000000 SID 00000924:Procedure Get:Success
	When failed	2013/10/01 12:00:00.000 0x00000000 SID 00000924:Procedure Get:Failed

■Stored procedure argument information browsing

Item		Description
Output log format	When succeeded	[Date] [Error code] SID [Session ID]:ProcParam Get:[Stored procedure name]:Success
	When failed	[Date] [Error code] SID [Session ID]:ProcParam Get:[Stored procedure name]:Failed
Example	When succeeded	2013/10/01 12:00:00.000 0x00000000 SID 00000924:ProcParam Get:StoredProcedureName:Success
	When failed	2013/10/01 12:00:00.000 0x00000000 SID 00000924:ProcParam Get:StoredProcedureName:Failed

SQL failure log

If an error occurs when the SQL text is executed in the database, the error contents are output to the SQL failure log.

SQL failure log details are shown below.

For details on [Database error number] and [Database error message] in the output log format in the case of failure, refer to the manual for each database.

Depending on the [Error code], the contents after 'Database Message' are not be output.

According to the error code, check the error contents and take corrective actions.

SQL failure log

Item	Description
Output log format	[Date] [Error code] [Target data source]:[SQL text] Database Message [Database error number] [Database error message]
Example	2007/10/01 12:00:00.000 0x00000000 DataSource:INSERT INTO TABLE(COL) VALUES("): Database Message 0x00000388[Oracle][ODBC][Ora]ORA-00904:"COL":invalid identifier

Stored procedure execution failed

Item	Description
Output log format	[Date] [Error code] [Target data source]:[Procedure name] ([Value in argument 1][, Value in argument 2][, ...]) Database Message [Database error number] [Database error message]
Example	2013/10/01 12:00:00.000 0x20f00007 SQLSERVER:SampleProcedure ('003','MES') Database Message 0x00000afc [Microsoft][ODBC SQL Server Driver][SQL Server]Could not find stored procedure 'SampleProcedure'.

10.3　Error Code List

Error codes for the MES interface module

Error code	Error name	Corrective action
0001h	System error	• Please consult your local Mitsubishi representative.
0002h	Response time-out error	• Review the access target CPU setting. • Check the communication cable status and access target CPU status. • Correct the response monitoring time setting. • Review the routing parameter set for the CPU(s) on the access route. • Review the control CPU(s) of the network module(s) on the access route to the access target CPU module. • Review whether the series of the access target CPU is supported.
0041h to 0044h	System error	• Please consult your local Mitsubishi representative.
0045h	Processing code error	• Review the CPU(s) on the access route.
0046h	Station No. specification error	• Review the station number setting in "Access target CPU settings".
0047h	Receive data error	• Review the CPU(s) on the access route.
0048h	System error	• Please consult your local Mitsubishi representative.
0049h		
004Dh		
004Eh		
0050h		
0051h		
0055h	Channel No. error	• Review the Ethernet module setting of the access target CPU.
0064h	System error	• Please consult your local Mitsubishi representative.
0065h	Routing parameter error	• Set the routing parameter set for the CPU(s) on the access route.
0066h	Data send error	• Review the CPU(s) on the access route.
0067h	Data receive error	
0080h	Read size error	
0081h	Device type error	• Review the device type entered in "Device tag settings".
0082h	Device No. error	• Review the device number entered in "Device tag settings".
0083h	Number of device points	• Review the CPU(s) on the access route.
0084h	Write size error	
0085h	Link parameter error	• Set a correct link parameter for the programmable controller CPU(s) on the access route.
0087h to 0089h	System error	• Please consult your local Mitsubishi representative.
00D2h	RUN time disable error	• Review the CPU(s) on the access route.
00D4h	System error	• Please consult your local Mitsubishi representative.
00D7h	Receive data length error	• Check the cables on the access route.
00D8h	Protocol error	
00D9h	Address error	• Review the CPU(s) on the access route.
00DBh	Write error	
00E0h	Station No. error	• Review the station number setting in "Access target CPU settings".
00E1h	Processing mode error	• Review the PLC series in "Access target CPU settings".
00E2h	Intelligent function module specification error	• Review the intelligent function module device (Un\G) set in "Device tag settings".
00E3h	Other data error	• Review the CPU(s) on the access route.
00E4h	Link specification error	• Refer to the accessible range in the following manual, and review the access route. 📖 MES Interface Module User's Manual
00E8h	System error	• Please consult your local Mitsubishi representative.
00E9h	Link timeout	• Reconnect the link on the access route.
00EAh	Special module BUSY	• Review the hardware of the intelligent (or special) function module.
00ECh	Access target BUSY	• Review the access target.
00F0h	Link error	• Reconnect the link on the access route.

10

Error code	Error name	Corrective action
00F1h	Special module bus error	• Review the hardware of the intelligent (or special) function module.
00F2h	Special module timeout	
0100h to 0104h	System error	• Please consult your local Mitsubishi representative.
0110h		
0112h		
0180h	Switch setting error	• Review the intelligent function module switch setting. • Conduct the hardware test again.
0181h	ROM check sum error	• Conduct the hardware test again.
0182h	RAM test error	
0190h	Timeout error	• Hardware failure • Please consult your local Mitsubishi representative.
0191h	Communication error	
0192h	Comparison error	
0193h	In-frame position error	
0200h to 0203h	System error	• Please consult your local Mitsubishi representative.
0210h		
0300h		
0301h	Setting file read error	• Insert a CompactFlash card. • Retry writing the setting with MES Interface Function Configuration Tool.
0400h to 0402h	System error	• Please consult your local Mitsubishi representative.
0480h	CF card initialization error	• Check if the CompactFlash card was inserted properly. • Replace the CompactFlash card.
0481h	CF card drive data retrieve error	
0482h	CF card mount failure	
0483h		
0490h to 0493h	System error	• Please consult your local Mitsubishi representative.
0494h	CF card format error	• Check if the CompactFlash card was inserted properly. • Check the CompactFlash card for any error. (Perform check disk on the personal computer.)
0495h	CF card check error	• Check the CompactFlash card for any error. (Perform check disk on the personal computer.)
0496h	CF card response error	• Replace the CompactFlash card.
04D0h	Battery error	• Replace the battery. • Check the battery connection.
0501h	CPU fault detected	• Check the CPU status of module mounting station.
0502h	APS mismatch	• Retry the transmission. • Review the access target CPU setting.
0604h	Setting file error	• Retry writing the setting with MES Interface Function Configuration Tool.
0607h		
060Ah	Component device error	• Review the device in "Component List".
0610h	Access target CPU setting error	• Initialize the module, and set the access target CPU setting again.
0617h	Module stop error	• Remove the cause of the module stop error, and reset the programmable controller CPU.
0618h	Setting update time-out error	• Re-execute the setting update. • Reset the programmable controller CPU.
0619h	Device name error	• Refer to the accessible device in the following manual, and enter a correct device name. 📖 MES Interface Module User's Manual
061Ah	BCD type conversion error	• Review the device tag setting. • Check if the value stored in the device can be properly expressed in BCD type.
0626h	Multiple CPU setting error	• Review the access target CPU setting.
0627h	Network communication route error	
0628h	Tag sampling interval setting error	• Review the device tag setting.
0629h	Setting file error	• Retry writing the setting with MES Interface Function Configuration Tool.
062Ah		
062Ch		
062Dh	No CPU specification error	• Specify an existing CPU as the access target.

