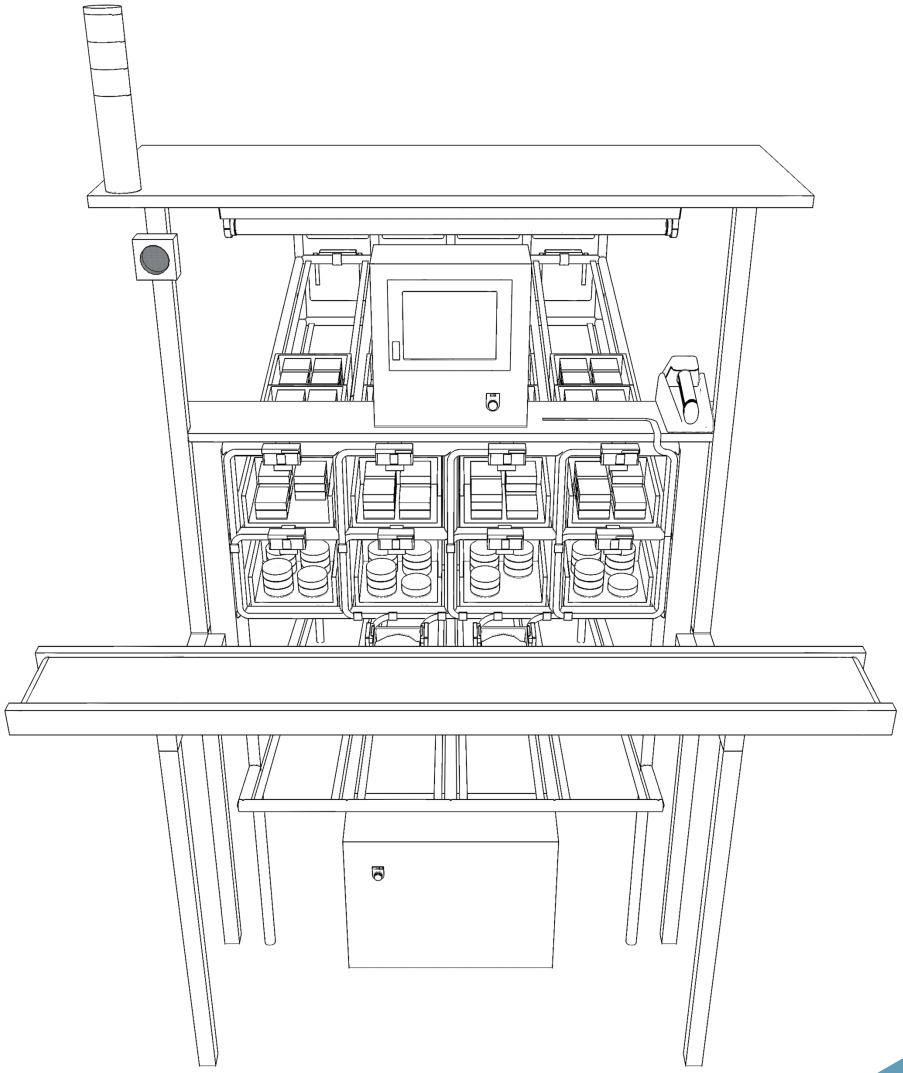
MITSUBISHI ELECTRIC

MITSUBISHI ELECTRIC FA Application Package

iQ Monozukuri POKAYOKE
Startup Manual



iQ Monozukuri

SAFETY PRECAUTIONS

(Always read these precautions before using this system.)

Before installation, operation, maintenance or inspection of the system devices used in this system, thoroughly read thorough and understand this manual and all the relevant manuals and handle the devices correctly. Before using the product, become familiar with the devices, safety information, and precautions.

In this manual, the safety precautions are ranked as "⚠WARNING" and "⚠CAUTION".

⚠WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Note that the ⚠ caution level may lead to a serious accident according to the circumstances.
Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[MOUNTING PRECAUTIONS]

⚠WARNING

- Make sure to shut off all phases of the power supply externally before attempting installation or wiring work.
  Failure to do so may cause an electric shock or damage to the devices.
- Make sure to install all terminal covers before turning on the power or performing operations after installation or wiring work.
  Failure to do so may cause an electric shock.
- Tighten the screws within the specified torque range.
  Undertightening can cause the product to drop, short circuit, or malfunction.
  Overtightening cause the product to drop, short circuit, or malfunction due to the damage of the screws and/or module.
- Do not directly touch any conductive parts and electronic components of the module.
  Doing so can cause a module malfunction or failure.
- Connectors for wiring must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered.
  Incomplete connections may cause a short circuit, fire, or malfunction.
- When using an SD memory card, fully insert it into the SD memory card slot.
  After the insertion, check that the SD memory card has been inserted completely.
  Poor contact may cause system malfunctions.

[MOUNTING PRECAUTIONS]

⚠ CAUTION

- Install the system devices used in this system securely.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits of electrical products such as a programmable controller, GOT, and power supply. Doing so may cause a fire, module failures, or malfunctions.
- Install an SD memory card, USB memory, and barcode reader securely to their prescribed connectors. Any installation failures, floating parts, or tilted installation of them can cause system malfunctions.
- Perform class D grounding (Grounding resistance: 100 Ω or less) to the grounding terminals on the programmable controller, GOT, control panel, and others using a wire of 2 mm^2 or thicker. Do not use common grounding with heavy electrical systems.
- Connect the AC and DC power supply wiring to the dedicated terminals shown in the electrical diagrams. Incorrect connections will burn out the programmable controller.
- Do not wire vacant terminals externally. Doing so may damage the devices.
- Connect cables so that hands or feet will not be caught. Doing so can cause a fall or an injury or damages to the devices.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠ WARNING

- Do not directly touch any conductive parts of the product during power-on. Doing so may cause an electric shock, malfunctions, or failures.
- Before cleaning or retightening terminals, shut off all phases of the power supply externally. Failure to do so may cause an electric shock. Failure to do so can cause the module to fail or malfunction.

⚠ CAUTION

- Do not disassemble or modify the product. Doing so can cause a failure, malfunction, or fire. (For repair of the product, please contact your local sales office.)
- Do not directly touch any conductive parts and electronic components of electrical devices. Doing so may cause an electric shock, malfunctions, or failures.
- Always turn off the power before installing or removing electrical devices. Failure to do so may cause device failures or malfunctions.
- Never use the product in areas with excessive dust, greasy fumes, conductive dusts, corrosive gas (Salt air, Cl_2, H_2S, SO_2 or NO_2), flammable gas, vibration or impacts, or expose the product to high temperature, condensation, or rain and wind. If the devices are used in such conditions, electric shocks, fire, malfunctions, deterioration, or damage may occur.
- Do not drop the system devices used in this system or subject them to strong shock. Doing so may damage the devices.
- Do not press the GOT display section with a pointed material such as a pen or driver. Doing so can cause a damage or failure of the display section.

[STORAGE AND DISPOSAL PRECAUTIONS]

⚠ CAUTION

- Operate and store the product in an environment without direct sunlight, high temperature, dust, humidity, and vibrations.
- When disposing of the system devices used in this system, treat them as industrial waste.
  When disposing of batteries, separate them from other wastes according to the local regulations.
- Dispose of used batteries promptly. Keep them away from children. Do not disassemble used batteries or do not dispose of the batteries in fire.

[PRECAUTIONS ON INTRODUCTION OF USER PROGRAMS]

⚠ WARNING

- If this system is customized by users, each function of the POKAYOKE application may delay or stop its processing. On each user's responsibility, customize the POKAYOKE application and its functions and check the operation of them.
- Do not change values of the device areas used in this system from a user program.
  Doing so may cause malfunctions.

[OTHER PRECAUTIONS (REQUESTS)]

⚠ CAUTION

- This system has been manufactured as a general-purpose product for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human lives.
- When using this system with other products, please confirm the standard and the code, or regulations with which users should follow.
  Moreover, please confirm the compatibility of this system to the system, machine, and apparatus with which users use.
- For safety precautions of the products manufactured by other companies included as the system devices used in this system, refer to the product manuals supplied with the devices.
- If in doubt at any stage during the installation of this system, always consult a professional electrical engineer who is qualified and has specialized knowledge in electricity (knowledge that electrical workers have or equivalent knowledge). If in doubt about the operation or usage of this system, please consult your local Mitsubishi Electric representative.
- Do not modify, delete, or add contents in this manual. The contents, specification, and others in this manual may be changed for improvement without any notice.
  The information in this manual has been carefully checked and is believed to be accurate; however, if you have noticed a doubtful point, a doubtful error, and others, please contact your local Mitsubishi Electric representative.

SYSTEM APPLICATION

The Mitsubishi POKAYOKE Control Package has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be greatly affected if any failure or malfunction occurs in the product.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the purchaser or end user.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize the use of the product in one or more of the Prohibited uses, provided that the usage of the product is limited only for the specific uses agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the products are required. For details, please consult your local Mitsubishi Electric representative.

INTRODUCTION

Thank you for purchasing the POKAYOKE Control Package.
This manual describes the information on the operation panel design, assembly procedures, system configurations, installation, test operations, and troubleshooting of the POKAYOKE application required for constructing a POKAYOKE application system.
Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the POKAYOKE application to design the product correctly.

CONTENTS

4. INSTALLATION TO WORK TABLES

5. SYSTEM SETTINGS

6. OPERATION CHECK

7. USER CUSTOMIZATION

APPENDICES

RELEVANT MANUALS

(1) Operation descriptions of the POKAYOKE application

Manual name	Description
iQ Monozukuri License Key Request Instructions <BCN-EP2005-0002>	Procedures to request the license key to register to the application package purchased
iQ Monozukuri POKAYOKE Operating Manual <BCN-EP2005-0025>	Procedures, system configurations, functions, and troubleshooting of the POKAYOKE application

(2) Programmable controller-related manuals

Manual name	Description
MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals) <SH-080889ENG, 13JZ35>	Information on the functions and devices of the CPU module and programming
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection) <SH-080890ENG, 13JZ36>	Information on the specifications of the hardware, such as CPU modules and power supply modules, maintenance and inspection of the system, and troubleshooting required to use LCPU
MELSEC-L CPU Module User's Manual (Built-In Ethernet Function) <SH-080891ENG, 13JZ37>	Information on the Ethernet function of the CPU module
MELSEC-L CPU Module User's Manual (Built-In I/O Function) <SH-080892ENG, 13JZ38>	Information on the general-purpose I/O functions, interrupt input function, pulse catch function, positioning function, and high-speed counter function of the CPU module
MELSEC-L Serial Communication Module User's Manual (Basic) <SH-080894ENG, 13JZ40>	Overview of the serial communication module, applicable system configurations, specifications, procedures prior to operation, basic data transmission method with external devices, maintenance, inspections, and troubleshooting
MELSEC-Q/L Serial Communication Module User's Manual (Application) <SH-080007, 13JL87>	Specifications and usage of special functions of the serial communication module, settings to execute special functions, and basic data transmission method with external devices
MELSEC Communication Protocol Reference Manual <SH-080008, 13JF89>	Specifications, access ranges, message protocols, and functions of the MELSEC communication protocol
MELSEC-Q/L AnyWireASLINK Master Module User's Manual <SH-081094ENG, 13JZ70>	Functions and programming of the LJ51AW12AL AnyWireASLINK master module
MELSEC-Q/L Programming Manual (Common Instruction) <SH-080809ENG, 13JW10>	Usage of sequence instructions, basic instructions, and application instructions for the L series
GX Works2 Version 1 Operating Manual (Common) <SH-080779ENG, 13JU63>	Functions that are common to simple projects and structured projects, including system configuration, parameter settings, and operation methods for online functions of GX Works2
GX Works2 Version 1 Operating Manual (Intelligent Function Module) <SH-080921ENG, 13JU69>	Operation methods of the intelligent function module, including parameter settings, monitoring, and predefined protocol support function with GX Works2

(3) GOT-related manual

Manual name	Description
GOT2000 Series User's Manual (Hardware) <SH-081194ENG, 1D7MJ5>	Hardware details of the GOT2000 series, such as specifications, wiring, installation, and maintenance
GOT2000 Series User's Manual (Utility) <SH-081195ENG, 1D7MJ6>	Information on the functions of the GOT2000 series, such as the GOT basic setting, extended function setting, maintenance, monitoring, and data control that can be set or operated on each utility screen
GT Designer3 (GOT2000) Screen Design Manual <SH-081220ENG, 1D7ML9>	Basic operations for drawing, data transfer, and common settings in GT Designer3
GOT2000 Series Connection Manual (Microcomputers, MODBUS Products, Peripherals) <SH-081200ENG>	Information on the connection between GOT2000 Series GOT with microcomputer, MODBUS/fieldbus, and peripheral devices

(4) FA Integrated Software-related manuals

Manual name	Description
iQ AppPortal Installation Instructions <BCN-P5999-0635>	Information on the operating environment and installation procedure of iQ AppPortal
iQ AppPortal Operating Manual <SH-081623ENG>	Information on the functions and how to use of iQ AppPortal

(5) AnyWire product manual

Refer to the product manual supplied with the product used.

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
POKAYOKE application	A generic term for POKAYOKE Control Package and system devices
POKAYOKE system	The abbreviation for the system constructed with the POKAYOKE application
AnyWireASLINK	A system in which sensors at the ends of a control system are connected to a programmable controller in the optimal way
AnyWireASLINK master module	A module used to connect the AnyWireASLINK system to the programmable controller and control the system
AnyWire Update	This function automatically recognizes the address of each ASLINK connected device.
ASLINK transmission cable	A cable that has signal wires to connect ASLINK connected device
POKAYOKE terminal	A generic term for terminals that have AnyWireASLINK interfaces and used for picking work
Terminal	The abbreviation for POKAYOKE terminal
Address	A number used by the AnyWireASLINK master module to identify each device on AnyWireASLINK
Address writer	A handy device used to read or write addresses and parameters from/to ASLINK connected devices
Barcode reader	A generic term for handy scanners manufactured by DENSO WAVE INCORPORATED and barcode readers manufactured by Cognex Corporation.
Code	A generic term for barcodes to be read using a barcode reader. This code is used to register or certify users, items, and parts.
System alarm	A generic term for CPU errors, GOT errors, and network errors issued by GOTs
Alarm	A generic term for errors other than system alarms issued by this system
Address mismatch	In this state, the address of an ASLINK connected device connected to the AnyWireASLINK master module and the address set in the settings of this system are not consistent.
Item	An item to be produced
Top administrator	A top manager who can register any information and perform copy operations in addition to playing a role as an administrator
Administrator	A manager who can register various settings (including some exceptions) of a POKAYOKE system. Managers can log in to the system as an operator.
Manager	A generic term for top administrators and administrators
Operator	Operators can use only the screens and functions necessary for parts pickups and supplies. They pick up, assemble, and supply parts following the orders indicated by the illumination of terminal lamps.
User	A generic term for managers and operators who can access the POKAYOKE system.
Work table	A table installed in the workplace to perform assembly operations
Area	A unit in the workplace controlled by the POKAYOKE system. It consists of a work table and part shelves.
Register Shelf	The action to register a terminal type and an address of a shelf where a POKAYOKE terminal is used
Register Shelf information	The information in which a shelf number, a terminal type, and an address of a shelf where a POKAYOKE terminal is used. This information can be set on the "Shelf" screen or using the Quick Registration Tool (sample).
Register lamp ON condition	Using this function, register the lamp status (ON/flashing) and a light color (RGB-compatible POKAYOKE terminals only) before and after a pickup operation during a picking operation.
Register Parts	Using this function, register various information such as a name, quantity, and the number of parts in each shelf.
Register Item	Using this function, register item names, operation target time, and other items as information of an item to be produced.
Register Process	Using this function, register various information such as a selection order and the number of picked pieces of each item.
Run/Suspend/End	Start, suspend, and end a picking operation according to predetermined operations.
Stock management	Using this function, manage the number of parts based on the current number of stocks to prevent the parts from being out of stock. When the number falls below a set number, a warning and the order to supply the parts are issued.
Alarm display	Using this function, display various error information on the POKAYOKE terminals such as communication errors and stock alarms.
Call	Use this function to call a manager.
Alarm History	This screen displays the alarm history.
Check	Operations of the POKAYOKE terminals can be checked.
Terminal control delay time registration	Register the control delay time for door-type terminals during an entire check.
All setting initialization	The registration information in the system can be reset to the state just after the installation.
Register Manager	Register a manager.

Term	Description
Register Operator	Register an operator.
Change Password	Change a password of the user who has logged in.
USB memory copy authority registration	Register a user (Administrator) who is allowed to copy data from a USB memory to a CPU and from a CPU to a USB memory.
Quick Registration Tool (sample)	This tool (sample) is used to edit registered information on the POKAYOKE system on a personal computer and update information in the programmable controller using the USB memory. Please contact your local Mitsubishi Electric representative for obtaining the tool.
User screen	A generic term for screen data added by the user customization function
User program	A generic term for sequence programs added by the user customization function
User device	Devices that users can freely use at the user customization of this system
User screen	Screens (screen numbers) that users can freely use at the user customization of this system
Devices disclosed to users	Among the devices occupied by this system, the applications of these devices are disclosed to users. Users can access the devices disclosed to users from user programs and refer to information of this system.
External interface	An interface that users can operate the system from user programs. Users can access the external interface from user programs and perform some operations on this system.
System signal	A signal that controls the three-color stack light according to the operation state of the system
Area signal	A signal that controls the three-color stack light according to the operation state of each area
Terminal Output ON	Data is output to the POKAYOKE terminal.
Terminal Output OFF	Data output to the POKAYOKE terminal is stopped.

REQUESTING AND REGISTERING A LICENSE KEY

To use the "POKAYOKE application", register a license key to the CPU module.
Before starting up the system, follow the "License Key Request Instructions" supplied with the POKAYOKE Control Package to get a license key.

(1) The following information is required to request a license key.

- Application information (product name, model, and product ID)
  This information is described in the "License Certificate" supplied with the POKAYOKE Control Package.
- Hardware information (model and serial number)
  The model, serial number, and function version of the CPU module to be used.
  For how to check the serial number and function version, refer to the following.

☞ 3.4.4 Checking serial number and function version

(2) Register the license key to the CPU module at the installation of a sequence program.

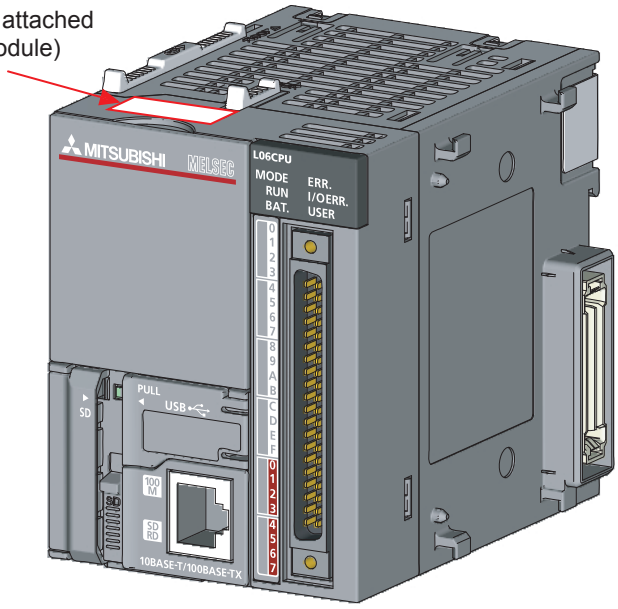
For the details, refer to the following.

☞ 5.2 Installing Sequence Programs

(3) Attach the "iQ Monozukuri seal" on the CPU module for which a license key has been registered.

- The "iQ Monozukuri seal" is supplied with the POKAYOKE Control Package.
- For the position to attach the seal, refer to the following.

Position where the seal is attached
(On the top of the CPU module)



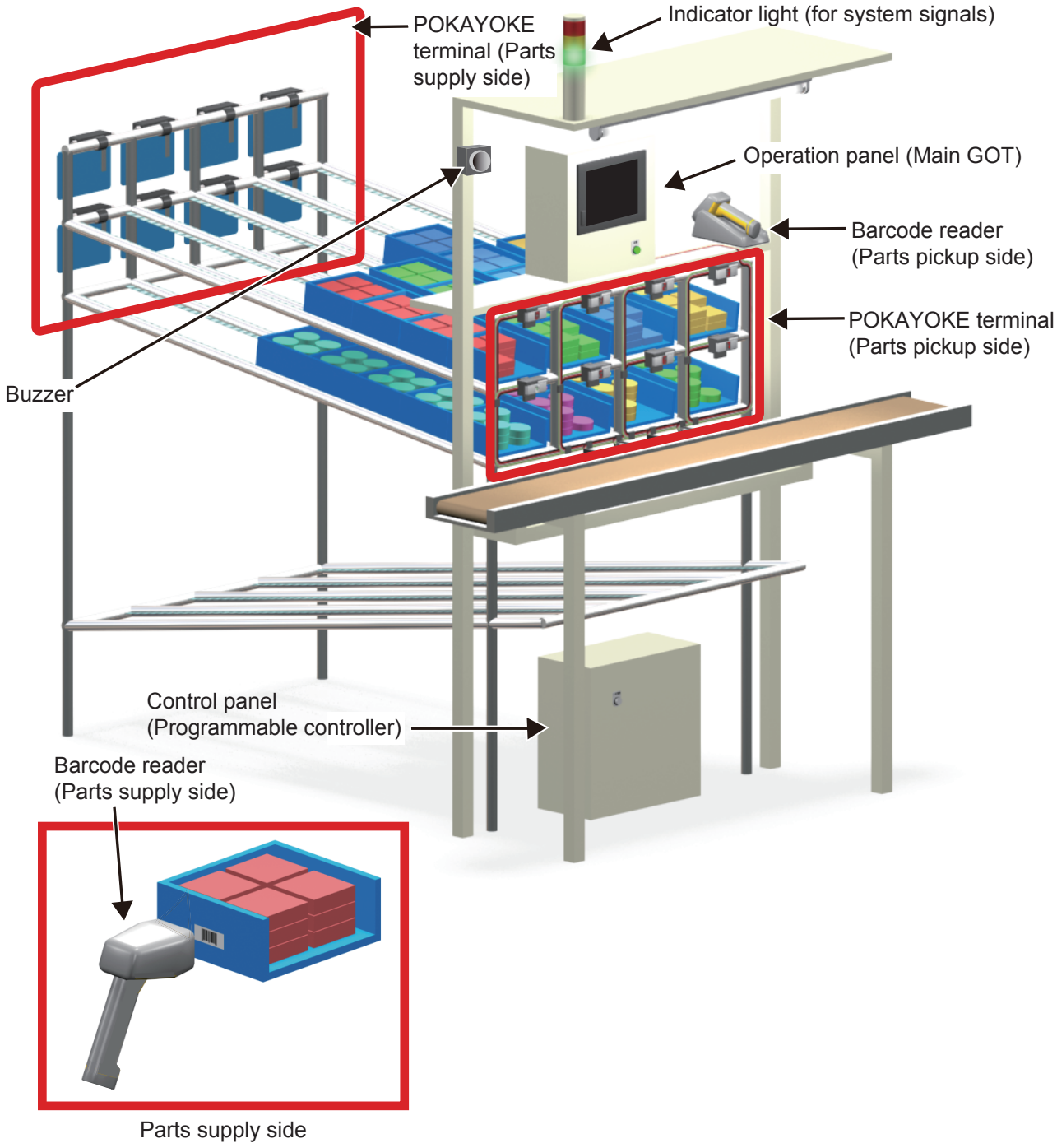
1. SYSTEM CONSTRUCTION

This chapter describes the entire system configuration for constructing the POKAYOKE system with the POKAYOKE application.

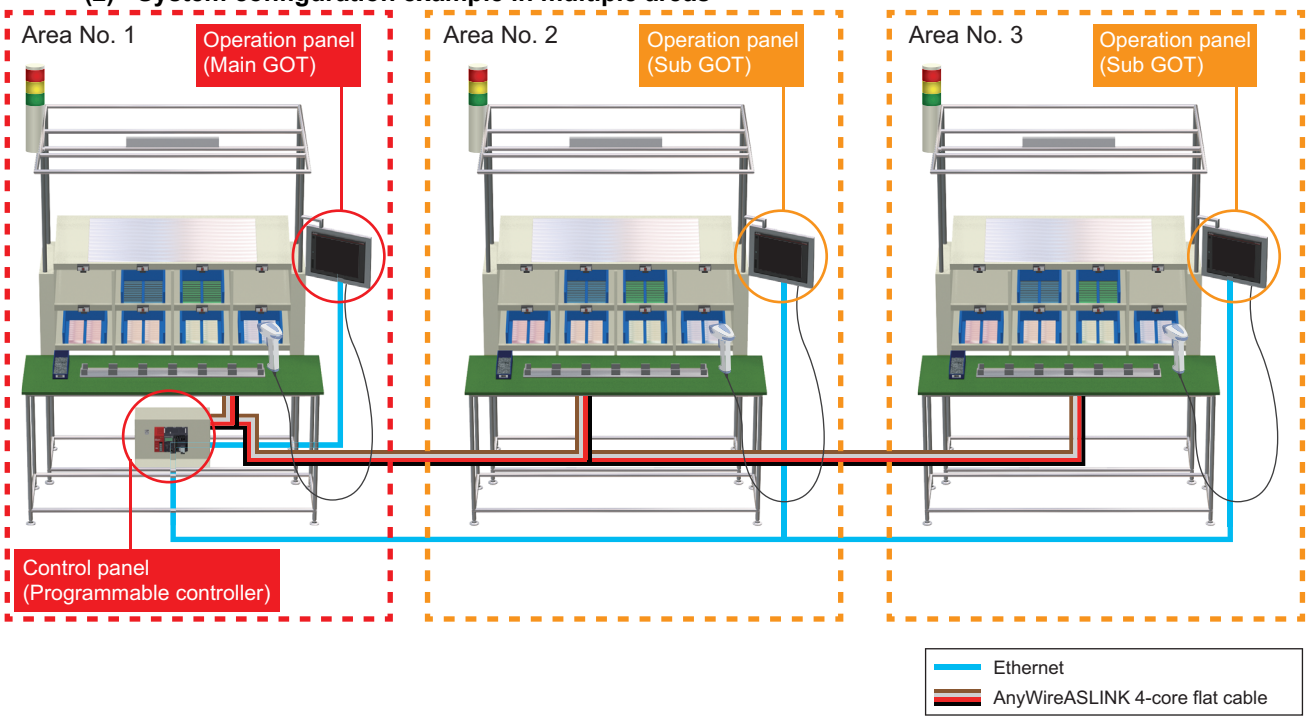
1.1 Entire System Configuration

The following figure shows a system configuration image of the POKAYOKE system constructed with this application.

(1) System configuration example in a single area



(2) System configuration example in multiple areas



An area where a shelf with no GOT can be constructed, however, the installation of the main GOT and control panel (programmable controller) is required for the system.

POINT

- The main GOT can perform start operations of all areas.
- For an area where the sub GOT is installed, the sub GOT also can perform the start operation.
- Even if the power of the main GOT or sub GOT is turned off during operation, it does not affect the operation state in other areas.
- The total length of transmission cables for POKAYOKE terminal is limited. For the details, refer to the following.

☞ 4.2.3 Wiring precautions

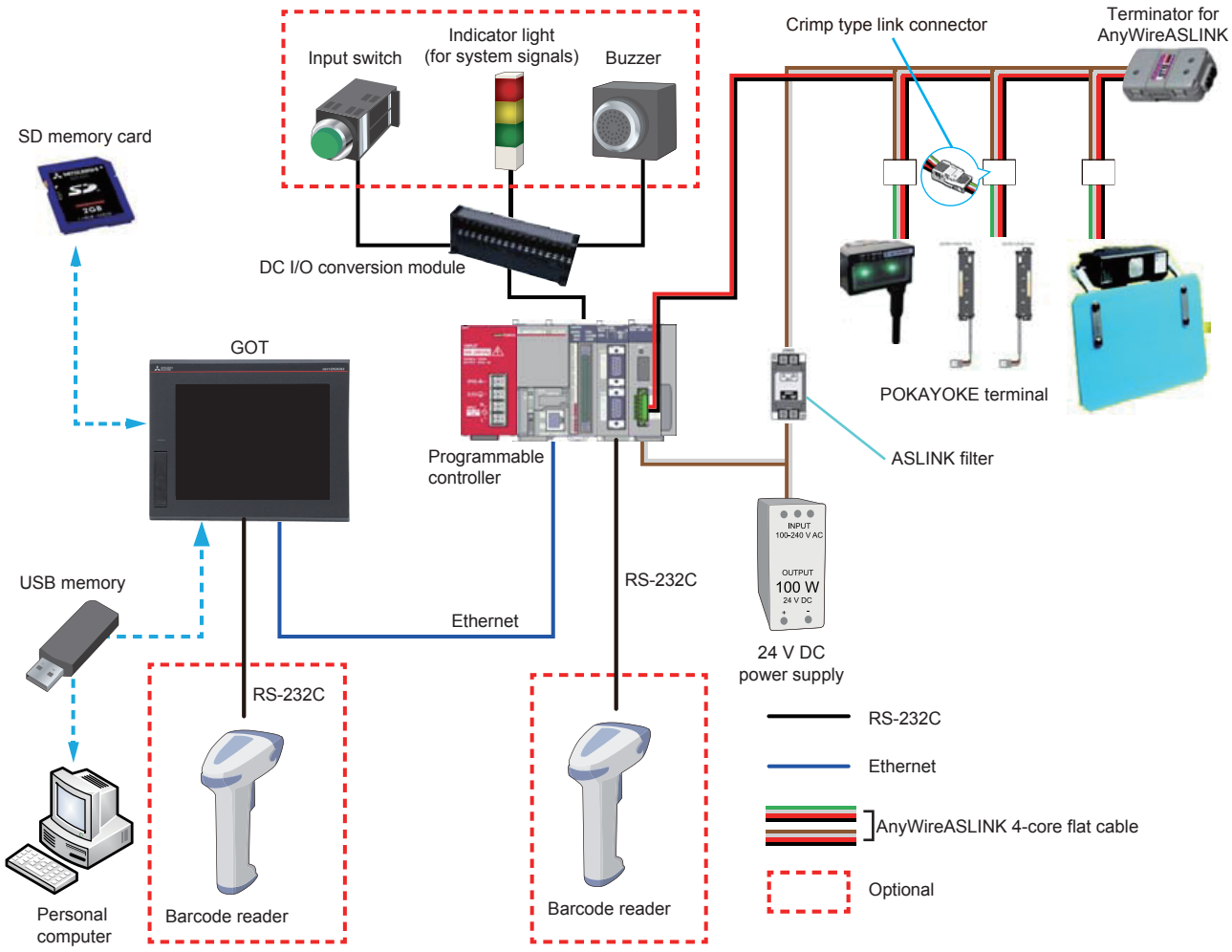
This application consists of the "POKAYOKE Control Package", programmable controllers, GOTs, "POKAYOKE terminals", and others.
The "POKAYOKE Control Package" is an application package of the software library (sequence programs, screen data, manuals).

1.1.1 Hardware components

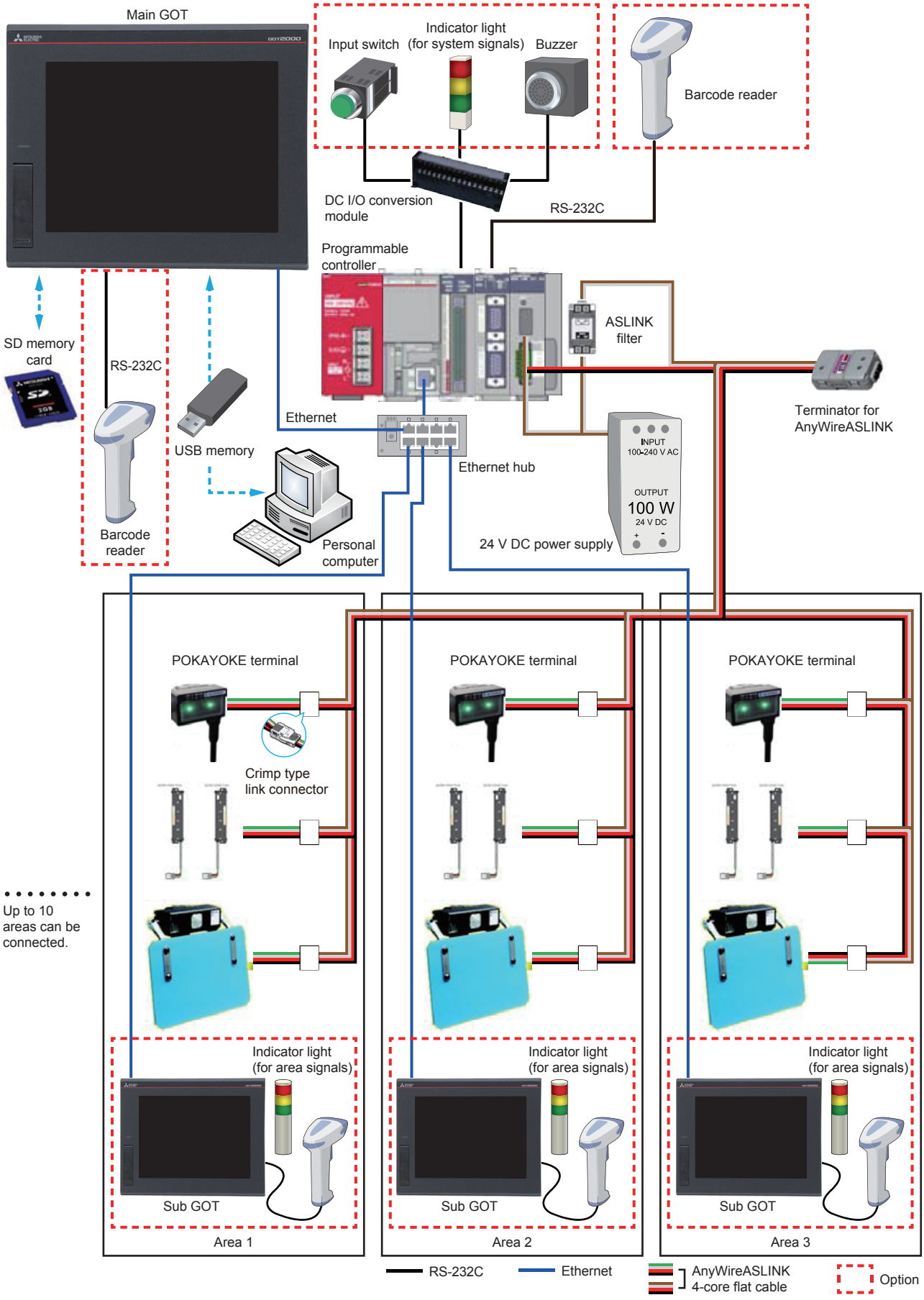
The following figure shows the hardware components of this application.
For the details of models and related information, refer to the following.

☞ 2.1 List of System Devices

(1) System configuration example in a single area

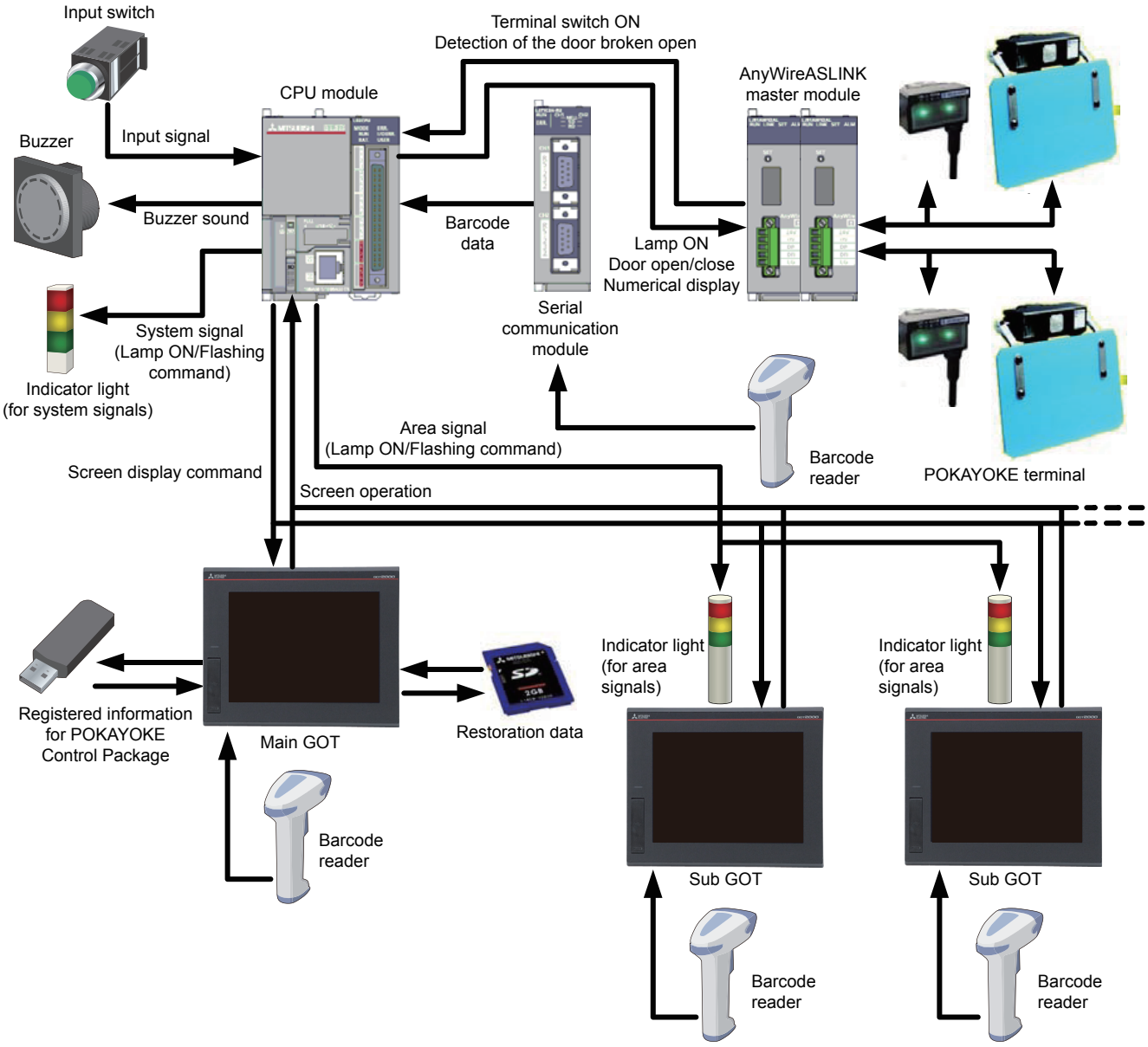


(2) System configuration example in multiple areas



1.2 Data and Signal Exchanges

The following figure shows an overview of data and signal exchanges among modules.



