

iQ Platform

C Controller/C Intelligent Function Module

Applications Pre-installed Model

e-Factory

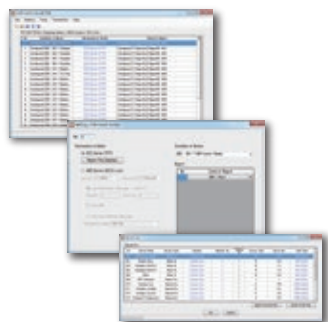




R12CCPU-V-BZ19/-BZ1B **NEW**
Q12DCCPU-V-BZ19/-BZ1B **NEW**

Data Collection Software

By implementing "data collection software", a system to manage, analyze, and utilize data from shop floor is realized, helping to optimize entire manufacturing with e-F@ctory.



Data collection software

Data Mining System

(Data Collection Software + Data Analysis Tool)

Low cost implementation of data mining system

This product enables direct collection of data necessary for analysis and has features and functions that simplify analysis in upper analysis system.

Collecting data without programming

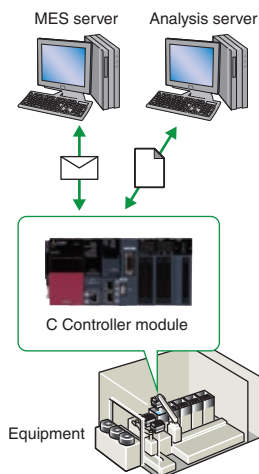
This product is able to retrieve data from desired information at desired timing with desired format. Data such as equipment data and communication data between host*¹ and equipment can be monitored and automatically collected just by configuration.

*1. Host communication protocol types supported: SECS-I (SEMI E4), SECS-II (SEMI E5), HSMS (SEMI E37), GEM (SEMI E30)

Supports various analysis tools

Supports various analysis tools that are necessary for data mining.*²

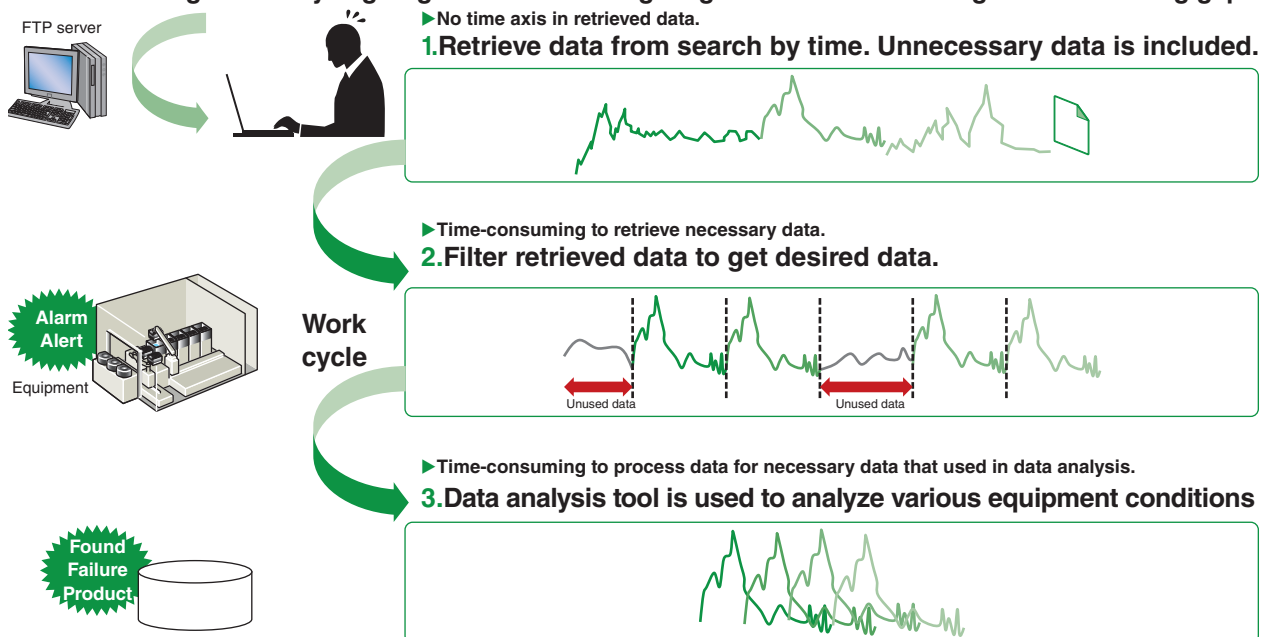
*2. Data analysis tools are separately required.



Preparation of retrieved data required many operations.