Error code	Error name	Corrective action
062Eh	Data type incorrect error	• Review the component list.
062Fh	Excessive number of characters error	
0630h	Decimal/Exponential form setting error	
0631h	Setting file error	• Retry writing the setting with MES Interface Function Configuration Tool.
0649h		
064Bh	Excessive number of device points for high speed sampling tag	• Change the setting so that the total device points will not exceed 96.
064Ch	High speed sampling tag component registration error	• Ensure a system area in the program memory of the programmable controller CPU. (Format the PLC memory.) • For the redundant CPU, check the system area for the redundant CPU of both systems.
0650h	Setting file error	• Retry writing the setting with MES Interface Function Configuration Tool.
0659h	Network communication route error	• Review the head I/O address in "Access target CPU settings".
06A0h	System error	• Please consult your local Mitsubishi representative.
06AAh		
06ABh		
06ADh		
0830h	Setting file error	• Retry writing the setting with MES Interface Function Configuration Tool.
0831h		• Insert a CompactFlash card. • Retry writing the setting with MES Interface Function Configuration Tool.
0832h		• Retry writing the setting with MES Interface Function Configuration Tool.
08A1h	System error	• Please consult your local Mitsubishi representative.
08A2h		
08B0h		
08B1h		
0A00h	Initialization error	• Replace the CompactFlash card.
0A01h	Start error	
0A02h	Stop error	
0A03h	Reset error	
0A04h	Tag related error	• Check if the network on the programmable controller CPU side is normal.
0A05h	System error	• Please consult your local Mitsubishi representative.
0A06h	Initial SNTP server time enquiry error	• Check for any fault on the network connected to the specified SNTP server personal computer. • Check if the clock time is synchronized between the specified SNTP server and the host server correctly. • Check that the time of the specified SNTP server has not been manually changed.
0A07h	SNTP server time enquiry error	
0A08h to 0A0Dh	Setting read error	• Replace the CompactFlash card.
0A0Fh	CF access stopped error	• Insert a CompactFlash card. • Turn the power ON from OFF, or reset the programmable controller CPU.
0A11h	No CF card installed	• Insert a CompactFlash card.
0A12h	CF directory operation error	
0A13h	Transferred setting file check error	
0A14h	Setting file check error	
0A80h to 0A83h	System error	• Please consult your local Mitsubishi representative.
0A84h	Illegal action setting error	• Review the action of the job displayed in "Job List" on the "Remote operation" screen. • In "Job List" on the "Remote operation" screen, the job having any illegal action can be checked. (Such a job is not displayed.)
0B00h to 0B0Ah	System error	• Please consult your local Mitsubishi representative.
0B0Bh	Setting read error	• Replace the CompactFlash card.
0B0Ch		
0B0Dh	DB connection service communication error	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct.
0B0Eh to 0B1Eh	System error	• Please consult your local Mitsubishi representative.
0B1Fh	Type conversion error	• Change the setting so that type conversion will be available in any case.
0B20h	Tag write error	• Check if data can be written to the device specified for the tag component.

10

Error code	Error name	Corrective action
0B21h	System error	• Please consult your local Mitsubishi representative.
0B22h	Tag access error	• Check if the device tag setting is correct. • Check if the ERR. LED is ON or flashing on the MES interface module.
0B23h	System error	• Please consult your local Mitsubishi representative.
0B24h	Tag value read error	• Check if the device tag setting is correct.
0B25h to 0B28h	System error	• Please consult your local Mitsubishi representative.
0B29h	Type conversion to tag component error	• Review the data type of the tag component or the substitute value. • Check that the operation result obtained by operation action is within the range of the data type of the substitute source tag component.
		<When the database is Microsoft® Access® 2007/2010/2013> • When using "Select" and "MultiSelect" for a field whose data type is single type or double type, check that "Microsoft Access Driver (*.mdb)" is selected in the ODBC setting.
0B2Ah to 0B2Dh	System error	• Please consult your local Mitsubishi representative.
0B2Eh	DB buffer content error	• Replace the CompactFlash card.
0B2Fh		
0B30h	Partial correction of DB buffer content	—
0B31h	System error	• Please consult your local Mitsubishi representative.
0B32h	DB buffer clear error	• Replace the CompactFlash card.
0B33h	DB buffer file error	
0B34h	DB buffer content error	
0B35h to 0B3Ah	System error	• Please consult your local Mitsubishi representative.
0B3Bh	DB buffer full error	• Check the network status. • Ensure a DB buffering capacity.
0B3Ch	System error	• Please consult your local Mitsubishi representative.
0B3Dh		
0B3Eh	DB buffering error	• Check the CompactFlash card. • If the CompactFlash card is damaged, replace it.
0B3Fh	System error	• Please consult your local Mitsubishi representative.
0B40h		
0B41h	DB buffer read error	• Check the CompactFlash card. • If the CompactFlash card is damaged, replace it.
0B42h	DB buffer clear error	
0B43h	DB buffer read error	
0B44h	DB buffer empty error	• Do not clear the DB buffer during resending of DB-buffered data. • Check the CompactFlash card. • If the CompactFlash card is damaged, replace it.
0B45h	DB buffer content error	• Check the CompactFlash card. • If the CompactFlash card is damaged, replace it.
0B46h	System error	• Please consult your local Mitsubishi representative.
0B47h		
0B48h	Error in conversion from character string to number	• Change the setting so that type conversion will be available in any case.
0B49h	System error	• Please consult your local Mitsubishi representative.
0B4Ah	Error in conversion from character string to number	• Change the setting so that type conversion will be available in any case.
0B4Bh	System error	• Please consult your local Mitsubishi representative.
0B4Ch	Error in conversion from character string to number	• Change the setting so that type conversion will be available in any case.
0B4Dh	System error	• Please consult your local Mitsubishi representative.
0B4Eh	Error in conversion from character string to number	• Change the setting so that type conversion will be available in any case.
0B4Fh to 0B52h	System error	• Please consult your local Mitsubishi representative.
0B53h	Overflow or zero divide error	• Review the data type or the substitute value of the tag component or input argument and input/output argument of stored procedure. • Change the setting to avoid division by zero.
0B54h	Operation error	• Change the setting so that any invalid operation will not performed.
0B55h	System error	• Please consult your local Mitsubishi representative.