1.3 Operating Environment

This application requires a personal computer to install it and browse manual PDF files.

(1) Operating environment of a personal computer (The environments not specified below are unsupported.)

Personal computer	The personal computer on which the following OS can be used (refer to (2) for the system requirements for OS.)	
OS	Windows® 8.1(Operating System, Pro Operating System, Enterprise Operating System)	
	Windows® 8(Operating System, Pro Operating System, Enterprise Operating System)	
	Windows® 7(Professional Operating System, Ultimate Operating System, Enterprise Operating System)	
Disk drive	DVD drive*1*2	
Interface	USB*2	USB1.1 or later
	SD memory card*3	SDHC-compliant
Application	MELSOFT GX Works2*4	Version 1.555D or later
	MELSOFT GT Designer3 (GOT2000)*5	Version 1.156N or later
	Microsoft® Excel®*2	Excel® 2010
Application (recommended)	Adobe® Reader®*1	

*1 Used for browsing manuals.
*2 Used by the Quick Registration Tool (sample). Please contact your local Mitsubishi Electric representative for obtaining the tool.
*3 Used for the restoration function of the GOT.
*4 Used to install and customize sequence programs.
*5 Used to install and customize screen data.

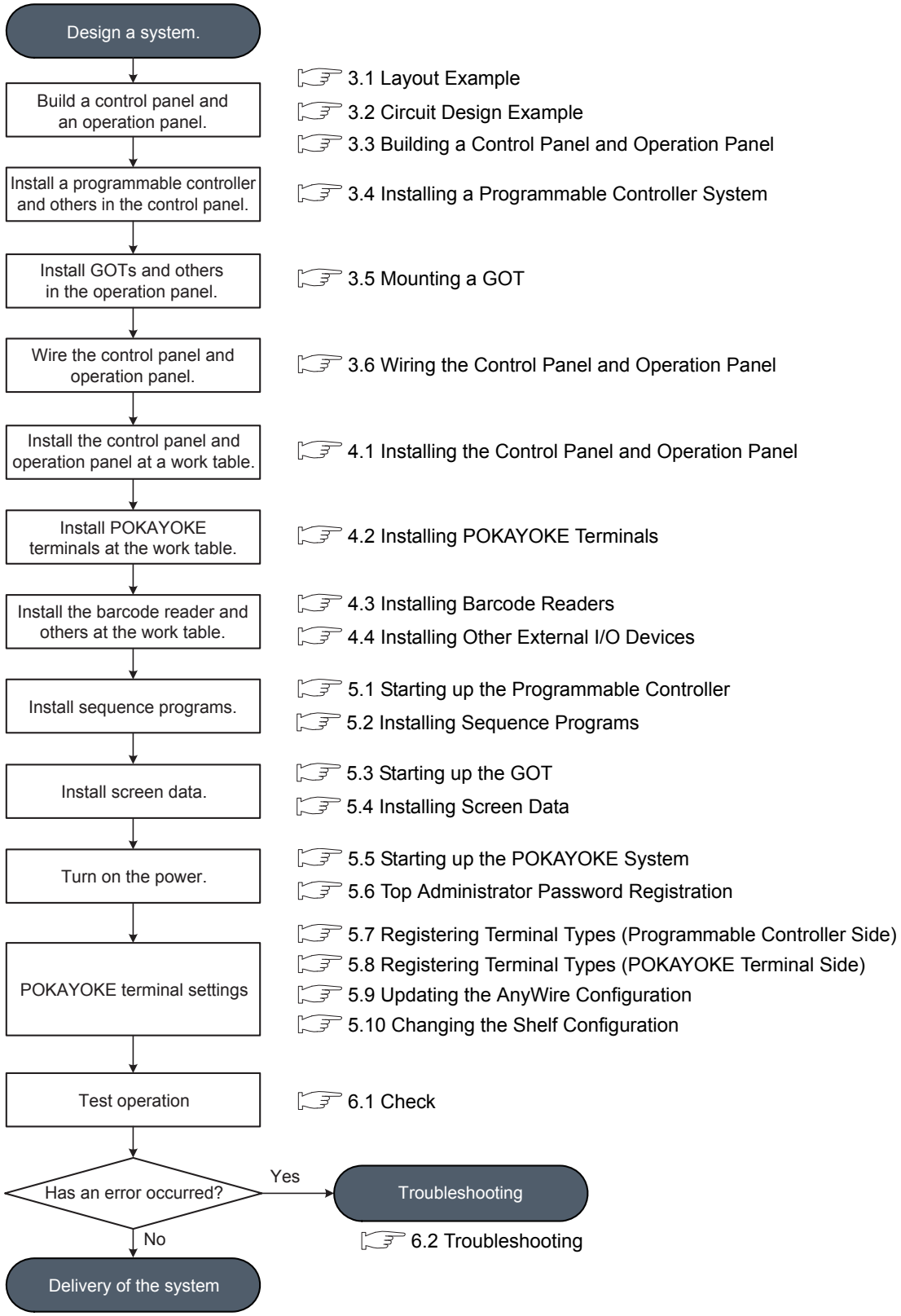
(2) System requirements for OS

OS		CPU	Memory	Disk space
Windows® 8.1, Windows® 8, Windows® 7	64 bits	1 GHz or more	2 GB or more	Free space: 20 GB or more
	32 bits		1 GB or more	Free space: 16 GB or more

1.4 Procedures Prior to Operation

The following figure shows the steps required to construct the POKAYOKE system with this application.
For the details of each process, refer to the corresponding pages.

CAUTION	Before changing wiring and settings, always power off the system.



2. SYSTEM CONFIGURATION

This chapter describes the system devices used in the POKAYOKE application.

2.1 List of System Devices

The following tables list the system devices of this application.

(1) Products in the iQ Monozukuri POKAYOKE Control Package (AP10-PKY002AA-M☐)

Check that all the products in the following table are included in a package.
For quantities, refer to "Before Using the Product" included in the package (BCN-EP2005-0021).

Component	Model	Manufacturer	Remarks
Before Using the Product	BCN-EP2005-0021	Mitsubishi Electric Corporation	
END-USER SOFTWARE LICENSE AGREEMENT	BCN-EP2005-0001		
License Certificate	BKO-CF2023H**		A number that comes in ** of "H**" depends on the number of purchased licenses. • 1 license: H01 • 5 licenses: H02 • 10 licenses: H03 • 15 licenses: H04 • 20 licenses: H05 • 25 licenses: H06
License Key Request Instructions	BCN-EP2005-0002		☞ REQUESTING AND REGISTERING A LICENSE KEY
iQ Monozukuri seal	BD996D089		
Installation DVD 	AP10-PKY002AA-DVD		☞ 2.2 Files in DVD-ROM

(2) Products to be prepared by users

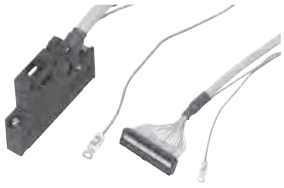
Purchase the following products.

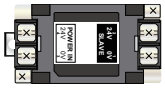
Component	Model	Manufacturer	Quantity	Remarks
Power supply module 	Select one of the following. • L61P • L63P • L63SP	Mitsubishi Electric Corporation	1	
CPU module 	Select one of the following. • L06CPU • L06CPU-P • L26CPU • L26CPU-P • L26CPU-BT • L26CPU-PBT	Mitsubishi Electric Corporation	1	Use the module with a serial number (first five digits) of "18102" or later. ☞ 3.4.4 Checking serial number and function version

Component	Model	Manufacturer	Quantity	Remarks
AnyWireASLINK master module 	LJ51AW12AL	Mitsubishi Electric Corporation	1 to 2	For connection to the AnyWireASLINK system
Serial communication module 	LJ71C24-R2[*1]	Mitsubishi Electric Corporation	0 to 1	For connection with a barcode reader RS-232: 2 channels
Main GOT 	Select one of the following. • GT2712-STWA • GT2712-STWD • GT2712-STBA • GT2712-STBD • GT2710-STBA • GT2710-STBD • GT2708-STBA • GT2708-STBD	Mitsubishi Electric Corporation	1	POKAYOKE application main operation panel
Sub GOT	• GT2712-STWA • GT2712-STWD • GT2712-STBA • GT2712-STBD • GT2710-STBA • GT2710-STBD • GT2708-STBA • GT2708-STBD • GT2104-PMBD[*2] • GT2104-RTBD[*3] • GT2103-PMBD[*2] • GS2110-WTBD • GS2107-WTBD	Mitsubishi Electric Corporation	0 to 10	POKAYOKE application sub operation panel
External power supply	-	-	1	-
Noise filter	-	-	1	For external power supply Example: RSHN-2003 (TDK-Lambda Corporation) or a noise filter having equivalent damping characteristics
Ethernet hub	-	-	-	For connection to the CPU module, main GOT, sub GOTs, and hubs Ethernet standard-compatible cable for 100BASE-TX connection Category 5 or higher (STP cable)
Ethernet cable (Twisted pair cable with shields)	-	-	-	
Ferrite core	-	-	-	For Ethernet cables Example: ZCAT3035-1330 (TDK Corporation) or a ferrite core having equivalent damping characteristics
Surge protection device	-	-	-	-

(3) Product to be prepared by users (depends on the system configuration)

Purchase the following products according to the system configuration.

Component	Model	Manufacturer	Remarks
SD memory card 	Select one of the following. • NZ1MEM-2GBSD • NZ1MEM-4GBSD • NZ1MEM-8GBSD • NZ1MEM-16GBSD	Mitsubishi Electric Corporation	Used to restore data in the GOT
Connection cable for DC I/O conversion module 	FA-SCBL10FMV-M	Mitsubishi Electric Engineering Company Limited.	For connection between a MELSEC-LCPU built-in I/O connector and a connector/ terminal block converter module Length: 1 m
DC I/O conversion module 	FA-TBS40P	Mitsubishi Electric Engineering Company Limited.	General-purpose screw terminal for wiring external I/O devices
Three-color stack light	-	-	Example: LMS-302L-RYG (PATLITE Corporation)
Input switch	-	-	For the external input function
Buzzer	-	-	Example: M5BJ-B24 (OMRON Corporation)
DIN rail	-	-	
USB memory	-	-	For backing up/restoring registered information
24 V DC power supply	-	-	90 W (input: 85 to 265 V AC, output: 24 V DC, 3.8 A) Example: KHNA90F-24 (COSEL CO., LTD.)
POKAYOKE terminal	☞ (a) List of POKAYOKE terminals	Anywire Corporation	The same number of link connectors are included.
φ28 pipe installation holder for transmission type terminal (Dust-proof:140mm)	A027-T14PHP28-H1	Anywire Corporation	For installing transparent type picking sensors
Installation screw set for transmission type terminal (for product with no protective bracket) (including 5 pieces)	A027-TSM4-5P	Anywire Corporation	Mounting screws for transparent type picking sensor fittings
[H] holder φ28 pipe installation holder lower tightening type (including 5 pieces)	A027-HP28-5P	Anywire Corporation	A holder attached to a terminal depends on the type of the terminal used. Use the proper holder depending on the pipe. For details, refer to the product manual supplied with the product used.
[H1] holder φ28 pipe installation holder back tightening type (including 5 pieces)	A027-HP28-H1-5P		
[SUS] holder SUS pipe installation holder	A027-HP-SUS2		

Component	Model	Manufacturer	Remarks
Cable with connectors on both ends	A0102-CND-**	Anywire Corporation	For connecting ultracompact touch type terminals each other (** varies according to the cable length.)
Transmission cable	A0102-CNE-20		For ultracompact touch type terminals
Wiring duct	A092-DM		For installing ultracompact touch type terminals
Terminator 	BT0	Anywire Corporation	Terminator for AnyWireASLINK One unit is required for each AnyWireASLINK master module.
4-core flat cable 	FK4-125-100	Anywire Corporation	Transmission cable for AnyWireASLINK (100 m per roll)
Pressure welding connector  (This figure shows LP4-WR-10P.)	LP4-WR-10P	Anywire Corporation	LP connector for AnyWireASLINK (For FK4-125-100)
	LP4-WW-10P		LP connector for AnyWireASLINK (For A0102-CNE-20)
ASLINK filter 	ANF-01	Anywire Corporation	For 24 V DC products
Address writer 	ARW-02AS	Anywire Corporation	Writer for setting POKAYOKE terminal addresses and door (arm) opening/closing angles and speeds
Pressure welding tool for LP connector 	LP-TOOL	Anywire Corporation	Tool exclusive to pressure welding connectors (LP4-WR-10P)
Barcode reader*4, *5	-	-	For the barcode reader whose operation has been checked by Mitsubishi, please contact your local Mitsubishi Electric representative.
Gender changer	-	-	D-sub 9-pin (male-male) For connection between a barcode reader and a serial communication module

*1 To connect a barcode reader, a gender changer is required.
*2 A barcode reader cannot be connected.
*3 To connect a barcode reader, a connection cable to connect it with the connector terminal block of the GOT needs to be provided. For the details, refer to the following.

GOT2000 Series Connection Manual (Microcomputers, MODBUS Products, Peripherals)

*4 Up to one barcode reader can be connected to the main GOT, and up to two barcode readers can be connected to the serial communication module. Decide whether or not to connect barcode readers and the number of barcode readers to be connected by the customer.
*5 Up to one barcode reader can be connected to each sub GOT. Decide whether or not to connect barcode readers by the customer.

POINT

A barcode reader is required to supply parts.

(a) List of POKAYOKE terminals

No.	Model	Product type	Indication/ instruction method	Response/ detection method	Number of I/O points		Transmission side (DP-DN side) consumption current (mA)
					Input	Output	
1	BL227XB-K02V-P	Standard compact type LED indication 	One color selection	Lever	1	1	6
2	BL227XB-K02VN-P			Pushbutton	1	1	6
3	BL227XB-K02VL-P			Downward reflection	1	1	6
4	BL227XB-K06M-P		RGB combination	Lever	1	3	6
5	BL227XB-K06MN-P			Pushbutton	1	3	6
6	BL227XB-K06ML-P			Downward reflection	1	3	6
7	BL227XB-K71V-P	Standard compact type 7-segment (one digit) + LED indication 	One color selection	Lever	1	5	6
8	BL227XB-K71VN-P			Pushbutton	1	5	6
9	BL227XB-K71VL-P			Downward reflection	1	5	6
10	BL227XB-K71M-P		RGB combination	Lever	1	7	6
11	BL227XB-K71MN-P			Pushbutton	1	7	6
12	BL227XB-K71ML-P			Downward reflection	1	7	6
13	BL227PB-T07P02V-P	Standard compact type LED indication (short) 	One color selection	Transmission (light emission)	0	1	2.5
14	BL227XB-T07P02V-C			Transmission (light reception)	1	1	2.5
15	BL227PB-T07P06M-P		RGB combination	Transmission (light emission)	0	3	2.5
16	BL227XB-T07P06M-C			Transmission (light reception)	1	3	2.5

No.	Model	Product type	Indication/ instruction method	Response/ detection method	Number of I/O points		Transmission side (DP-DN side) consumption current (mA)
					Input	Output	
17	BL227PB-T14P02V-P	Standard compact type LED indication (long) 	One color selection	Transmission (light emission)	0	1	2.5
18	BL227XB-T14P02V-C			Transmission (light reception)	1	1	2.5
19	BL227PB-T14P06M-P		RGB combination	Transmission (light emission)	0	3	2.5
20	BL227XB-T14P06M-C			Transmission (light reception)	1	3	2.5
21	BL227XB-F2K04V-P	Standard compact type Door open/close (vertical metal arm) + LED indication 	One color selection Independent	Lever	2	2	6
22	BL227XB-F2K04VN-P			Pushbutton	2	2	6
23	BL227XB-F2K04VL-P			Downward reflection	2	2	6
24	BL227XB-F2K08M-P		RGB combination Independent	Lever	2	4	6
25	BL227XB-F2K08MN-P			Pushbutton	2	4	6
26	BL227XB-F2K08ML-P			Downward reflection	2	4	6
27	BL227XB-R2K04V-P	Standard compact type Door open/close (horizontal metal arm) + LED indication 	One color selection Independent	Lever	2	2	6
28	BL227XB-R2K04VN-P			Pushbutton	2	2	6
29	BL227XB-R2K04VL-P			Downward reflection	2	2	6
30	BL227XB-R2K08M-P		RGB combination Independent	Lever	2	4	6
31	BL227XB-R2K08MN-P			Pushbutton	2	4	6
32	BL227XB-R2K08ML-P			Downward reflection	2	4	6
33	BL227XB-F3K04V-P	Standard compact type Door open/close (vertical plastic arm) + LED indication 	One color selection Independent	Lever	2	2	6
34	BL227XB-F3K04VN-P			Pushbutton	2	2	6
35	BL227XB-F3K04VL-P			Downward reflection	2	2	6
36	BL227XB-F3K08M-P		RGB combination Independent	Lever	2	4	6
37	BL227XB-F3K08MN-P			Pushbutton	2	4	6
38	BL227XB-F3K08ML-P			Downward reflection	2	4	6
39	BL227XB-F04V-P	Standard type Door open/close (vertical metal arm) + LED indication 	One color selection Independent	Lever	2	2	6
40	BL227XB-F04VL-P			Downward reflection	2	2	6

No.	Model	Product type	Indication/ instruction method	Response/ detection method	Number of I/O points		Transmission side (DP-DN side) consumption current (mA)
					Input	Output	
41	B292XB-02VL	Mole type LED indication	One color selection	Touch	1	1	6
42	B292XB-06ML		RGB combination	Touch	1	3	6
43	BL2101XB-02VL-P	Surface-emission type LED indication 	One color selection	Touch	1	1	3

⚠CAUTION

- To use the following POKAYOKE terminals, set "3" as a variable of "error detection function mode". If a value other than "3" is set, the POKAYOKE terminals may not operate normally.
  - BL227XB-F2K04V-P, BL227XB-F2K04VN-P, BL227XB-F2K04VL-P
  - BL227XB-F2K08M-P, BL227XB-F2K08MN-P, BL227XB-F2K08ML-P
  - BL227XB-R2K04V-P, BL227XB-R2K04VN-P, BL227XB-R2K04VL-P
  - BL227XB-R2K08M-P, BL227XB-R2K08MN-P, BL227XB-R2K08ML-P
  - BL227XB-F3K04V-P, BL227XB-F3K04VN-P, BL227XB-F3K04VL-P
  - BL227XB-F3K08M-P, BL227XB-F3K08MN-P, BL227XB-F3K08ML-P
  - BL227XB-F04V-P, BL227XB-F04VL-P

  For the setting method, refer to the product manual supplied with the product used.
- Simultaneously opening or closing multiple door-type terminals may cause the ASLINK transmission cable voltage drop error (H7002). Check the current consumption of the door-type terminal during operation, and add an external power supply as necessary.
  For details of the current consumption of POKAYOKE terminals and the local power supply method, refer to the product manual supplied with the product used.

2.1.1 Precautions for use

(1) Always insert the ASLINK filter (ANF-01) between the AnyWireASLINK master module and the cables that supply drive power (24 V DC, 0 V) to the module.

(2) When installing the ASLINK filter, connect the LINE side (Terminal 1 and 2) of the ASLINK filter to the terminal, and connect the LOAD side (Terminal 3 and 4) to the power supply.

(3) Connect one AnyWireASLINK terminator in one AnyWireASLINK master module system, and at the cable end farthest from the module.

(4) For the total length of transmission cables, refer to the following.
☞ 4.2.3 Wiring precautions

(5) Up to 128 POKAYOKE terminals can be connected to one AnyWireASLINK master module in this system. When two AnyWireASLINK master modules are connected, up to 256 POKAYOKE terminals can be connected.
(Count a transparent-type terminal as one unit on the light emission and light reception sides respectively.)

(6) The maximum connectable number of terminals is limited not only by the maximum connectable number of AnyWireASLINK master modules but also by the supply current from an external power source. Do not allow the total current consumption of terminals to exceed the supply current from the external power source.

(7) Do not use "SET switch" of the AnyWireASLINK master module in this system.

(8) Setting the arm (door) motion time to "0" (Delay time: 0 second) may cause operators' hands to be caught. Set the arm (door) motion time to "1" (Delay time: 1 second) or longer and adjust the door opening/closing position setting depending on the system in use.

(9) The number of output colors from a three-color stack light is limited to three (red, yellow, and green).

(10) OUT0 to 4 and IN6 of the CPU module are exclusive to the three-color stack light (for system signals), buzzers, and input switches used in this application. Up to two barcode readers can be connected in this system.

2.2 Files in DVD-ROM

The following table describes the structure of the files in the installation DVD supplied with the POKAYOKE Control Package.

Folder		File name*1	Description	Required application
-		AP10-PKY002AA.txt	The version of the POKAYOKE application in this installation DVD is described.	-
Manual	Chinese	bcnep20050002*_zh-cn.pdf	Chinese (Simplified) manual	Adobe Reader
		bcnep20050026*_zh-cn.pdf		
		bcnep20050027*_zh-cn.pdf		
		readme.txt	The details of the manual is described.	-
	English	bcnep20050002*_en-us.pdf	English manual	Adobe Reader
		bcnep20050024*_en-us.pdf		
		bcnep20050025*_en-us.pdf		
		readme.txt	The details of the manual is described.	-
	Japanese	bcnep20050002*_ja-jp.pdf	Japanese manual	Adobe Reader
		bcnep20050022*_ja-jp.pdf		
		bcnep20050023*_ja-jp.pdf		
		readme.txt	The details of the manual is described.	-
Tools	AP10-PKY002AA-LIC	-	PKY license key registration support tool	Microsoft® Excel®
Project		AP10-PKY002AA-L06_*.****.gxw	Project for L06CPU	GX Works2
		AP10-PKY002AA-GT27S_Main_*.****.gtx	Project for main GOT (GT2712-S, GT2710-S, GT2708-S)	GT Designer3
MELSOFT iQ AppPortal		-	Installer for the application integrated management software "MELSOFT iQ AppPortal"	MELSOFT iQ AppPortal

1 "" indicates the version of the project.

POINT

"MELSOFT iQ AppPortal" is the application integrated management software which manages assets, including projects and libraries, in a group for each purpose.
Use this software to manage projects and related files for each application.

- For the operating environment and how to install the software, refer to the following.

  iQ AppPortal Installation Instructions

- For the functions and how to use the software, refer to the following.

  iQ AppPortal Operating Manual

Installing "MELSOFT iQ AppPortal" stored in the installation DVD registers all the data included in this package to "iQ Monozukuri Folder" in "MELSOFT iQ AppPortal".
The following data in the zip format is registered in "iQ Monozukuri Folder". Decompress the file to be used as needed.

- PKY license key registration support tool (AP10-PKY002AA-LIC.zip)

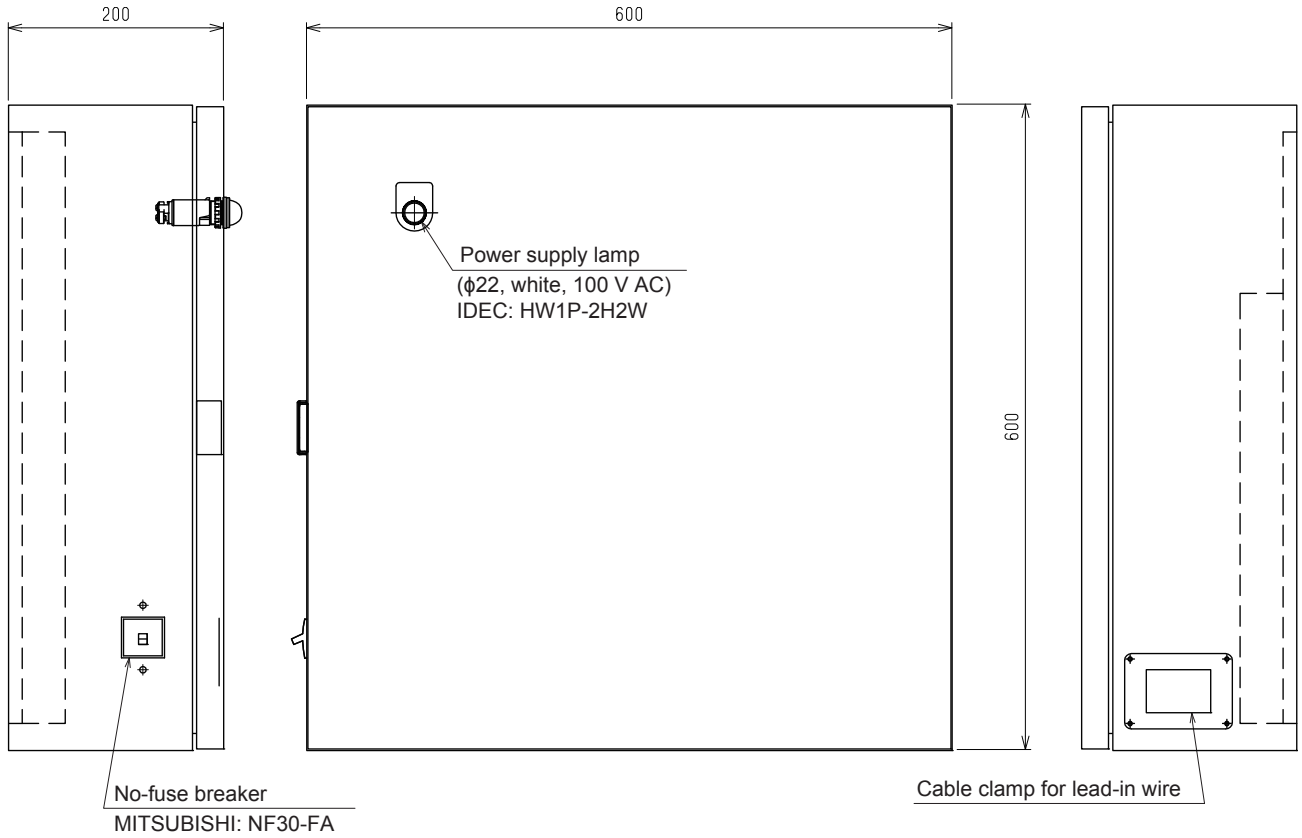
3. DESIGNING CONTROL PANEL AND OPERATION PANEL

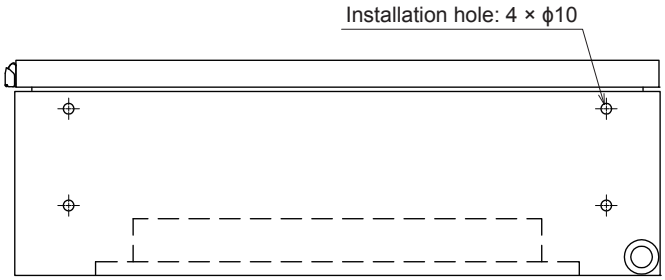
This chapter describes the procedure for building a control panel to control the POKAYOKE application and an operation panel on which the GOT is to be mounted.

3.1 Layout Example

The following figures show layout examples of the control panel and operation panel.

(1) Control panel

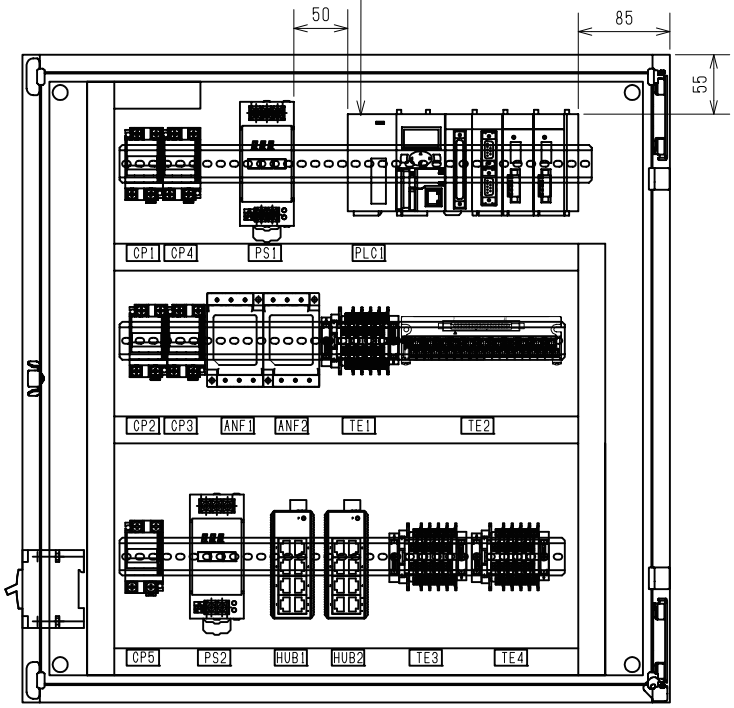


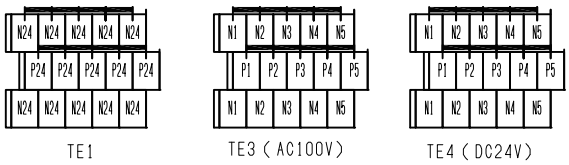


(Unit: mm)

PLC module configuration

CPU: L06CPU
Serial communication module: LJ71C24-R2
AnyWireASLINK master module: LJ51AW12AL
AnyWireASLINK master module: LJ51AW12AL

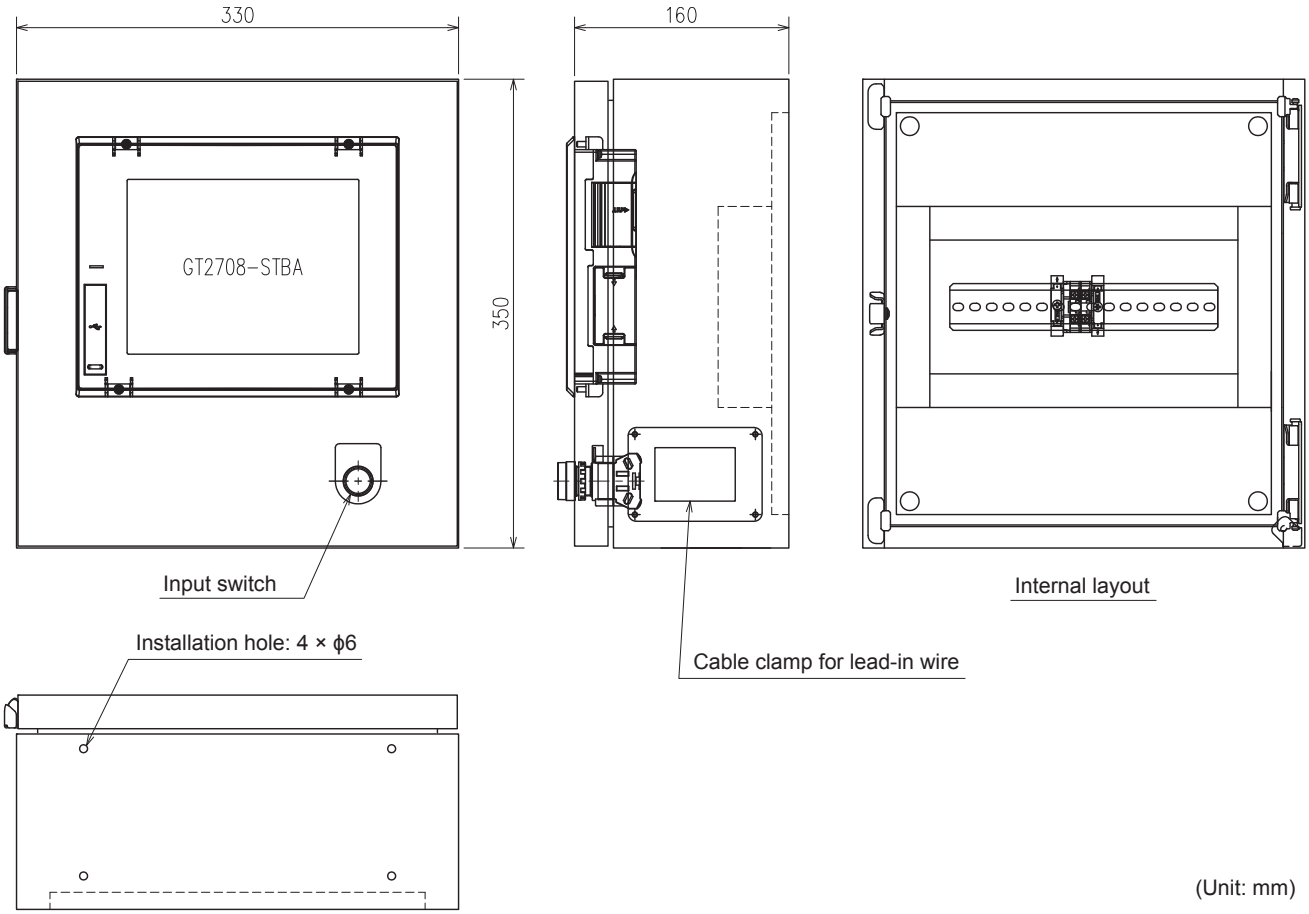




Terminal layout

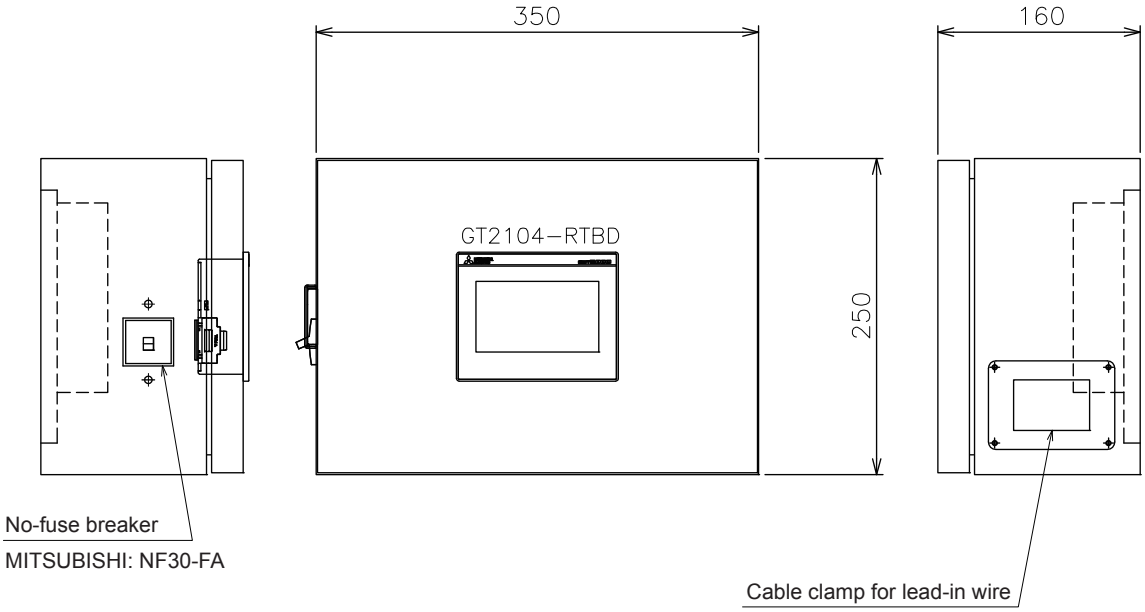
(Unit: mm)

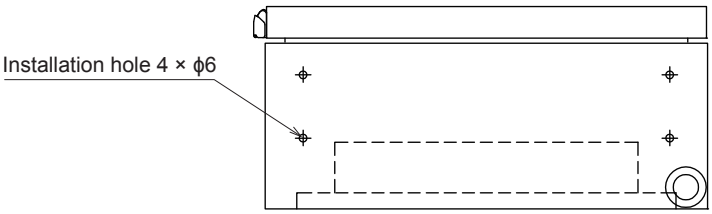
(2) Operation panel (Example for the main GOT: GT2708-STBA)

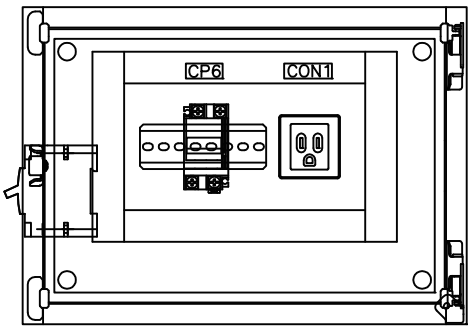


(Unit: mm)

(3) Operation panel (Example for the sub GOT: GT2104-RTBD)





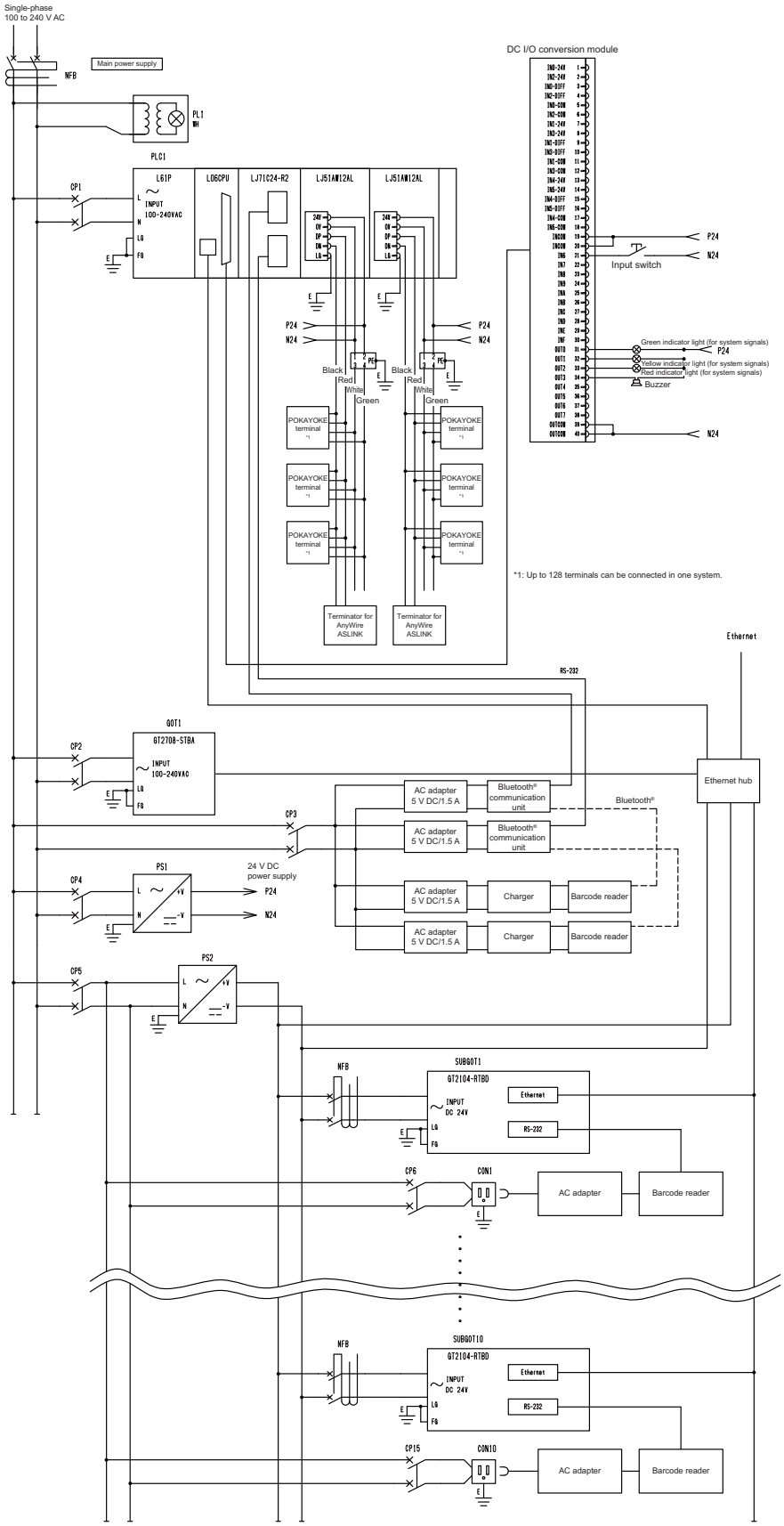


Internal layout

(Unit: mm)

3.2 Circuit Design Example

The following figures show design examples of electrical circuits.