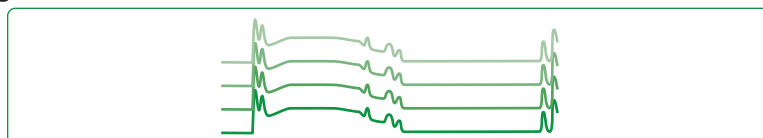
(without "data collection software")

Tired of filtering and analyzing target data from a huge log file! Difficult matching data with timing gap!



"Data collection software" requires only few simple settings to retrieve data.

Data can be displayed in many layers and can be extracted in the same condition for comparison. Deviation data can be monitored with guard band!



Application example

Detect abnormality of manufacturing equipment utilizing collected sensor data.

Common issues

- Production stop due to a sudden equipment failure results in a substantial loss.
- Periodical check requires a significant maintenance cost.

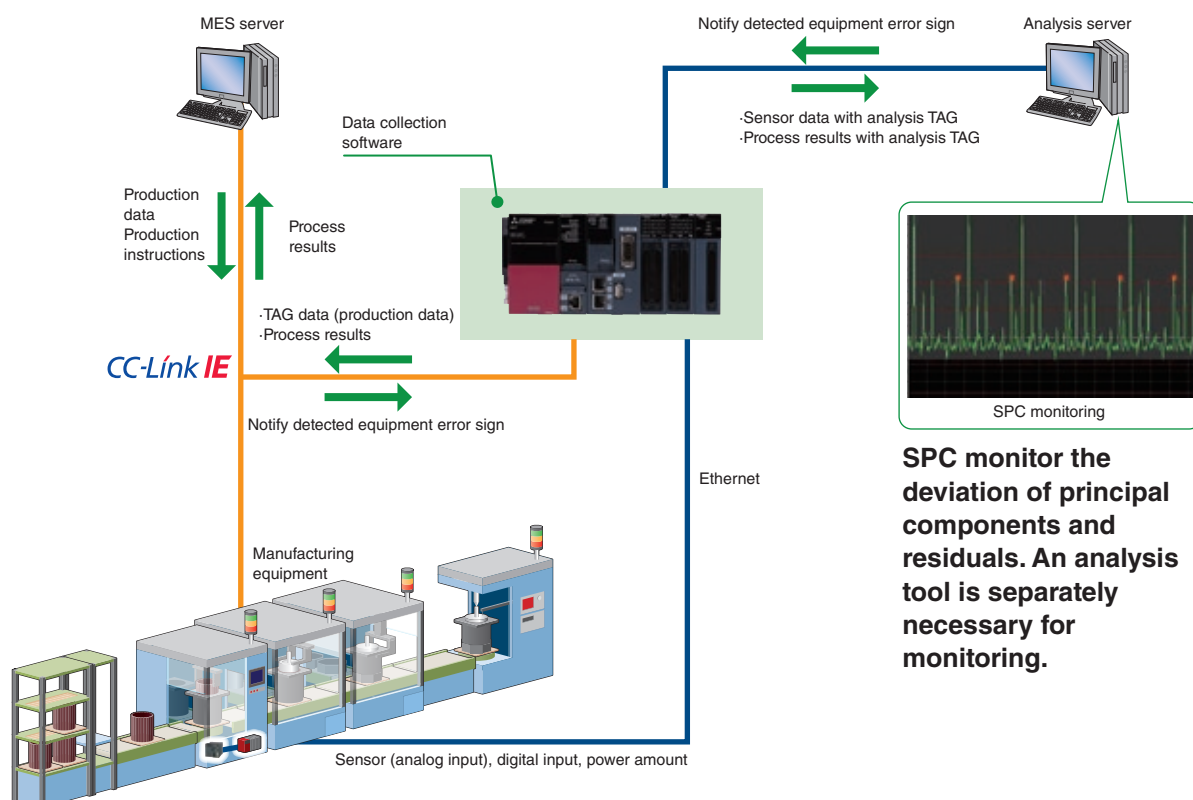
Merits

- Monitor a sign of equipment error by statistically monitoring trend deviation of collected sensor data.
- Collect FFT converted*1 results of huge volume of analog data such as sound and vibrations.

*1. A conversion program needs to be created using a PLC or C Controller for FFT conversion.

Additional merits

- Equipment maintenance is realized just before an error occurs in equipment.
- Periodical parts replacement can be reduced, realizing cost reduction.
- Implementation is easy as modification of the existing equipment is not necessary.





RD55UP06-V-BZ11/-BZ13/-BZ15 **NEW**
Q12DCCPU-V-BZ11/-BZ13/-BZ15 **NEW**

SECS/GEM Communication Software

SECS^{*1}/GEM communication can be realized with the upper-level server without a PC and programming, significantly reducing engineering costs.