Error code	Error name	Corrective action
0B56h	Trigger buffer full error	• Reduce the frequency of job startups and their processing loads.
0B57h to 0B63h	System error	• Please consult your local Mitsubishi representative.
0B64h	DB buffering write error	• Change the setting of the DB buffering capacity to ensure a sufficient free space on the CompactFlash card. • Check if the CompactFlash card is damaged.
0B68h	Max. number of acquired records illegal	• Set 1 or more to the tag component value specified for the maximum number of acquired records.
0B80h	System error	• Please consult your local Mitsubishi representative.
0B81h	Communication start error	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct.
0B82h	System error	• Please consult your local Mitsubishi representative.
0B83h	Communication connection error	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct. • Check if the server personal computer has no problem. • Consult your network administrator about the firewall settings.
0B84h	Communication connection timeout	
0B85h to 0B87h	System error	• Please consult your local Mitsubishi representative.
0B88h	Message transmission error	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct.
0B89h	Message transmission timeout	
0B8Ah	System error	• Please consult your local Mitsubishi representative.
0B8Bh	Message reception error	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct. • Check if the database has been restarted or not.
		<When the database is Microsoft® Access®> • Check if 128 or more fields are set in Update actions. • Check the sent SQL text and the database contents. • Check if the table and field settings are correct. • Check that reserved terms of the database are not set for table names and field names. • Check if the uniqueness constraint of the database (PRIMARY KEY constraint) is violated or not. • Check if multiple accesses have been made to one file at the same time (accesses from multiple MES interface modules).
0B8Ch	Message reception timeout	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct.
0B8Dh to 0B90h	System error	• Please consult your local Mitsubishi representative.
0B91h	DB transaction status error	• Check the status of the database.
0B92h	DB transaction start status error	
0B93h	DB transaction end status error	
0B94h to 0B9Dh	System error	• Please consult your local Mitsubishi representative.
0B9Eh	Database connection error	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct.
0B9Fh	Message reception error	
0BA0h	Received message data error	
0BA1h to 0BA5h	System error	• Please consult your local Mitsubishi representative.
0BA6h	Wait for DB access (program execution) completion timed out	• Check the Ethernet connection. • Check if the server service setting is correct. • Check if the ODBC setting is correct. • Check if the database is operating normally. • Check if the program specified for program execution has been completed. • Increase the DB access timeout value with DB Connection Service Setting Tool. • Check if the processing overload of the server personal computer is high. • Check if data amount in the database exceeds the specified capacity of the personal computer. • Check if the number of selected/updated records are extreme at the selection or update.
0BA7h	System error	• Please consult your local Mitsubishi representative.

Error code	Error name	Corrective action
0BA8h	SELECT execution error	• Check the sent SQL text and the database contents. • Check if the table and field settings are correct. • Check that reserved terms of the database are not set for table names and field names.
0BA9h	COMMIT execution error	
0BAAh	ROLLBACK execution error	
0BABh	DB update error	• Check the sent SQL text and the database contents. • Check if the table and field settings are correct. • Check that reserved terms of the database are not set for table names and field names.
		<When the database is Microsoft® Access®> • Check if 128 or more fields are set in Update actions. • Check if multiple accesses have been made to one file at the same time (accesses from multiple MES interface modules).
0BACh	SQL execution error	• Check the sent SQL text and the database contents. • Check if the table and field settings are correct. • Check that reserved terms of the database are not set for table names and field names. • Check if the uniqueness constraint of the database (PRIMARY KEY constraint) is violated or not.
0BADh	ODBC connection error during SQL execution	• Check the sent SQL text and the database contents. • Check if the table and field settings are correct. • Check that reserved terms of the database are not set for table names and field names.
0BAEh to 0BB5h	System error	• Please consult your local Mitsubishi representative.
0BB6h	Execution error (Program execution function)	• Check if the program specified with the program execution function is executable with the specified account.
0BB7h		
0BB8h	Specified program file not exist (Program execution function)	
0BB9h	Specified program file duplicated (Program execution function)	
0BBAh	Wait for DB access (program execution) completion timed out	• Increase the DB access timeout value with DB Connection Service Setting Tool. Terminate running programs before logoff. (For Windows Vista®, Windows® 7, Windows Server® 2008, Windows Server® 2008 R2, Windows® 8, Windows® 8.1, Windows Server® 2012, and Windows Server® 2012 R2)
0BBBh	Execution error (Program execution function)	• Check if the program specified with the program execution function is executable with the specified account.
0BBCh		
0BBDh	Execution error (Program execution function)	• Check if the program specified with the program execution function is executable with the specified account. • After creating an account used for the program execution function, be sure to log in once at least. • A user with an empty password cannot be specified. Set a password for the specified user.
0BBEh	Execution error (Program execution function)	• Check if the program specified with the program execution function is executable with the specified account.
0BBFh		
0BC0h		
0BC1h		
0BC2h		
0BC3h		
0BC4h		
0BC5h		
0BC6h	DB connection service version error	• Install the latest version of DB Connection Service to a server personal computer of the connection target.
0BC7h		
0BC8h	Stored procedure execution error	• Check if the settings of the stored procedures, return values, and arguments are correct. • Check if the data type between the argument and the input argument and input/output argument of the stored procedure to be passed are the same. • Check that reserved terms of the database are not set for the stored procedure names.
0C00h to 0C56h	System error	• Please consult your local Mitsubishi representative.
0C80h	CF card check error (event log writing)	• Check if the CompactFlash card is damaged. • Turn the power ON from OFF, or reset the programmable controller CPU.
0C81h	CF card full error (event log writing)	• Check the capacity of the CompactFlash card.

Error code	Error name	Corrective action
0D00h	Setting file out-of-range access error	• Turn the power ON from OFF, or reset the programmable controller CPU.
0D01h	New setting file creation error	
0D02h	Setting file open error	
0D03h	Setting file seek error	
0D04h	Setting file read error	
0D05h	Setting file write error	
0D06h	Setting file close error	
0D80h to 0D82h	System error	• Please consult your local Mitsubishi representative.
100Eh		
2000h to 20FFh		
4000h to 4FFFh	Errors detected by the access target CPU	
7000h to 7FFFh	Errors detected by the serial communication module	
9000h	System error	• Please consult your local Mitsubishi representative.
9006h		
9008h	Send buffer full	• Review the control CPU(s) of the network module(s) on the access route to the access target CPU module. • Review the routing parameter set for the CPU(s) on the access route. • Review whether the series of the access target CPU is supported.
9202h	System error	• Please consult your local Mitsubishi representative.
9204h		
920Ah		
9920h		
9922h		
9923h		
9E20h	Processing code error	• Review the CPU(s) on the access route.
9E81h	Device type error	• Review the device type entered in "Device tag settings".
9E82h	Device No. error	• Review the device number entered in "Device tag settings".
9E83h	Number of device points	• Review the number of device points entered in "Device tag settings".
B000h to BFFFh	Errors detected in CC-Link system	
C000h to CFFFh	Errors detected in the Ethernet interface module	
D000h to DFFFh	Errors detected in CC-Link IE Field Network	
E000h to EFFFh	Errors detected in CC-Link IE Controller Network	
F000h to FEFFh	Errors detected in the MELSECNET/H (10) network system	
FFD0h	System error	• Please consult your local Mitsubishi representative.
FFD1h	Monitor condition dissatisfied error	• Delete the monitor condition by GX Works2.
FFD2h to FFD4h	System error	• Please consult your local Mitsubishi representative.
FFD5h	ROM operation error	• Change the TC setting value during ROM operation.
FFD6h	System error	• Please consult your local Mitsubishi representative.
FFD7h		
FFD9h to FFDEh		
FFDFh	Incorrect access target error	• Review the access target CPU setting.
FFE0h	System error	• Please consult your local Mitsubishi representative.
FFE1h		
FFEDh to FFEFh		
FFF0h	Station or Network No. error	• Review the station No. and network No. in "Access target CPU settings".
FFF1h	System error	• Please consult your local Mitsubishi representative.
FFF2h	Memory cassette error	• Check the memory cassette of the access target CPU.
FFF3h	Write protect error	• Check the block No. of the extension file register (device type). • Check the write-protect DIP switch on the memory cassette of the access target CPU.
FFF4h	Block error	• Check the block No. of the extension file register (device type).
FFF5h	System error	• Please consult your local Mitsubishi representative.
FFF8h		
FFFAh		