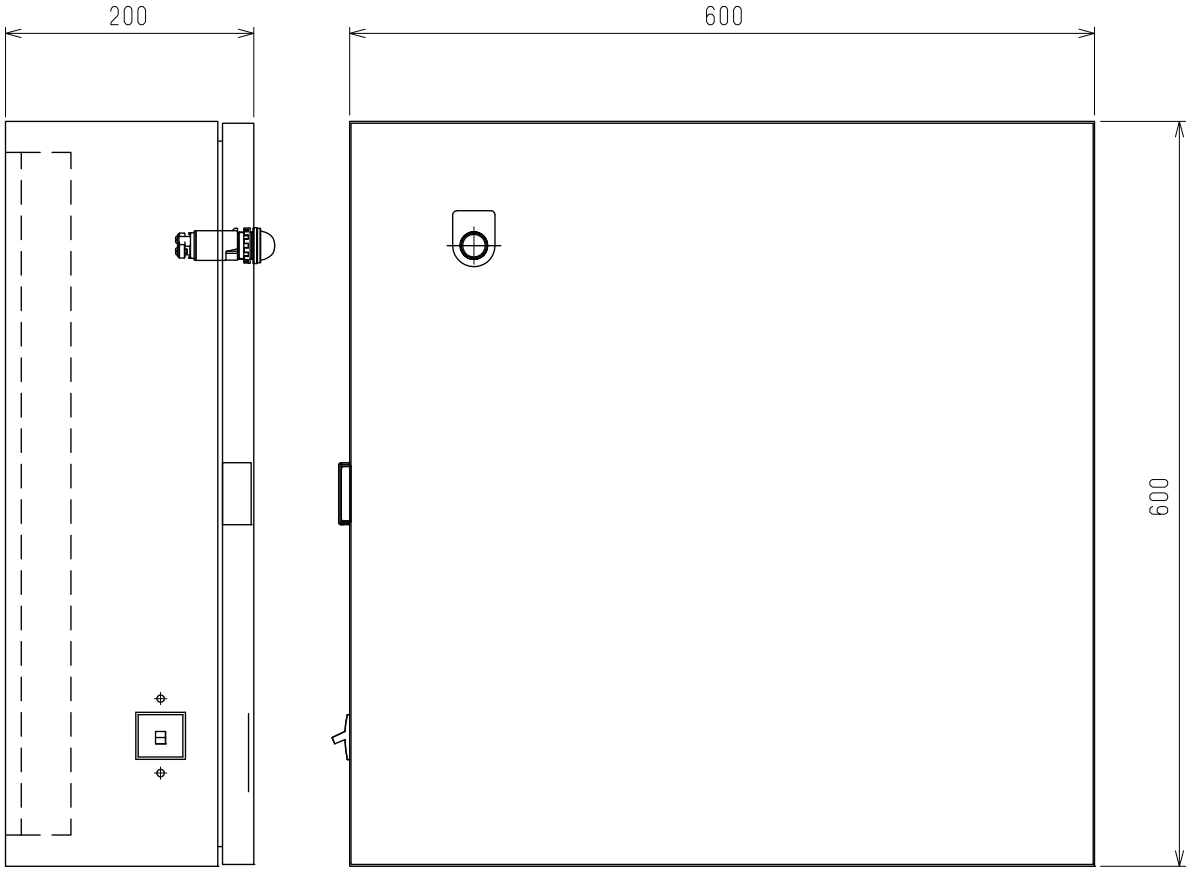
3.3 Building a Control Panel and Operation Panel

Build and place a control panel and operation panel on which a programmable controller system is to be installed based on the following specifications.

3.3.1 Building a control panel (Chassis)

To build a control panel that has the layout introduced in Section 3.1, use the following information as a guide.

(1) Size



(Unit: mm)

(2) Mounting the modules on a DIN rail

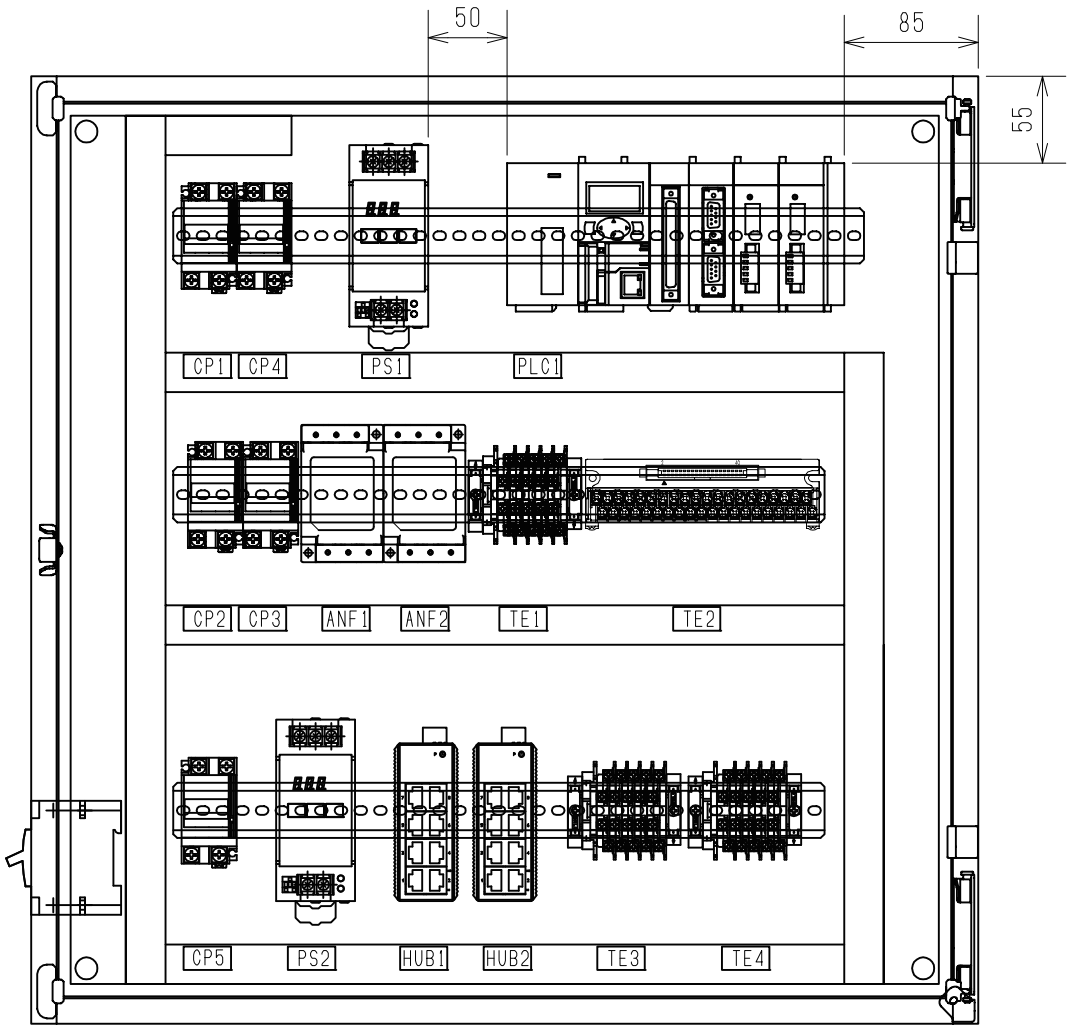
Install a DIN rail in the control panel based on the following information.

(a) Installation position of the programmable controller

To ensure good ventilation and ease module change, provide clearance between the module top/bottom and structures/parts. For the details, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

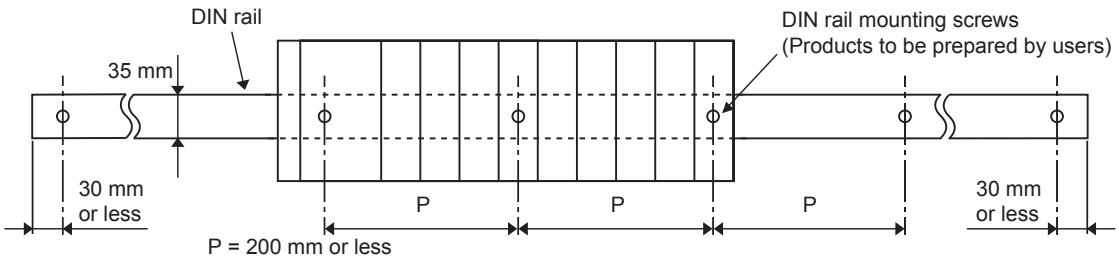
(b) Layout of programmable controller system components inside the control panel



(Unit: mm)

(c) Interval between DIN rail mounting screws

To ensure the strength of a DIN rail, tighten DIN rail mounting screws (Products to be prepared by users) within 30 mm away from the both edges of the DIN rail and at 200 mm-interval between the screws.



(d) Applicable DIN rail model (IEC 60715)

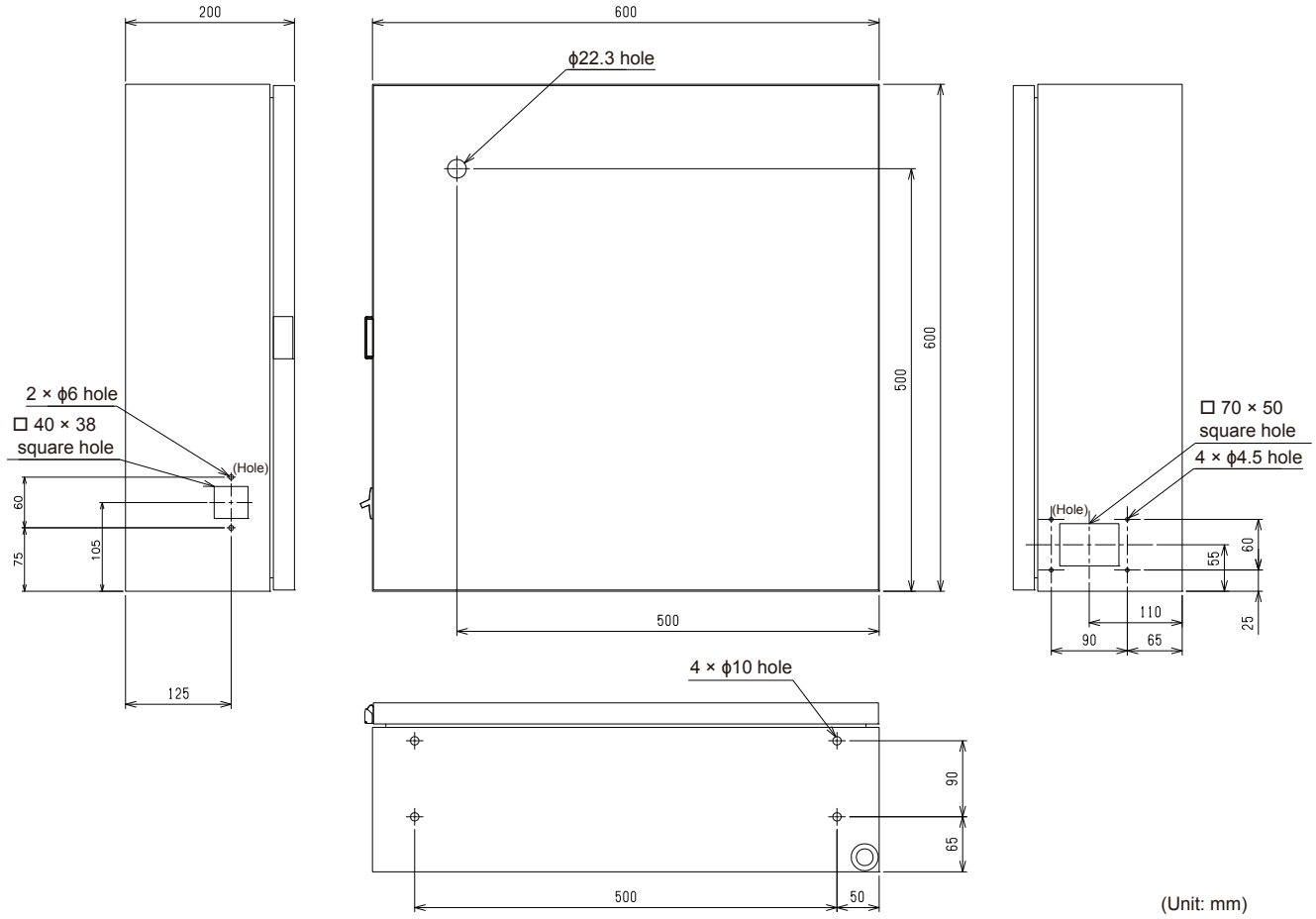
- TH35-7.5Fe
- TH35-7.5Al
- TH35-15Fe

(e) DIN rail stopper

Use a stopper that is attachable to the DIN rail.

(f) Sizes of mounting and installation holes for a power supply lamp, main power supply, and cable clamp
Make holes on the doors and right side and left side of the control panel chassis as shown below.

Control panel cutout dimensions



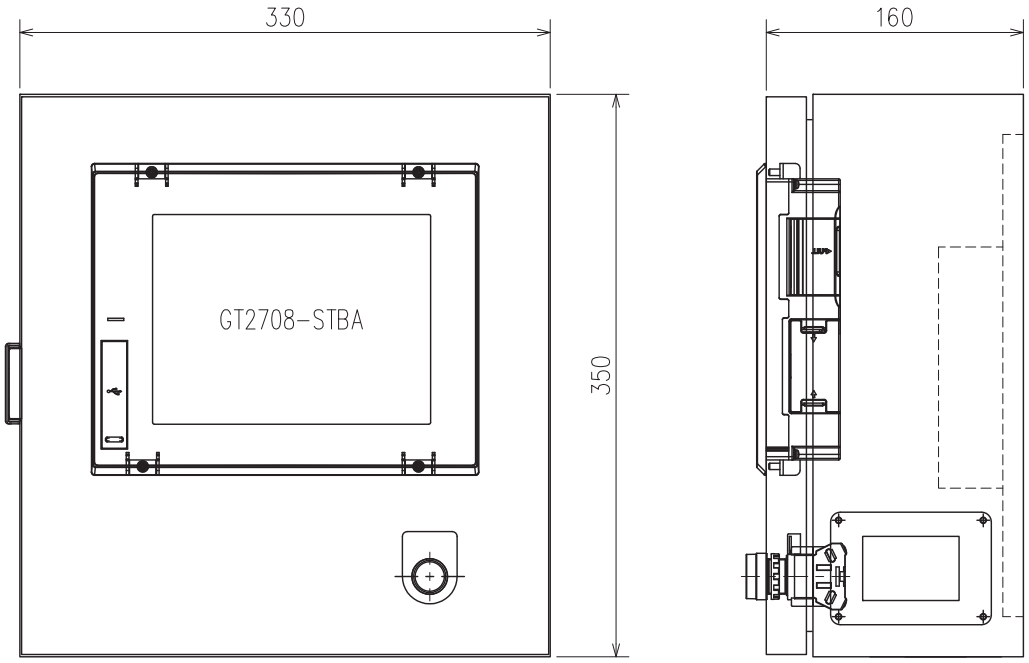
(Unit: mm)

3.3.2 Building an operation panel (Chassis)

To build an operation panel that has the layout introduced in Section 3.1, use the following information as a guide.

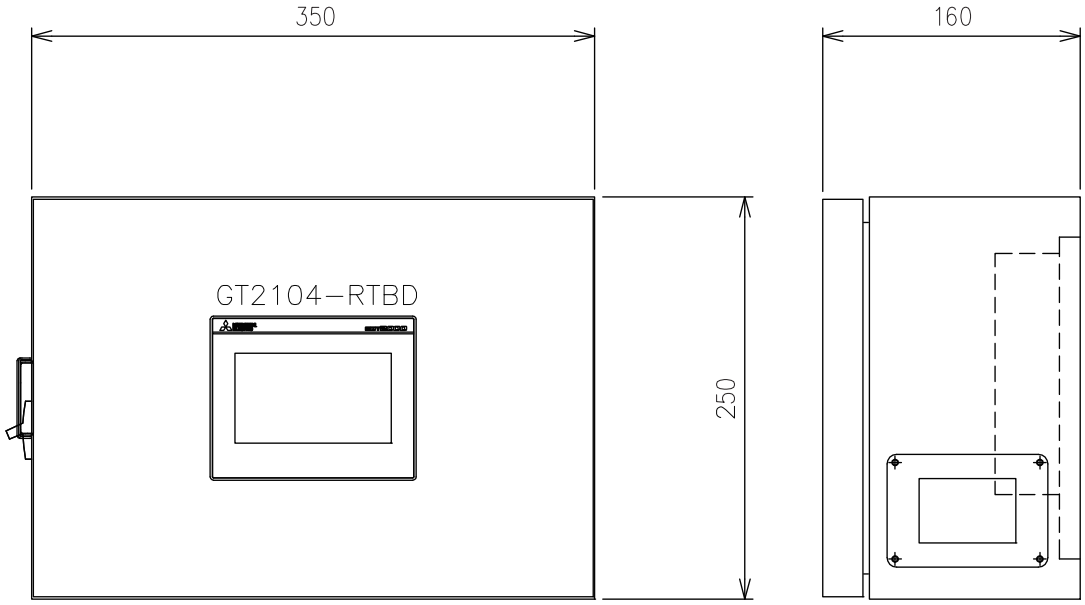
(1) Size

(a) Example for the main GOT: GT2708-STBA



(Unit: mm)

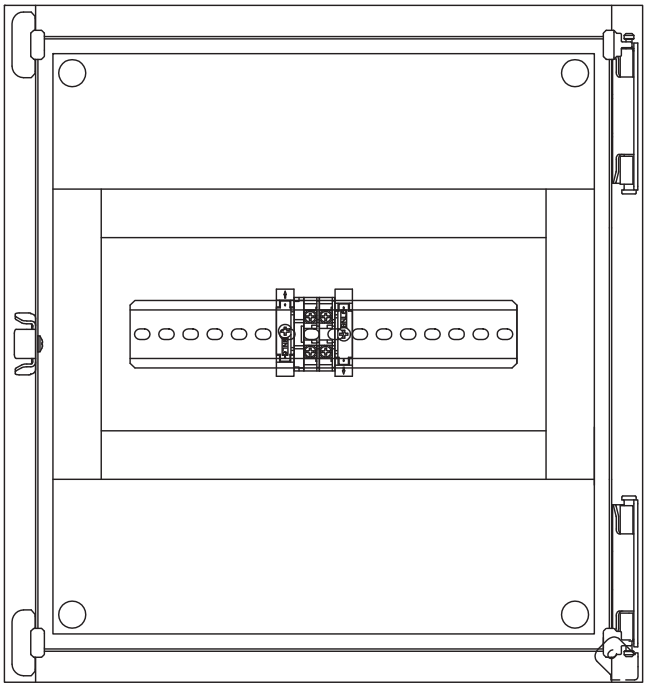
(b) Example for the sub GOT: GT2104-RTBD



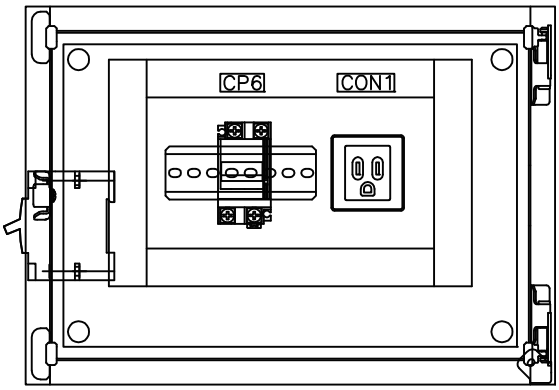
(Unit: mm)

(2) Installing a DIN rail

Install a DIN rail in the operation panel based on the following information.



Operation panel (Main GOT)



Operation panel (Sub GOT)

For the details of the interval between DIN rail mounting screws and applicable DIN rail model and DIN rail stopper, refer to the following.

☞ 3.3.1 Building a control panel (Chassis)

(3) Installation position of the GOT

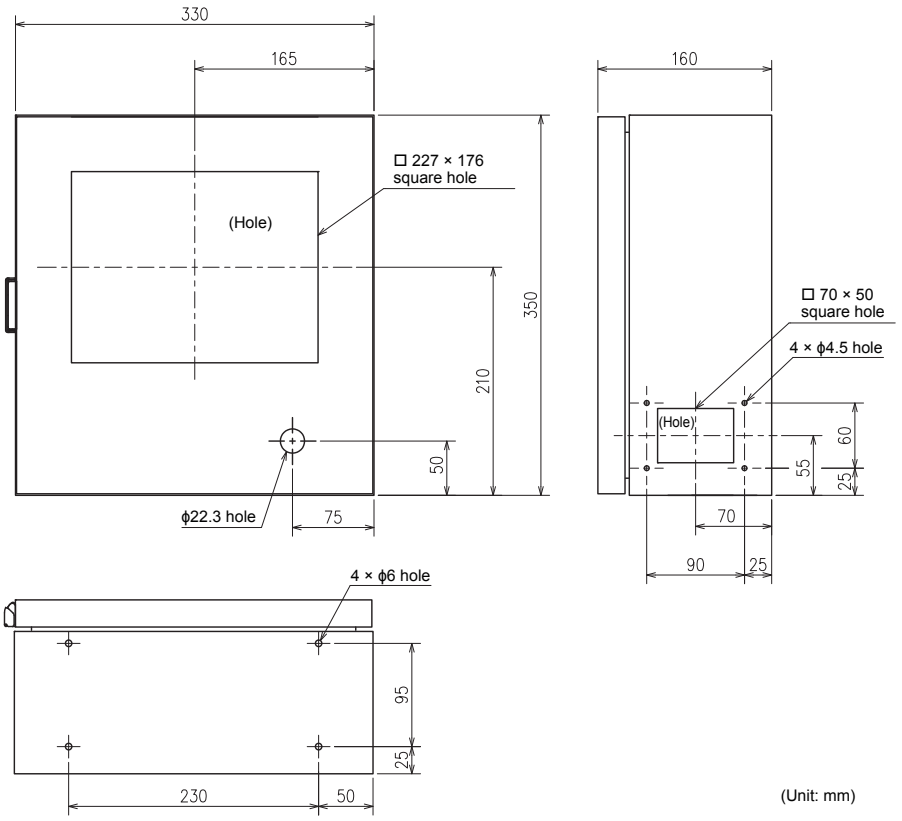
To install the GOT, some distance is required between the GOT and the other devices.
Depending on the units and cables used for the GOT, the distance more than the described dimensions may be required.
Install the GOT with consideration of the connector dimensions and the cable bend radius.
For the cable pull-out distance from the bottom of the GOT, refer to the following.

GOT2000 Series User's Manual (Hardware)

(4) Sizes of mounting and installation holes for the GOT, input switch, and cable clamp

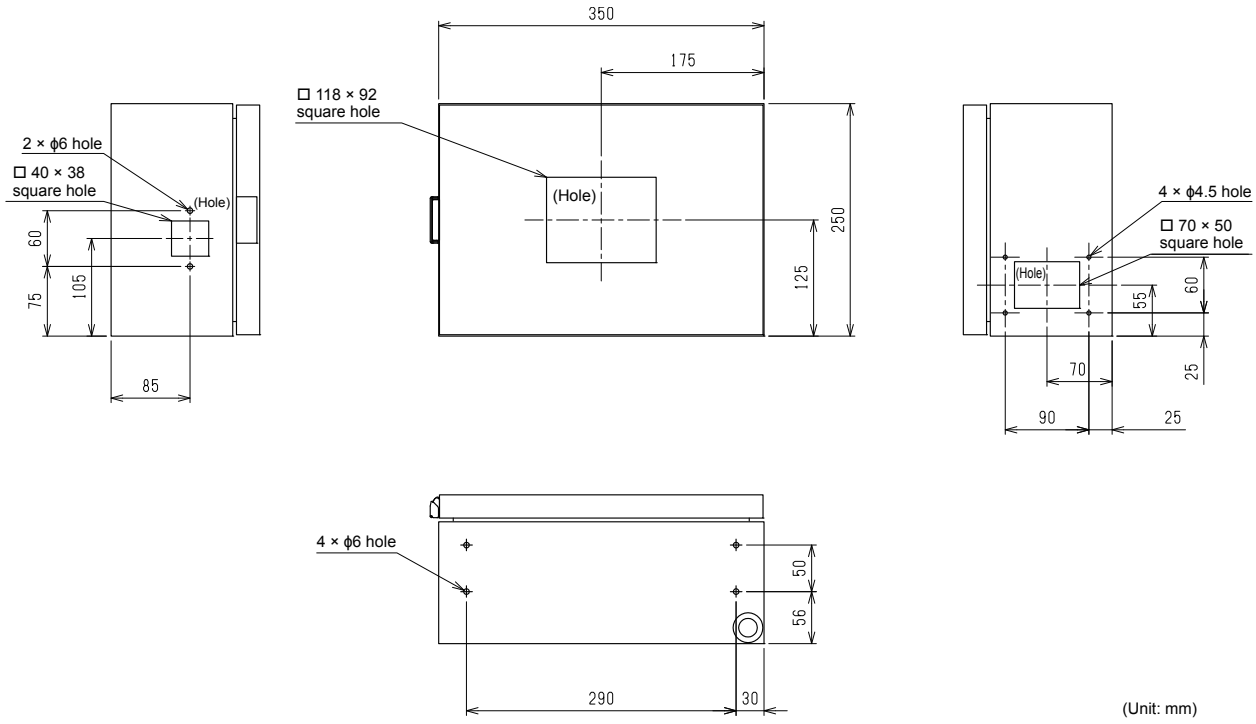
Make holes on the doors and right side and bottom of the operation panel chassis as shown below.

(a) Example for the main GOT: GT2708-STBA



(Unit: mm)

(b) Example for the sub GOT: GT2104-RTBD

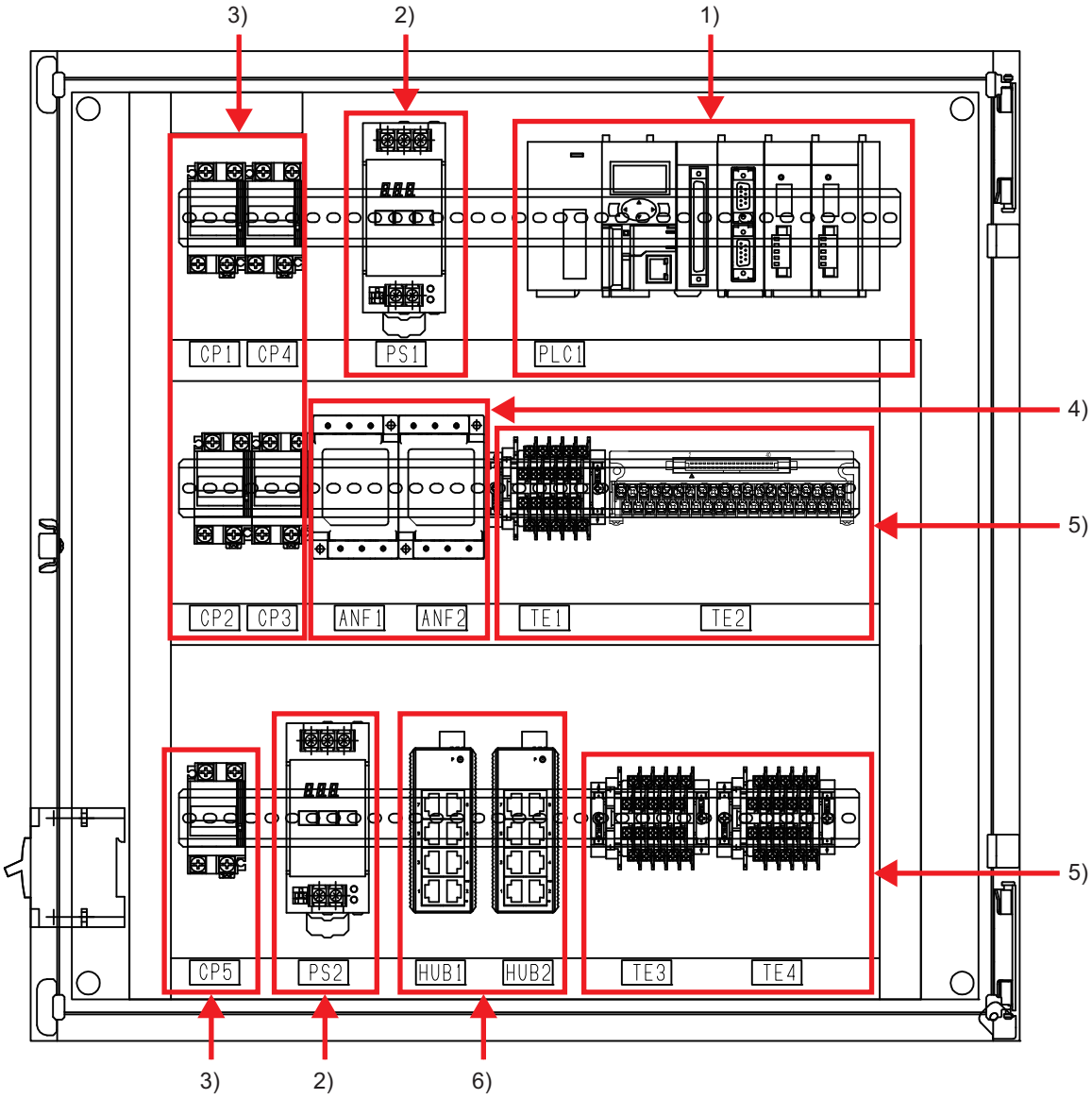


(Unit: mm)

3.4 Installing a Programmable Controller System

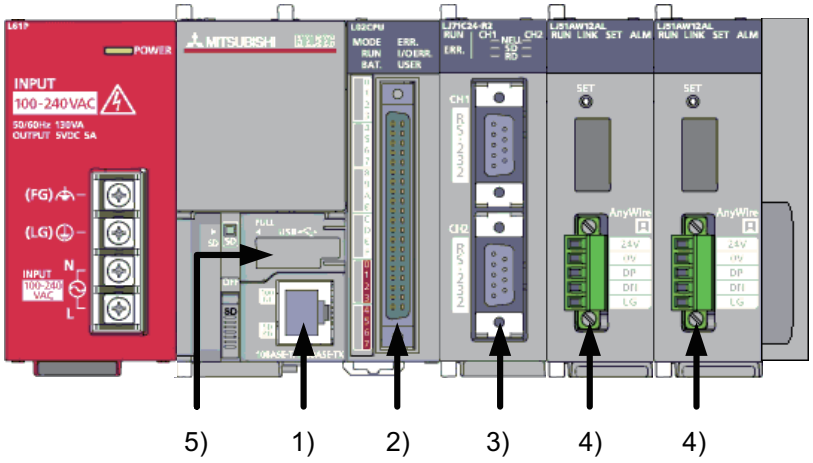
3.4.1 Entire system configuration

The following figure shows the entire system configuration of the programmable controller system to be installed in the control panel.
Installing a programmable controller in the control panel with full consideration of operability, maintainability, and environment resistance.



No.	Symbol	Name	Remarks
1)	PLC1	Power supply module	MELSEC-L series power supply module (AC input)
		CPU module	MELSEC-L series programmable controller
		Serial communication module	MELSEC-L series serial communication module
		AnyWireASLINK master module	Master module for MELSEC-L series AnyWireASLINK system
2)	PS1	24 V DC power supply	For the POKAYOKE terminals
	PS2		For the sub GOTs
3)	CP1	Circuit protector	Circuit protector for power supply module
	CP2		Circuit protector for the main GOT
	CP3		Circuit protector for the barcode reader
	CP4		Circuit protector for the 24 V DC power supply (PS1)
	CP5		Circuit protector for the 24 V DC power supply (PS2)
4)	ANF1	ASLINK filter	For 24 V DC power supply (ANF-01)
	ANF2		
5)	TE1	Terminal block	For 24 V DC power supply
	TE2	DC I/O conversion module	FA-TBS40P
	TE3	Terminal block	For the 100 V AC power supply
	TE4	Terminal block	For 24 V DC power supply
6)	HUB1	Ethernet hub	For connection to the programmable controller, main GOT, and sub GOTs
	HUB2		

3.4.2 I/O interface of a programmable controller



No.	Name	Standard	Use
1)	Ethernet connector	10Base-T/100Base-TX	For connection with the GOT For connecting a personal computer necessary for customizing user programs
2)	Connector for external devices	40-pin (Male)	For connection with the DC I/O conversion module
3)	RS-232 connector	D-sub 9-pin (Female)	For connection with a barcode reader
4)	AnyWireASLINK transmission line terminal	AnyWireASLINK	For connection with POKAYOKE terminals
5)	USB interface (Device)	USB2.0 Connector shape: Mini-B	For connecting a personal computer necessary for customizing user programs

3.4.3 Precautions on system configuration

(1) Rated output current (5 V DC)

Configure a system so that the total current consumption may not exceed 5 V DC, the rated output current of the power supply module.

For the details, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

(2) For the power capacity

A shortage of the power capacity may result depending on the combination of connected modules and the numbers of connected modules. When connecting the modules, be sure to consider the power capacity. If there is a shortage of the power capacity, consider the combination of modules to be connected.

(3) Installation environment

Install the programmable controller according to the installation environment shown in the general specifications.