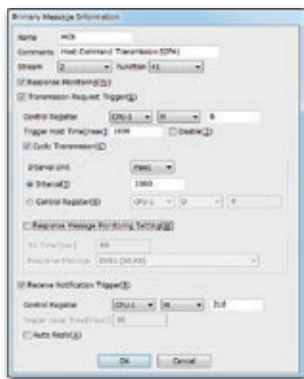
Various Communications Package

Implementation of communication without programming

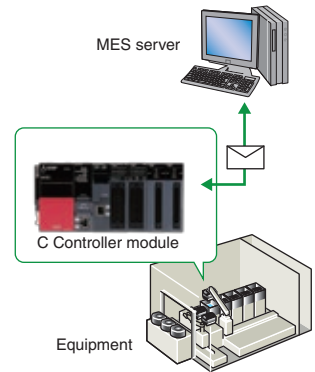
Various types of communication function can be added to the PLC by just configuring the handshake of data devices and trigger relay. A communication log and PLC log can be output also. The huge device process data can be reported without a gateway PC and the existing equipment can be connected to the MES server easily.

Communication types supported:

SECS- I (SEMI E4), HSMS (SEMI E37)
SECS- II (SEMI E5), GEM (SEMI E30)

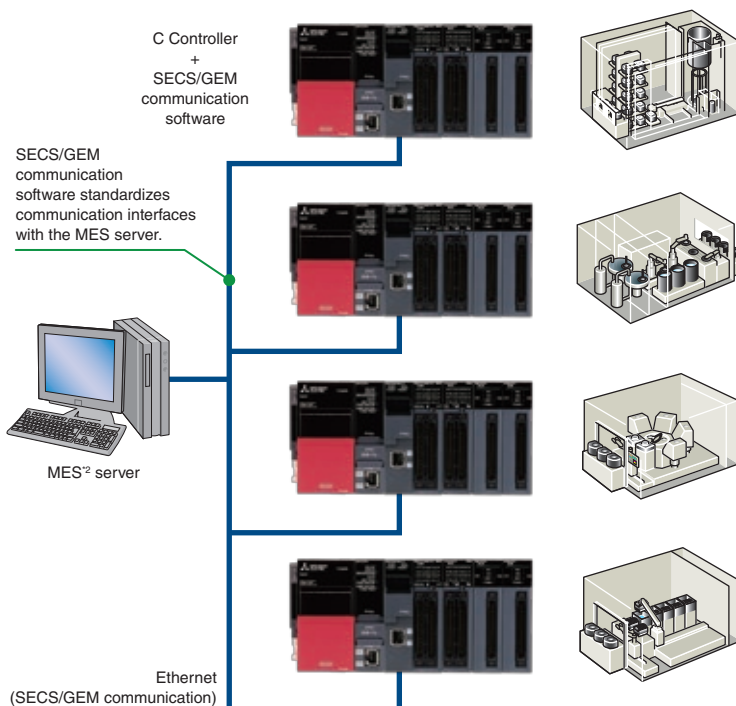


SECS/GEM communication software



Reduction of installation and running costs

Possible to fast start the new production line by distributing setting data to equipment manufacturers. Even if the SECS/GEM communication specification is changed, only setting change is necessary, reducing development processes and time.



Reduction of implementation costs for "SECS ready" equipment

Utilizing the correlation between the MELSEC system and "SECS/GEM communication software", SECS based communication interfaces can be implemented easily throughout the fab.

In addition to cost reduction of gateway PCs, issues when introducing PC system into the fab environment especially when clean room operations are used can be eliminated.

The C Controller + "SECS/GEM communication software" solution utilizes the direct link from the MES system to the factory floor provided by the MELSEC solution with the programmable controller. Specific SECS/GEM level functionality is realized and flexible to changes in the SECS/GEM communication specification without having to update hardware and software modules within the control system.