Error code	Error name	Corrective action
FFFBh	Size error	• Review the device number entered in "Device tag settings".
FFFCh	CPU error	• Check the settings of the network module on the access route. • Review the station number setting in "Access target CPU settings".
FFFDh	Device type error	• Review the device type entered in "Device tag settings".
FFFEh	Device No. error	• Review the device number entered in "Device tag settings".
FFFFh	System error	• Please consult your local Mitsubishi representative.

Error codes of DB Connection Service

For DB Connection Service outputs errors to the Windows® Event Log, access log, and SQL failure log.
For Windows Vista®, Windows® 7, Windows Server® 2008, Windows Server® 2008 R2, Windows® 8, Windows® 8.1, Windows Server® 2012, and Windows Server® 2012 R2, DB Connection Service Client also outputs errors to the Windows® Event Log.

Event log of Windows®

■Event log output warning list of DB Connection Service (source name: DBConnector)

Error code	Error name	Corrective action
1	There is no setting file. Start the service using the default setting.	• Configure the settings again with DB Connection Service Setting Tool.

■Event log output error list of DB Connection Service (source name: DBConnector)

Error code	Error name	Corrective action
1	Unable to start the service due to insufficient memory.	• Terminate any unnecessary applications.
2	Unable to start the service due to insufficient resources.	• Add more memory to the personal computer.
3	System error	• Please consult your local Mitsubishi representative.
4		
5	Failed to read the setting file. The service is stopped.	• Refer to the actions of error codes 101 to 129. • Actions are displayed with error codes 101 to 129.
6	Failed to initialize the log file. The service is stopped.	• Refer to the actions of error codes 401 to 403, and 501 to 503. • Actions are displayed with error codes 401 to 403, and 501 to 503.
7	System error	• Please consult your local Mitsubishi representative.
8		
9	The server port has already been opened. The service is stopped.	• Change the server port number with DB Connection Service Setting Tool.
10	System error	• Please consult your local Mitsubishi representative.
11		
101	The computer ran out of memory while reading the setting file.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
102	The setting file path is too long.	• Reinstall the DB Connection Service to the directory whose path name is shorter.
103	The setting file name indicates the directory.	• Reinstall the DB Connection Service.
104	The setting file could not be opened.	
105	Description of the setting file is not correct.	• Terminate other applications, and configure the settings again with DB Connection Service Setting Tool.

Error code	Error name	Corrective action
106	Parameter specification of the setting file is not correct.	• Configure the settings again with DB Connection Service Setting Tool.
107	The version of the setting file is not correct.	
108	The server port number setting is not correct.	
109	The server port number setting is out of range.	
110	The DB access timeout time setting is not correct.	
111	The DB access timeout time setting is out of range.	
112	There are too many connection-permitted IP address settings.	
113	Description of the connection-permitted IP address setting is not correct.	
114	The mask bit length setting of the connection-permitted IP address is not correct.	
115	The mask bit length setting of the connection-permitted IP address is out of range.	
116	The access log setting is not correct.	
117	The setting of the access log file name is not correct.	
118	The access log file name is too long.	
119	The maximum file size setting for the access log is not correct.	
120	The maximum file size setting for the access log is out of range.	
121	The maximum number of access log files is not set correctly.	
122	The maximum number of access log files is out of range.	
123	The SQL failure log setting is not correct.	
124	The setting of the SQL failure log file name is not correct.	
125	The SQL failure log file name is too long.	
126	The maximum file size setting for the SQL failure log is not correct.	
127	The maximum file size setting for the SQL failure log is out of range.	
128	The maximum number of SQL failure log files is not set correctly.	
129	The maximum number of SQL failure log files is out of range.	
401	The computer ran out of memory when initializing the access log file.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
402	The computer ran out of resources when initializing the access log file.	
403	The full path name of the access log file is too long.	• Shorten the path to the access log file with DB Connection Service Setting Tool.
404	The access log file could not be opened.	• If no directory exists for storing the access log file, create it. • When the attribution of the access log file is set to read-only, cancel the setting. • If read/write is disabled for the access log file, enable it in the security setting. • When the access log file name represents a directory, rename or delete the directory. • When the access log file has been open in another application, terminate the application. • Check the disk device for any fault.
405	The log could not be written to the access log file.	• When the disk space is full, ensure a free disk space. • When the access log file has been open in another application, terminate the application. • Check the disk device for any fault.

Error code	Error name	Corrective action
406	Failed to delete an old access log file.	• When the attribution of the oldest access log file is set to read-only, cancel the setting. • If read/write is disabled for the oldest access log file, enable it in the security setting. • When the oldest access log file has been open in another application, terminate the application. • Check the disk device for any fault.
407	Failed to rename the access log file.	• When the attribution of the new and old access log files is set to read-only, cancel the setting. • If read/write is disabled for the new and old access log files, enable it in the security setting. • When the new and old access log files have been open in another application, terminate the application. • Check the disk device for any fault.
501	The computer ran out of memory when initializing the SQL failure log file.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
502	The computer ran out of resources when initializing the SQL failure log file.	
503	The full path name of the SQL failure log file is too long.	• Shorten the path to the SQL failure log file with DB Connection Service Setting Tool.
504	The SQL failure log file could not be opened.	• If no directory exists for storing the SQL failure log file, create it. • When the attribution of the SQL failure log file is set to read-only, cancel the setting. • If read/write is disabled for the SQL failure log file, enable it in the security setting. • When the SQL failure log file name represents a directory, rename or delete the directory. • When the SQL failure log file has been open in another application, terminate the application. • Check the disk device for any fault.
505	The log could not be written to the SQL failure log file.	• When the disk space is full, ensure a free disk space. • When the SQL failure log file has been open in another application, terminate the application. • Check the disk device for any fault.
506	Failed to delete an old SQL failure log file.	• When the attribution of the oldest SQL failure log file is set to read-only, cancel the setting. • If read/write is disabled for the oldest SQL failure log file, enable it in the security setting. • When the oldest SQL failure log file has been open in another application, terminate the application. • Check the disk device for any fault.
507	Failed to rename the SQL failure log file.	• When the attribution of the new and old SQL failure log file is set to read-only, cancel the setting. • If read/write is disabled for the new and old SQL failure log file, enable it in the security setting. • When the new and old SQL failure log file has been open in another application, terminate the application. • Check the disk device for any fault.