For the details, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

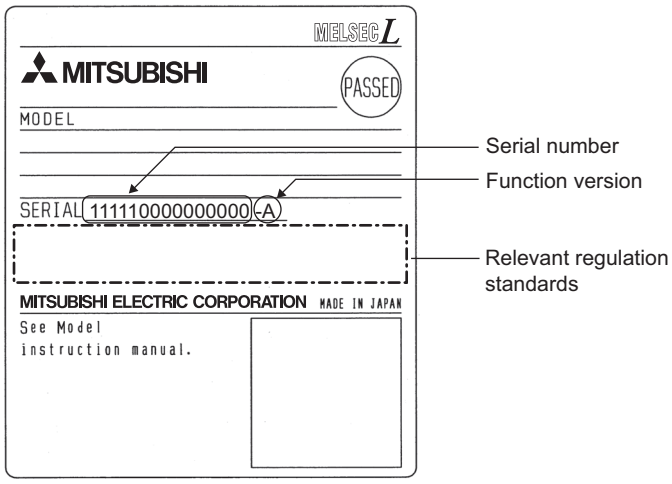
3.4.4 Checking serial number and function version

The serial number and function version of the module can be checked any of on:

- the rating plate, or
- Serial No. display board

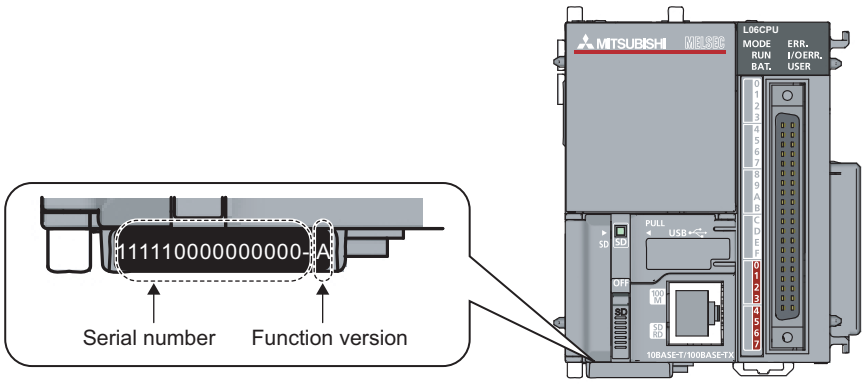
(1) Checking on the rating plate

The rating plate is located on the side of the module.



(2) Checking on the serial No. display board

The serial No. display board is located on the front face (bottom) of the module.



3.4.5 Mounting the modules

For the procedure for connecting modules, refer to the following.

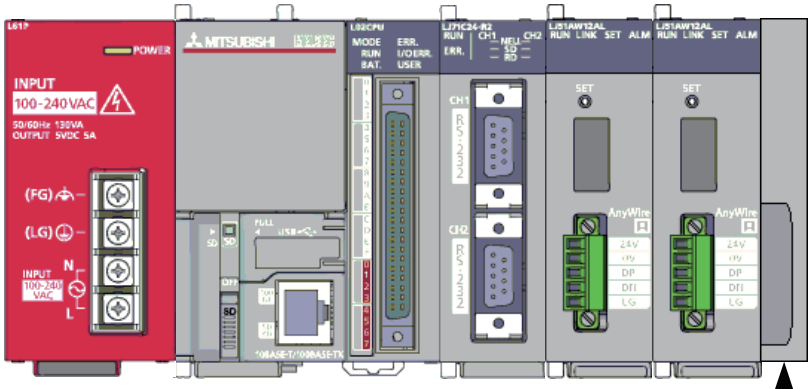
MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

POINT

To prevent consumption of the CPU module battery, the battery connector is disconnected at shipment. Connect the battery connector before using the CPU module for the first time.

CAUTION	Shut off the external power supply for the system in all phases before connecting or disconnecting modules.

The following figure shows the connection order of modules.



POINT

For changing the connection orders, refer to the following.

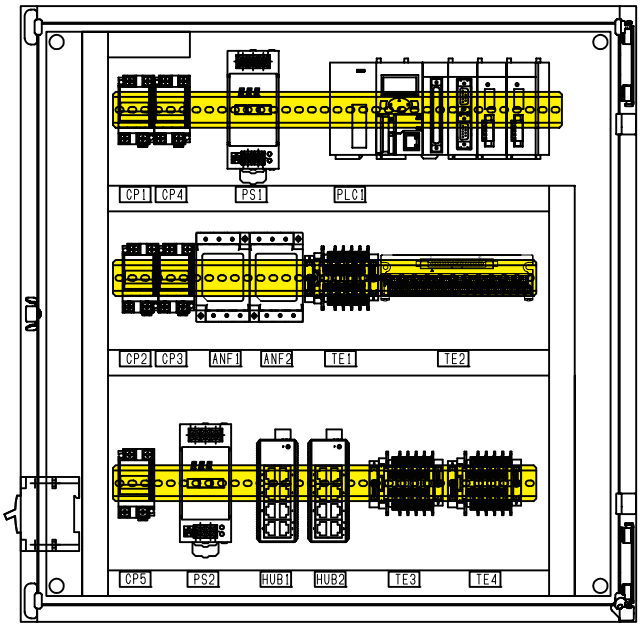
5.2.4 Customizing the project

3.4.6 Mounting on a DIN rail

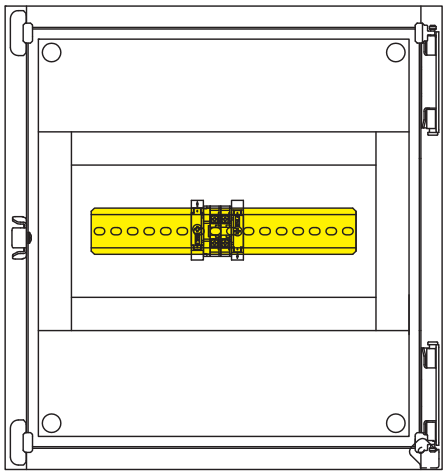
For the procedure for mounting modules on a DIN rail, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

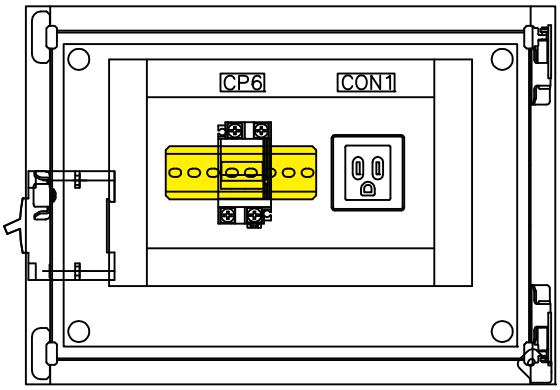
The following figure shows DIN rails in the control panel and operation panel in yellow.



Control panel



Operation panel (Main GOT)



Operation panel (Sub GOT)

POINT

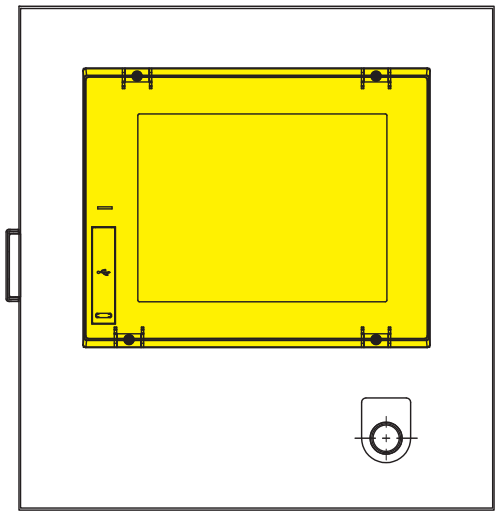
The procedure for using a DIN rail stopper is an example. When fixing the modules, refer to the manual for the DIN rail stopper used.

3.5 Mounting a GOT

This section describes how to mount the GOT on the door panel of the operation panel.

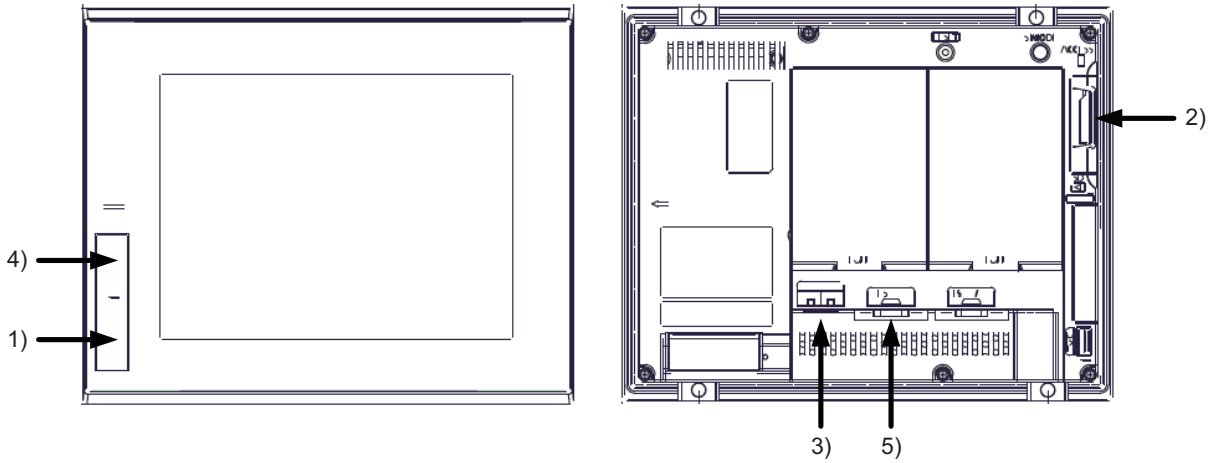
Mount the GOT in consideration of the control panel inside dimensions and installation prohibited area.
Depending on the types of connection cables connected to the GOT, a distance longer than the specified one may be required.
Mount the GOT in consideration of the connector size and cable bend radius.

The right figure shows the GOT on the door panel of the operation panel in yellow.



3.5.1 I/O interface of the main GOT

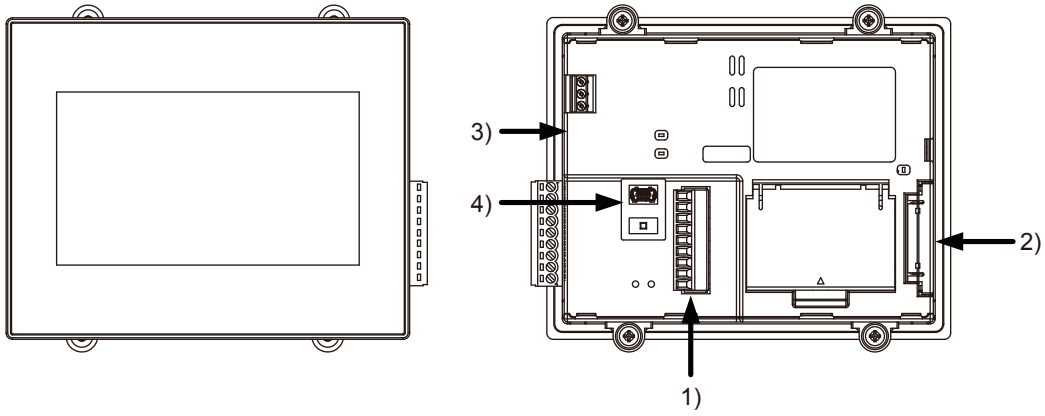
Example for GT2708-STBA



No.	Name	Standard	Use
1)	USB interface (host, front face)	USB2.0 Connector shape: TYPE-A	For writing and reading POKAYOKE application registered information
2)	SD memory card interface	1 channel SDHC supported (Max. 32 GB)	For restoring the POKAYOKE application
3)	Ethernet connector	10Base-T/100Base-TX	• For connection with the programmable controller • For connection with a personal computer
4)	USB interface (device, front face)	USB2.0 Connector shape: Mini-B	For connection with a personal computer
5)	RS-232 interface	For communication with connected devices Connector shape: D sub 9 pins (male)	For connection with the barcode reader

3.5.2 I/O interface of the sub GOT

Example for GT2104-RTBD



No.	Name	Standard	Use
1)	RS-232 interface (back face)	Connector terminal block (9 pins)	For connection with the barcode reader
2)	SD memory card interface (inside the cover)	1 channel SDHC supported (Max. 32 GB)	For restoring the POKAYOKE application (Do not remove the SD memory card without permission.)
3)	Ethernet connector	10Base-T/100Base-TX	• For connection with the programmable controller • For connection with a personal computer
4)	USB interface (device, back face)	USB2.0 Connector shape: Mini-B	For connection with a personal computer

3.5.3 Installing the GOT

For the procedure for installing a GOT, refer to the following.

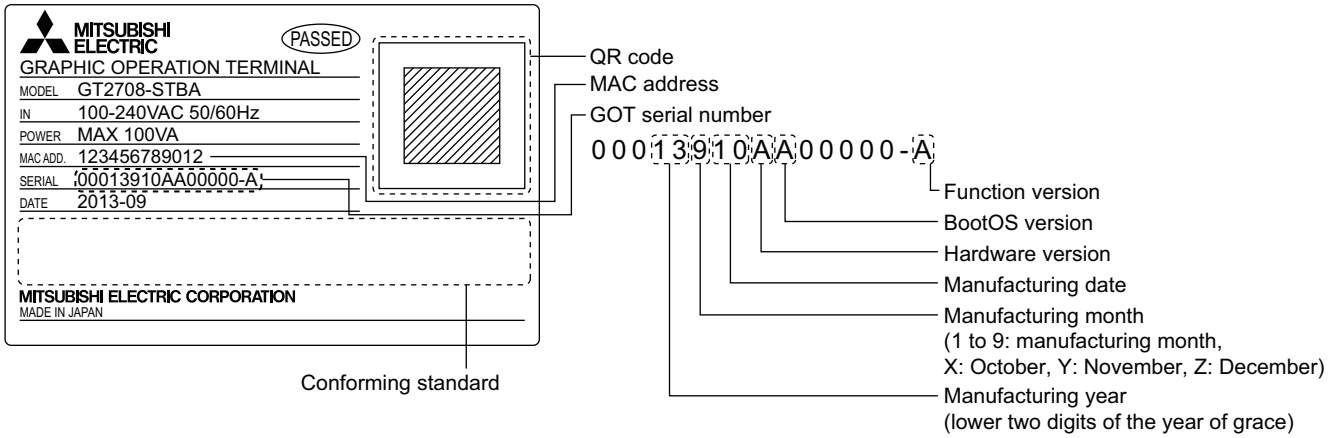
GOT2000 Series User's Manual (Hardware)

POINT

A battery has been installed in the battery cover as standard. Before using the GOT, connect the connectors of the GOT and the battery.

3.5.4 Confirming of versions and conforming standards

The GOT hardware version, BootOS version, function version, and conforming standards can be confirmed at the rating plate on the GOT rear face.



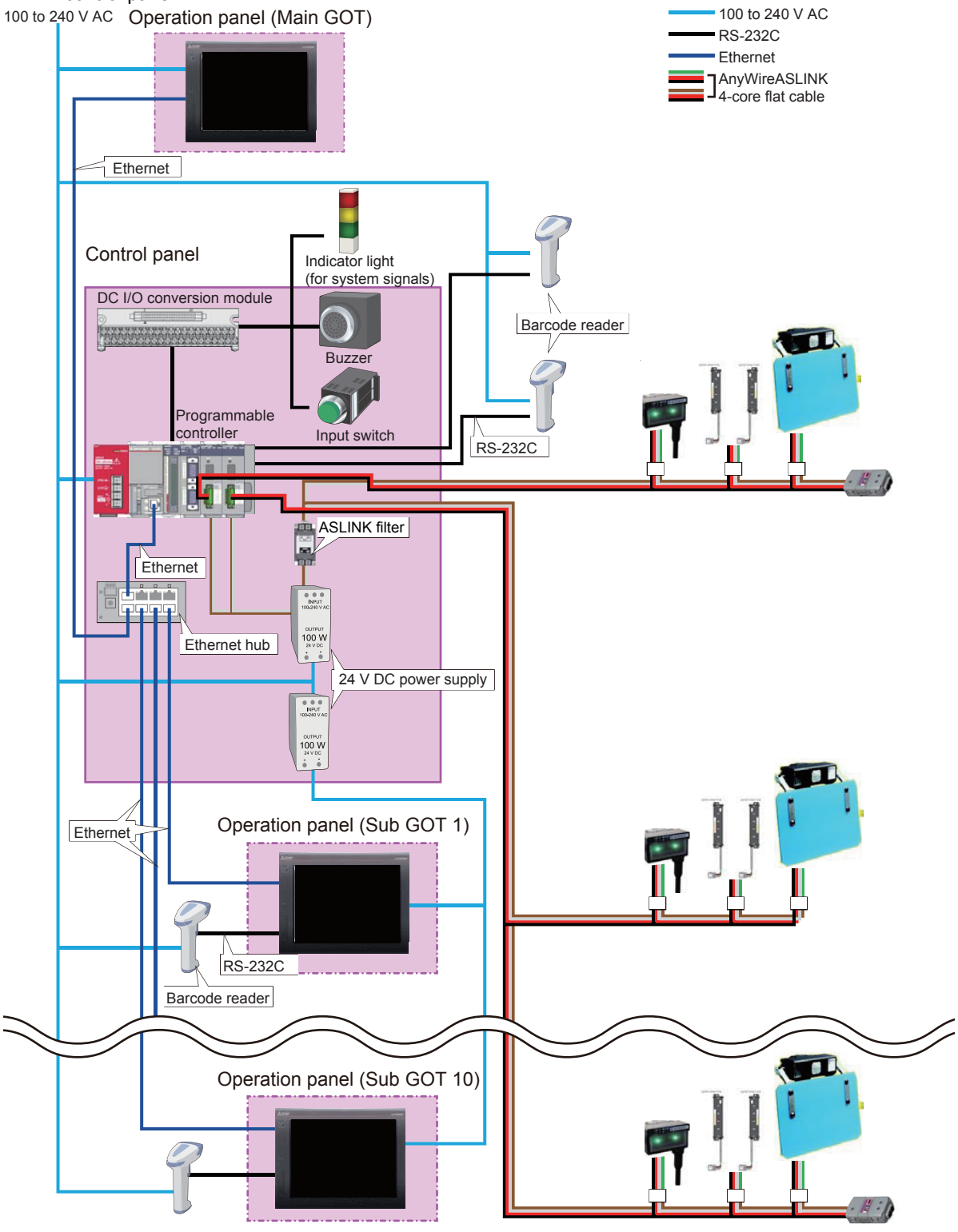
3.6 Wiring the Control Panel and Operation Panel

When the installation in the control panel and operation panel has been completed, perform wiring based on the circuit design diagram introduced in "3.2 Circuit Design Example".

3.6.1 Wiring

(1) Wiring

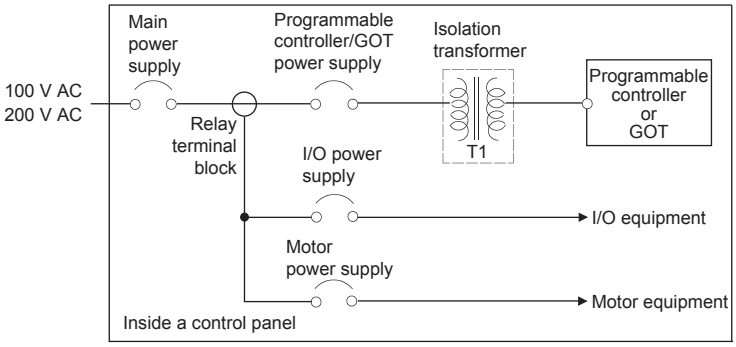
The following figure shows an example of wiring for this system in which the GOT is housed in the operation panel and the CPU module is housed together with the 24 V DC power supply for POKAYOKE terminals in the control panel.



(2) Precautions for wiring

The following describes precautions for wiring to power supply modules.

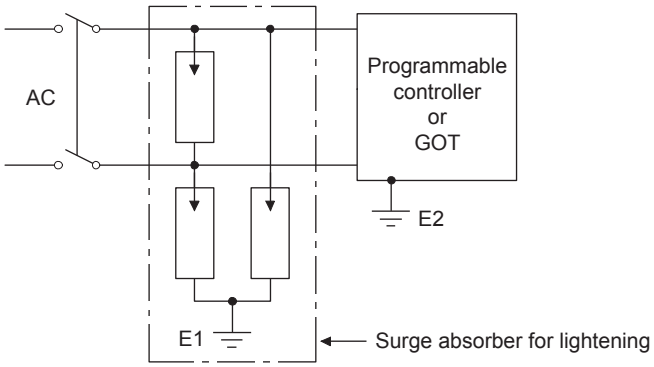
- Wire the power supply of the programmable controller or GOT, I/O power supply, and dynamic power supply as shown below to separate the systems.



- Considering the rated current and inrush current of the power supply module, connect a breaker having appropriate sensing property or an external fuse causing proper blowout. (When using a single programmable controller, connecting a breaker around 10 A or an external fuse is recommended.)
- To minimize a voltage drop, use thick power cables up to 2 mm^2, twist the cables closely, and connect the modules with the shortest distance.
- Do not install the power cables together with the main circuit (high voltage and high current) cables, I/O signal cables, and common cables. Keep a distance of 100 mm or more between them.
- If there is much noise due to a lightning surge or other causes, connect an isolation transformer.
- After wiring, always attach the included terminal cover to the power supply module and do not touch any terminal while the power is on or the module is operating.
- Use a Class 2 power supply for a module using a DC power supply.
- Configure a system so that the total current consumption may not exceed 5 V DC, the rated output current of the power supply module. For the specifications of the power supply module, refer to the following.

MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)

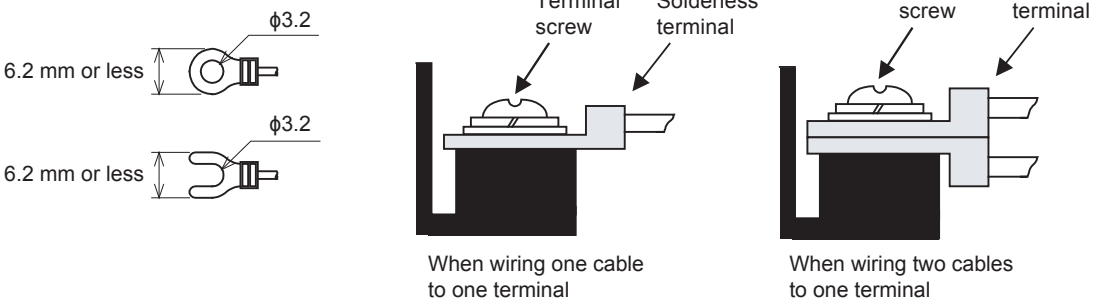
- Due to noise caused by lightening surge, a momentary power failure may be detected or the CPU module may be reset. As measures against the noise, connect a surge absorber for lightening as shown below.



Separate the ground for the lightening surge absorber (E1) and ground for the programmable controller or GOT (E2).

Select an appropriate lightening surge absorber that does not exceed the maximum allowable circuit voltage of the surge absorber even when the power supply voltage has increased to the maximum.

- Always use a solderless terminal for wiring to the terminal block on a power supply module. To prevent a short when screws come loose, always use a solderless terminal with insulation sleeve of 0.8 mm or less in thickness. Up to two solderless terminals can be connected to one terminal block.



Applicable solderless terminal
RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A

- Use UL-approved solderless terminals and, for processing, use a tool recommended by their manufacturer.
- Tighten the terminal screws of the power supply module within the range of 0.66 to 0.89 N·m).
- Use the following wire to the power supply module.

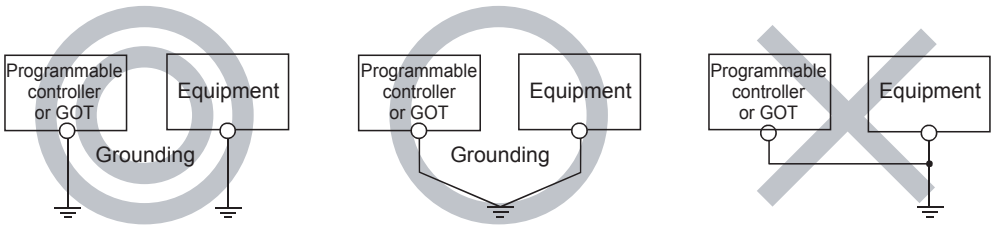
Applicable wire size	Material	Temperature rating
0.75 to 2 mm^2 (18 to 14 AWG) (stranded)	Copper	75°C or more

- Inputting a signal with a different voltage may cause malfunction of the module and failure of the external devices.
- Use an online UPS (uninterruptible power supply) with a power distortion factor of 5% or less or a line interactive UPS. If a standby UPS is used, use a Mitsubishi low-capacity UPS "FREQUPS FW-F series" (hereinafter FW-F series). (Example: FWF10-0.3K/0.5K)
- Select a power supply having enough power for a power supply module. (For an AC power supply module, the power capacity should be twice or more as great as the current consumption of the power supply module, and four times or more for a DC power supply module.)

(3) Grounding

Observe the following:

- Provide independent grounding when possible. Ground the FG and LG terminals to the protective ground conductor dedicated to the programmable controller (ground resistance: 100 Ω or less).
- If independent grounding cannot be provided, employ (2) Shared grounding shown below.



(1) Independent grounding ... Recommended

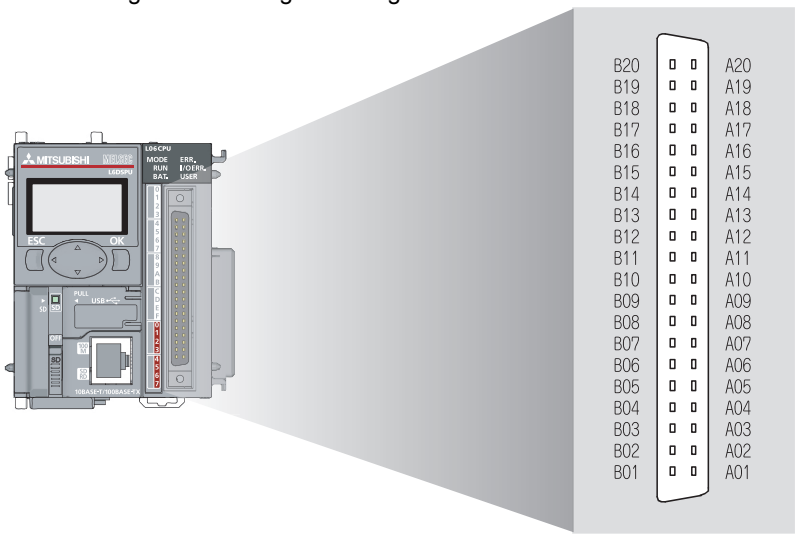
(2) Shared grounding ... Allowed

(3) Common grounding ... Not allowed

- Use thick cables up to 2 mm^2. Reduce the distance between the ground point and the programmable controller/GOT as long as possible to shorten the ground cable.

(4) Signal assignment of the connector for external devices

The following shows the signal arrangement of the connector for external devices of the CPU.



(a) I/O connector pin numbers and corresponding I/O signals

Pin No.	Category	Type	Correspondence for line driver	Corresponding I/O signal
B20	Input	Highspeed	○	X0
B19				
B18				
B17		Highspeed	○	X1
B16				
B15				
B14		Highspeed	○	X4
B13				
B12				
B11		Input common		
B10		Standard	-	X6
B09		Standard	-	X8
B08		Standard	-	XA
B07		Standard	-	XC
B06		Standard	-	XE
B05	Output	Highspeed	-	Y0
B04		Highspeed	-	Y2
B03		Highspeed	-	Y4
B02		Highspeed	-	Y6
B01		Output common (Negative common)		

Pin No.	Category	Type	Correspondence for line driver	Corresponding I/O signal
A20	Input	Highspeed	○	X2
A19				
A18				
A17		Highspeed	○	X3
A16				
A15				
A14		Highspeed	○	X5
A13				
A12				
A11		Input common		
A10		Standard	-	X7
A09		Standard	-	X9
A08		Standard	-	XB
A07		Standard	-	XD
A06		Standard	-	XF
A05	Output	Highspeed	-	Y1
A04		Highspeed	-	Y3
A03		Highspeed	-	Y5
A02		Highspeed	-	Y7
A01		Output common (Negative common)		

POINT

For the details of the connected devices, refer to the following.

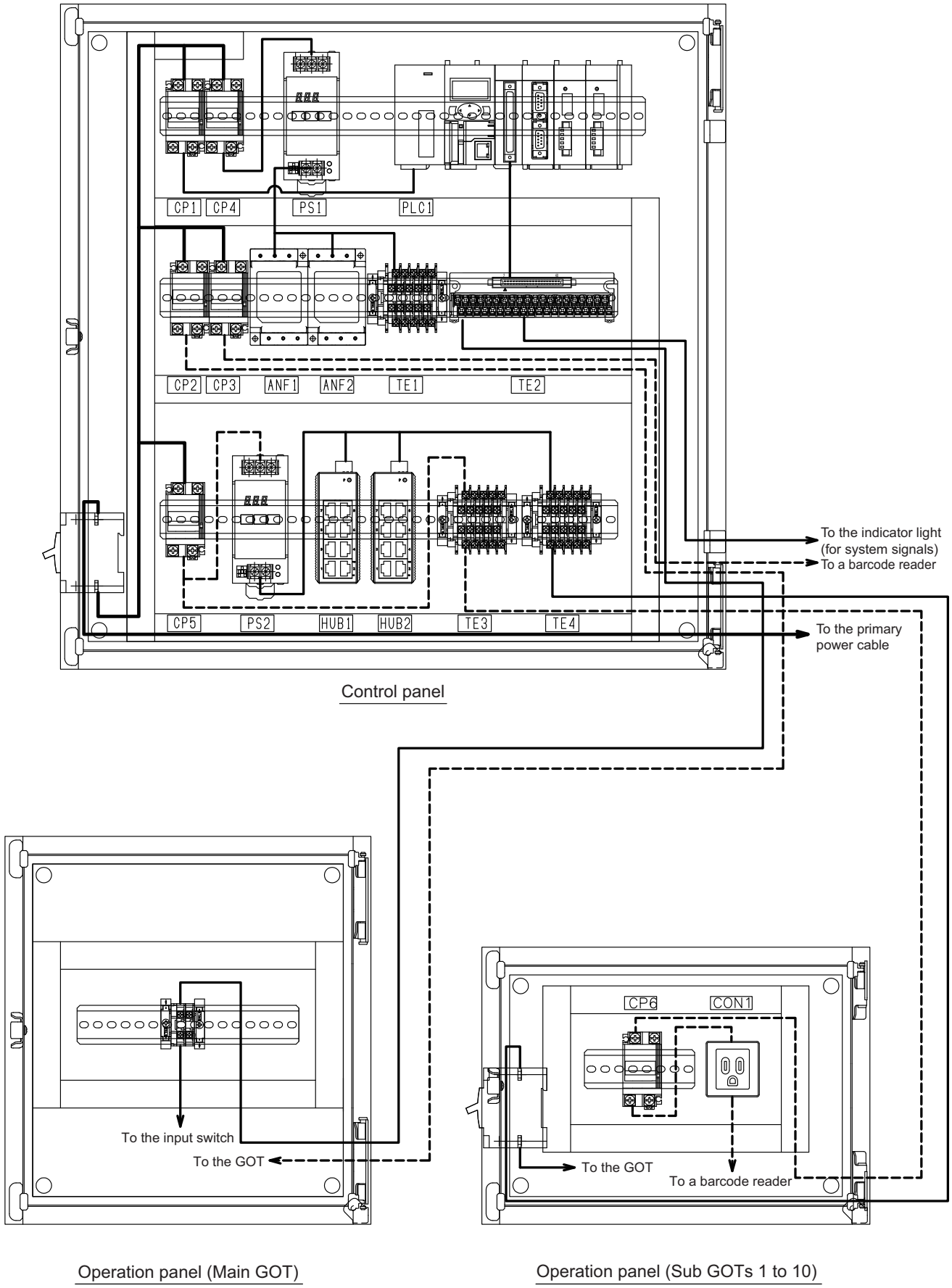
- 3.2 Circuit Design Example
- 4.4 Installing Other External I/O Devices
- 7.1 User Program

(b) Internal circuits

For details of the internal circuit, refer to the following.

MELSEC-L CPU Module User's Manual (Built-In I/O Function)

(5) Example of wiring path



4. INSTALLATION TO WORK TABLES

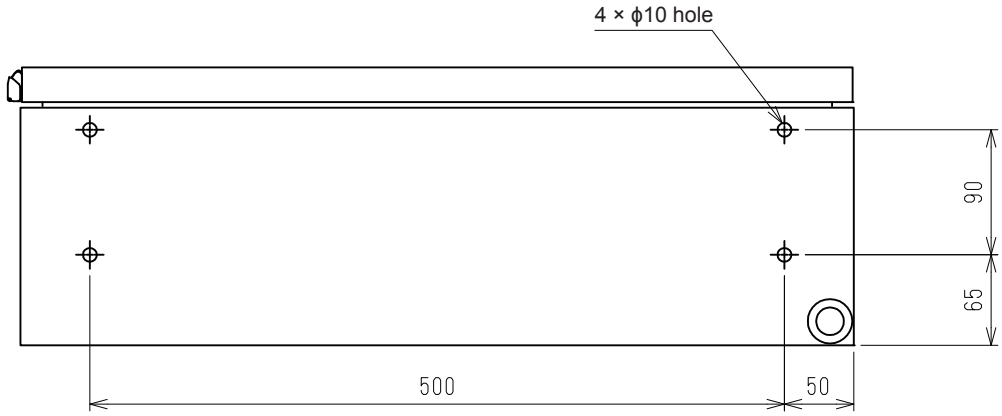
This chapter describes how to install the control panel, operation panel, and POKAYOKE terminals.

4.1 Installing the Control Panel and Operation Panel

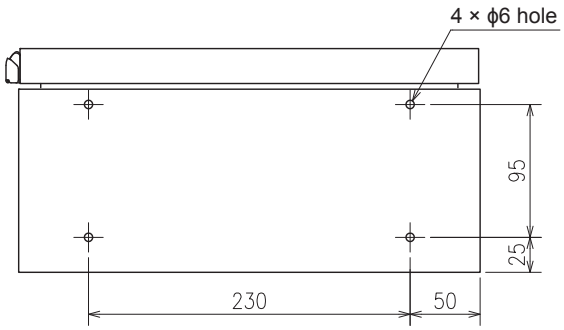
The bottoms of the control panel and operation panel have installation holes.

☞ 3.3.1 Building a control panel (Chassis)

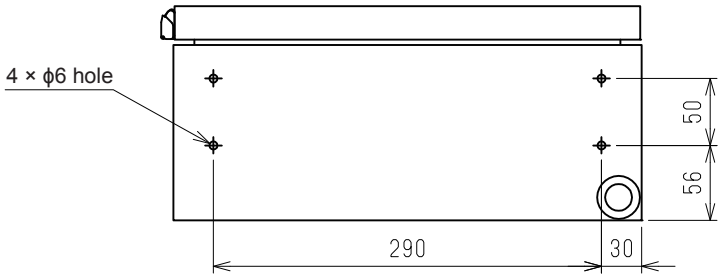
☞ 3.3.2 Building an operation panel (Chassis)



Control panel



Operation panel (Main GOT)



Operation panel (Sub GOT)

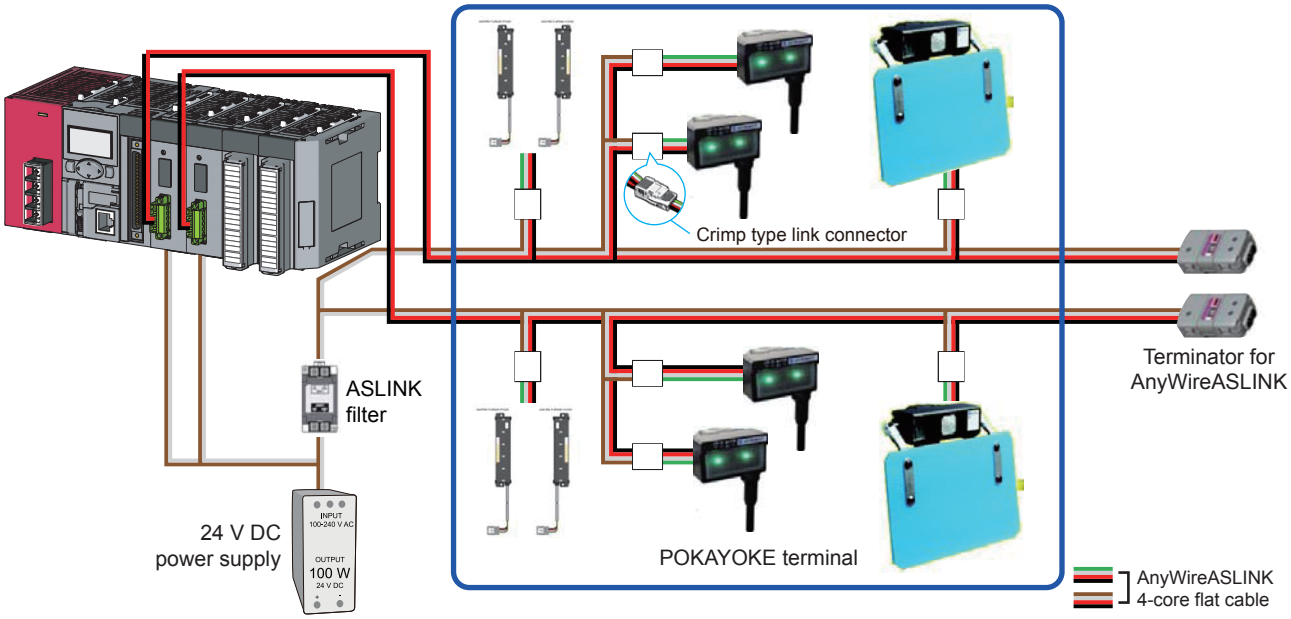
(Unit: mm)

To prevent accidents caused by dropping and toppling over of the control panel and operation panel, secure them on a workbench or floor with bolt nuts and in a horizontal position.

CAUTION	On the workbench on which the operation panel is to be installed, a laptop may be used to write and read registration data. Design a workbench that has a sufficient space left for a laptop on it.