^{*1} SECS : SEMI Equipment Communications Standard
^{*2} MES : Manufacturing Execution Systems

Application example

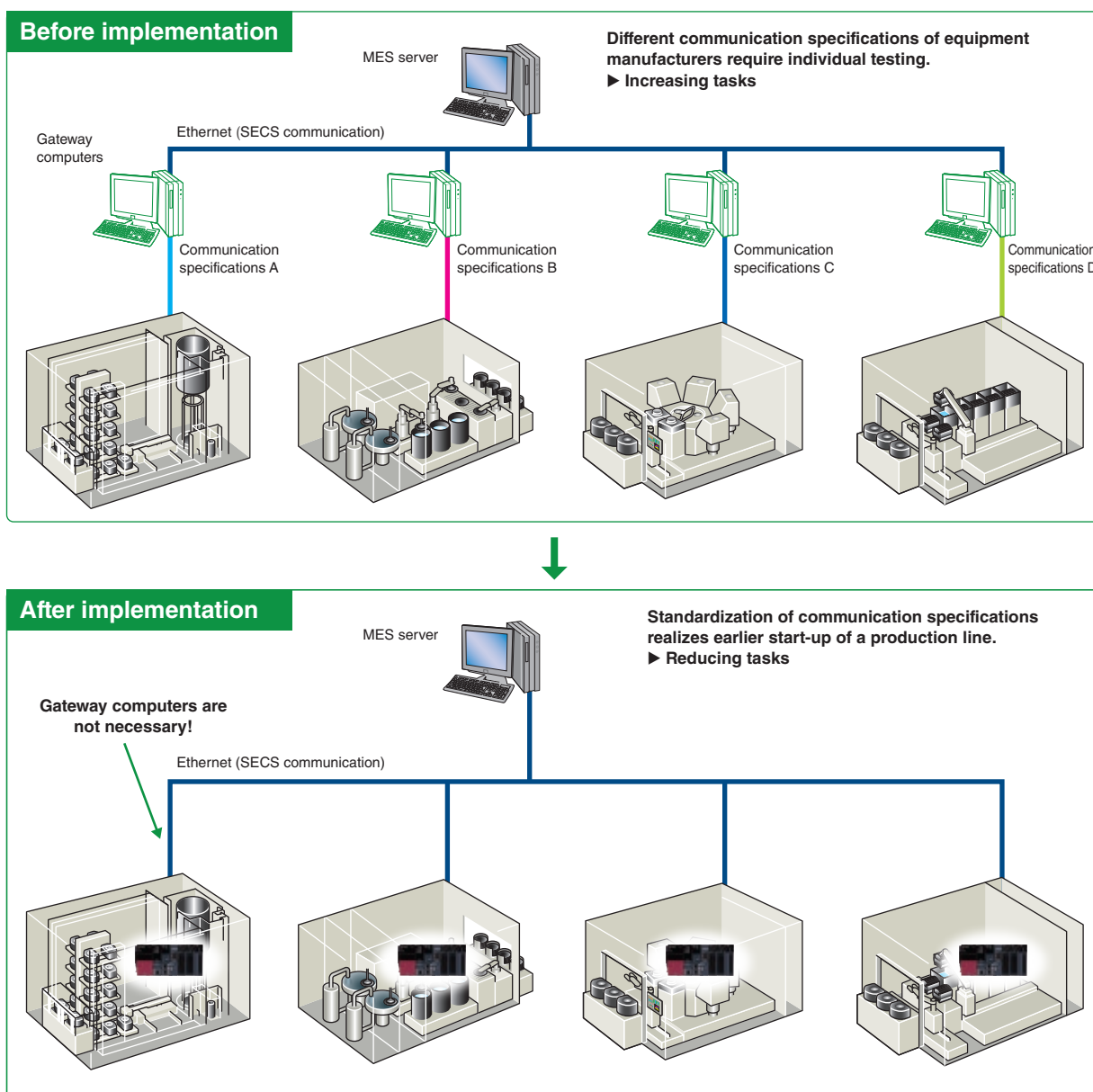
Reduce total implementation costs for SECS communication interfaces

Common issues

- Determining communication specifications with equipment manufacturers is cumbersome.
- Difficult to start a new production line in a short time due to a time-consuming communication testing.
- Difficult to change communication specifications after starting of a production line.
- High maintenance costs associated with aging parts of PCs such as disk drive, cooling fan, and UPS.
- OS maintenance and virus security measures are necessary.

Merits

- Standardization of communication specifications is realized by providing setting files to equipment manufacturers.
- Early start-up of SECS communication in the factory is realized by providing setting files to equipment manufacturers.
- Only setting change is necessary when SECS communication specifications are changed after system implementation.
- Maintenance cost can be reduced as the system does not require gateway computers.
- Long-term stable operation is realized with use of highly reliable VxWorks® embedded C Controller.