■**Event log output error list of DB Connection Service Client (source name: DBCnctClient)**

Error code	Error name	Corrective action
50	Unable to start DB Connection Service Client.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
51		
52		
53		

Access log of DB Connection Service

Error code	Error name	Corrective action
0x20100001	(Service Not Start.) Failed to start the service due to insufficient memory.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20100002	(Service Not Start.) Failed to start the service due to insufficient resources.	
0x20100010	System error	• Please consult your local Mitsubishi representative.
0x20100011	(Service Not Start.) Failed to start the service due to failure of the server port initialization.	• If firewall software has been installed, set the specified server port operational.
0x20100012	(Service Not Start.) Another application has opened the server port.	• Terminate the application that has opened the server port. • Set another server port number with DB Connection Service Setting Tool.
0x20100013	System error	• Please consult your local Mitsubishi representative.
0x20200001	(Not Initialize a service for each client:[IP address]) Failed to initialize a service for each client due to insufficient memory.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20200002	(Deny network connection request from [IP address]) Rejected the connection request from the non-permitted IP address.	• Add the IP address to those with connection permission with DB Connection Service Setting Tool.
0x20200003	System error	• Please consult your local Mitsubishi representative.
0x20300001	(SID [Session ID]:Request Receive Error:[IP address]) Failed to receive data due to insufficient memory.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20300010	(SID [Session ID]:Request Receive Error:[IP address]) Connection disconnected during request reception.	• Check if it is connected to the network. • Check if the gateway and/or hub is operating. • Check if the power of the module is not turned OFF.
0x20300011	(SID [Session ID]:Request Receive Error:[IP address]) Timed out during request reception.	
0x20300012	(SID [Session ID]:Request Receive Error:[IP address]) Detected failure of the MES interface module or the configuration personal computer while waiting for or receiving a request.	
0x20300013	(SID [Session ID]:Request Receive Error:[IP address]) Receive I/O error	
0x20300014	(SID [Session ID]:Request Receive Error:[IP address]) Buffer overrun (Request length exceeded)	• Check if the source IP address belongs to the MES interface module or the configuration personal computer. • Check the version of the MES interface module or MES Interface Function Configuration Tool.
0x20300015	(SID [Session ID]:Request Receive Error:[IP address]) Received an invalid request.	
0x20310010	(SID [Session ID]:Response Transmit Error:[IP address]) Failed to transmit a response due to disconnection.	• Check if it is connected to the network. • Check if the gateway and/or hub is operating. • Check if the power of the module is not turned OFF.
0x20310011	(SID [Session ID]:Response Transmit Error:[IP address]) Timed out during response transmission	
0x20310012	(SID [Session ID]:Response Transmit Error:[IP address]) Detected failure of the MES interface module or the configuration personal computer during response transmission.	
0x20310013	(SID [Session ID]:Response Transmit Error:[IP address]) Send I/O error	
0x20400001	(SID [Session ID]:DBConnect:[Data source]:[User]: Failed) Failed in DB connection due to insufficient memory.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20400002	(SID [Session ID]:DBConnect:[Data source]:[User]: Failed) Failed in DB connection due to insufficient resources.	
0x20400010	(SID [Session ID]:DBConnect:[Data source]:[User]: Failed) Invalid DB connection request	• Check if the source IP address belongs to the MES interface module or the configuration personal computer. • Check the version of the MES interface module or MES Interface Function Configuration Tool.
0x20400011	System error	• Please consult your local Mitsubishi representative.
0x20400012		
0x20400020	(SID [Session ID]:DBConnect:[Data source]:[User]: Failed) Failed to create a DB handle.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20400021	System error	• Please consult your local Mitsubishi representative.

Error code	Error name	Corrective action
0x20400022	(SID [Session ID]:DBConnect:[Data source]:[User]: Failed) Failed in DB connection.	• Set correct data source name, user name, and password in "Server service settings" of MES Interface Function Configuration Tool. • To use a 64-bit version operating system for the server, enter the following at the command prompt to start the "ODBC Data Source Administrator". %SystemRoot%\SysWOW64\odbcad32.exe
0x20400023 0x20500011 0x20500012 0x20500020 to 0x20500022	System error	• Please consult your local Mitsubishi representative.
0x20600001	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) Failed in SQL execution due to insufficient memory.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20600002	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) Failed in SQL execution due to insufficient resources.	
0x20600010	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) Invalid SQL execution request	• Check if the source IP address belongs to the MES interface module or the configuration personal computer. • Check the version of the MES interface module or MES Interface Function Configuration Tool.
0x20600011 0x20600012	System error	• Please consult your local Mitsubishi representative.
0x20600020	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) DB Connection Service does not support the SQL instruction to be executed.	• Check if the source IP address belongs to the MES interface module or the configuration personal computer. • Check the version of the MES interface module or MES Interface Function Configuration Tool.
0x20600021	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) Failed in preparation before SQL execution.	• Set a correct database type in "Server service settings" of MES Interface Function Configuration Tool. • Select "Job settings" ⇨ "Communication action" in MES Interface Function Configuration Tool, and set a correct table name.
0x20600022	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) Failed to obtain the number of fields in the record that is to be obtained by the SQL execution.	
0x20600023	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) Failed in SQL execution.	• Set a correct database type in "Server service settings" of MES Interface Function Configuration Tool. • Select "Job settings" ⇨ "Communication action" in MES Interface Function Configuration Tool, and set a correct table name, field names, and Select/ Update/Delete conditions. Also, set a correct data type for the data entered in the fields. • Check if the uniqueness constraint of the database (PRIMARY KEY constraint) is violated or not. • Check that reserved terms of the database are not set for table names and field names.
0x20600024	System error	• Please consult your local Mitsubishi representative.