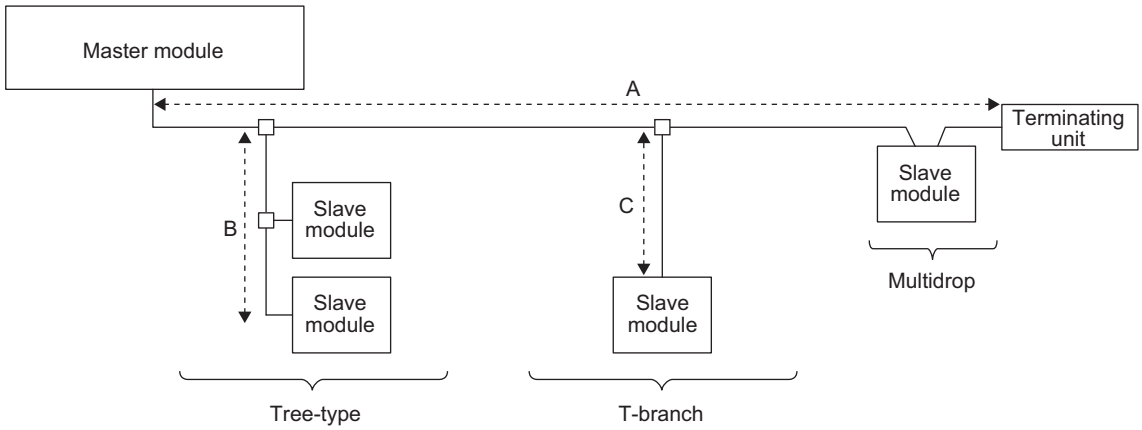
4.2 Installing POKAYOKE Terminals

The following figure shows the system configuration of AnyWireASLINK POKAYOKE terminals.



CAUTION	Make sure to insert a noise filter between the 24 V DC power supply and 4-core flat cable.

4.2.1 Wiring to the AnyWireASLINK master module



- Tree branch, T-branch, and multidrop connections are usable in the AnyWireASLINK system. However, for stable transmissions, the recommended number of branch levels is 10 or less.
- Up to 128 AnyWireASLINK terminals can be connected to one AnyWireASLINK master module.
- Connect one terminating unit for each system at the far end from the master module.

POINT

The total length of the transmission distance for the AnyWireASLINK system can be calculated from A + B + C. Note that the total length should not exceed the maximum transmission distance or the total length set for the system to branch lines.

(1) Requirements regarding transmission lines and nodes

Satisfy the following requirements as to the number of terminals to be connected to one system. There are no other requirements such as about the branches of wiring.

- Connectable number: maximum of 128
- Length of transmission line: Depends on the number of connected terminals. For the details, refer to the following.

☞ 4.2.3 Wiring precautions

- Total transmission points: maximum of 254 inputs and 254 outputs

(2) Requirements regarding terminators

BT0 is a module that shapes transmission waveforms.
Because BT0 has a polarity, do not connect it with reverse polarity. Otherwise transmission trouble occurs.
Connect one BT0 in one system at the end of the transmission line farthest from the terminal.
If there is a branch line over 40 m, also connect BT0 to the end.
Up to two branch lines over 40 m can be connected.

4.2.2 Assigning addresses to POKAYOKE terminals

There are restrictions on assigning addresses to POKAYOKE terminals installed at part shelves.

(1) Number of addresses

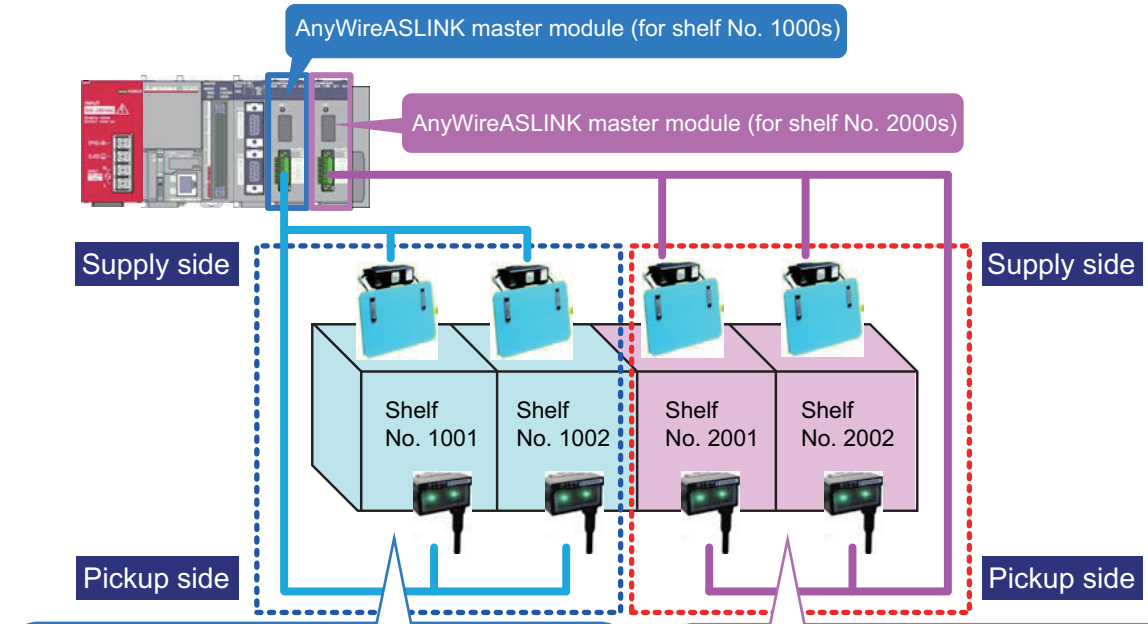
For one AnyWireASLINK master module (LJ51AW12AL), up to 254 address input points and 254 output points can be assigned. The number of address points differs depending on the type of terminal installed.

☞ 2.1 List of System Devices

(2) Connecting terminals

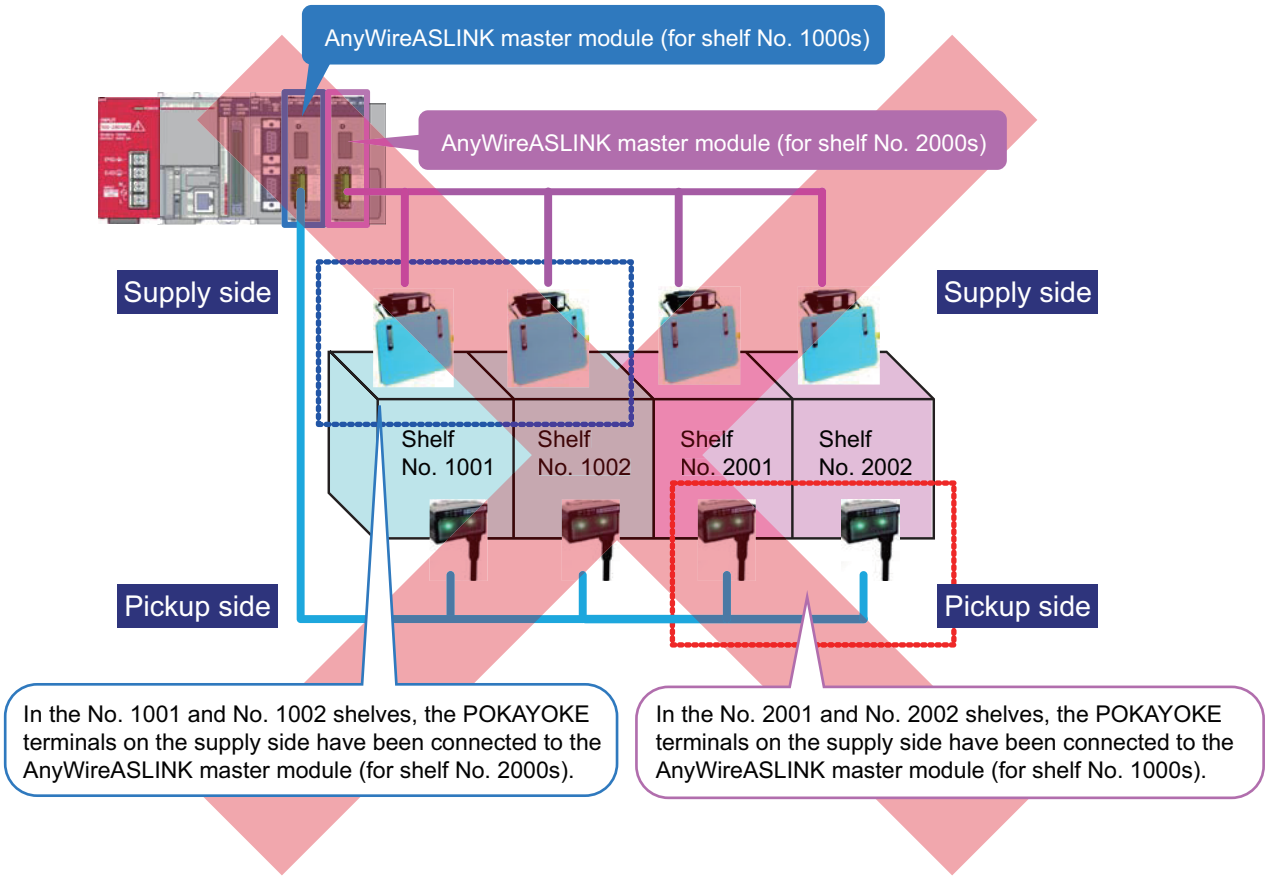
When installing POKAYOKE terminals on both the pickup and supply sides, make sure to connect the both side terminals to the same AnyWireASLINK master module.
When POKAYOKE terminals installed at the same part shelf on the pickup and supply sides and connected to different AnyWireASLINK master modules, the terminals on both sides cannot be set for the same part shelf.

[Connection example: POKAYOKE terminals and AnyWireASLINK master modules]

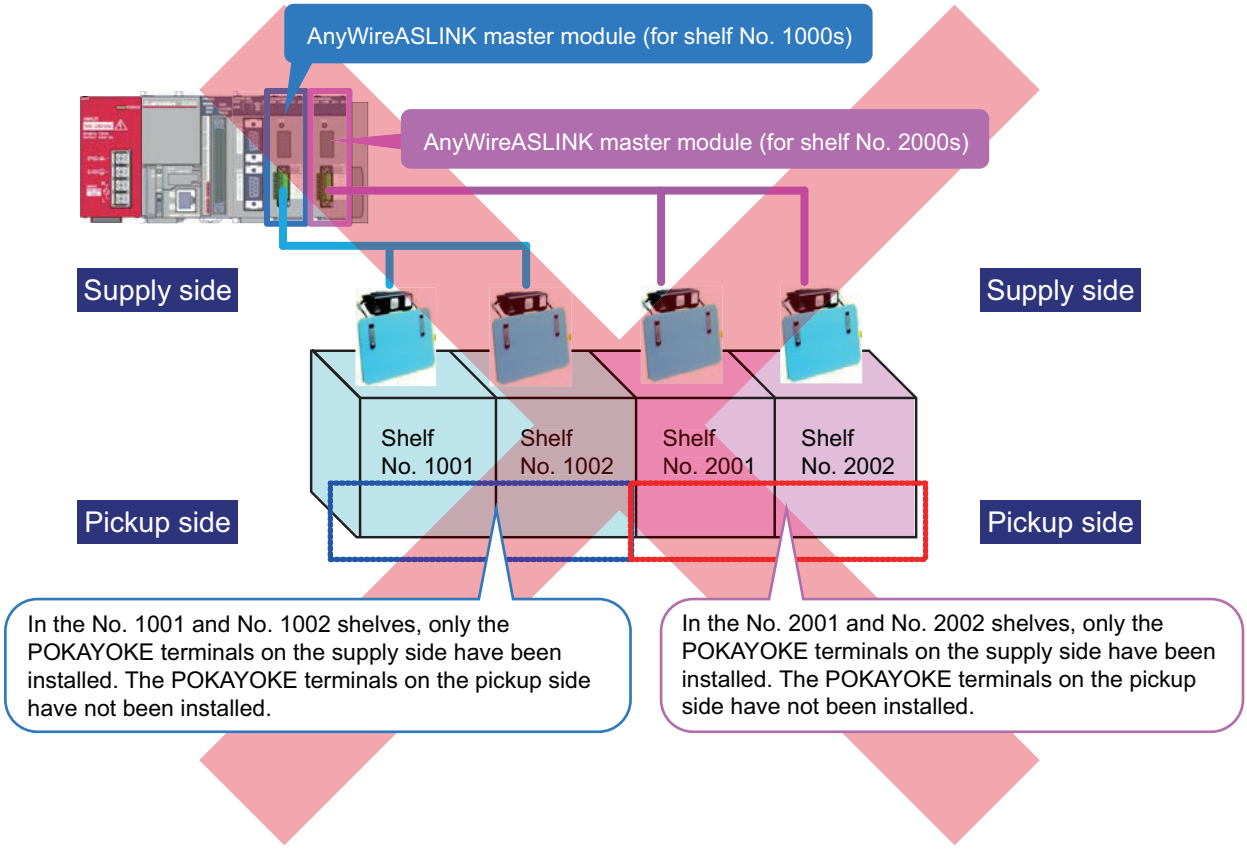


The next page shows bad connection examples.

[Incorrect connection example 1): POKAYOKE terminals and AnyWireASLINK master modules]



[Incorrect connection example 2): POKAYOKE terminals and AnyWireASLINK master modules]



4.2.3 Wiring precautions

In the AnyWireASLINK system, signals and power are supplied to a slave module with two types of transmission cables; DP and DN.

(1) Total length of transmission cables

The total length of transmission cables (including trunk and branch lines) per one AnyWireASLINK master module depends on the maximum power supply current value of the transmission cables.

Wire diameter of transmission cables (DP, DN)	Power supply current of transmission cables (maximum value)*1	Total length of transmission cables
1.25 mm^2	2 A	50 m or less
	1 A	100 m or less
	0.5 A	200 m or less

*1 The power supply current of the transmission cables is the total current consumption of connected POKAYOKE terminals. Refer to the following and calculate the total current consumption.

(a) List of POKAYOKE terminals

(2) Calculation example

Calculate the total length of transmission cables for when the following POKAYOKE terminals are connected.

- Pickup side: 30 pushbutton switch type terminals (Selection of one color from seven colors)
- Supply side: 30 door type terminals, 2-point output type (with break open detection function)

BL227XB-K02VN-P(0.006) × 30 + BL227XB-F04V-P(0.006) × 30 = 0.360

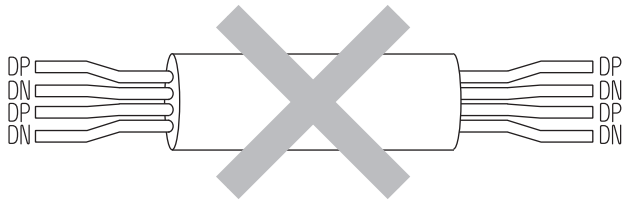
Thus, the total length of the transmission cables is up to 200 m.

POINT

- For details of the power supply current and total length of transmission cables, refer to the following manual.

  MELSEC-Q/L AnyWireASLINK Master Module User's Manual

- For details of the current consumption of POKAYOKE terminals, refer to the product manual supplied with the product used.
- Do not send the transmission cables (DP, DN) of multiple systems with multi-core cables in a batch.



- The voltage should not fall below the lower limit of the allowable voltage range due to the voltage drop caused by the cable.
  If the voltage falls below the lower limit, malfunctions may occur.
- Do not connect soldered cables directly to the terminals. Doing so may loosen the screws, resulting in a poor contact.

4.2.4 Cables

(1) 4-core flat cable

Model	Details
FK4-125-100	16 AWG (1.25 sq × 4 cores), insulating coating outer diameter: ϕ2.5±0.1 mm (Conductor resistance: 0.015 Ω/m, permissible current: 5 A), 100 m winding

(2) LP connector (Pressure welding connector)

Model	Details
LP4-WR-10P	For 4-core flat cable (1.25 sq) (Coating outer diameter: ϕ2.54, cover: white, body: red), pin protector type

(3) Pressure welding tool for LP connector

Model	Details
LP-TOOL	Although an LP connector can be pressure welded using a tool such as pliers, a dedicated tool is recommended for steady working.

4.2.5 Terminator for AnyWireASLINK

Model	Product specifications	Dimension (mm)
BT0	For AnyWireASLINK Line termination, with polarity (attachment holder included)	44 × 24.5 × 12

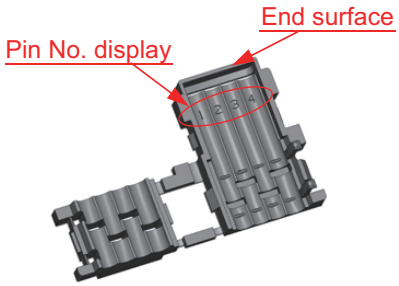
⚠CAUTION	The terminator (BT0) is a module used to stabilize transmission waveforms. Connect the terminator to the end of the transmission line farthest from the master module. Be aware that BT0 has a polarity. (The LED turns on in correct polarity.) A misconnection may cause malfunctions or failures.

4.2.6 Attaching the link connector

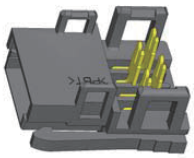
This section describes how to attach the link connector.
To perform pressure welding to the link connector, use the dedicated tool (LP-TOOL: Anywire Corporation).

⚠CAUTION	• Do not make a reverse connection or a short circuit in connection work. A misconnection may cause malfunctions or failures. • Do not pull cables when making connections. Do not secure cables with stress exerted on them. Doing so may cause poor contact.

(1) List of component parts



Connector cover



Connector body

Flat cable

(2) Pressure welding at the flat cable end

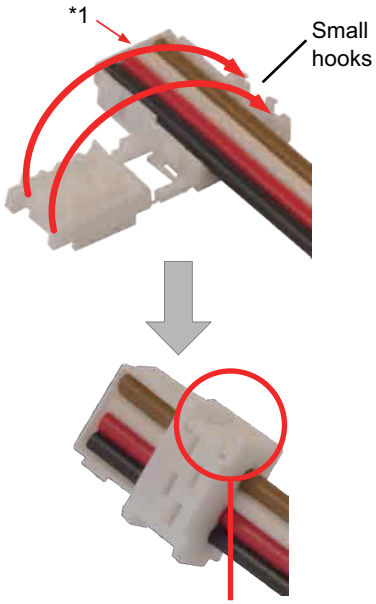
(a) Setting the flat cable on the connector cover

1) Check the pin numbers shown on the grooves on the inner surface of the connector cover and the cable orientation. (The black line is positioned on the hinge side of the connector cover.)
Be aware that transmissions are not made with the reverse orientation.

2) Slide the flat cable so that the cable end contacts with the end face of the connect cover.*1

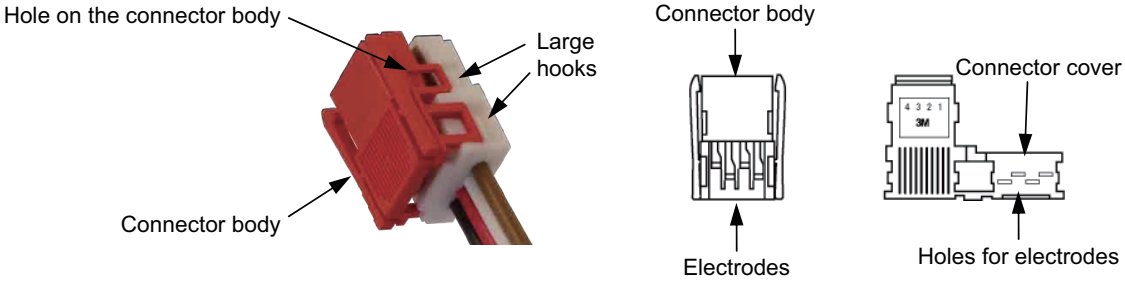
3) Fold the cover into two in such a way that the cover sandwiches the wires.

4) Secure the tip of the small hooks into the fixing hole.



Check that the small hooks have been fixed in the holes.

(b) Engaging the connector body to the connector cover
Push the four electrodes standing on the connector body into the four holes on the connector cover.



(c) Pressure welding
Place a production tool such as pliers on the top face of the connector cover and the knurled part on the back of the connector body, and push the connector cover into the connector body.

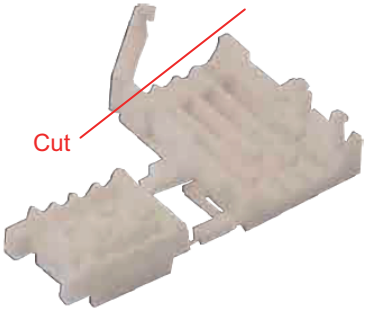
Check that with snaps, all the four large hooks of the connector cover (two on each side) are securely engaged into the connector body holes.

The appearance should be as shown below after all the steps have been completed.

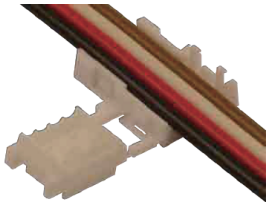
[Front view] [Side view]

(3) Pressure welding at a position between flat cable ends

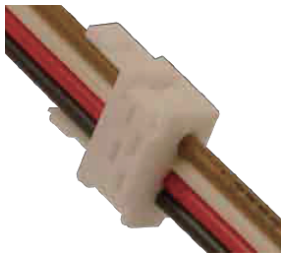
(a) Cut off the end face of the connector cover using a tool such as a nipper.



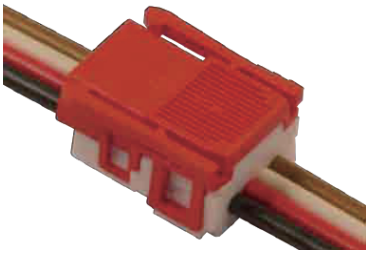
(b) Check the pin numbers shown on the grooves on the internal surface of the connector cover and the flat cable orientation, and set the flat cable. (The black line is positioned on the hinge side of the connector cover.)



(c) Perform steps (a)-3), (a)-4), (b), and (c) for pressure welding at the flat cable end.

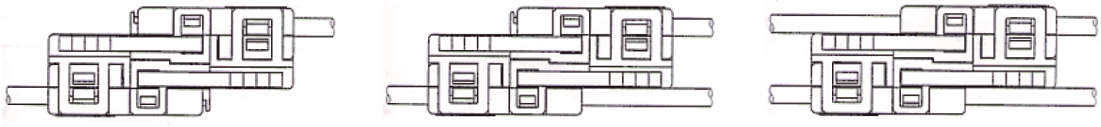


The appearance should be as shown below after all the steps have been completed.

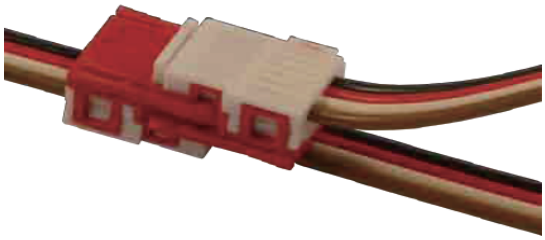


Utilizing the combinations (of pressure welding at flat cable ends and at positions between the ends) allows three types of connections.

[Addition] [T-shape branching] [H-shape branching]



[Example of T-shape branching connection]



POINT

Pin alignment of the link connector

Cable colors of the flat cable for wiring and the link connector cable attached to each type of POKAYOKE terminal are partially different.

Pin No.	Description	Cable color	
		Flat cable for wiring	Cable attached to POKAYOKE terminal
1	DN	Black	Black
2	DP	Red	Red
3	0 V	White	White
4	24 V	Brown	Green

The link connector is a gender-neutral connector.

4.3 Installing Barcode Readers

For the details of how to connect the barcode reader, refer to the product manual supplied with the barcode reader.

4.3.1 Communication setting of a barcode reader

■ Barcode reader for the main GOT (connected to the serial communication module)

Configure the communication setting of the serial communication module according to that of the barcode reader used.
For the communication setting of the serial communication module, refer to the following.

GX Works2 Version 1 Operating Manual (Intelligent Function Module)

■ Barcode reader for the main GOT (connected to the main GOT)

Configure the GOT settings related to the barcode reader according to the communication setting of the barcode reader used.
For the GOT settings, refer to the following.

GT Designer3 (GOT2000) Screen Design Manual

■ Barcode reader for the sub GOT

Configure the GOT settings related to the barcode reader according to the communication setting of the barcode reader used.
For the GOT settings, refer to the following.

GT Designer3 (GOT2000) Screen Design Manual

POINT

For the barcode reader whose operation has been checked by Mitsubishi, please contact your local Mitsubishi Electric representative.

4.4 Installing Other External I/O Devices

To connect a three-color stack light (for system signals), buzzer, and external input device to the CPU module in this POKAYOKE application, connect the terminals to the DC I/O conversion module (FA-TBS40P) connected to the CPU module by the conversion cable (FA-SCBL10FMV-M).

The following table shows the DC I/O conversion module terminals to which a three-color stack light (for system signals), buzzer, and external input device are connected.

Device name		Terminal or pin for connection			
		DC I/O conversion module		CPU module	
Three-color stack light (for system signals)	Green lamp	31	39 or 40	OUT0 (B05)	OUTCOM (A01 or B01)
	Yellow lamp	32		OUT1 (A05)	
	Red lamp	33		OUT2 (B04)	
Buzzer		34		OUT3 (A04)	
Input switch		21	19 or 20	IN6 (B10)	INCOM (A11 or B11)

POINT

- For the external I/O of the CPU module, refer to the following.

  ☞ 3.6.1 Wiring

- For the connection specifications of the DC I/O conversion module and conversion cable, refer to the product manual supplied with the product used.
- Up to one buzzer can be connected. Even when the [Call] switch is touched on the sub GOT, the buzzer of the main GOT sounds.

(1) Signals of three-color stack light

The POKAYOKE system outputs "system signals" that indicate the operation state of the entire system and "area signals" that indicate the operation state of each area.
Each color of the lamp can turn ON or flash once a three-color stack light is connected for each type of signal.

The following shows the definitions of light turning ON and flashing.

- ON: Defined as ON independently of other light status definitions.
- Flashing: In a state that causes the same color light to turn on, ON takes priority over flashing.
  (Example: When a missing part alarm has occurred and the parts are out of stock at the same time, the red light turns on.)
- -: Depends on other ON definitions.
  (Example: The green light turns on if the operating state is "Running" even during the occurrence of a stock alarm.)
  Yellow and red lights turn off if the state does not correspond to ON or flashing.

(a) System signal

State		Indicator light Green	Indicator light Yellow	Indicator light Red
Software version mismatch		-	-	-
System startup error		-	-	-
CPU stop error		-	-	-
All areas in standby		Flashing	-	-
Area(s) in operating		ON	-	-
Area(s) in suspended		Flashing	-	-
Area(s) with a call		-	-	ON
Minor alarm	Stock alarm occurred in area(s)	-	Flashing	-
	Door break open occurred in area(s)			
	Time exceedance alarm occurred in area(s)			
	Wrong picking occurred in area(s)			
	Missing part alarm occurred in area(s)	-	-	Flashing
Severe alarm	Terminal address error	-	-	ON
	Out of stock occurred in area(s)			
	Severe alarm other than the above			

(b) Area signal

State		Indicator light Green	Indicator light Yellow	Indicator light Red
Software version mismatch		-	-	-
System startup error		-	-	-
CPU stop error		-	-	-
Standby		Flashing	-	-
Operating		ON	-	-
Suspended		Flashing	-	-
Calling		-	-	ON
Minor alarm	Stock alarm occurred	-	Flashing	-
	Door break open			
	Time exceedance alarm occurred			
	Wrong picking occurred			
	Missing part alarm occurred	-	-	Flashing
Severe alarm	Terminal address error	-	-	ON
	Out of stock			
	Severe alarm other than the above			

POINT

Please contact your local Mitsubishi Electric representative for the details of area signals.

(2) Buzzer sounds and lamp state corresponding to the Call switch operations

The following shows the buzzer sounds, three-color stack light lights up, and switch and lamp light up corresponding to the [Call] switch operations.

Call switch operation		Buzzer sound	Light status	
			Red light of the three-color stack light (for system signals) Call switch (main)*1	Red light of the three-color stack light (for area signals) Call switch (area)*2 Call lamp (area)*3
Main GOT	OFF→ON	Sound	ON	No change
	ON→OFF	Stop	OFF	OFF for all areas
Sub GOT	OFF→ON	Sound	ON	ON only for the area where the switch has been operated
	ON→OFF	Stop	OFF if OFF in all areas	OFF only for the area where the switch has been operated

*1 [Call] switch on the "Main" screen
*2 [Call] switch on the "Process Display (Simple Display)" screen and "Process Display (Detail Display)" screen
*3 "Call" lamp on the "Process List Display" screen

5. SYSTEM SETTINGS

This chapter describes the system settings of the POKAYOKE application.

5.1 Starting up the Programmable Controller

Power on and start the programmable controller.

5.2 Installing Sequence Programs

The following shows the procedure for installing sequence programs in the programmable controller.

POINT

For the details of operations and other information related to GX Works2, refer to the following.

GX Works2 Version 1 Operating Manual (Common)

GX Works2 Version 1 Operating Manual (Intelligent Function Module)

CAUTION

Restrictions are applied to the following functions of GX Works2 in the POKAYOKE Control Package project.

Function	Description
Write to PLC	You cannot write only the execution program. (Write the program together with its source information.)
	You cannot write data to SD memory cards.
Write to IC Memory Card	Not available
Write to IC Memory Card (Edit and Data Copy)	
Verify with PLC	You cannot display details of verification results. (You can display only a list of verification results.)
Verify	
Device Display	Not available
Batch Device Display	
Display Compile Result	
Print	You cannot use the device display.
Print Preview	
User Library	You cannot register data in the user library.
Copy	Not available

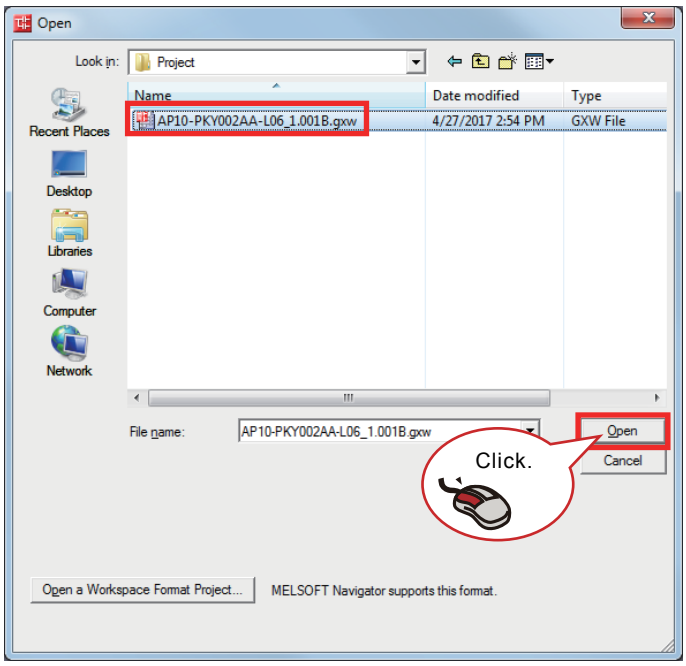
5.2.1 Preparing a GX Works2 project

Copy the following file in the "Project" folder on the installation DVD to the personal computer and clear the read-only attribute of the copy.

- AP10-PKY002AA-L06_*.****.gxw (*.**** indicates the version.)

5.2.2 Reading a project

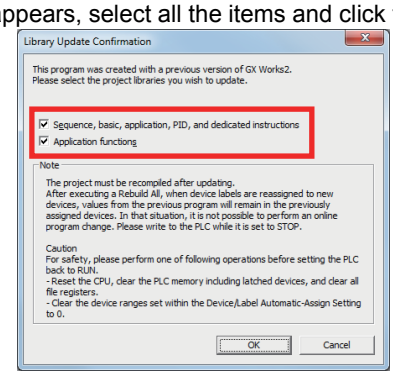
Open the POKAYOKE Control Package project on GX Works2.



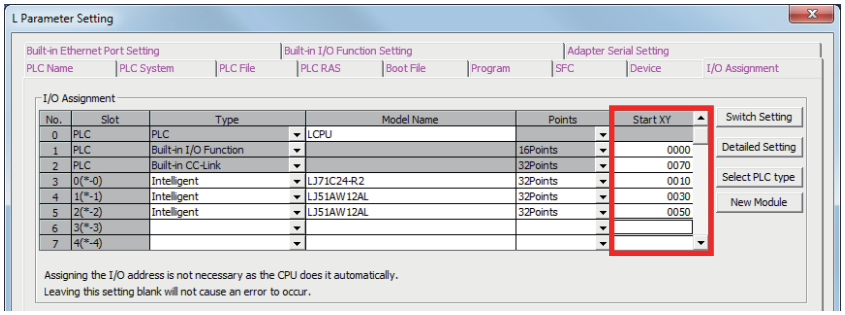
1. Run "GX Works2" from the Start menu of Windows.
2. Click [Project] → [Open] in the menu.
3. The "Open" window appears.
4. Select the copy of the file on the installation DVD and click the [Open] button.
5. The POKAYOKE Control Package project is opened.

POINT

- When the following window appears, select all the items and click the [OK] button.



- The CPU type of the POKAYOKE Control Package project stored in the installation DVD is "L06/L06-P". To use other CPU types, change the PLC type with GX Works2.
- If the PLC type is changed to "L26-BT/L26-PBT", change "Start XY" of the PLC parameter [I/O Assignment] as follows.



5.2.3 Registering a license key

A license key can be registered in the CPU module by writing the license key and product ID to the following devices.

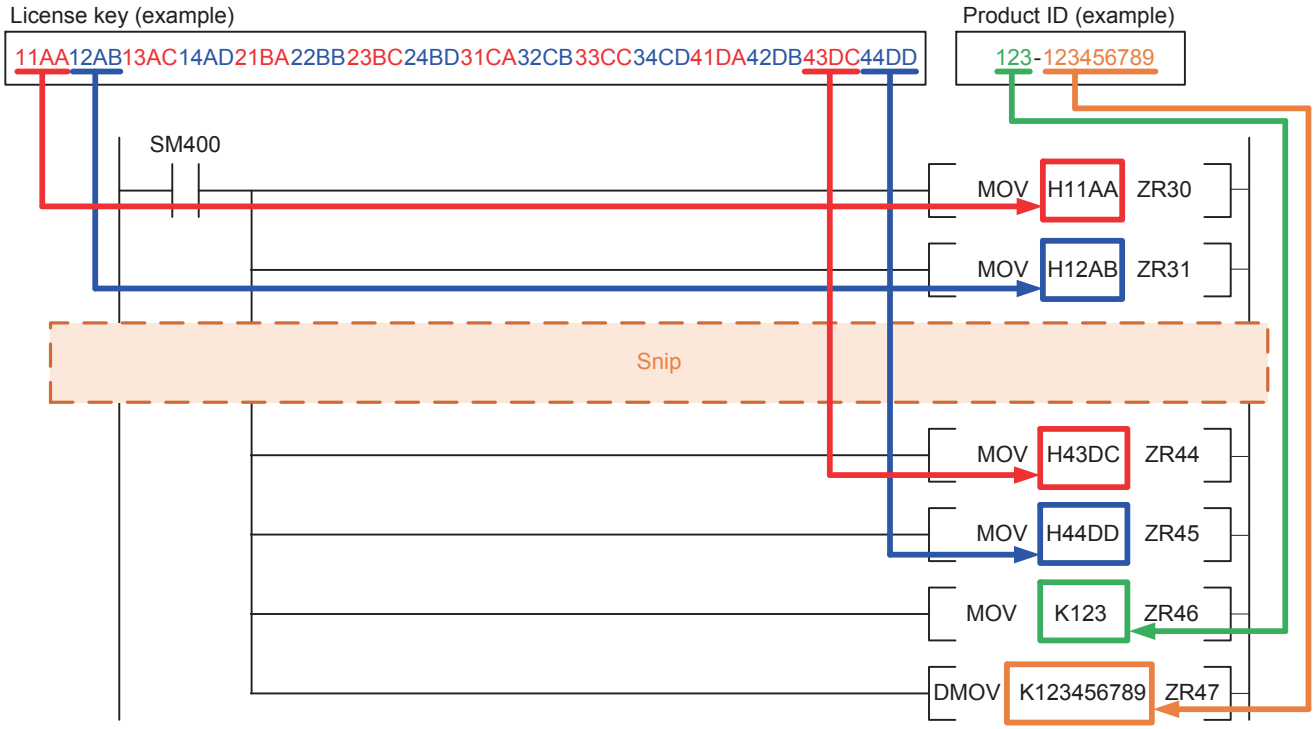
Information to be registered		Write target device
License key (64 characters)*1		ZR30 to ZR45
Product ID*2	3-digit number	ZR46
	9-digit number	ZR47 to ZR48

*1 Follow the "License Key Request Instructions" supplied with the POKAYOKE Control Package to get a license key.
*2 This information is described in the "License Certificate" supplied with the POKAYOKE Control Package.

Write the license information to the devices by one of the following two methods.