Q24DHCCPU-VG-B000/-B002

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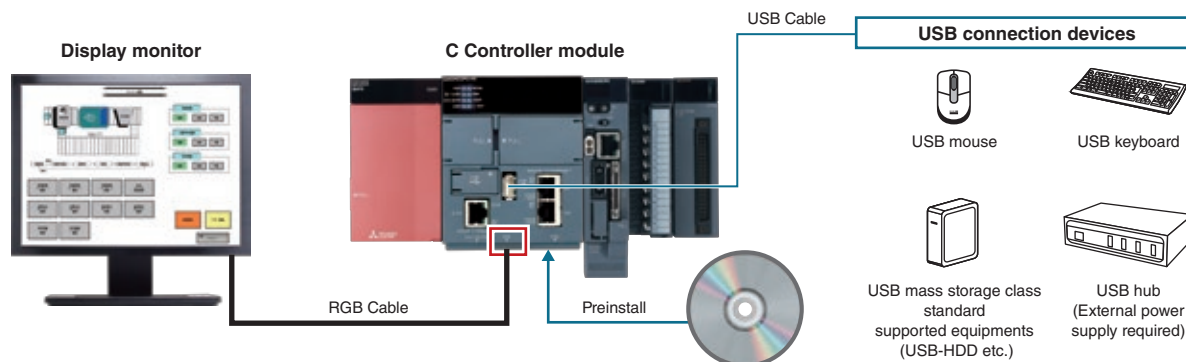


GENWARE®3-VG

The visual programming style realizes simple and speedy GUI development, substantially reducing development time.

Supports GUI Development

Increased user interfaces such as display and USB connection keyboard and mouse.



Automatic Generation of C Language Program using GUI Development Tool

Simple and speedy GUI development

GUI applications can be developed in the visual programming style similar to VB/VC etc. using the GUI Development tool (CI SKETCH-E).

GUI template screen collection

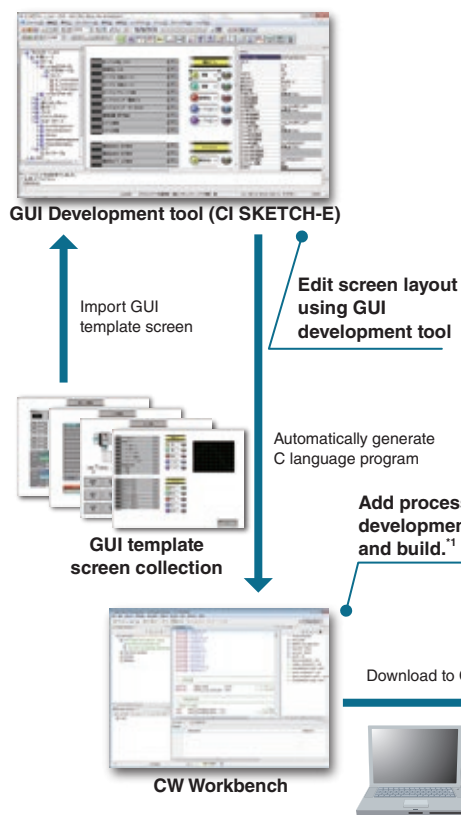
GUI screen development can be accelerated using the provided GUI template screens intended for use in FA site.

Built-in font data

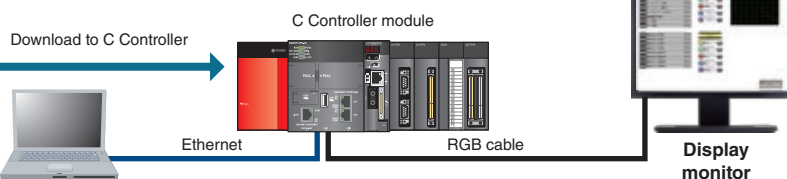
Font data is provided by default.

Fast and compact GUI runtime library

The compact runtime library built using fast proprietary algorithms is pre-installed into the C Controller Q24DHCCPU-VG.



The developed GUI operation can be monitored in real-time by connecting to the C Controller and can be debugged.



*1. CW Workbench is separately required.



Q26DHCCPU-LS-B031
Q24DHCCPU-LS-B030

Lineo Solutions, Inc.



uLinux Station+ uLinux Station

Utilizing the existing Linux® development assets, a PC on the shop floor can be easily replaced with the C Controller. A built-in report function model allows displaying and printing in-device inspection data, reports, or others without using a PC.

Lineo uLinux Configuration Tool

Product profile

uLinux Station is a web-based application which enables basic settings of Linux® system (Lineo uLinux*1) installed on C Controller. Using web browser on a PC, start/stop of basic Linux® services and system log check and such can be easily done.