Error code	Error name	Corrective action
0x20600025	(SID [Session ID]:SQL<...>:Failed) (SID [Session ID]:COMMIT:Failed) (SID [Session ID]:ROLLBACK:Failed) (SID [Session ID]:GetNext:Failed) (SID [Session ID]:Reset:Failed) No record was updated, inserted, or deleted by the SQL execution.	• Select "Job settings" ⇨ "Communication action" in MES Interface Function Configuration Tool, and set a correct Select/Update/Delete conditions. • Check if the database has been filled with registered data.
0x20600026 to 0x2060002A	System error	• Please consult your local Mitsubishi representative.
0x2060002B	(SID [Session ID]:***Transmitting CommitSuccess ResponseFailed.***) Failed to transmit the COMMIT success response.	• Check if it is connected to the network. • Check if the gateway and/or hub is operating. • Check if the power of the module is not turned OFF.
0x20700001	(ProgramExec:[IP address]:<...>:Failed) Failed in program execution due to insufficient memory.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20700002	(ProgramExec:[IP address]:<...>:Failed) Failed in program execution due to insufficient resources.	
0x20700003	System error	• Please consult your local Mitsubishi representative.
0x20700010	(ProgramExec:[IP address]:<...>:Failed) Invalid program execution request	• Check if the source IP address belongs to the MES interface module.
0x20700011	System error	• Please consult your local Mitsubishi representative.
0x20700012		
0x20700020	(ProgramExec:[IP address]:<...>:Failed) Failed to log on in program execution	• Set correct data source name, user name, and password in "Server service settings" of MES Interface Function Configuration Tool. • Check if the user account is invalid or not by the administrative tool of Windows®. • Check if the setting is forcing the user to enter password at next logon by the administrative tool of Windows®. • Check if the user password is expired or not by the administrative tool of Windows®.
0x20700021	(ProgramExec:[IP address]:<...>:Failed) Failed to load user profile during program execution	• No user profile for Windows® may have been created. With the user name and password set in "Server service settings" of MES Interface Function Configuration Tool, log on Windows® once, and re-execute it. • The load applied to the personal computer may have been too high. Check the execution conditions of other applications.
0x20700022	System error	• Please consult your local Mitsubishi representative.
0x20700023	(ProgramExec:[IP address]:<...>:Failed) Failed to generate process during program execution	• Check if the application to be executed in program execution exists or not. • Check if the name of the application to be executed in program execution is a directory. • Configure a proper security setting for the application to be executed in program execution.
0x20700024	(ProgramExec:[IP address]:<...>:Failed) The wait for process completion timed out or was interrupted during program execution.	• Increase the DB access timeout value with DB Connection Service Setting Tool. • Terminate the application executed by program execution before logoff.
0x20800010	(SID [Session ID]:TCPOpen RequestError:[IP address]) Invalid TCPOpen request	• Check if the source IP address belongs to the MES interface module or the configuration personal computer. • Check the version of the MES interface module or MES Interface Function Configuration Tool.
0x20800011	System error	Please consult your local Mitsubishi representative.
0x20800012		
0x20B00001		
0x20B00002		
0x20B00003	Failed to acquire table names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool. • Check if there is any problem in the connection route.

Error code	Error name	Corrective action
0x20B00004	Failed to acquire the information which is necessary for table name acquisition when acquiring table names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool.
0x20B00005	System error	• Please consult your local Mitsubishi representative.
0x20B00006		
0x20B00008	Failed to acquire the version of the database when acquiring table names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool.
0x20B00009	Failed to prepare before the SQL execution when acquiring table names from the database	
0x20B0000A	Failed to execute SQL when acquiring table names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool. • Check if there is any problem in the connection route.
0x20B0000B to 0x20B0000D	System error	• Please consult your local Mitsubishi representative.
0x20B0000E	The database type set for the DB server setting is different from the actual database type.	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool.
0x20B0000F	System error	• Please consult your local Mitsubishi representative.
0x20C00001		
0x20C00002		
0x20C00003	Failed to acquire field names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool. • Check if there is any problem in the connection route.
0x20C00004	Failed to acquire the information which is necessary for field name acquisition when acquiring field names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool.
0x20C00005 to 0x20C00007	System error	• Please consult your local Mitsubishi representative.
0x20C00008	Failed to acquire the version of the database when acquiring field names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool.
0x20C00009	Failed to execute SQL when acquiring field names from the database	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool. • Check if there is any problem in the connection route.
0x20C0000A		
0x20C0000B to 0x20C0000D	System error	• Please consult your local Mitsubishi representative.
0x20C0000E	The database type set for the DB server setting is different from the actual database type.	• Set the database type of the DB server setting correctly with the MES Interface Function Configuration Tool.
0x20C0000F	System error	• Please consult your local Mitsubishi representative.
0x2FE00010		

SQL failure log of DB Connection Service

Error code	Error name	Corrective action
0x20600001	Failed in SQL execution due to insufficient memory.	• Terminate any unnecessary applications. • Add more memory to the personal computer.
0x20600002	Failed in SQL execution due to insufficient resources.	
0x20600020	DB Connection Service does not support the SQL instruction to be executed.	• Check if the source IP address belongs to the MES interface module or the configuration personal computer. • Check the version of the MES interface module or MES Interface Function Configuration Tool.
0x20600021	Failed in preparation before SQL execution.	• Set a correct database type in "Server service settings" of MES Interface Function Configuration Tool. • Select "Job settings" ⇨ "Communication action" in MES Interface Function Configuration Tool, and set a correct table name.
0x20600022	Failed to obtain the number of fields in the record that is to be obtained by the SQL execution.	
0x20600023	Failed in SQL execution.	• Set a correct database type in "Server service settings" of MES Interface Function Configuration Tool. • Select "Job settings" ⇨ "Communication action" in MES Interface Function Configuration Tool, and set a correct table name, field names, and Select/Update/Delete conditions. Also, set a correct data type for the data entered in the fields. • Check if the uniqueness constraint of the database (PRIMARY KEY constraint) is violated or not. • Check that reserved terms of the database are not set for table names and field names.
0x20600024	System error	• Please consult your local Mitsubishi representative.
0x20600025	No record was updated, inserted, or deleted by the SQL execution.	• Select "Job settings" ⇨ "Communication action" in MES Interface Function Configuration Tool, and set a correct Select/Update/Delete conditions. • Check if the database has been filled with registered data.
0x20600026 to 0x20600028	System error	• Please consult your local Mitsubishi representative.
0x2060002B	(Data source name: ***Transmitting Commit Success Response Failed.***) Failed to transmit the COMMIT success response.	• Check if it is connected to the network. • Check if the gateway and/or hub is operating. • Check if the power of the module is not turned OFF.

Error codes returned in XML response messages

Error code	Error name	Corrective action
0x41170101	System error	• Please consult your local Mitsubishi representative.
0x41170103	XML message length error	• Check the content of the sent XML message.
0x41171101	XML request message interpretation error	
0x41171111	Duplicated XML request message route	
0x41171201	XML request message route error	
0x41171205	XML request message, attribute error	
0x41171301	XML request message, job name error	
0x41173101	Job execution error	• Check if the job is already in execution. • Check if the MES interface module is operating. • Check the CompactFlash card status (X1) and the file access status (X2). • Execute the job after starting the module and sampling tag data.
0x41173103	System error	• Please consult your local Mitsubishi representative.
0x41173105		

11 TERMS

11.1 Definitions and Descriptions of Terms

The following table shows the definitions and descriptions of the terms used in this manual.