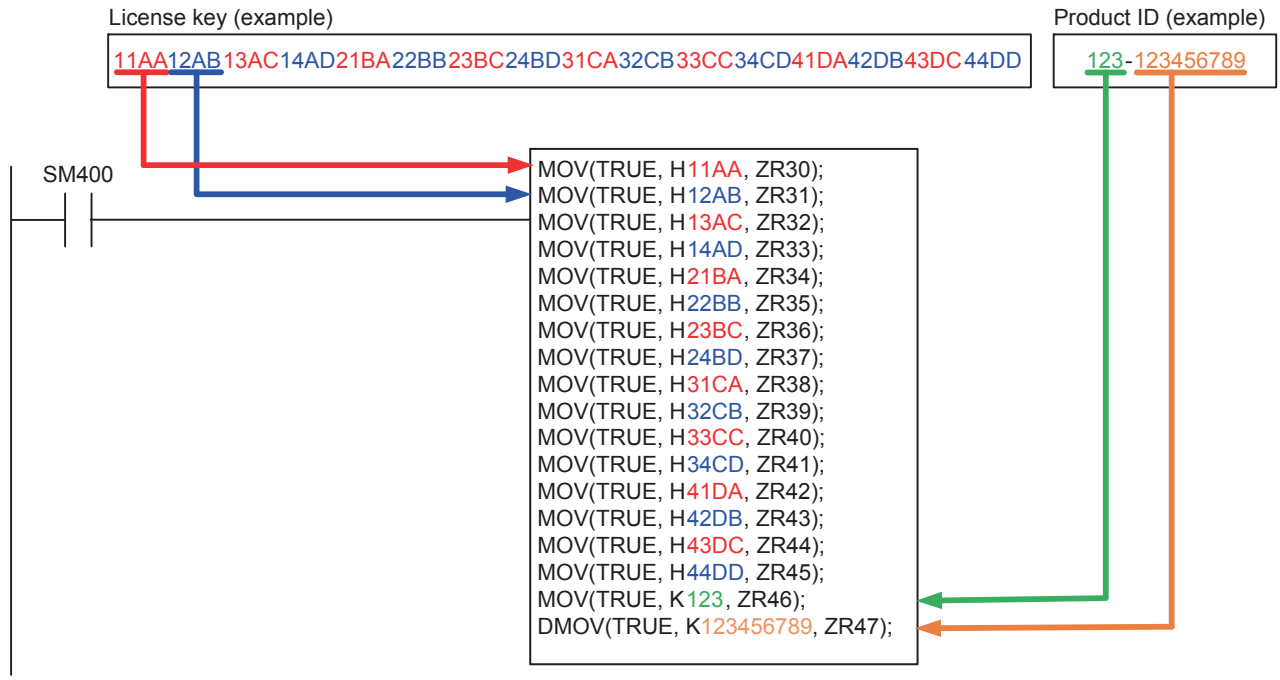
(1) Using a ladder program

Add a ladder program in the program "KEY_LD".
Refer to the following example and create a ladder program.



(2) Using an in-line ST box

Add an ST program in the in-line ST box in the program "KEY_ST".
Refer to the following example and create an ST program.



5.2.4 Customizing the project

Customize the project as needed.

(1) Customizing the programmable controller system

The POKAYOKE Control Package project stored in the installation DVD is designated to use one serial communication module (LJ71C24-R2) and two AnyWireASLINK master modules (LJ51AW12AL).
To change the number of modules used, change the following settings.

- Delete unnecessary modules from PLC parameter [I/O Assignment] and fill the empty mounting positions (slots). (Do not change "Points" and "Start XY".)
- Select "Project" → "Intelligent function module" in the Navigation window and delete unnecessary modules. (Set the slot number and start XY address according to the PLC parameter [I/O Assignment] settings.)

(2) Customizing the sequence program

For the details, refer to the following.

☞ 7.1 User Program

POINT

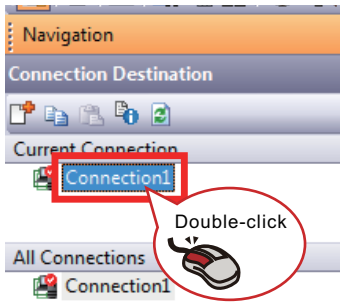
To use a barcode reader, a sequence program needs to be created.
Create a program or use a sample program.
Please contact your local Mitsubishi Electric representative for obtaining the sample program.

5.2.5 Writing the project

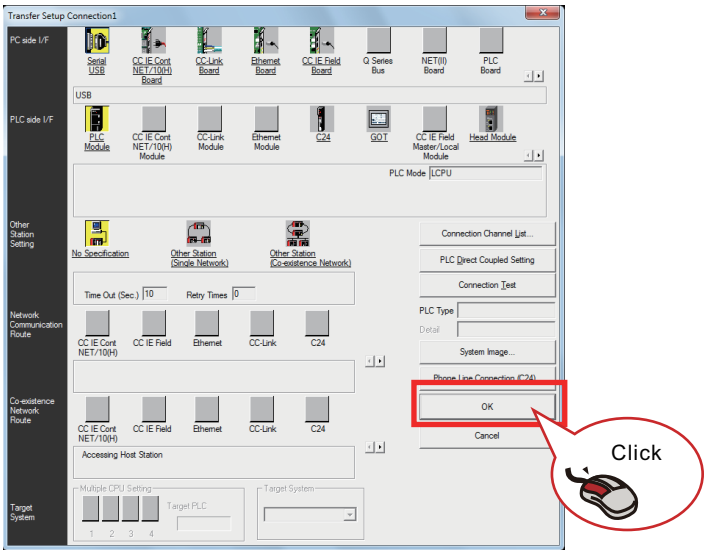
Write the POKAYOKE Control Package project with GX Works2.

POINT

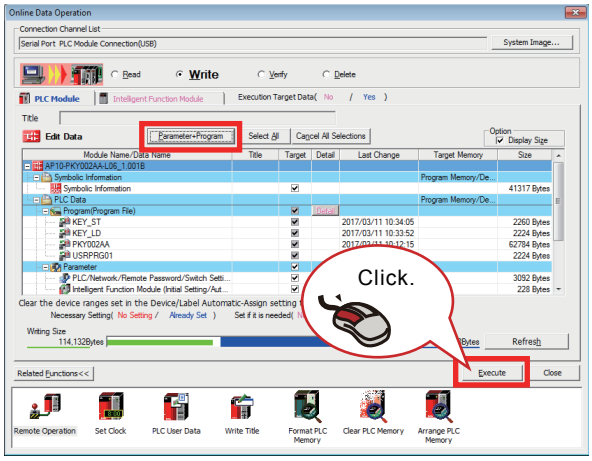
Convert and compile all the projects to complete the compilation in advance.



1. Select "Connection Destination" → "Current Connection" and double-click "Connection1" in the Navigation window.



2. The "Transfer Setup" window appears.
3. Configure the following settings and click the [OK] button.
   - PC side I/F: "Serial USB"
   - PLC side I/F: "PLC Module"
   - Other Station Setting: "No Specification"



4. Click [Online] → [Write to PLC] in the menu.
5. The "Online Data Operation" window appears.
6. Click the [Parameter+Program] button.
7. Click the [Execute] button.

5.3 Starting up the GOT

Power on and start the GOT.

5.4 Installing Screen Data

The following shows the procedure for installing screen data in the GOT.

POINT

For the details of operations and other information related to GT Designer3, refer to the following.

GT Designer3 (GOT2000) Screen Design Manual

5.4.1 Preparing a GT Designer3 project

In the "Project" folder on the installation DVD, select one of the following files appropriate to the GOT used, copy the selected file to the personal computer, and then clear the read-only attribute of the copy.

(1) For the main GOT

- AP10-PKY002AA-GT27S_Main_*.****.gtx*1 (GT2712-S, GT2710-S, GT2708-S)

(2) For the sub GOT

Create a program or use a sample screen.

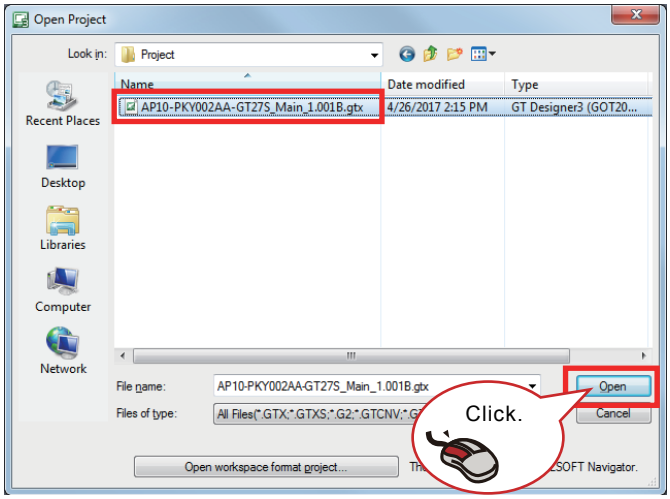
Please contact your local Mitsubishi Electric representative for obtaining the sample screen.

1 "" indicates the version of the project.

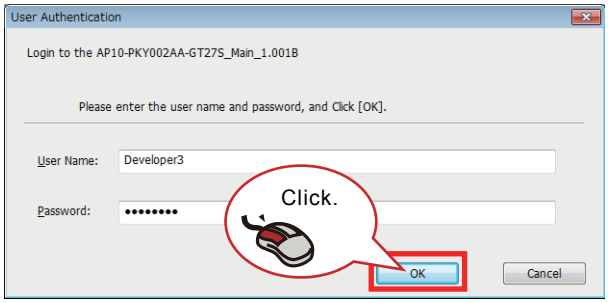
5.4.2 Reading a project

Open the POKAYOKE Control Package project on GT Designer3.

1. Run "GT Designer3" from the Start menu of Windows.
2. Click [Project] → [Open] in the menu.



3. The "Open Project" window appears.
4. Select the copy of the file on the installation DVD and click the [Open] button.



5. The "User Authentication" window appears.
6. Enter the following information and click the [OK] button.
   - User name: "Developer3"
   - Password: "3LDEVPKY"
7. The POKAYOKE Control Package project is opened.

POINT

The message about the protection on scripts/object scripts is displayed. Click the [OK] button.

5.4.3 Customizing the project

Customize the project as needed.

POINT

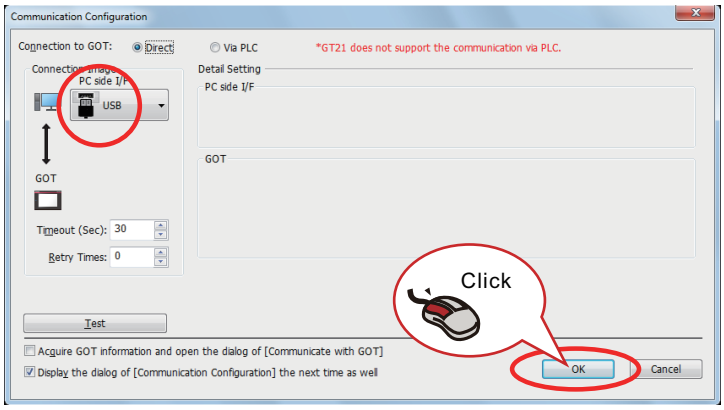
For details of user customization, refer to the following.

7.2 Custom Screen

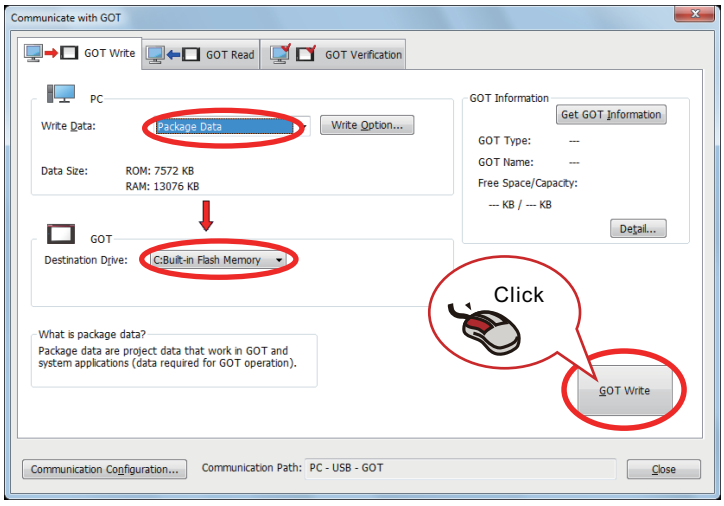
5.4.4 Writing the project

Write the POKAYOKE Control Package project to the main GOT or sub GOT.

1. Click [Communication] → [Write to GOT] in the menu.



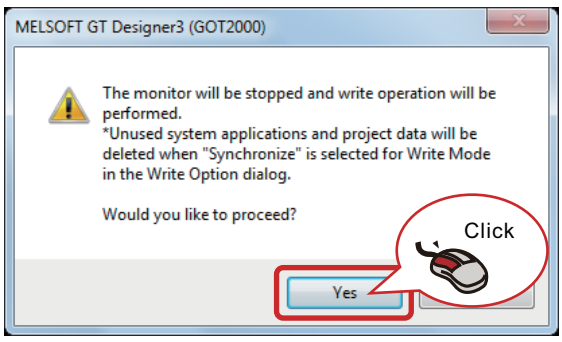
2. The "Communication Configuration" window appears.
3. Check that "PC side I/F" is "USB" and click the [OK] button.



4. The "Communicate with GOT" window appears.
5. Click the [GOT Write] tab to check that the settings have been configured as follows.
   - [PC] Write Data: "Package Data"
   - [GOT] Destination Drive: "C:Built-in Flash Memory"
6. Click the [GOT Write] button.

7. The window shown on the left appears.
8. Enter the following information and click the [OK] button.

   Password: "POKAYOKEDSP"



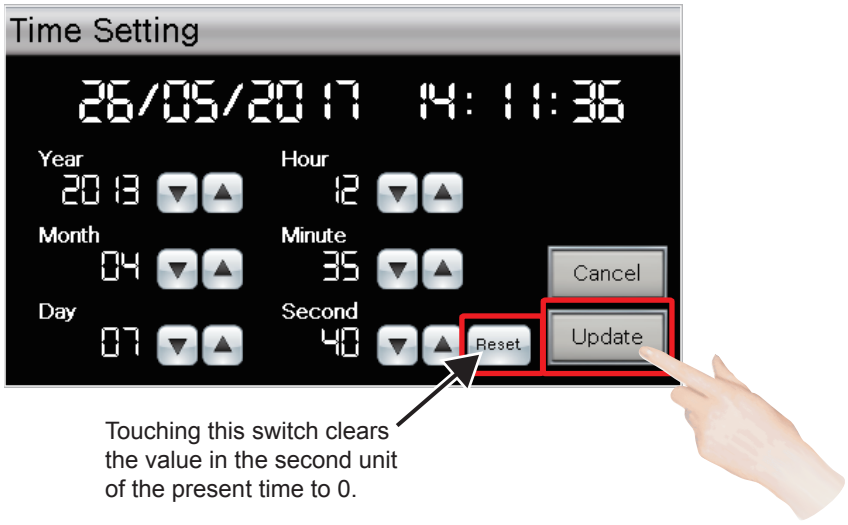
9. The window shown on the left appears.
10. Click the [Yes] button.
11. The project is written to the GOT.

5.5 Starting up the POKAYOKE System

Start up the POKAYOKE system and configure the language setting and time setting.

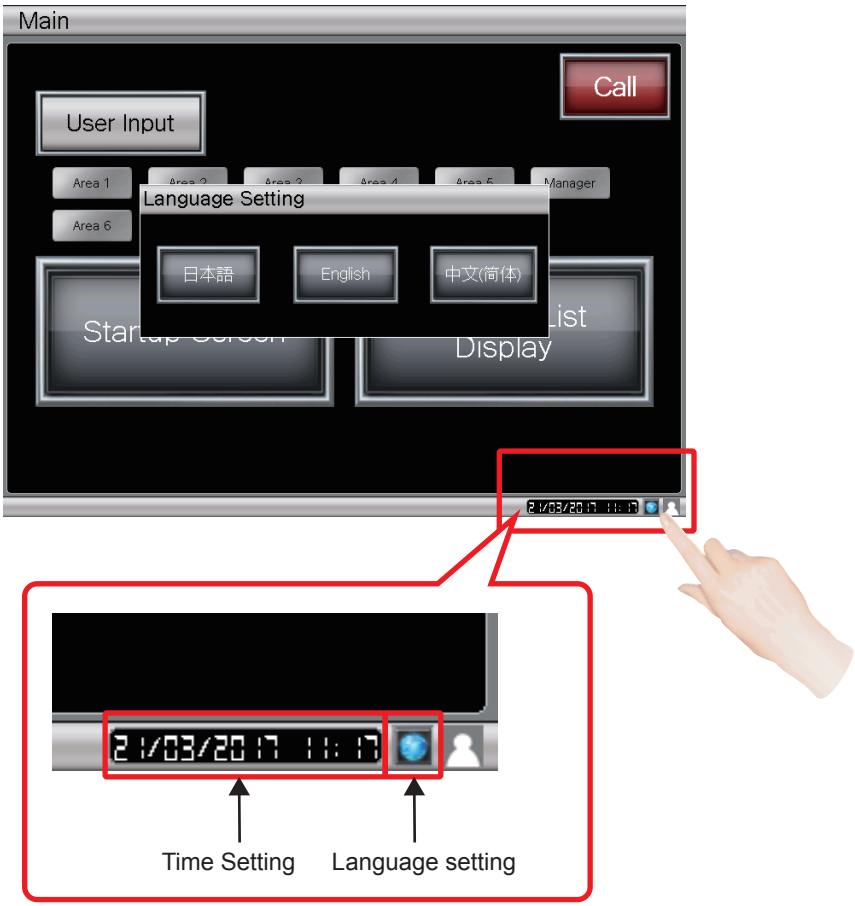
1. Set the RUN/STOP/RESET switch of the CPU in the RUN state.
2. Turn on the main power supply switch on the control panel to power on the GOT.
   The power supply lamp on the left on the GOT on the operation panel door turns on and the iQ Monozukuri logo is displayed on the screen.
3. Select a display language by touching it in the "Language Setting" window.

4. The "Time Setting" window appears.
   Set Year, Month, Day, Hour, Minute, and Second values by touching [▲][▼] switches to set a time.
   Touch the [Update] switch to set the time.



POINT

The display language and time can be changed at any time by touching the Earth icon and time display at the right bottom of screens subsequent to the "Main" screen.

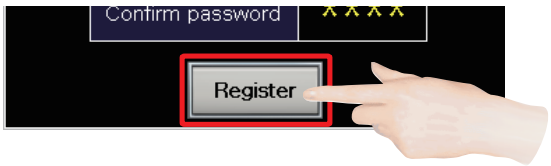


5.6 Top Administrator Password Registration

After the language setting and time setting have been completed, the "Top administrator password registration" window appears.

1. Touching the setting value display area displays a numeric keypad. Enter any password within the range of 1 to 9999.
Enter a password and touch the [ENT] switch.

2. Enter the password entered in Step 1 again in the Confirm password column.
Enter a password and touch the [ENT] switch.

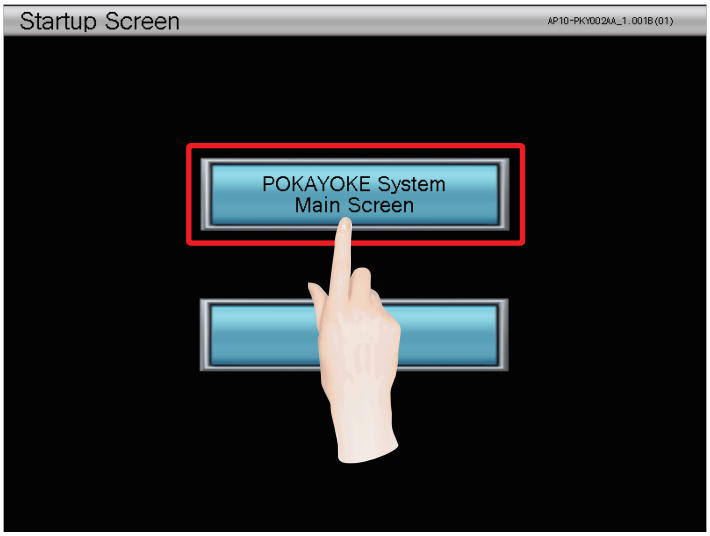


3. Touch the [Register] switch.
Do not forget the registered password.

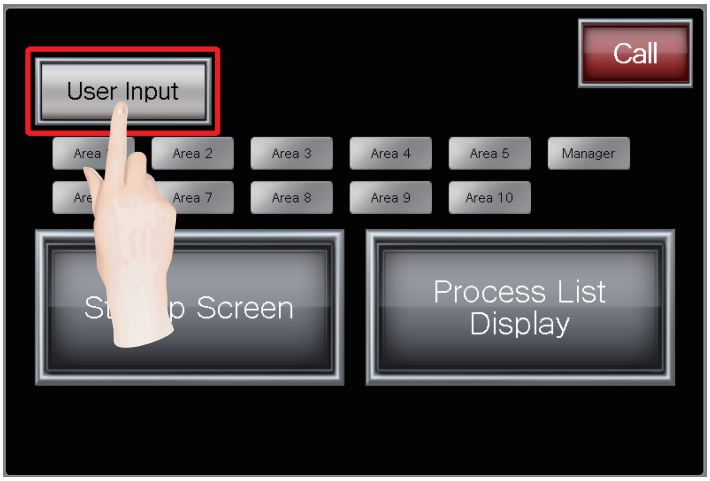
5.7 Registering Terminal Types (Programmable Controller Side)

Register the types of the POKAYOKE terminal installed at each part shelf to the programmable controller in the control panel.

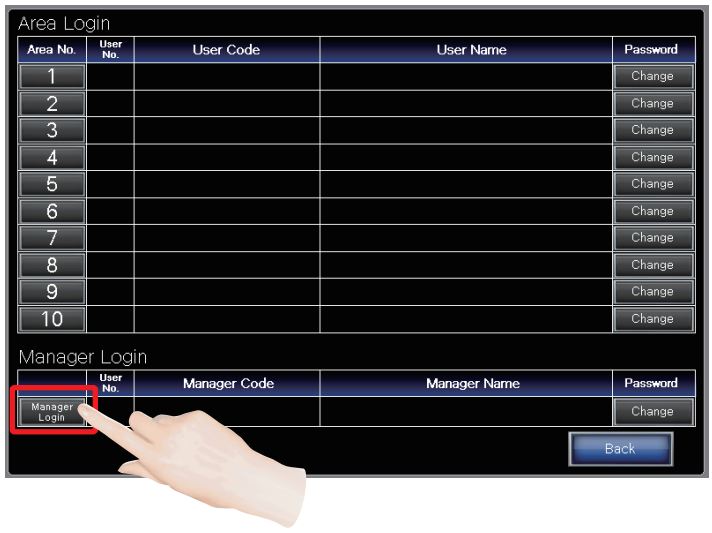
1. Touch the [POKAYOKE System Main Screen] switch.



2. The "Main" screen is displayed.
Touch the [User Input] switch.



3. After the "User Input" screen has been displayed, touch the [Manager Login] switch.

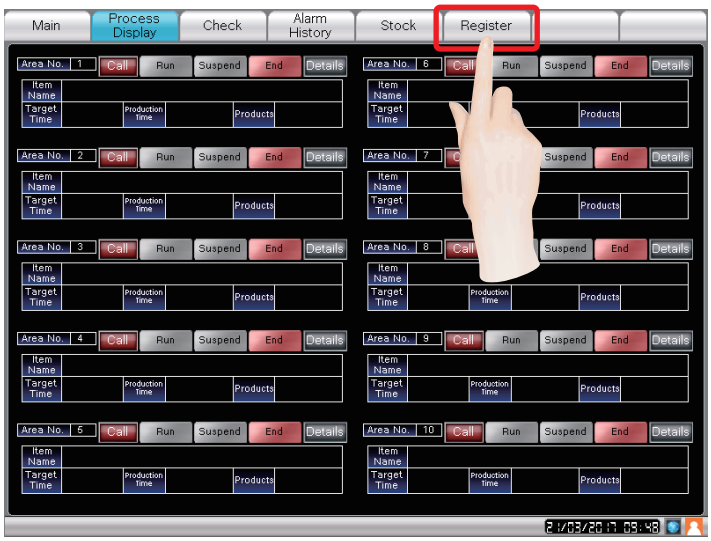


4. The "Manager Login" window appears.
A user number and password are required to be entered. Because you are going to log in to the system as a top administrator, enter "0" as the user number and the password you set in "5.6 Top Administrator Password Registration", and touch the [Login] switch.

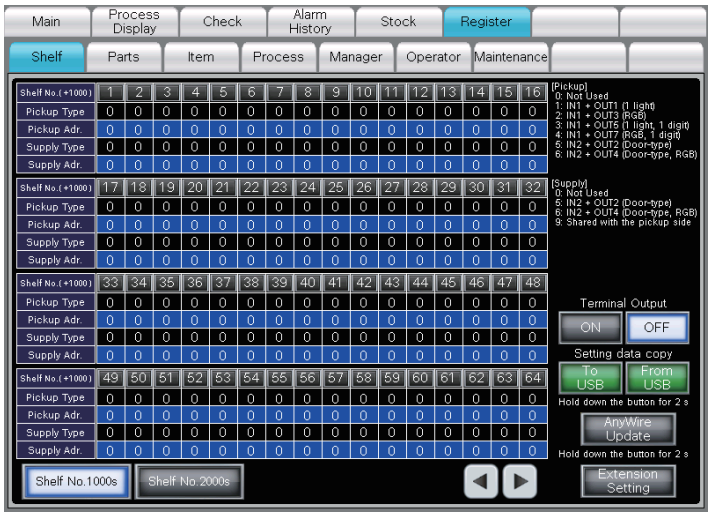
5. When the screen returns to the "User Input" screen, touch the [Back] switch.

6. When the screen returns to the "Main" screen, touch the [Process List Display] switch.

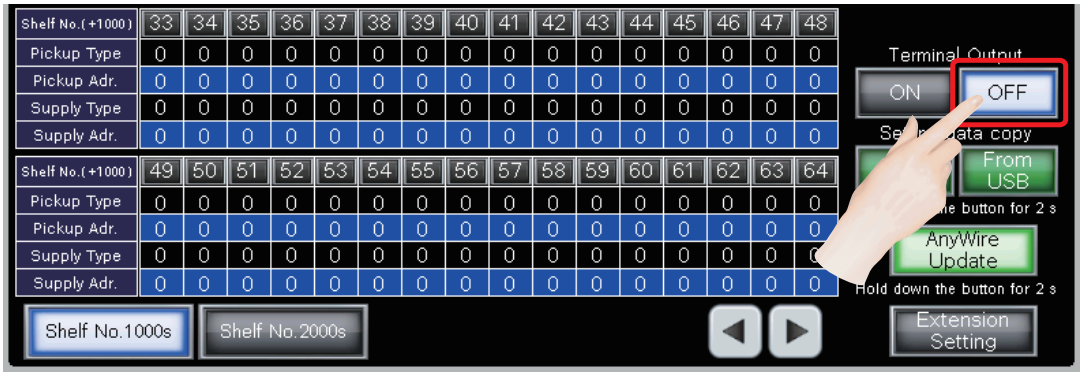
7. After the "Process List Display" screen has been displayed, touch the "Register" tab.



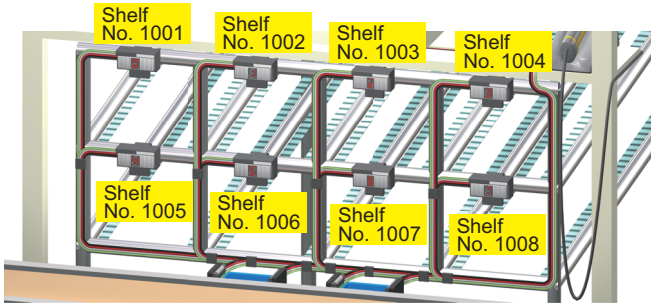
8. The "Shelf" screen is displayed.



9. Touch the [OFF] switch of "Terminal Output" in the lower right of the "Shelf" screen.

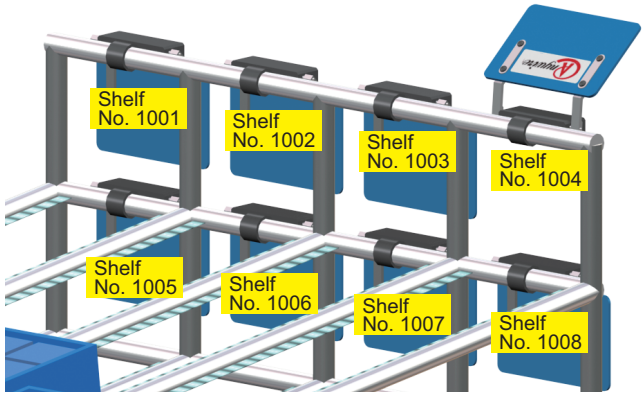


The following terminal settings are used for the POKAYOKE system described in this manual.



Parts pickup side

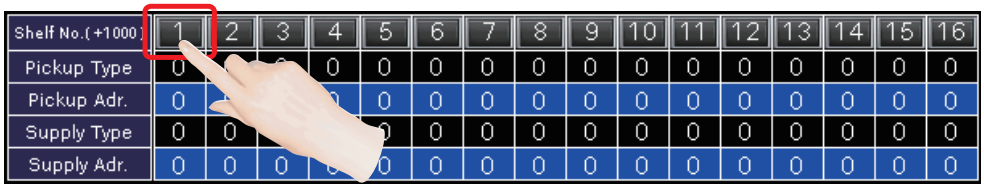
Shelf No. 1001: Terminal Type 3
Shelf No. 1002: Terminal Type 3
Shelf No. 1003: Terminal Type 3
Shelf No. 1004: Terminal Type 3
Shelf No. 1005: Terminal Type 4
Shelf No. 1006: Terminal Type 4
Shelf No. 1007: Terminal Type 4
Shelf No. 1008: Terminal Type 4



Parts supply side

Shelf No. 1001: Terminal Type 5
Shelf No. 1002: Terminal Type 5
Shelf No. 1003: Terminal Type 5
Shelf No. 1004: Terminal Type 5
Shelf No. 1005: Terminal Type 5
Shelf No. 1006: Terminal Type 5
Shelf No. 1007: Terminal Type 5
Shelf No. 1008: Terminal Type 5

10. Touch the [Shelf No.] switch of the shelf to be registered. (In this procedure, select "Shelf No. 1 (1001)".)
(Change Terminal Output to OFF and perform the operation. When Terminal Output is ON, the window is not displayed.)

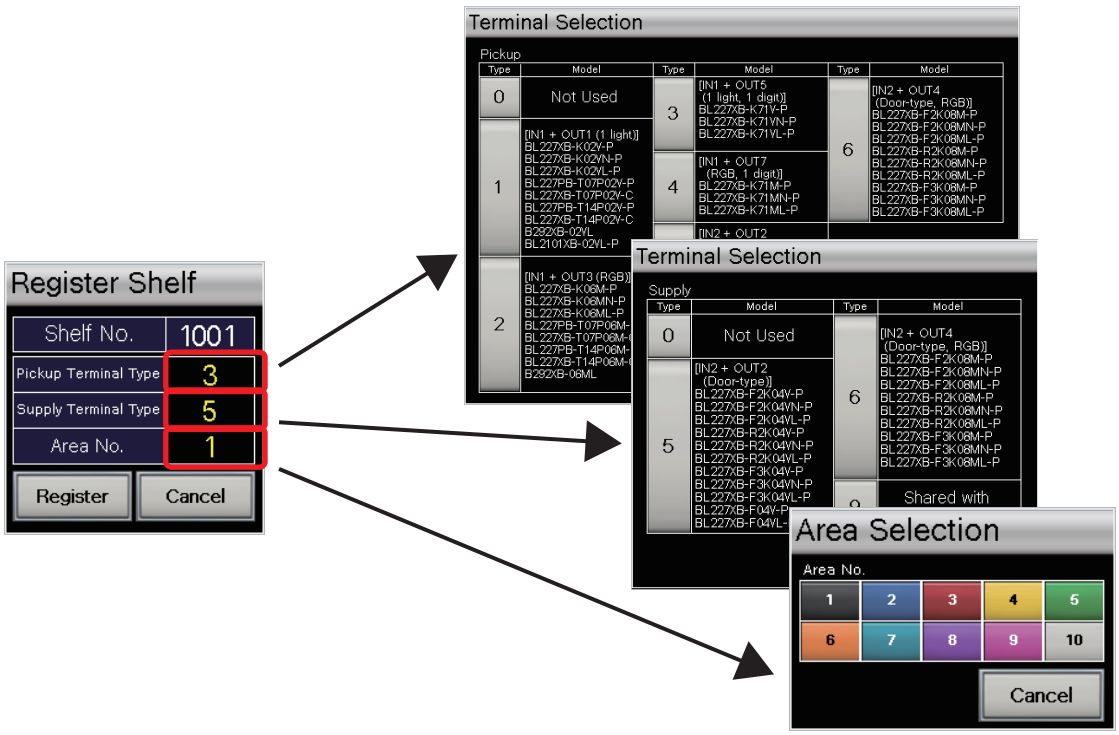


POINT

The background color of the [Shelf No.] switch indicates "Area No." as shown below.

Area No.									
1	2	3	4	5	6	7	8	9	10
Black	Blue	Red	Yellow	Green	Orange	Light blue	Purple	Pink	White

11. The "Register Shelf" window appears.
Set terminal types and area numbers for the pickup side and supply side.

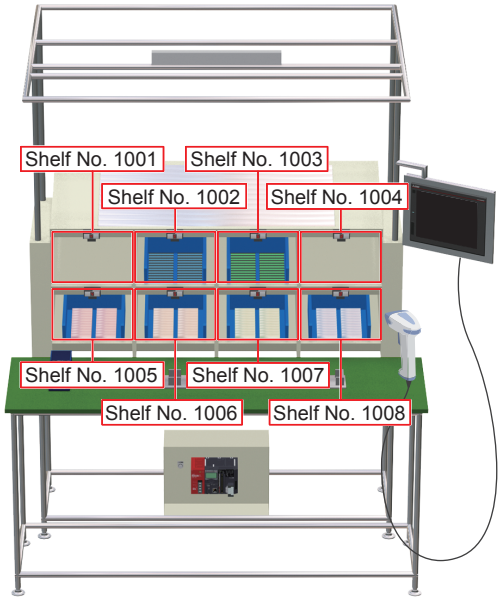


12. After the input is completed, touch the [Register] switch to close the "Register Shelf" window.
To cancel the registration, touch the [Cancel] switch.

13. Repeat the steps 10 to 12 to register the terminal types of the terminals installed to all the shelves.

POINT

When "9" is set for the supply side POKAYOKE terminal type, parts can be supplied from the pickup side POKAYOKE terminal.
(In this case, the start address of the supply side POKAYOKE terminal is the same as that of the pickup side.)
The following figure shows a setting example.



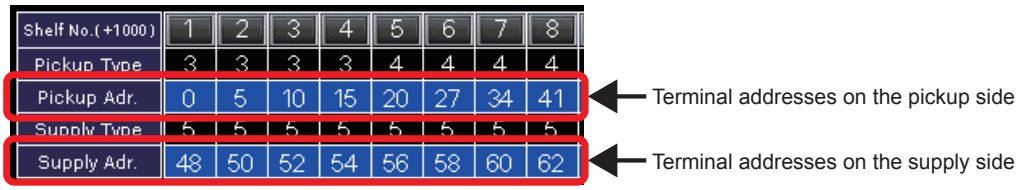
Parts pickup side
Shelf No. 1001: Terminal Type 3
Shelf No. 1002: Terminal Type 3
Shelf No. 1003: Terminal Type 3
Shelf No. 1004: Terminal Type 3
Shelf No. 1005: Terminal Type 4
Shelf No. 1006: Terminal Type 4
Shelf No. 1007: Terminal Type 4
Shelf No. 1008: Terminal Type 4

Parts supply side
Shelf No. 1001: Terminal Type 9
Shelf No. 1002: Terminal Type 9
Shelf No. 1003: Terminal Type 9
Shelf No. 1004: Terminal Type 9
Shelf No. 1005: Terminal Type 9
Shelf No. 1006: Terminal Type 9
Shelf No. 1007: Terminal Type 9
Shelf No. 1008: Terminal Type 9

Shelf No.(+1000)	1	2	3	4	5	6	7	8
Pickup Type	3	3	3	3	4	4	4	4
Pickup Adr.	0	5	10	15	20	27	34	41
Supply Type	9	9	9	9	9	9	9	9
Supply Adr.	0	5	10	15	20	27	34	41

5.8 Registering Terminal Types (POKAYOKE Terminal Side)

The following explains the procedure for writing addresses to the terminals according to the terminal I/O addresses at the programmable controller side that are registered in "5.7 Registering Terminal Types (Programmable Controller Side)".



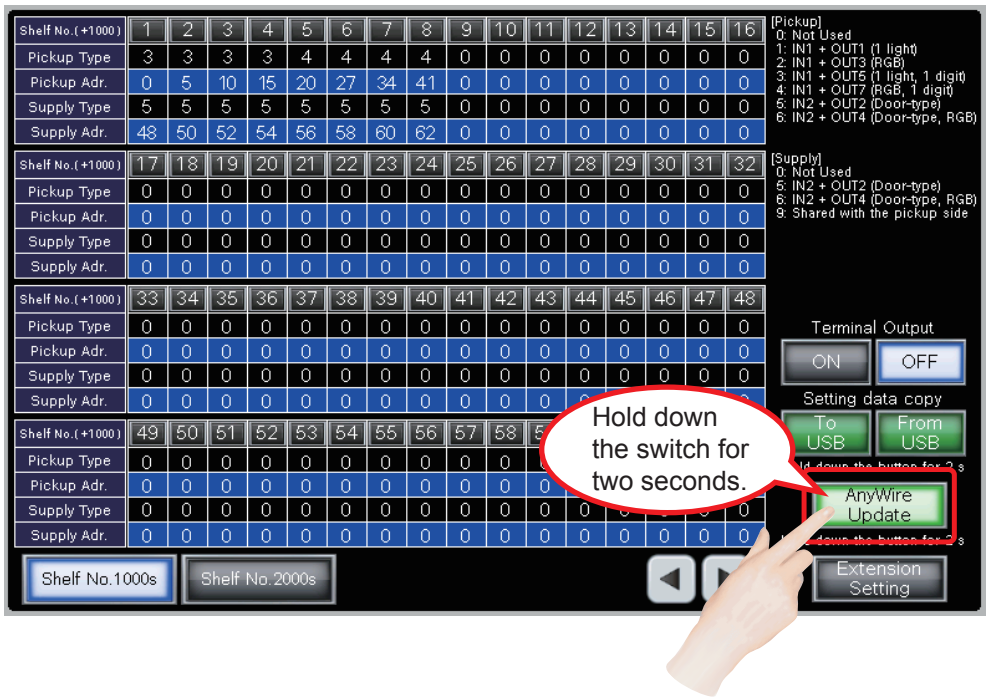
To set an address for each POKAYOKE terminal, use the address writer (ARW-02AS).
For the usage of the address writer, refer to the product manual supplied with the address writer.