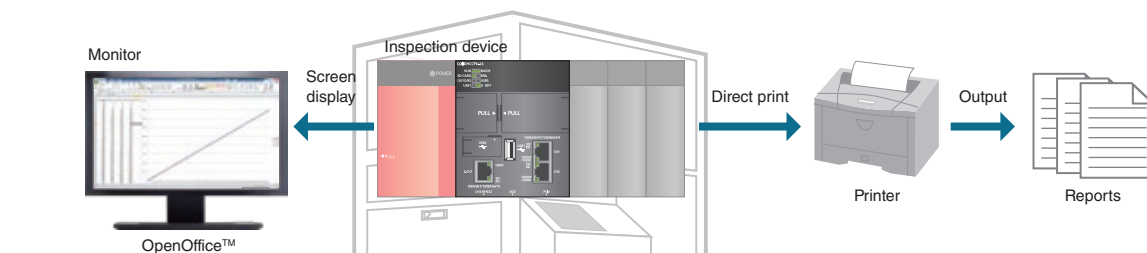
Functional overview

- Display device information
- Display system information of uLinux
 - MELSEC I/F function
 - By using MELSEC I/F, operate main system and/or display its information
 - Network configuration
 - Network configuration of uLinux system
 - System configuration
 - System configuration of uLinux system
 - External storage settings
 - Connection/disconnection settings of external storage for uLinux system
 - Log reference
 - Refer to uLinux system log
 - Report function (uLinux Station+*2)
 - Processes data of an Excel® file created with a PC

*1. Lineo uLinux = Lineo Solutions' embedded Linux®

*2. uLinux Station+ is available only in the Q26DHCCPU-LS-B031.

Reports can be displayed or printed directly with the C Controller instead of a PC.



Lineo uLinux ELITE/BSP Q24DHCCPU-LS Basic Edition

Embedded Linux® development environment exclusively for Mitsubishi C Controller*3

- 100% pure open source
- No runtime license needed
- High reliability
- Long-range maintenance available

*3. Separate agreement is necessary to customize uLinux pre-installed to Q24DHCCPU-LS/Q26DHCCPU-LS.

Embedded Linux® Developers site for Mitsubishi C Controller ("eldmicc")*4

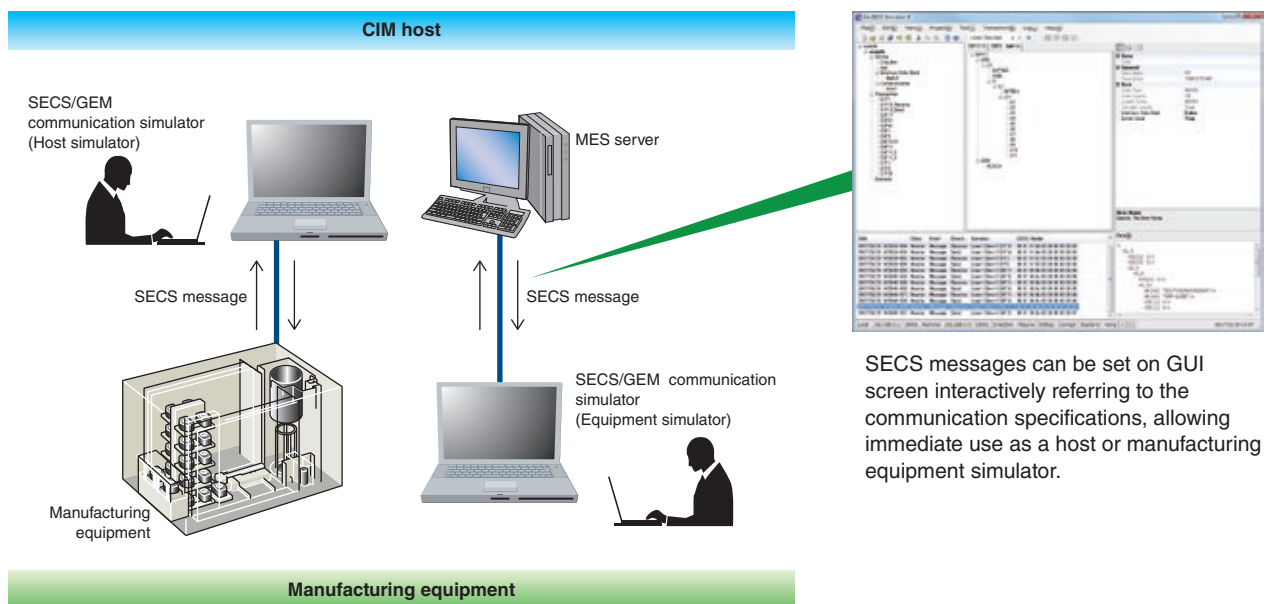
Eldmicc offers various contents ---technical information, update, supportive programs and more---for developers to complement and facilitate implementation of the C Controller with Linux®.