Term	Description
CSV	An acronym for Comma Separated Values. A text file that consists of comma-delimited data.
DB buffering	A function to temporarily store SQL text that failed to be sent due to a communication error and resend the text when the communications have been recovered.
HTTP	An acronym for Hyper Text Transfer Protocol. A protocol to exchange XML format messages between the MES interface module and user applications in the XML processing function.
Tag for Wonderware® Historian	A name for data unit in the database Wonderware® Historian.
MES	An acronym for Manufacturing Execution Systems. A system for controlling and monitoring the plant status in real time to optimize production activities. The systems enable to speed up the responses to production plan and status changes that lead to efficient production processes and optimization of production activities.
ODBC	An acronym for Open Database Connectivity. Standard specifications for software to access databases.
SNTP	An acronym for Simple Network Time Protocol. A protocol for synchronizing computer time via a TCP/IP network.
SNTP server personal computer	A personal computer that provides time information to the MES interface module. This personal computer can be shared with a server personal computer.
SQL	An acronym for Structured Query Language. A database manipulation language that is used for operating a relational database.
URL	An acronym for Uniform Resource Locator. A notation method for indicating the locations of information resources on the Internet.
URL encode	Converts character strings into characters can be used in URLs. This designates percent encoding defined by RFC3986.
XML	An acronym for eXtensible Markup Language. A markup language for describing documentation, data meanings, and structures.
Item	One setting group unit included each setting type for editing.
Account	Designates the right to use the MES interface module or server personal computer, or an ID necessary for their use.
Action	A unit for processing defined in a job. There are two kinds of actions: communication action for communicating with a database and operation action for calculating values of tag component. The communication action is a processing unit for sending one SQL text (Select, Update, or Insert). The operation action is a processing unit for performing a maximum of 20 binary operations.
System switching	A function for the Redundant CPU to switch between control system and standby system of the redundant system. (Switching from control system to standby system, and vice versa.)
COMMIT	Processing for finalizing changes to a database.
CompactFlash card (CF card)	A storage card regulated by the 'CF+ and CompactFlash Specification' issued by the CompactFlash Association. This memory card is necessary for the MES interface module to operate the MES interface function.
Server service	A generic term for the services which can be offered by a server personal computer to which DB Connection Service is installed. There are database server service and application server service. The database server service is a service for accessing a database. The application server service is a service for linking with a program.
Server personal computer	There are database server personal computers and application server personal computers. The database server is a personal computer with a relational database which links information with the MES interface module. The application server is a personal computer with a program that operates upon request from the MES interface module.
Job	A unit for accessing a database.
Update settings	Processing that updates the settings in MES interface module using MES Interface Function Configuration Tool.

Term	Description
Configuration personal computer	A personal computer used for configuring various settings required for the MES interface function in the MES interface module. This personal computer can be shared with a server personal computer.
Time zone	A standard time zone for each region of the world. Each nation uses the time difference (±12 hours maximum) from the time at the Greenwich Observatory in the United Kingdom (GMT) as the standard time. The region using the same time difference is called a time zone. The standard time for Japan is 9 hours ahead of the GMT. In some nations, daylight time in which the clock is advanced for one hour is used in summer.
Tag component (component)	A generic term for components (device data) which configures a device tag (tag). This data organizes the communications path, data type, device, etc. for access to each programmable controller CPU device data as a single data unit.
Data source	Connection information which is necessary for accessing data using ODBC. With Windows®, a data source name is assigned to connection information for management. The database can be accessed via ODBC by specifying the data source name in the MES interface function.
Database (DB) or relational database (RDB)	Data management method that follows relational data model logic. One data is expressed as a collection of multiple items (fields) and the data collection is expressed as a table. Data can be easily merged and selected using key data.
Table	Data management format managed with relational databases. It is a two-dimensional table format composed of rows and columns.
Device	Variety of memory data in the programmable controller. There are devices handled in units of bits and devices handled in units of words.
Device tag (Tag)	Data table that contains a set of information (component) required to access device data in each programmable controller CPU on a network. The MES interface module collects device data in units of tags at an interval defined in the tag.
Trigger condition	Startup conditions for job operation.
Trigger buffering	When trigger conditions (conditions for data transmission) of multiple jobs are met in a concentrated manner, their data and trigger times are buffered in the module's internal memory so that actions (data operation/transmission) can be executed later using the buffered data. Even if the frequency of data transmission triggers is high, jobs are executed without missing any trigger.
Data separation	New data and old data are mixedly exists in units of 16 bits (1 word) in 32 bits data (2 words) or larger data due to data reception timing.
Daylight saving (summer time)	The system in which clocks are set one hour ahead of standard time in a specific period of time in summer.
Handshake	For highly reliable processing, programmable controller CPU devices are used to manage processing between the programmable controller CPU and MES interface module.
Field	Corresponds to a column in a relational database and indicates a type of data (record attribute).
Variable (temporary variable)	A variable that can be used in a same job for saving values selected from a database temporarily, and for writing operation values to a database or tag components.
Record	Corresponds to a row in a relational database. One row (record) stores the values of multiple columns (fields).
Rollback	Processing for canceling changes to a database.

INDEX

I

T

U

W

X

76

REVISIONS

TRADEMARKS

Ethernet is a registered trademark of Fuji Xerox Corporation in Japan.

Microsoft, Microsoft Access, Excel, SQL Server, Visual Studio, Windows, Windows Server, Windows Vista, and Windows XP are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Oracle and Java are registered trademarks of Oracle and/or its affiliates.

CompactFlash is either a registered trademark or a trademark of SanDisk Corporation.

The company names, system names and product names mentioned in this manual are either registered trademarks or trademarks of their respective companies.

In some cases, trademark symbols such as '™' or '®' are not specified in this manual.

Precautions before use

This publication explains the typical features and functions of the products herein and does not provide restrictions or other information related to usage and module combinations. Before using the products, always read the product user manuals. Mitsubishi Electric will not be held liable for damage caused by factors found not to be the cause of Mitsubishi Electric; opportunity loss or lost profits caused by faults in Mitsubishi Electric products; damage, secondary damage, or accident compensation, whether foreseeable or not, caused by special factors; damage to products other than Mitsubishi Electric products; or any other duties.

⚠For safe use

- To use the products given in this publication properly, always read the relevant manuals before use.

- The products have been manufactured as general-purpose parts for general industries, and have not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.

- Before using the products for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.

- The products have been manufactured under strict quality control. However, when installing the products where major accidents or losses could occur if the products fail, install appropriate backup or fail-safe functions in the system.