⚠CAUTION	• Before changing terminal addresses, change Terminal Output to OFF. Changing terminal addresses with Terminal Output set to ON may close or open the doors of terminals. • Do not change terminal addresses during the check operation. Doing so may change the outputs to POKAYOKE terminals (lamps, 7-segment displays, and opening/closing of terminal doors). • Set addresses so that each terminal has a different address. Otherwise transmission trouble occurs. • Setting the arm (door) motion time to "0" (Delay time: 0 second) may cause operators' hands to be caught. Set the arm (door) motion time to "1" (Delay time: 1 second) or longer and adjust the door opening/closing position setting depending on the system in use.

5.9 Updating the AnyWire Configuration

After the registration at the programmable controller side and the terminal side has been completed, finally update the current system configuration.
Make sure to execute this operation after changing the shelf registration.

1. Hold down the [AnyWire Update] switch at the right bottom of the "Shelf" screen for two seconds.



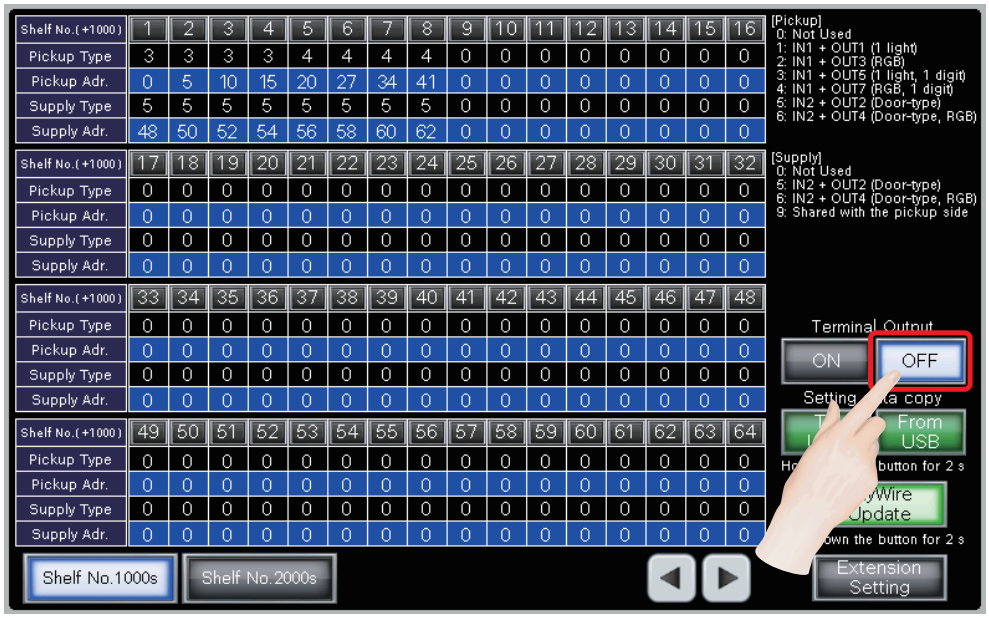
2. After the "Confirmation" window has appeared, touch the [Yes] switch.
(Change Terminal Output to OFF and perform the operation. When Terminal Output is ON, the window is not displayed.)

3. The system configuration is updated.

5.10 Changing the Shelf Configuration

To change the shelf configuration, follow the procedure below.

1. Touch the [OFF] switch of "Terminal Output" in the lower right of the "Shelf" screen.



2. After the "Confirmation" window has appeared, touch the [Yes] switch.

3. Change the shelf configuration.
   - Install or remove POKAYOKE terminals to transmission cables.
     ☞ 4.2 Installing POKAYOKE Terminals
   - According to the terminals to which changes have been applied, change the terminal types registered to the programmable controller.
     ☞ 5.7 Registering Terminal Types (Programmable Controller Side)
   - According to the terminal types registered to the programmable controller, change terminal addresses.
     ☞ 5.8 Registering Terminal Types (POKAYOKE Terminal Side)

4. Update the AnyWire configuration.
   ☞ 5.9 Updating the AnyWire Configuration

5. If an alarm (error message) related to terminal addresses has occurred, take corrective actions according to the following and update the AnyWire configuration again.
   ☞ ■Error messages displayed on the GOT screen

6. Touch the [ON] switch of "Terminal Output" in the lower right of the "Shelf" screen.

7. Check the operations of the terminals.
   ☞ 6.1 Check

6. OPERATION CHECK

This chapter describes how to check the POKAYOKE system constructed in this chapter for proper operation.

6.1 Check

This section describes how to check the operation by operating the GOT panel on the operation panel.

6.1.1 Individual check

The POKAYOKE terminals installed to the part shelves are individually checked for whether the terminals correctly function or not.

1. Touch the "Check" tab in the manager mode.

2. Touch the [Valid] switch of "Check Operation".

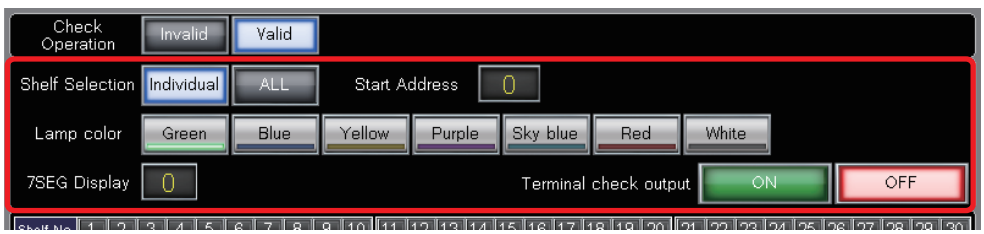
3. After the "Confirmation" window has appeared, touch the [Yes] switch.

POINT

While the POKAYOKE system is operating, the setting of Check Operation cannot be set to Valid. Switching the setting after changing the operating state of all areas to Standby.

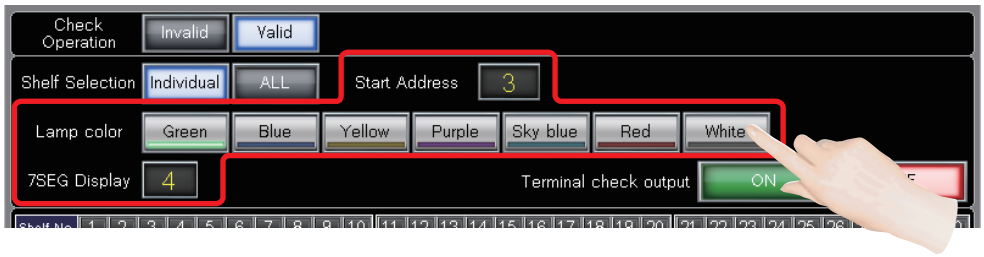
⚠CAUTION	Switching the setting (Invalid or Valid) of Check Operation may close or open doors of terminals. Before changing the setting, fully check the safety.

4. The [Valid] switch of "Check Operation" turns on and setting items that have not been displayed are displayed under "Check Operation".



5. Touch the [Individual] switch of "Shelf Selection".

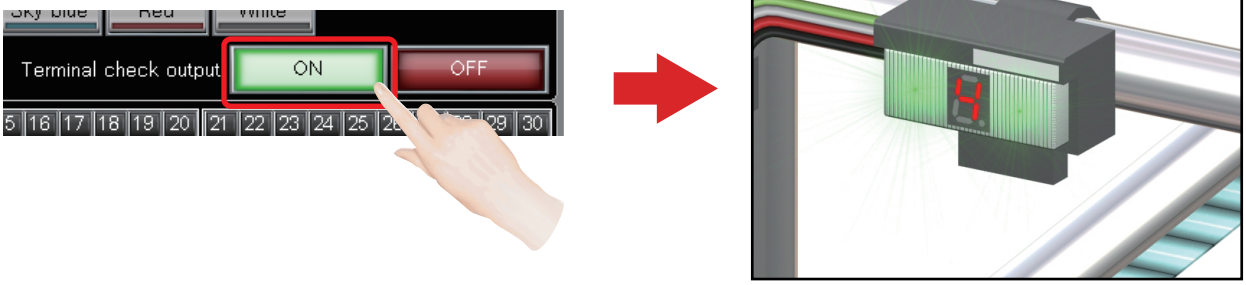
6. Set the setting items of the POKAYOKE terminals to be checked.
   - Start address
   - Lamp color
   - 7-segment display



POINT

A lamp color can be selected only for RGB display type POKAYOKE terminals.

7. Touch the [ON] switch of "Terminal check output" to check the POKAYOKE terminals selected in step 6.

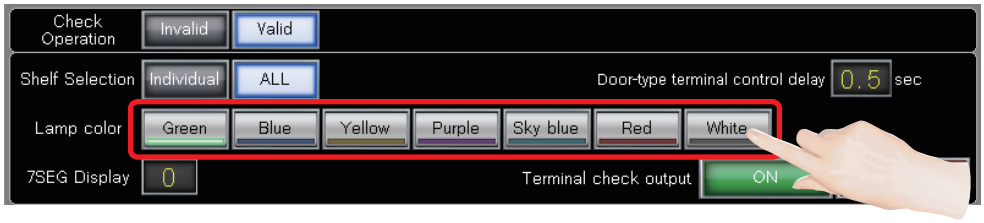


8. To end the check, touch the [OFF] switch of "Terminal check output".

6.1.2 Entire check

1. Touch the [ALL] switch of "Shelf Selection".

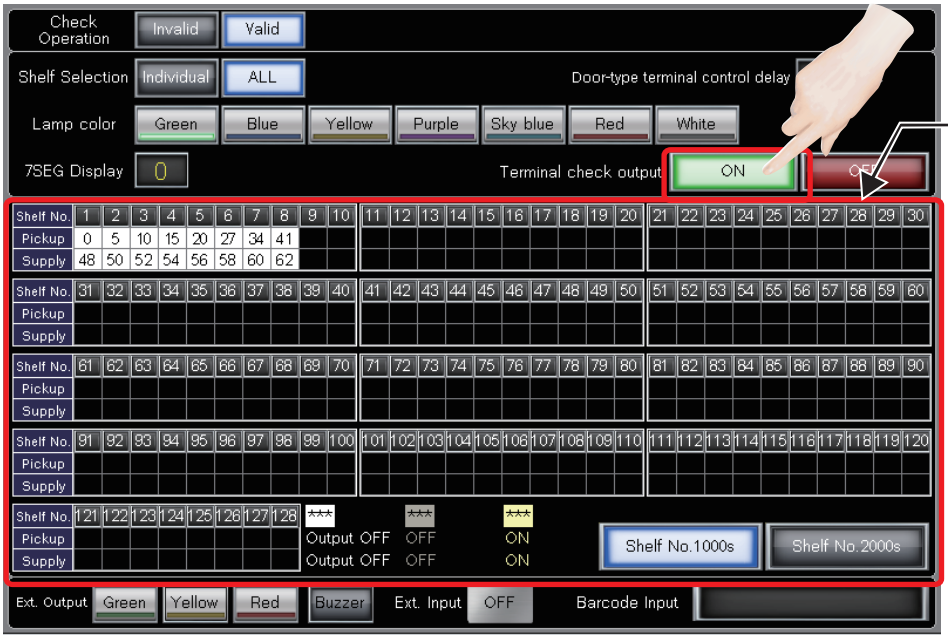
2. Select a "Lamp color".



POINT

A lamp color can be selected only for RGB display type POKAYOKE terminals.

3. Touch the [ON] switch of "Terminal check output" to check all terminals in the system.



The terminal addresses used in the system can be monitored with color display.
- White: Output OFF
- Gray: OFF
- Yellow: ON

4. To end the check, touch the [OFF] switch of "Terminal check output".

POINT

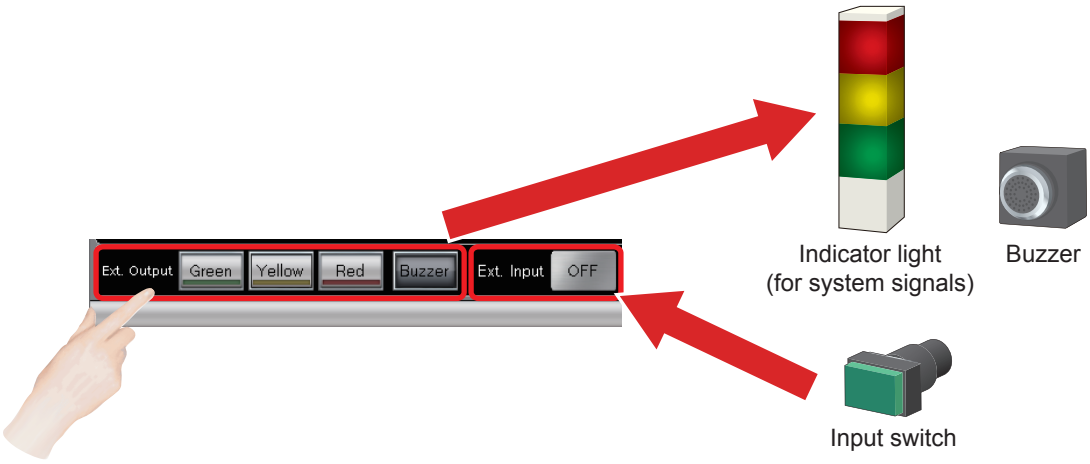
When door-type terminals are used in the system, the doors of the terminals on each of the pickup side or supply side will open in descending order of the shelf numbers and lamps will turn on according to the set door-type terminal control delay time.

The default value is 0.5 seconds.
The range of settable values is 0.0 to 9.9.
(Only top administrators can set this time.)

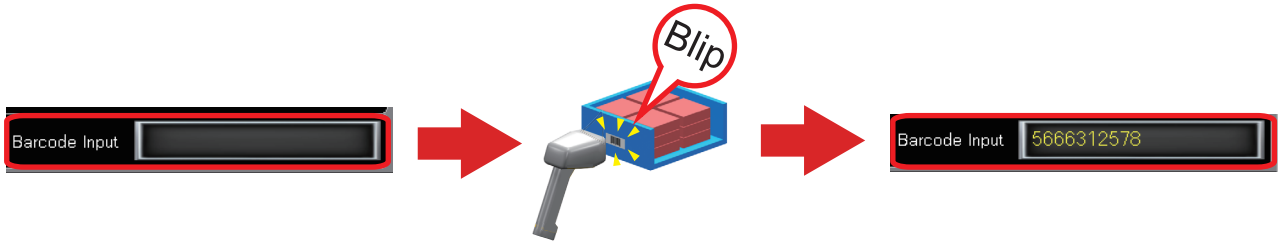
Simultaneously opening or closing multiple door-type terminals may cause the ASLINK transmission cable voltage drop error (H7002).
Change the setting to adjust the opening and closing timing of the terminal.

6.1.3 Other checks (External I/O devices)

Check external outputs such as three-color stack light (for system signals) and buzzers and external inputs such as input switches on the "Check" screen.



A value read using a barcode reader*1 can be checked by the following procedure.



1. Before a barcode is input, the barcode input area on the Check screen is blank.
2. Read a barcode.
3. The read value is displayed in the barcode input area.

*1 The check targets of this function are the barcode readers connected to the main GOT and serial communication module. For the barcode readers connected to the sub GOT, refer to the sub GOT screen.

POINT

External inputs are always displayed regardless of the setting (Invalid or Valid) of Check Operation.
Note that Check Operation must be set to [Valid] while external outputs are performed. When Check Operation has been set to Valid and a button in this display area has been touched and turned on, a corresponding signal or buzzer is output.

6.2 Troubleshooting

For the troubleshooting for when an error has occurred in the POKAYOKE system, use one of the following methods.

- Searching for a recovery method from the function or connected device where the error has occurred
  ☞ 6.2.1 Troubleshooting by symptom
- Searching for a recovery method from the error message or alarm history displayed on the GOT screen
  ☞ 6.2.2 List of error messages

6.2.1 Troubleshooting by symptom

■ Troubleshooting related to the CPU module and GOT

Symptom	Check detail	Corrective action
The power supply does not turn on.	Has the power supply lamp of the CPU module power supply turned on?	When the lamp has not turned on, correctly connect the 100 to 240 V AC power supply.
• The Startup Screen does not appear. • The screen cannot be switched to another screen.	Has the GOT been started?	When the GOT has not been started, turn on the main power supply switch on the control panel to power on the GOT.
	Has the CPU module power supply turned on?	When the power supply is off, turn it on.
	Has the Ethernet cable been connected correctly?	• Connect the Ethernet cable correctly. • Replace the Ethernet cable with a new one that meets correct standards.
	Have the IP addresses been set correctly?	Set the IP address of the CPU module and GOT correctly.
The "version mismatch" screen appears. (The area of the CPU version is blank.)	Is the RUN/STOP/RESET switch of the CPU module in the RUN state?	When the switch is in the STOP state, change the state to the RUN state.
	Have the sequence programs been installed on the CPU?	Install the sequence programs on the CPU using the installation DVD.
The "version mismatch" screen appears. (The versions of the CPU module and the GOT mismatch.)	Are the version of the sequence program in the CPU module and the version of the screen data in the GOT matched?	When the versions are different, reinstall the ladder program to the CPU module or the screen data to the GOT from the installation DVD.
	Have the CPU module and GOT been restarted after the installation of the projects in the CPU module and GOT?	When they have not been restarted, restart them.
The CPU module has an error. (Error code: 2998)	Has the license key written to the correct device?	Check the program to write the license key and correct the target device. ☞ 5.2.3 Registering a license key
The CPU module has an error. (Error code: 2999)	Has a license key been registered?	When no license key has been registered, follow the installation procedure and register a license key in the CPU module. ☞ 5.2.3 Registering a license key
	Is the combination of the serial number of the CPU module and the license key correct?	• Register a license key in the CPU module with a serial number used to request the license key. • If an error occurs even when a license key has been registered in the CPU module with a serial number used to request the license key, contact the following. ■Please send all inquiries concerning the License Key Request form to: iQ Monozukuri Office, Nagoya Works, Mitsubishi Electric Corporation iQMZ@nx.MitsubishiElectric.co.jp
The CPU module has an error. (Error code: Other than above)	-	For the CPU error codes, refer to the following. MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)
• The screen cannot be switched to another screen. • Operations cannot be carried out correctly by using the screens.	Has any error occurred in the CPU module?	When an error has occurred, restart the module. When an error still occurs after the restart, refer to the manual of the module used to check the error code and eliminate the error.
	Has the Ethernet cable been connected correctly? (Check if it is unplugged.)	Connect the Ethernet cable correctly.
	Is the "CPU STOP status" error being displayed on the GOT?	Set the RUN/STOP/RESET switch of the CPU module to the RUN state.
The displayed time is incorrect.	Has the battery been installed to the CPU module? Has the battery been charged?	Install the battery to the CPU module, or replace it.
	Has the battery been installed to the GOT? Has the battery been charged?	Install the battery to the GOT, or replace it.

■ Troubleshooting related to POKAYOKE terminals

Symptom	Check detail	Corrective action
• The LINK lamp of the AnyWireASLINK master module does not flash. • The LINK lamp of the POKAYOKE terminal does not flash.	Has the 24 V DC power supply been connected correctly?	Correctly connect the 24 V DC power supply.
	Have POKAYOKE terminals and AnyWireASLINK master modules been connected correctly?	Correctly connect the POKAYOKE terminals and AnyWireASLINK master modules.
	Is the pressure welding direction of the link connector correct?	Properly perform pressure welding to the link connector.
POKAYOKE terminals do not function as set.	Do the terminal type displayed on the "Shelf" screen and model of the connected terminal match?	Modify the terminal type on the "Shelf" screen to the model of the connected terminal.
	Is the address setting correct?	Write the address that was automatically calculated on the "Shelf" screen to the terminal, and touch the [AnyWire Update] switch.
	Is any terminal not faulty? (Check the operations in the check mode (individual) in the "Check" screen.)	When a terminal does not operate properly, replace the terminal with a new one.
	Has the Terminal output OFF alarm occurred?	To restart outputting to POKAYOKE terminals, touch the [ON] switch of Terminal Output on the "Shelf" screen.
	Are the addresses of the light emission terminal and light reception terminal matched?	Match the addresses of the light emission terminal and light reception terminal.
A door-type terminal does not open or close.	Are the arm lifting angle and lowering angle of the door-type terminal correct?	Set a value other than "0" as the arm lifting angle of the door-type terminal. In addition, set a value larger than the arm lowering angle for the arm lifting angle.
	Has the Terminal output OFF alarm occurred?	To restart outputting to POKAYOKE terminals, touch the [ON] switch of Terminal Output on the "Shelf" screen.
The door-type terminal control delay does not function as set.	Is the scan time not prolonged?	When using the user customization function, shorten the scan time of the user program.
The "ASLINK transmission cable voltage drop error" occurs.	Is the power consumption of all the terminals within the output power of the 24 V DC power supply?	• Enlarge the power supply capacity. • Add a power supply.
	Is the time of "Door-type terminal control delay" in the "Check" screen other than "0 second"?	When [ALL] has been selected for "Shelf Selection" in the "Check" screen, set a value other than "0 second" for "Door-type terminal control delay".
"Terminal address duplication" occurs.	Has a single address been set to multiple terminals?	Do not set overlapping addresses for terminals.
The "ASLINK transmission cable disconnection" occurs.	Have POKAYOKE terminals and AnyWireASLINK master modules been connected correctly?	Correctly connect the POKAYOKE terminals and AnyWireASLINK master modules.
	Is the pressure welding direction of the link connector correct?	Properly perform pressure welding to the link connector.
	Has a single address been set to multiple terminals?	Do not set overlapping addresses for terminals. (If the alarm is reset after "Terminal address duplication" has occurred, "Terminal address duplication" is canceled and this error occurs.)
The "Door broken open" warning window appears even when the door is not broken to open.	Is there any door-type terminal for which the arm cannot be raised due to it being caught or for another reason?	• Remove anything that catches the arm. • Set "3" as a variable of "error detection function mode" for door-type terminals.
The "Door broken open" warning window keeps appearing and disappearing even when the door is not broken to open.		
Unintended input signals are generated.	Is "3" set as a variable of "error detection function mode" for door-type terminals?	Set "3" as a variable of "error detection function mode" for door-type terminals.
The "Door broken open" warning window is not displayed even when the door is broken to open.		
The LEDs of the transparent-type terminal do not turn off.	Has the light emission terminal been connected?	Connect the light emission terminal when it has not been connected.
	Are the addresses of the light emission terminal and light reception terminal matched?	Match the addresses of the light emission terminal and light reception terminal.
	When an output of a screw shelf No. is turned on in the "Check" screen, does a corresponding LED of the terminal turn on?	Adjust the optical axis of the infrared light emitting/received from/at the transparent-type terminal.

Symptom	Check detail	Corrective action
The LEDs on the light emission side of the transparent-type terminal do not turn on.	Has the light emission terminal been connected?	Connect the light emission terminal when it has not been connected.
	Are the addresses of the light emission terminal and light reception terminal matched?	Match the addresses of the light emission terminal and light reception terminal.
The LEDs on the down-reflection type terminal do not turn off, the lamp does not turn on, or the door does not open or close.	Is the IN lamp of the terminal lit in orange?	Adjust the sensitivity of the switch of the downward reflection type terminal.
Incorrect signals are input from the downward reflection type terminal.	Is the movement of hands or door detected incorrectly during the pickup or supply on a different shelf?	Adjust the following items to prevent incorrect detection. • Sensitivity of the switch of the downward reflection type terminal • Open/close angle of the door with incorrect detection • Terminal placement

■ Troubleshooting related to the barcode reader

Symptom	Check detail	Corrective action
A barcode cannot be read.	Do other modules including the serial communication module and the programmable controller operate without errors?	When an error has occurred, restart the programmable controller. When an error still occurs after the restart, refer to the manual of the module used to check the error code and eliminate the error.
	Is the wiring from the barcode reader to the serial communication module not disconnected?	When the wiring has been disconnected, replace the wiring.
	Is the wiring from the barcode reader to the GOT not disconnected?	When the wiring has been disconnected, replace the wiring.
	Is the barcode reader setting correct?	Match the communication settings of the barcode reader with those of the connected serial communication module/GOT.
A warning window has appeared.	Does the warning window show the following content? "A code processing error occurs."	• Review the user program to process barcodes. • Match the communication settings of the barcode reader with those of the connected serial communication module/GOT.

■ Troubleshooting related to external devices

Symptom	Check detail	Corrective action
External inputs are not input.	Have external inputs been output correctly from an external device?	Correct the output setting on the external device side.
	Is the wiring from the external device to the CPU module not disconnected?	When the wiring has been disconnected, replace the wiring.
The operation cannot be started with external inputs.	Is "External Input" of Start Method enabled?	Enable "External Input" of Start Method.
The USB memory processing error occurs.	Is the USB memory connected?	Insert the USB memory.

■ Troubleshooting related to indicator lights

Symptom	Check detail	Corrective action
All the colors of the indicator light do not turn on.	Is the wiring not disconnected?	When the wiring has been disconnected, replace the wiring.
	Is the RUN/STOP/RESET switch of the CPU module in the RUN state?	When the switch is in the STOP state, change the state to the RUN state.
	Is the indicator light not faulty?	When the indicator light is faulty, replace the indicator light.
One color of the indicator light does not turn on.	Is the wiring not disconnected?	When the wiring has been disconnected, replace the wiring.
	Is the indicator light not faulty?	When the indicator light is faulty, replace the indicator light.
The flashing speed decreased.	Is the scan time not prolonged?	When using the user program customization function, shorten the scan time of the user program.

■ Troubleshooting related to the buzzer

Symptom	Check detail	Corrective action
The buzzer does not sound.	Is the wiring not disconnected?	When the wiring has been disconnected, replace the wiring.

■ Troubleshooting related to the GOT screen display and operations

Screen	Symptom	Check detail	Corrective action
User Input	The [Process List Display] switch is not displayed.	Has anyone logged in the system?	When no one has logged in, log in to the system.
	Logging in to an area is disabled (when a user No. and password have been entered manually).	Is the user number correct?	Enter a user number correctly. (From 0 to 30 is valid.)
		Is the password correct?	Enter the password correctly. When the password is forgotten, ask a manager who has a higher authority to reset the password.
	Logging in to an area is disabled (when reading a barcode)	Is the barcode correct?	Enter a barcode registered to the manager or operator.
		Is the barcode read?	Refer to the following. ☞ ■Troubleshooting related to the barcode reader
	Logging in as a manager is disabled (when a user No. and password have been entered manually)	Is the user number correct?	Enter a user number correctly. (From 0 to 10 is valid.)
		Is the password correct?	• Enter the password correctly. • Check that the passwords of managers and operators other than the top administrator have been registered (Default value: 0).
	Logging in as a manager is disabled (when reading a barcode)	Is the barcode correct?	Enter a barcode registered to the manager.
		Is the barcode read?	Refer to the following. ☞ ■Troubleshooting related to the barcode reader
	The password of the top administrator is lost.	-	To initialize the password of the top administrator, install the sequence program again. Perform "Format PLC Memory" on the CPU module with GX Works2, and install the sequence program by the following procedure. ☞ 5.2 Installing Sequence Programs The registration information is also initialized with the above actions. Backup data to the USB on the "Maintenance" screen in advance, and restore the data from the USB after the installation.
Main	Touching the [Call] switch does not turn on the indicator light (red).	-	Refer to the following. ☞ ■Troubleshooting related to indicator lights
	Touching the [Call] switch does not sound the buzzer.	-	Refer to the following. ☞ ■Troubleshooting related to the buzzer
• Process Display (Simple Display) • Process Display (Detail Display)	Reading a barcode using the barcode reader does not start an operation.	Is the barcode reader connected?	Refer to the following. ☞ ■Troubleshooting related to the barcode reader
		Is the barcode reader setting correct?	
	The operation cannot be started with external inputs.	Is the selected start method correct?	Enable "External Input" of Start Method. (This operation can be performed only when the user has logged in as a manager.)
		Has an external signal been entered correctly?	Refer to the following. ☞ ■Troubleshooting related to external devices
	Touching the [Run] switch does not start an operation.	Is the selected start method correct?	Enable "Touch Panel" of Start Method. (This operation can be performed only when the user has logged in as a manager.)

Screen	Symptom	Check detail	Corrective action
• Process Display (Simple Display) • Process Display (Detail Display)	A warning window has appeared after loading an item code.	Does the warning window show the following content? "The registered process of this item is incorrect."	• Review the setting for the picking order, No. of picked pieces, pickup count, and shelf No. for the selected item. • Select another item.
		Does the warning window show the following content? "No terminal type is set to a shelf of this item."	• Review the setting for the shelf No. and terminal type for the selected item. • Select another item.
		Does the warning window show the following content? "The area No. of the shelf used for this item is incorrect."	• Review the setting for the area No. and shelf No. for the selected item. • Select another item.
		Does the warning window show the following content? "The same shelf numbers are specified for At once."	• Review the setting for the "At once" group for the selected item. • Select another item.
		Does the warning window show the following content? "The area No. set for this item is incorrect."	• Review the setting for the area No. for the selected item. • Select another item.
		Does the warning window show the following content? "The number of products is not set."	• Review the setting for the number of products for the selected item. • Select another item.
		Does the warning window show the following content? "You have been logged out. Login to the system."	• Log in to the system in the area in which you will start operation. • Log in to the system as a manager in the area in which you will start operation.
		Does the warning window show the following content? "The operation cannot be started while parts are being supplied."	• Complete parts supply in the area in which you will start operation. • Cancel parts supply in the area in which you will start operation.
		Does the warning window show the following content? • "The operation cannot be started due to the data processing." • "The operation and part supply cannot be started due to the data processing."	Start operation after the data processing from the external interface is completed.
		Does the warning window show the following content? "The barcode input is not ON."	Enable "Barcode Reader" of Start Method. (This operation can be performed only when the user has logged in as a manager.)
		Does the warning window show the following content? • "The operation cannot be started due to the process information checking." • "The operation cannot be started by using the item code due to the process information checking."	Start operation after the process information is checked.
		Does the warning window show the following content? "The operation cannot be started due to a major alarm."	Clear the major alarm.
		Does the warning window show the following content? "The registered part code and item code are different."	• Register an item code or part code. • Select another item code or part code.

Screen	Symptom	Check detail	Corrective action
• Process Display (Simple Display) • Process Display (Detail Display)	The operation cannot be started. (Due to the reasons other than above)	Has a major alarm occurred related to a terminal No. 2000s?	Change the setting for "Number of Connected ASLINK Master Modules" to "1 unit" in "Extension Setting" on the "Shelf" screen. The alarm that occurred in a terminal No. 2000s will be reset and operation using a terminal No. 1000s will be enabled. (If you set "Number of Connected ASLINK Master Modules" back to "2 units", the alarm that occurred in a terminal No. 2000s shall be displayed again.)
		Has a severe alarm other than above occurred?	When a severe alarm has occurred, delete the corresponding alarm. (excluding missing part alarms)
	The operation start method cannot be changed.	Is a user logging in as a manager?	After logging in to the system as a manager, change the operation start method.
		Is any area under operation?	The operation start method cannot be changed during an operation in an area. After the operation has been completed, change the operation start method.
	The information related to items is not displayed.	Has the information of the target item number been registered?	Select the item number registered in Register Item again.
		Do the area number displayed on the "Process Display" screen and the area number for the target item match?	• Select the item number for which the same area number as the area number displayed on the "Process Display" screen is set. • Change the area number for the target item and the area number of the shelf to be used on the process to the area number to be operated. • Create the item information and process information for the area number to be operated using another item number.
	The item number cannot be changed.	Is an operation being performed?	The item number cannot be changed during an operation. After the operation has been completed, change the item number.
		Is the selected operation start method correct?	When only "Barcode Reader" has been enabled for Start Method, the operation start method cannot be changed manually. Enable "External Input" or "Touch Panel". (This operation can be performed only when the user has logged in as a manager.)
Check	Check Operation cannot be changed to [Valid].	Does the warning window show the following content? "The check operation cannot be enabled while the system is operating or has been suspended."	Check Operation cannot be changed to [Valid] while the system is operating or has been suspended. After the operation has been completed, change to [Valid].
		Does the warning window show the following content? "The check operation cannot be enabled when a major alarm has occurred."	When a severe alarm has occurred, delete the corresponding alarm. (excluding missing part alarms)
		Does the warning window show the following content? "The check operation cannot be enabled due to the data processing."	Start operation after the process information is checked.
		Does the warning window show the following content? "The check operation cannot be enabled when the parts supply."	• Complete parts supply in the area in which you will start operation. • Cancel parts supply in the area in which you will start operation.
		Does the warning window show the following content? "The check operation cannot be enabled due to the data processing."	Start operation after the data processing from the external interface is completed.

Screen	Symptom	Check detail	Corrective action
Check	When Terminal check output is set to "ON", the lamps of the terminal light up for a moment and then go off. (The door of door-type terminals opens for a moment and then closes.)	Is anything contacting the switch of a button, touch, or lever switch type terminal?	Remove the material contacting the switch.
		Is anything shielding a transparent-type or downward reflection type terminal?	Remove the material shielding the terminal.
		Has the optical axis of a transparent-type terminal shifted?	Adjust the optical axis.
		Is equipment under a downward reflection terminal detected incorrectly?	Adjust the sensitivity of the sensor.
	When Check Operation has been set to [Valid] and "Shelf Selection" has been set to [Individual], the lamps of POKAYOKE terminals do not turn on.	Do all the lamps of POKAYOKE terminals turn on when Check Operation has been set to [Valid] and Shelf Selection has been set to [ALL]?	When only the target POKAYOKE terminal does not turn on, replace the POKAYOKE terminal with a new one.
		Is the entered address correct?	Set the correct address value on the screen and the check target shelf number.
		Is the switch display of the shelf number correct?	Select a correct switch from Shelf No. 1000s or Shelf No. 2000s.
	When Check Operation has been set to [Valid] and "Shelf Selection" has been set to [ALL], the control delay value of a door-type POKAYOKE terminal is not displayed.	Has a top administrator logged in as a manager?	Log in to the system as a top administrator in the manager mode.
		Have you logged in to the system as a manager?	Log in to the system as a top administrator in the manager mode.
	When Check Operation has been set to [Valid] and "Shelf Selection" has been set to [ALL], the lamps of POKAYOKE terminals do not turn on.	Has any error occurred in the CPU module?	When an error has occurred, restart the CPU module.
		Has the POKAYOKE terminal been connected correctly?	Refer to the following. ☞ ■Troubleshooting related to POKAYOKE terminals
	The lamp does not turn on in the selected color.	Is the type of the target POKAYOKE terminal the RGB display type?	For POKAYOKE terminals other than RGB display type POKAYOKE terminals, terminal lamps turn on in the color specified for each POKAYOKE terminal. For the list of the RGB display type POKAYOKE terminals, refer to the following. 📖 iQ Monozukuri POKAYOKE Operating Manual
	The entered value are not displayed on the 7-segment display.	Is the target POKAYOKE terminal compatible with 7-segment display?	For POKAYOKE terminals other than 7-segment-compatible POKAYOKE terminals, the 7-segment display does not exist. For the list of the 7-segment displays-compatible POKAYOKE terminals, refer to the following. 📖 iQ Monozukuri POKAYOKE Operating Manual
		Has a value of 10 or larger been entered?	When a value of 10 or larger has been entered, "C" appears on the display.
	External outputs are not output. (Indicator light)	Is the indicator light connected?	Refer to the following. ☞ ■Troubleshooting related to indicator lights
		Has Check Operation been set to [Valid]?	Switch the setting of Check Operation to [Valid], and perform an operation.
	External outputs are not output. (Buzzer)	Is the buzzer connected?	Refer to the following. ☞ ■Troubleshooting related to the buzzer
		Has Check Operation been set to [Valid]?	Switch the setting of Check Operation to [Valid], and perform an operation.
	The input value of the external input remains OFF and does not change.	Has an external signal been entered correctly?	Refer to the following. ☞ ■Troubleshooting related to external devices
	Reading a barcode using the barcode reader does not change the input value of the barcode.	Is the barcode reader connected?	Refer to the following. ☞ ■Troubleshooting related to the barcode reader
		Is the barcode reader used for reading connected to the main GOT or the serial communication module?	Use a barcode reader connected to the main GOT or the serial communication module.