*4. This website is for registered users of Lineo uLinux ELITE for the Q24DHCCPU-LS/Q26DHCCPU-LS, but some contents are available to non-users as well.
<http://eldmicc.lineo.co.jp>



SECS/GEM Communication Simulator

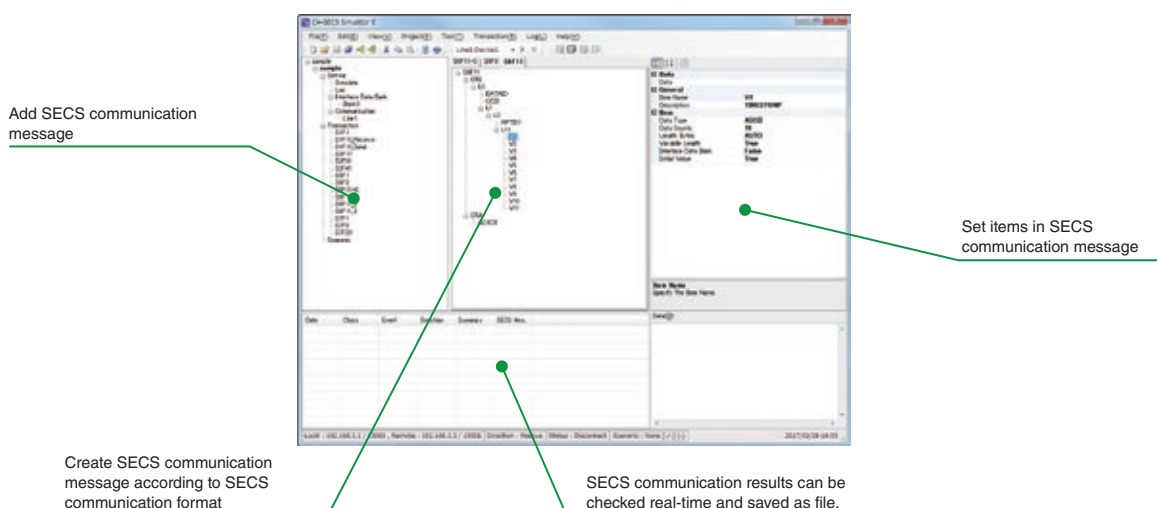
SECS/GEM communication simulator is Windows® application software enabling simulations of semiconductor communication standard SECS communication. Utilizing either as a host or equipment simulator and for debugging check and on-site testing, necessary works for enabling SECS/GEM communication can be smoothly done, reducing overall development cost.



Features

- SECS communication format can be easily created/set with GUI operation on tree view that's suitable for SECS message in SGML format.
- Acting as a host simulator, communication functions of manufacturing equipment can be simulated prior to the delivery of manufacturing equipment.
- This simulator can be used to debug SECS communication functions of manufacturing equipment and CIM host.
- This tool can be used to test SECS communication functions of existing equipment or CIM host on site, in order to connect existing equipment to CIM host.

Utilizing as an equipment simulator, communication functions of CIM host can be checked prior to the delivery of manufacturing equipment.



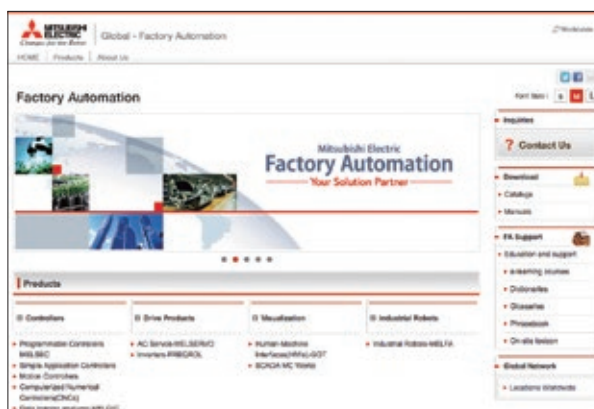
Factory Automation Global website

Mitsubishi Electric Factory Automation provides a mix of services to support its customers worldwide. A consolidated global website is the main portal, offering a selection of support tools and a window to its local Mitsubishi Electric sales and support network.

■ From here you can find:

- Overview of available factory automation products
- Library of downloadable literature
- Support tools such as online e-learning courses, terminology dictionary, etc.
- Global sales and service network portal
- Latest news related to Mitsubishi Electric factory automation

**Mitsubishi Electric Factory Automation
Global website:**
www.MitsubishiElectric.com/fa



Online e-learning

An extensive library of e-learning courses covering the factory automation product range has been prepared. Courses from beginner to advanced levels of difficulty are available in various languages.