Mitsubishi Programmable Controllers
MES Interface Module Quick Start Guide

Country/Region	Sales office	Tel/Fax
USA	MITSUBISHI ELECTRIC AUTOMATION, INC. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100 Fax : +1-847-478-2253
Mexico	MITSUBISHI ELECTRIC AUTOMATION, INC. Mexico Branch Mariano Escobedo #69, Col. Zona Industrial, Tlalnepantla Edo. Mexico, C.P.54030	Tel : +52-55-3067-7500
Brazil	MITSUBISHI ELECTRIC DO BRASIL COMÉRCIO E SERVIÇOS LTDA. Avenida Adelino Cardana, 293, 21 andar, Bethaville, Barueri SP, Brazil	Tel : +55-11-4689-3000 Fax : +55-11-4689-3016
Germany	MITSUBISHI ELECTRIC EUROPE B.V. German Branch Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany	Tel : +49-2102-486-0 Fax : +49-2102-486-1120
UK	MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, U.K.	Tel : +44-1707-28-8780 Fax : +44-1707-27-8695
Ireland	MITSUBISHI ELECTRIC EUROPE B.V. Irish Branch Westgate Business Park, Ballymount, Dublin 24, Ireland	Tel : +353-1-4198800 Fax : +353-1-4198890
Italy	MITSUBISHI ELECTRIC EUROPE B.V. Italian Branch Centro Direzionale Colleoni-Palazzo Sirio Viale Colleoni 7, 20864 Agrate Brianza(Milano) Italy	Tel : +39-039-60531 Fax : +39-039-6053-312
Spain	MITSUBISHI ELECTRIC EUROPE, B.V. Spanish Branch Carretera de Rubí, 76-80-Apdo. 420, 08190 Sant Cugat del Vallés (Barcelona), Spain	Tel : +34-935-65-3131 Fax : +34-935-89-1579
France	MITSUBISHI ELECTRIC EUROPE B.V. French Branch 25, Boulevard des Bouvets, 92741 Nanterre Cedex, France	Tel : +33-1-55-68-55-68 Fax : +33-1-55-68-57-57
Czech Republic	MITSUBISHI ELECTRIC EUROPE B.V. Czech Branch Avenir Business Park, Radlicka 751/113e, 158 00 Praha5, Czech Republic	Tel : +420-251-551-470 Fax : +420-251-551-471
Poland	MITSUBISHI ELECTRIC EUROPE B.V. Polish Branch ul. Krakowska 50, 32-083 Balice, Poland	Tel : +48-12-347-65-00 Fax : +48-12-630-47-01
Sweden	MITSUBISHI ELECTRIC EUROPE B.V. (Scandinavia) Fjelievägen 8, SE-22736 Lund, Sweden	Tel : +46-8-625-10-00 Fax : +46-46-39-70-18
Russia	MITSUBISHI ELECTRIC (RUSSIA) LLC St. Petersburg Branch Piskarevsky pr. 2, bld 2, lit "Sch", BC "Benua", office 720; 195027 St. Petersburg, Russia	Tel : +7-812-633-3497 Fax : +7-812-633-3499
Turkey	MITSUBISHI ELECTRIC TURKEY A.Ş Ümraniye Branch Serifali Mahallesi Nutuk Sokak No:5, TR-34775 Umraniye/Istanbul, Turkey	Tel : +90-216-526-3990 Fax : +90-216-526-3995
UAE	MITSUBISHI ELECTRIC EUROPE B.V. Dubai Branch Dubai Silicon Oasis, P.O.BOX 341241, Dubai, U.A.E.	Tel : +971-4-3724716 Fax : +971-4-3724721
South Africa	ADROIT TECHNOLOGIES 20 Waterford Office Park, 189 Witkoppen Road, Fourways, South Africa	Tel : +27-11-658-8100 Fax : +27-11-658-8101
China	MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD. No.1386 Hongqiao Road, Mitsubishi Electric Automation Center, Shanghai, China	Tel : +86-21-2322-3030 Fax : +86-21-2322-3000
Taiwan	SETSUYO ENTERPRISE CO., LTD. 6F, No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan	Tel : +886-2-2299-2499 Fax : +886-2-2299-2509
Korea	MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD. 7F-9F, Gangseo Hangang Xi-tower A, 401, Yangcheon-ro, Gangseo-Gu, Seoul 07528, Korea	Tel : +82-2-3660-9530 Fax : +82-2-3664-8372
Singapore	MITSUBISHI ELECTRIC ASIA PTE. LTD. 307, Alexandra Road, Mitsubishi Electric Building, Singapore 159943	Tel : +65-6473-2308 Fax : +65-6476-7439
Thailand	MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD. 12th Floor, SV.City Building, Office Tower 1, No. 896/19 and 20 Rama 3 Road, Kwaeng Bangpongpang, Khet Yannawa, Bangkok 10120, Thailand	Tel : +66-2682-6522 Fax : +66-2682-6020
Vietnam	MITSUBISHI ELECTRIC VIETNAM COMPANY LIMITED Hanoi Branch 6th Floor, Detech Tower, 8 Ton That Thuyet Street, My Dinh 2 Ward, Nam Tu Liem District, Hanoi, Vietnam	Tel : +84-4-3937-8075 Fax : +84-4-3937-8076
Indonesia	PT. MITSUBISHI ELECTRIC INDONESIA Gedung Jaya 11th Floor, JL. MH. Thamrin No.12, Jakarta Pusat 10340, Indonesia	Tel : +62-21-3192-6461 Fax : +62-21-3192-3942
India	MITSUBISHI ELECTRIC INDIA PVT. LTD. Pune Branch Emerald House, EL-3, J Block, M.I.D.C., Bhosari, Pune-411026, Maharashtra, India	Tel : +91-20-2710-2000 Fax : +91-20-2710-2100
Australia	MITSUBISHI ELECTRIC AUSTRALIA PTY. LTD. 348 Victoria Road, P.O. Box 11, Rydalmere, N.S.W 2116, Australia	Tel : +61-2-9684-7777 Fax : +61-2-9684-7245

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO 14001 (standards for environmental management systems) and ISO 9001 (standards for quality assurance management systems).

ISO 14001
JACO
EC97J1113

UKAS
MANAGEMENT SYSTEMS
051

ISO 9001
BUREAU VERITAS
Certification

BUREAU VERITAS
1828

UKAS
MANAGEMENT SYSTEMS
008
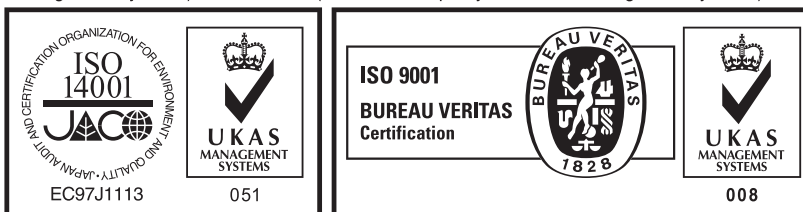
MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
www.MitsubishiElectric.com