Screen	Symptom	Check detail	Corrective action
Register screen	The window for registration cannot be operated.	Is an operation being performed? (Sub GOT and external interface is also included)	The window for registration cannot be operated during operation. Stop the operation.
	The [Register] switch in the "Register Shelf" window cannot be touched.	Is terminal type of the pickup side set to other than "0"?	To set a terminal on the supply side, set an option other than "0" for the terminal type of the corresponding pickup side.
	A warning window has appeared.	Does the warning window show the following content? "No code can be read in this window."	Switch the screen from the Register screen and then read the barcode.
	"AnyWire Update ASLINK address auto recognition processing error" is displayed on the "Shelf" screen.	Is the POKAYOKE terminal not disconnected?	When the wiring has been disconnected, replace the wiring, restart the CPU module and GOT and then execute AnyWire Update. (If a similar symptom occurs even after taking the corrective actions above, replace the AnyWireASLINK master module.)
	"The part code cannot be registered because of duplication due to area No. change." is displayed after an area number of the shelf is changed on the "Shelf" screen.	Is the combination of the area number of the shelf and part code to be changed the same as the setting for another shelf?	Review the setting so that it is different.

■ Troubleshooting related to the pickup operations

Screen	Symptom	Check detail	Corrective action
• Process Display (Simple Display) • Process Display (Detail Display)	During an operation, the lamp of the POKAYOKE terminal does not turn on (or flash).	Has any error occurred in the CPU module?	When an error has occurred, restart the CPU module.
		Has the POKAYOKE terminal been connected?	Refer to the following. ☞ ■Troubleshooting related to POKAYOKE terminals
		Has an alarm occurred?	When an alarm has occurred, delete the corresponding alarm.
		Is the registered information correct?	Check the Shelf, Parts, and Item screens and correctly set the corresponding shelves. (This operation can be performed only when the user has logged in as a manager.)
	The number of stocks does not decrease even after a pickup operation has been performed.	Is the registered information correct?	When the values of Stock Alarm and Missing Alarm of the parts stored in the corresponding shelf are 0, the stocks are excluded from the stock management targets. Thus, the number of stocks does not decrease even after a pickup operation has been performed.
	When one part is picked up, the number of stocks decreases by multiple stocks.	Is the number of picked parts multiple?	Set the number of picked parts per a picking operation with "Pickups" on the "Register Process" screen. Adjust the number of picked parts again.
	The "wrong picking warning" window has appeared.	Is the shelf from which parts are picked up is correct?	• Pick up parts from the correct shelf in an area which is displayed in the "wrong picking warning" window. • Touch the [OK] switch in the "wrong picking warning" window on the main GOT.
-	A power failure has occurred while the system is operating or has been suspended.	-	Before restarting an operation, recover the system from the power failure (turn on the power) and perform the following operations to return the system to the state before the power failure (power-off). • Log in to the system as a manager. • Select the item that has been produced before the power failure (power-off) for all areas and start the operation. Then, immediately touch the [Suspend] switch to change the operating state to Suspended. • Change the shelf of the current picking order to the one of the picking order before the power failure (power-off) for all areas. 📖 iQ Monozukuri POKAYOKE Operating Manual • Touch the [Run] switch to restart the operation.
	The power has been turned off while the system is operating or has been suspended.		

■ Troubleshooting related to the part supply

Screen	Symptom	Check detail	Corrective action
-	Reading a barcode does not open the door of a shelf (nothing is changed).	Has any error occurred in the CPU module?	When an error has occurred, restart the CPU module.
		Has the POKAYOKE terminal been connected?	Refer to the following. ☞ ■Troubleshooting related to POKAYOKE terminals
		Is the barcode reader connected?	Refer to the following. ☞ ■Troubleshooting related to the barcode reader
		Is the registered information correct?	Correctly set the shelf number corresponding to the part code in the "Parts" screen. (This operation can be performed only when the user has logged in as a manager.)
		Is the barcode correct?	Use the part code registered in the "Parts" screen and read the barcode again.
	A warning window has appeared.	Does the warning window show the following content? "The operation and part supply cannot be started due to the data processing."	Start part supply after the data from the external interface is processed.
		Does the warning window show the following content? "The operation and part supply cannot be started due to a major alarm."	When an alarm has occurred, delete the corresponding alarm.
		Does the warning window show the following content? "The part supply in the shelf shared with the pickup side cannot be started during the operation."	End or suspend the operation in the area in which you will start parts supply and then read the part code again.
		Does the warning window show the following content? "A new part supply cannot be started due to a shelf where parts are being supplied."	• Complete parts supply in the area in which you will start parts supply. • Cancel parts supply in the area in which you will start parts supply.
		Does the warning window show the following content? "The part supply cannot be started due to a shelf without terminal type setting."	Review the Terminal Type setting for the Shelf No. in which the part code is set.
		Does the warning window show the following content? "The registered part code and item code are different."	• Register a part code. • Select another part code.
		Does the warning window show the following content? "The registered part code is different."	
		Does the warning window show the following content? "The registered user code or part code are different."	
	Reading a barcode started an operation.	Has the barcode been registered as an item code?	Unregister the item code, and register the barcode as a part code.
	Reading a barcode of the parts opened a different shelf.	Is the registered barcode correct?	Correctly set the shelf number corresponding to the part code in the "Parts" screen. (This operation can be performed only when the user has logged in as a manager.)
		Is the read barcode correct?	Read the same barcode again to close the door (the number of stocks does not change), and read the correct barcode of the parts.
	The "break open warning" window has appeared.	Is the door of the door-type window broken open?	Close the door and the window.

■ Troubleshooting related to installation and user customization function

Symptom	Check detail	Corrective action
Data cannot be written to the programmable controller with GX Works2.	Is a USB cable used for the connection with the CPU module?	Use a USB cable for the connection with the CPU module. (Any connection methods other than the direct connection using a USB cable are not recommended.)
	Is the USB cable not disconnected?	Replace the USB cable with a new one.
	Has the CPU module been started?	Start the CPU module.
Data cannot be written to the GOT with GT Designer3.	Is a USB cable used for the connection with the CPU module?	Use a USB cable for the connection with the CPU module. (Any connection methods other than the direct connection using a USB cable are not recommended.)
	Is the USB cable not disconnected?	Replace the USB cable with a new one.
	Is the computer side I/F setting on the "Communication Configuration" screen correct?	Select USB for the computer side I/F setting on the "Communication Settings" screen.
The sub GOT does not operate. (The programmable controller and main GOT operate normally.)	Is the script setting for startup process correct?	Open the project for the sub GOT in GT Designer3, set the "TMP0" value for script No. 4 (startup process) to the area number of the area in which you will install the sub GOT.
	Are the network settings for the sub GOT correct?	Open the project for the sub GOT in GT Designer3 and review "Connected Devices Setting".
	Is wiring installed correctly?	Review the installation of the LAN and power cables.
	Has the equipment been started in the correct order?	Start the programmable controller and then start the sub GOT after it is connected to the programmable controller.

6.2.2 List of error messages

The following table lists the error messages and the recovery methods.

■ Error messages displayed on the GOT screen

[Alarm level]
Severe: Errors that will cause some trouble in operations and inspections
Minor: Errors that will not affect operations much

POINT

Check a terminal address corresponding to the shelf number referred in the error message on the "Shelf" screen.

Error code	Error Message	Alarm Level	Error detail	Recovery method
H6999	CPU STOP status	Severe	This message is displayed when the RUN/STOP/RESET switch of the CPU module is in the STOP state.	When the switch is in the STOP state, change the state to the RUN state.
H7000	AnyWireASLINK master module error	Severe	This message is displayed when no AnyWireASLINK master module has been connected or an error has occurred in the modules.	• Connect AnyWireASLINK master modules according to the setting of "Number of Connected ASLINK Master Modules" on the "Extension Setting" screen. • Replace the AnyWireASLINK master module where the error has occurred. • Correctly connect the CPU module and AnyWireASLINK master modules.
H7001	ASLINK transmission cable short-circuit error	Severe	This message is displayed when a short circuit of the transmission power or a maximum power supply current excess has been detected in the wiring of a POKAYOKE terminal.	• Wire cable not to make a short circuit. • Crimp the link connector in the proper direction. • Keep the power consumption of all POKAYOKE terminals within the supply current value of the transmission cable.
H7002	ASLINK transmission cable voltage drop error	Severe	This message is displayed when a voltage drop of the transmission power has been detected in the wiring of a POKAYOKE terminal.	• Wire cables no to make disconnections. • Wire cable not to make a short circuit. • Crimp the link connector in the proper direction. • Correctly connect the 24 V DC power supply to the AnyWireASLINK master modules and POKAYOKE terminals. • Adjust the power supply voltage of the external power supply. • Add an external power supply.
H7003	ASLINK transmission cable disconnection (Shelf No. 1000s)	Severe	This message is displayed when a disconnection has been detected in the wiring of the POKAYOKE terminal in a shelf or when the POKAYOKE terminal does not react.	• Wire cables no to make disconnections. • Wire cable not to make a short circuit. • Crimp the link connector in the proper direction. • Replace the POKAYOKE terminal that does not react. • If the AnyWire terminal configuration has not been updated after the shelf configuration change, touch the AnyWire Update switch. • If alarms "H7016" and "H7017" occur, eliminate the cause of "H7016" and then "H7017".
H7004	ASLINK transmission cable disconnection (Shelf No. 2000s)	Severe		
H7005	AnyWire Update error	Severe	This message is displayed when an alarm occurs on the AnyWireASLINK master module during ASLINK address auto recognition processing.	Reset the alarm on the AnyWireASLINK master module and then restart the system.
H7010	Supply Shelf No.1000s Terminal address upper limit excess	Severe	This message is displayed when the number of the terminal addresses on the supply side exceeds 254 (upper limit value). (It is not displayed if the terminals on the supply side have not been specified.)	Be sure that the number of terminal addresses on the supply side does not exceed 254 (upper limit value).
H7011	Supply Shelf No. 2000s Terminal address upper limit excess	Severe		

Error code	Error Message	Alarm Level	Error detail	Recovery method
H7012	Pickup Shelf No.1000s Terminal address upper limit excess	Severe	• This message is displayed if the number of the terminal addresses on the pickup side exceeds 254 (upper limit value) when start address specification on supply side is set to Invalid. • This message is displayed if the number of the terminal addresses on the pickup side exceeds the setting value for start address specification on supply side when start address specification on supply side is set to Valid.	• Be sure that the number of the terminal addresses on the supply side does not exceed 254 (upper limit value) when start address specification on supply side is set to Invalid. • Be sure that the number of the terminal addresses on the pickup side does not exceed the setting for start address specification on supply side when start address specification on supply side is set to Valid.
H7013	Pickup Shelf No. 2000s Terminal address upper limit excess	Severe		
H7016	Shelf No. 1000s Terminal address duplication	Severe	This message is displayed when address duplications of the connected POKAYOKE terminals are detected. (For transparent type terminals, a set of the light emission side and the light receiving side is counted as one terminal.)	• Use the address writer to find terminals for address duplications and correct the addresses. • Remove unnecessary POKAYOKE terminals. • If the AnyWire terminal configuration has not been updated after the shelf configuration change, touch the AnyWire Update switch. • This alarm is not reset even if you reset the alarm in the "Alarm History" screen. Execute AnyWire Update.
H7017	Shelf No. 2000s Terminal address duplication	Severe		
H7032	Serial module error	Severe	This message is displayed when an error has occurred in the serial communication module.	• Turn on the power supply of the CPU again. • According to the POKAYOKE system configuration, connect a serial communication module to the CPU module. • Replace the serial communication module where the error has occurred.
H7034	Terminal Output OFF	Severe	This message is displayed when Terminal Output is set to OFF.	To restart outputting to POKAYOKE terminals, touch the [ON] switch of Terminal Output on the "Shelf" screen.
H7612 to H7867	Shelf No. XXXX Missing part	Severe	This message is displayed when part stocks in a part shelf has run out. (XXXX indicates 1001 to 1128 or 2001 to 2128.)	Supply the insufficient parts.
H8124 to H8379	Shelf No. 1000s Terminal address YYY mismatch	Severe	This message is displayed when the address settings of the "Shelf" screen and a POKAYOKE terminal mismatch. (YYY indicates 000 to 255.)	• Match the addresses of the "Shelf" screen and the POKAYOKE terminal. • If the AnyWire terminal configuration has not been updated after the shelf configuration change, touch the AnyWire Update switch. • Configure the POKAYOKE terminal so that the number of connected units does not exceed 128. (A transparent-type terminal is counted as one unit on the light emission and light reception sides respectively.)
H8636 to H8891	Shelf No. 2000s Terminal address YYY mismatch	Severe		
L7071	USB memory read time exceedance	Minor	This message is displayed when a time exceedance has occurred while recipe data is being read from a USB memory.	• Read the data from the USB memory again. • Use another USB memory.
L7072	USB memory write time exceedance	Minor	This message is displayed when a time exceedance has occurred while recipe data is being written to a USB memory.	• Write the data to the USB memory again. • Use another USB memory.
L7073	USB memory processing error	Minor	This message is displayed when an error has occurred in the recipe processing due to no USB memory or a file access error.	• Insert the USB memory correctly. • Insert the USB memory again. • Check the file conditions. (Whether a file exists or data can be overwritten to the file, and others)
L7074	Barcode processing error	Minor	This message is displayed when an error has occurred in the barcode reader.	• Correctly connect the barcode reader. • Turn on the power supply of the CPU and barcode reader again. • Replace the barcode reader where the error has occurred.

Error code	Error Message	Alarm Level	Error detail	Recovery method
L7080	Area 1 Time exceedance	Minor	This message is displayed when the production time exceeds the time determined by adding the target time and extension time.	• Stop the processes in one cycle. • Stop the operation.
L7081	Area 2 Time exceedance	Minor		
L7082	Area 3 Time exceedance	Minor		
L7083	Area 4 Time exceedance	Minor		
L7084	Area 5 Time exceedance	Minor		
L7085	Area 6 Time exceedance	Minor		
L7086	Area 7 Time exceedance	Minor		
L7087	Area 8 Time exceedance	Minor		
L7088	Area 9 Time exceedance	Minor		
L7089	Area 10 Time exceedance	Minor		
L7090	Area 1 Wrong picked shelf alarm	Minor	This message is displayed when parts are picked up from a wrong shelf in a picking operation.	• Pick up parts from the correct shelf in an area where an alarm occurs. • Touch the [OK] switch in the warning window.
L7091	Area 2 Wrong picked shelf alarm	Minor		
L7092	Area 3 Wrong picked shelf alarm	Minor		
L7093	Area 4 Wrong picked shelf alarm	Minor		
L7094	Area 5 Wrong picked shelf alarm	Minor		
L7095	Area 6 Wrong picked shelf alarm	Minor		
L7096	Area 7 Wrong picked shelf alarm	Minor		
L7097	Area 8 Wrong picked shelf alarm	Minor		
L7098	Area 9 Wrong picked shelf alarm	Minor		
L7099	Area 10 Wrong picked shelf alarm	Minor		
L7100 to L7355	Shelf No. XXXX Stock alarm	Minor	This message is displayed when the number of stocks in a part shelf is less than the value set for Stock Alarm. (XXXX indicates 1001 to 1128 or 2001 to 2128.)	Supply the insufficient parts.
L7356 to L7611	Shelf No. XXXX Missing part alarm	Minor	This message is displayed when the number of stocks in a part shelf is less than the value set for Missing Alarm. (XXXX indicates 1001 to 1128 or 2001 to 2128.)	Supply the insufficient parts.

Error code	Error Message	Alarm Level	Error detail	Recovery method
L7868 to L8123	Supply shelf No. XXXX Door broken open	Minor	This message is displayed when a door-type POKAYOKE terminal on the supply side has been broken open. (XXXX indicates 1001 to 1128 or 2001 to 2128.)	Close the broken-open door.
L8380 to L8635	Pickup shelf No. XXXX Door broken open	Minor	This message is displayed when a door-type POKAYOKE terminal on the pickup side has been broken open. (XXXX indicates 1001 to 1128 or 2001 to 2128.)	Close the broken-open door.

7. USER CUSTOMIZATION

Users can customize the system of the POKAYOKE application by the following methods.

- Creating new sequence programs/screen data and adding them to the sequence programs/screen data included in the application
- Changing the screens for the standard functions according to the user's system configuration

⚠CAUTION	If the POKAYOKE application is customized by users, each function of the POKAYOKE application may delay or stop its processing. On each user's responsibility, customize the POKAYOKE application and its functions and check the operation of them.

7.1 User Program

To add user-specific sequence programs to the POKAYOKE application, use GX Works2 and add the user programs.

7.1.1 Specifications and restrictions

The following describes the specifications and restrictions on the addition of user programs.

⚠CAUTION	• Except for user devices, do not change values in user programs. Otherwise, it may lead to malfunctions. • When you use labels in user programs, change the device range in "Device/Label Automatic-Assign Setting" on GX Works2 within the range of the user devices. • For the other settings, follow the specifications and restrictions below. Otherwise, it may lead to malfunctions.

(1) Project

The following table lists the specifications and restrictions on projects.

Item	Specifications and restrictions
Project type	Structured project (Do not change this setting.)
Label	Use (Do not change this setting.)
PLC series	LCPU (Do not change this setting.)
PLC type	Select one of the following. • L06CPU • L06CPU-P • L26CPU • L26CPU-P • L26CPU-BT • L26CPU-PBT

(2) Parameter

The following table lists the specifications and restrictions on the parameters.

(a) PLC parameter

Parameter name	Item	Specifications and restrictions
Program setting	Program name	• POKAYOKE application program: KEY_ST (Do not change this setting.) • POKAYOKE application program: KEY_LD (Do not change this setting.) • POKAYOKE application program: PKY002AA (Do not change this setting.) • User program: USRPRG01 (Do not change this setting.) (Programs can be added until the number of programs reaches the number that GX Works2 allows besides these programs.)
	Execution type	• KEY_ST: Initial (Do not change this setting.) • KEY_LD: Initial (Do not change this setting.) • PKY002AA: Scan (Do not change this setting.) • USRPRG01: Scan (Do not change this setting.) (Any execution type can be selected for added programs other than above.)
	Execution order	• KEY_ST: 1 (Do not change this setting.) • KEY_LD: 2 (Do not change this setting.) • PKY002AA: 3 (Do not change this setting.) • USRPRG01: 4 (Do not change this setting.) (Any execution order (≥ 4) can be selected for added programs other than the above.)
Built-in I/O function setting	Input signal	Do not change any settings other than below. • Xn0 to Xn5 • Xn7 to XnF
	Output signal	Do not change any settings other than below. • Yn5 to Yn7

Parameter name	Item	Specifications and restrictions
I/O Assignment setting	I/O Assignment	Do not change the setting values of the following modules. • CPU (Built-in I/O function): 0000 • LJ71C24-R2: 0010 • LJ51AW12AL (two modules): 0030, 0050
Device setting	No. of devices	Do not change this setting. For user devices, refer to the following. ☞ (3)Device
	Local device	Do not use local devices.
	Latch	Include the following range in "Latch (2)". • Latch relay (L): 0 to 1999 • File register (ZR): 0 to 131071
	Index (Z)	Shared with the POKAYOKE application. When using the index (Z) in an interrupt program or a fixed scan program, execute the saving/restoration processing in the user program. When selecting "High Speed Execution" for "PLC System" of PLC Parameter, do not use index (Z) devices for Interrupt Program/Fixed Scan Program.

(b) Network parameter
No restrictions are applied.

(c) Remote password
No restrictions are applied.

(3) Device

The following table lists the ranges of the devices that users can freely use at the user customization of this system.

Device name		Base	No. of points	User device
Input relay	X	16	8K	X0 to X5, X7 to X0F, X70 to X0FFF, X1200 to X1FFF
Output relay	Y	16	8K	Y5 to Y0F, Y70 to Y0FFF, Y1200 to Y1FFF
Internal relay	M	10	12K	M9000 to M12287
Latch relay	L	10	8K	L2000 to L8191
Link relay	B	16	8K	B1000 to B1FFF
Annunciator	F	10	2K	F1024 to F2047
Link special relay	SB	16	2K	-
Edge relay	V	10	2K	V1024 to V2047
Step relay	S	10	8K	S2000 to S8191
Timer	T	10	2K	T500 to T2047

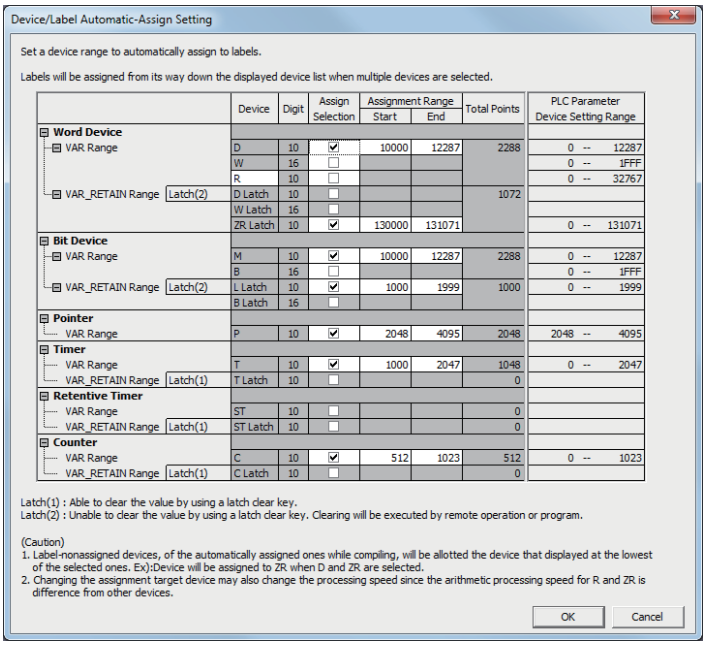
Device name		Base	No. of points	User device
Retentive timer	ST	10	0K	-
Counter	C	10	1K	C500 to C1023
Data register	D	10	12K	D9000 to D12287
Link register	W	16	8K	W1000 to W1FFF
Link special register	SW	16	2K	-
Index	Z	10	20	Z0 to 19
File register	ZR (R)	10	128K	ZR120000 to ZR131071
Extended data register	D	10	0K	-
Extended link register	W	16	0K	-
Pointer	P	10	4K	P200 to P4095

(4) Device comments, statements, and notes

No restrictions are applied.

(5) Device/label automatic-assign setting

When you use labels in user programs, change the device range in "Device/Label Automatic-Assign Setting" on GX Works2 within the range of the user devices. The following figure shows a setting example.



	Device	Digit	Assign Selection	Assignment Range Start	Assignment Range End	Total Points	PLC Parameter Device Setting Range
Word Device							
VAR Range	D	10	☑	10000	12287	2288	0 -- 12287
	W	16	☐				0 -- 1FFF
	R	10	☐				0 -- 32767
VAR_RETAIN Range Latch(2)	D Latch	10	☐			1072	
	W Latch	16	☐				
	ZR Latch	10	☑	130000	131071		0 -- 131071
Bit Device							
VAR Range	M	10	☑	10000	12287	2288	0 -- 12287
	B	16	☐				0 -- 1FFF
VAR_RETAIN Range Latch(2)	L Latch	10	☑	1000	1999	1000	0 -- 1999
	B Latch	16	☐				
Pointer							
VAR Range	P	10	☑	2048	4095	2048	2048 -- 4095
Timer							
VAR Range	T	10	☑	1000	2047	1048	0 -- 2047
VAR_RETAIN Range Latch(1)	T Latch	10	☐			0	
Retentive Timer							
VAR Range	ST	10	☐			0	
VAR_RETAIN Range Latch(1)	ST Latch	10	☐			0	
Counter							
VAR Range	C	10	☑	512	1023	512	0 -- 1023
VAR_RETAIN Range Latch(1)	C Latch	10	☐			0	

(6) Others

LA1S extension base units (LA1S65B, LA1S68B, and LA1S51B) cannot be used.

7.1.2 Adding a user program

The following describes the procedure for adding a user program.

(1) Preparing a GX Works2 project

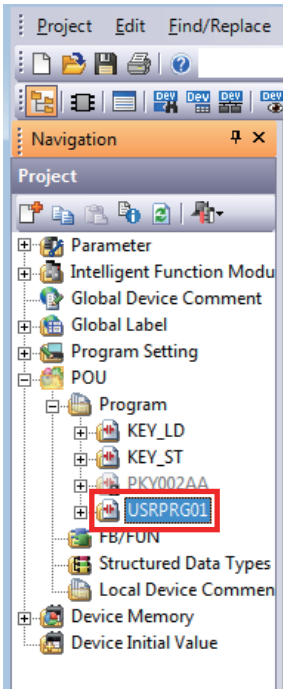
☞ 5.2.1 Preparing a GX Works2 project

(2) Reading a project

☞ 5.2.2 Reading a project

(3) Adding a user program

Add a user program to the POKAYOKE application.



1. In the POKAYOKE application project, you can find "USRPRG01", a user program.

   Add a sequence program to the existing program "USRPRG01" or create program data for the user program.

CAUTION	• "PKY002AA" in POU is the system program of the POKAYOKE application. Viewing and editing the system program are not allowed.
	• The following shows the number of available steps in the user program.
	  • L06CPU/L06CPU-P: 40 steps
	  • L26CPU/L26CPU-P/L26CPU-BT/L26CPU-PBT: 240K steps

(4) Writing the project

☞ 5.2.5 Writing the project

7.2 Custom Screen

To add user-specific screens to the POKAYOKE Application, use GT Designer3 and add custom screens.

7.2.1 Specifications and restrictions

The following describes the specifications and restrictions on the addition of custom screens.

⚠CAUTION	• Except for user devices, do not change values in user programs. Otherwise, it may lead to malfunctions. • For the other settings, follow the specifications and restrictions below. Otherwise, it may lead to malfunctions.

(1) System

The following table lists the specifications and restrictions on the system.

Item		Specifications and restrictions
GOT setup	-	Do not change the USB host.
Peripheral device setting	-	Do not set any devices other than below. Barcode, RFID, remote personal computer operation (Serial only), video/RGB input, multimedia, external I/Os /operation panel, RGB output, printer (USB only), sound output, and video camera
Interface connection list	Standard I/F setting IF-4	Do not change the CH number or driver

(2) Project

The following table lists the user screens related to projects.

Item		User screen
Screen	Base screen	0, 10000 to 32767*1, *2
	Window screen	10000 to 32767*3
Comment	Comment group No.	300 to 500*4
Alarm	Alarm ID	1000 to 32767
Recipe	Recipe number	100 to 32767
Script	Script number	10000 to 32767

*1 The base screens 0 and 10001 are the system screens of the POKAYOKE application, and can be partly customized by users.
*2 10002 to 10004 are used in the sample screen (Plan).
*3 10000 to 10002 are used in the sample screen (Plan).
*4 The following restrictions are applied to comment group No. 500.
- Comment No. 1 is for the "Startup" screen. It cannot be edited or deleted.
- Comment No. 2 is for the "Main" screen. It cannot be edited or deleted.
- Comment No. 3 is for the "Custom" screen. It can be edited but cannot be deleted.
- Comment No. 4 is for the "Process Display" screen. It cannot be edited or deleted.
- Comment Nos. 5 to 100 are for the sample screen (Plan). They can be edited and deleted.

POINT

Please contact your local Mitsubishi Electric representative for obtaining the sample screen (Plan).

(3) Device

The following table lists the user devices.

Device name	User device
GOT bit register (GB)	GB30000 to GB65535
GOT word register (GD)	GD30000 to GD65535

(4) Security

The following describes whether users can be added or not and passwords can be changed or not (for each authority level).

- Administrator: Unchangeable
- Developer3: Unchangeable
- Developer2 or lower: Changeable

The following describes whether the access control can be changed or not (for each authority level).

- Administrator: Unchangeable
- Developer3 or lower: These users can change the access control of the users with the authority levels lower than their own levels.

7.2.2 Adding a custom screen

The following describes the procedure for adding a custom screen.

(1) Preparing a GT Designer3 project

☞ 5.4.1 Preparing a GT Designer3 project

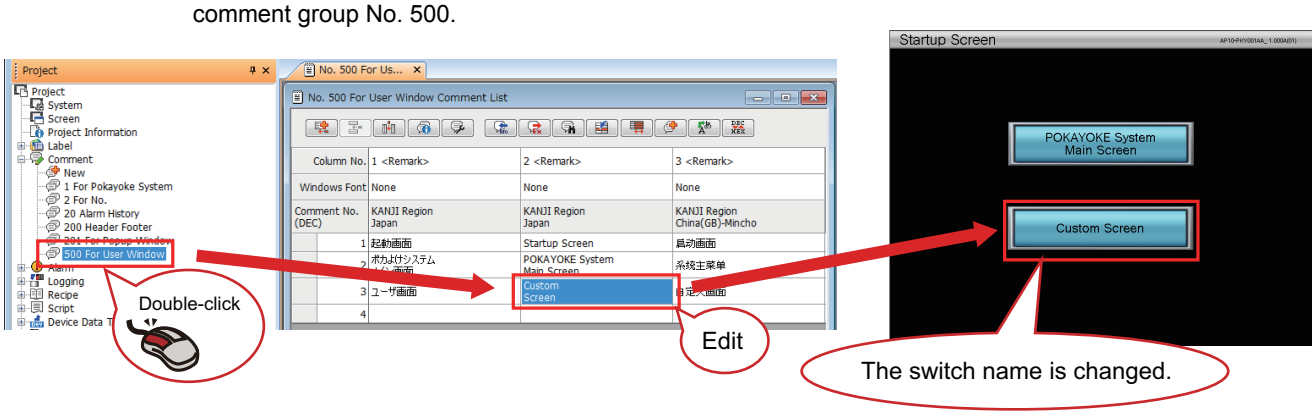
(2) Reading a project

☞ 5.4.2 Reading a project

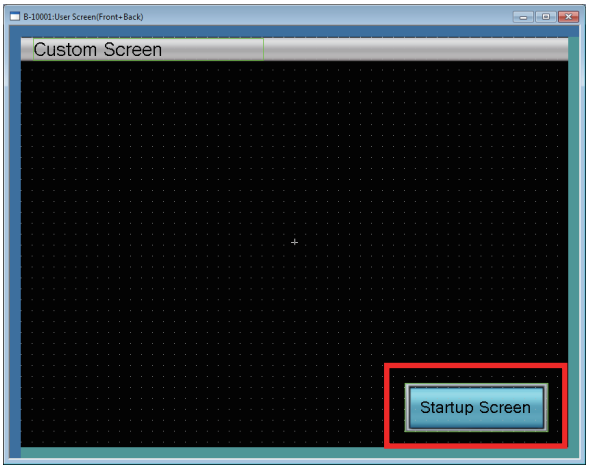
(3) Adding a custom screen

Add a custom screen to the POKAYOKE application.

(a) B-0: Startup Screen (Startup Screen)
Only the name of the [Custom Screen] switch can be changed by editing the comment No. 3 of the comment group No. 500.



(b) B-10001: User Screen (Custom Screen)
This screen can be edited with the user program customization function.
Objects such as switches can be added anywhere in the free area.
For the [Startup Screen] switch, only the position of the switch can be changed.



⚠CAUTION	• Because the capacities of 7 MB in ROM and 28 MB in RAM are required for the system screen data of the POKAYOKE application, the available capacity for the custom screen is 50 MB in ROM and 100 MB in RAM. • To add a switch in a custom screen and set a system screen of the POKAYOKE application as the destination, always specify "Startup Screen". If a system screen other than "Startup Screen" is specified, the POKAYOKE application may not operate properly.

(4) Writing the project

☞ 5.4.4 Writing the project

7.3 External interface

This application has external interfaces that are used for the operation coordinated with the external system devices.
When external interfaces are used, this application can be controlled from the external system.
For the details, please contact your local Mitsubishi Electric representative.

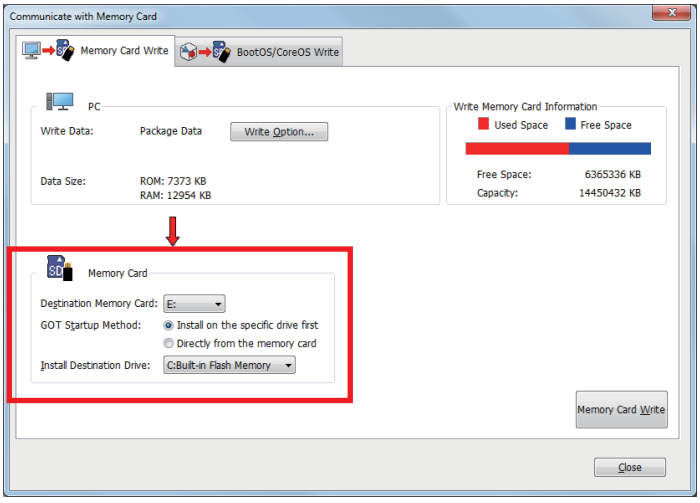
APPENDICES

Appendix.1 Restoration Function

Create GOT screen restoration data in advance so that users can restore the GOT screen data even if the data has been deleted accidentally due to an incorrect operation by a user.

Appendix.1.1 Creating restoration data

The following describes the procedure for creating restoration data.



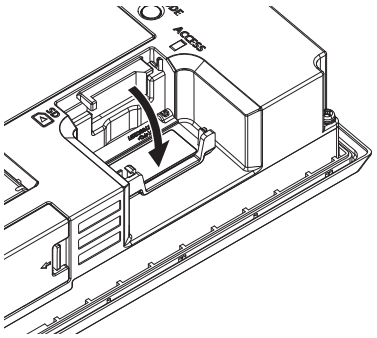
1. Run "GT Designer3" from the Start menu of Windows and open the POKAYOKE Control Package project.
2. Insert an SD memory card in the personal computer.
3. Click [Communication] → [Write to Memory Card] in the menu.
4. The "Communicate with Memory Card" window appears.
5. Select the following items and click the [Memory Card Write] button.
   - Destination Memory Card: A drive where the SD memory card has been inserted
   - GOT Startup Method: "Install on the specific drive first"
   - Install Destination Drive: "C:Built-in Flash Memory"
6. A confirmation message will appear. Click the [Yes] button.
7. The restoration data is created in the SD memory card.

Appendix.1.2 Restoration

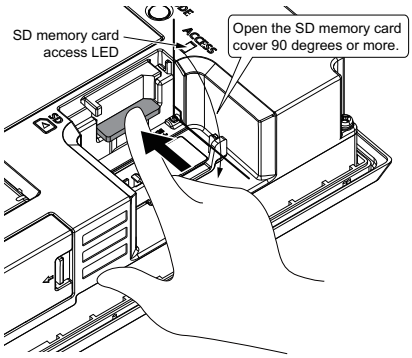
The following describes the restoration procedure.

(1) Insert the SD memory card in which the restoration data has been stored in the GOT of the operation panel.

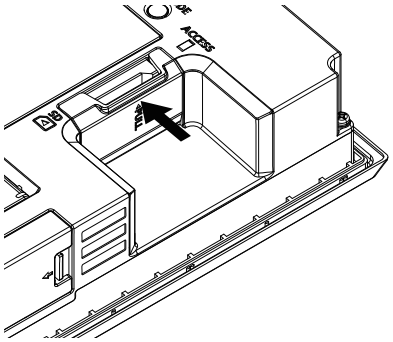
The following describes how to insert the SD memory card.



1. Make sure that the power to the GOT is off.
2. Open the SD memory card cover as shown in the left figure.



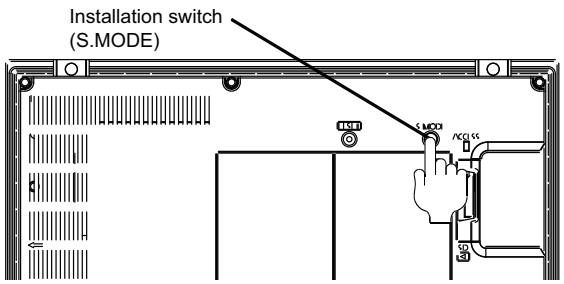
3. After making sure that SD memory card access LED is off with SD memory card cover 90 degrees or more open, insert the SD memory card in the SD memory card interface with its front side facing up.



4. Push and close the SD memory card cover until it clicks.
5. After the SD memory card cover is closed, the access to the SD memory card is allowed.

(2) Install the GOT screen data.

1. Turn on the power to the control panel while holding down the installation switch (S.MODE switch) on the GOT rear face.



2. The message "Install now..." is displayed.
   It takes a few minutes to complete the installation.
3. The message "Installation has been completed" is displayed.
   Touch the [OK] switch.
4. The GOT automatically restarts.
5. The "Touch panel calibration" screen is displayed.
   Follow the instructions on the screen and adjust coordinates.
6. The GOT automatically restarts.
7. The "Clock setting" screen is displayed.
   Configure the time setting and touch the [OK] switch.
8. The GOT automatically restarts.
9. The Startup Screen of the POKAYOKE application is displayed and the restoration has been completed.

POINT

When the system management authentication window appears, enter the following information and touch the [Enter] key.

- Password: "POKAYOKEDSP"

REVISIONS

Revision date	Manual number	Revision
February 2017	BCN-EP2005-0024-A	First edition
June 2017	BCN-EP2005-0024-B	■ Added or modified parts RELEVANT MANUALS, TERMS, REQUESTING AND REGISTERING A LICENSE KEY, Section 1.1, 1.1.1, 1.2, 1.3, 2.1, 2.1.1, 2.2, 3.1, 3.2, 3.3.1, 3.3.2, 3.4.1, 3.4.6, 3.5.2, 3.6.1, 4.1, 4.3, 4.3.1, 4.4, 5.2.4, 5.4.1, 5.5, 5.7, 5.8, 6.1.2, 6.1.3, 6.2.1, 6.2.2, 7.2.1, 7.3

WARRANTY

Please check the following product warranty details before using this Control Package.

(1) Software included in this Control Package

Check "END-USER SOFTWARE LICENSE AGREEMENT" (BCN-EP2005-0001) included in the package.

(2) Hardware included as the system devices of this system

Check the product warranty details of each hardware.

BCN-EP2005-0024-B(1706)CDS

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