■ Beginner level

Designed for newcomers to Mitsubishi Electric Factory Automation products gaining a background of the fundamentals and an overview of various products related to the course.

■ Basic to Advanced levels

These courses are designed to provide education at all levels. Various different features are explained with application examples providing an easy and informative resource for in-house company training.

Innovative next-generation, e-Manual

The e-Manual viewer is a next-generation digital manual offered by Mitsubishi Electric that consolidates all manuals into an easy-to-use package with various useful features integrated into the viewer. The e-Manual is modeled around a centralized database allowing multiple manuals to be cross-searched at once, further reducing the time for reading individual product manuals when setting up a control system.



■ Key features include

- One-stop database containing all required manuals, with local file cache
- Included with GX Works3 engineering software
- Also available in tablet version
- Easily download manuals all at once
- Automatic update of manual versions
- Search information across multiple manuals
- Visual navigation from hardware diagram showing various specifications
- Customizable by adding user notes and bookmarks
- Directly port sample programs within manuals to GX Works3

■ MITSUBISHI ELECTRIC FA e-Manual (tablet version)



The e-Manual application is available on iOS and Android™ tablets. e-Manual files are provided as in-app downloads.



iOS
Version 8.1 or later

Download on the
App Store





Android™
Version 4.3/4.4/5.0

ANDROID APP ON
Google play



■ Supported versions


OS	OS version	Model
iOS	iOS 8.1 or later	Apple iPad 2, iPad (3rd generation), iPad (4th generation), iPad Air, iPad Air 2, iPad mini, iPad mini 2, iPad mini 3, iPad mini 4
Android™	Android™ 4.3/4.4/5.0	ASUS Nexus7™ (2013)*1

*1: When using a tablet not listed above, 7-inch (resolution of 1920x1200 dots (WUXGA)) or better is recommended.

■ Product Configuration

Model	Pre-installed software	Outline
RD55UP06-V-BZ11 NEW	SECS/GEM communication software for NON-GEM	Supports SECS- I (SEMI E4), HSMS (SEMI E37), and SECS- II (SEMI E5).
Q12DCCPU-V-BZ11 NEW		
RD55UP06-V-BZ13 NEW	SECS/GEM communication software for GEM	Supports SECS- I (SEMI E4), HSMS (SEMI E37), SECS- II (SEMI E5), and GEM (SEMI E30). (Does not support Trace data collection, Limits monitoring, Process program management, and Document file output.)
Q12DCCPU-V-BZ13 NEW		
RD55UP06-V-BZ15 NEW	SECS/GEM communication software for GEM ADVANCED	Supports SECS- I (SEMI E4), HSMS (SEMI E37), SECS- II (SEMI E5), and GEM (SEMI E30). (Supports Trace data collection, Limits monitoring, Process program management, and Document file output.)
Q12DCCPU-V-BZ15 NEW		
SW1DNC-SECSSIM-E NEW	SECS/GEM communication simulator	Windows® application that enables SECS communication.
R12CCPU-V-BZ19 NEW	Data collection software	Equipped with Simple MES functionality.
Q12DCCPU-V-BZ19 NEW		
R12CCPU-V-BZ1B NEW	Data collection software Light	Not equipped with Simple MES functionality.
Q12DCCPU-V-BZ1B NEW		
Q24DHCCPU-VG-B000* ¹	GENWARE®3-VG Runtime License Version	Runtime library and font data are pre-installed.
Q24DHCCPU-VG-B002* ¹	GENWARE®3-VG Tool License Version	GUI development environment (CI SKETCH-E) is pre-installed into the Runtime License version.
Q26DHCCPU-LS-B031	uLinux Station +	Web pages application that can be configured in basic Linux® system.
Q24DHCCPU-LS-B030	uLinux Station	

*1. A separate maintenance contract is required for assistance with software questions.

 : Third-party company application pre-installed models

■ MELSOFT Library for the C Controller

Various software libraries for simple use of the C Controller are available, which improves engineering efficiency.

• Numerical value analysis software (Simulink) library

The MELSEC I/O function for Simulink has been added.

C/C++ based control program can be executed without changing a source code created with Simulink by using this library for the system with MATLAB.

• Module control library

Functions equivalent to FBs controlling the analog module, high-speed counter module, network module, or others are available as a library for the C Controller.

Use of this library reduces system development time.

Mitsubishi will expand libraries along with module release.

• Device connection library (label printer etc.)

A library for the C Controller to easily control various label printers, barcode readers, laser markers, or others used in FA sites is available. A template calling the library for the C Controller with the Open calc macro is available.

This template can be customized by customers.

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Please contact for details of pre-installed products

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