

# MITSUBISHI

## Mitsubishi Electric Air Conditioning Network System PLC Software for General Equipment

PAC-YG21CDA

(Ver.2 series)

### Installation (Setup) Manual

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**Please read this manual before using the unit.**

Please keep this manual for future use.

WT04104X06  
(Ver.2.2\*)



## 1. Safety Precautions

- Please read the Safety Precautions section very carefully before using the unit.
- The safety cautions provided here are very important for your safety. Please observe them at all times.
- The degree of danger involved with incorrect operation of the unit are indicated in this manual using the following symbols.

 **WARNING** Incorrect operation could result in death or severe injury.

 **CAUTION** Incorrect operation could result in injury or damage to property.

- After reading this information, please keep this manual in a location where the operator can see it.

**Note : Refer to the warnings and cautions in the respective installation manuals and instruction manuals for the PLC, personal computer and software, etc.**

### WARNING

**The customer must not do any wiring or electrical work.**

Have the dealer or a specialist do any wiring or electrical work. Do not do it yourself. Doing the work yourself may result in improper installation which may cause electric shock or fire.

**Do not relocate the unit yourself.**

Relocating the unit yourself may result in incorrect installation which may cause electric shock or fire. To relocate the unit, consult the company from which the unit was purchased.

**Do not make any improvements or repairs for any reason.**

Making improper improvements or repairs may cause electric shock or fire. For repairs, consult the company from which the unit was purchased.

**Read the installation manuals and operation manuals for the computer, peripherals and other machines.**

Improper operation could result in fire or damage to the computer or peripherals.

**Stop operation if an error appears on the personal computer or PLC and operation cannot be continued or a fault occurs.**

Continuing operation could result in fires or faults. Contact your dealer.

**Always read the installation manual and instruction manual for the PLC.**

Incorrect handling could result in PLC fires or faults, etc.

### CAUTION

**Do not use the product for any other purpose.**

This product is for use with the Mitsubishi Electric Building Air Conditioning Control System. Do not use it with any other air conditioning control system or for any other application. Doing so may cause the unit to malfunction.

**Keep children away from the unit.**

Inspections and maintenance can be dangerous. Do not let children near the unit during these times.

**Do not use with other applications.**

Use the PC that uses this product with this product only. Using it with other applications may cause faulty operation.

**Do not use the product for disaster and security control.**

Do not use for the application above, as the response may be delayed or the operation is hindered at trouble occurrence.

#### **Warning to all users (User Agreement)**

The contents contained herein represent permission for use given to our customer by Mitsubishi Electric Corporation. By using this software, the user agrees to the conditions of the License.

- Mitsubishi Electric and associated suppliers are not responsible for any collateral, secondary, or special damages, even if notified by the distributor of the possibility of a certain type of damage. Mitsubishi Electric is not responsible for any rights claimed by a third party.

## 2. Introduction

This software enables the monitoring/operation of general equipment, the operation of equipments such as air conditioners by input events, and the report of general equipment error mails via G-50A in the system that consists of G-50A and TG-2000A by Mitsubishi Electric Corporation.

\* Unless otherwise specified, "G-50A" in this manual refers to both "G-50A" and "GB-50A".

This manual explains only the basic settings of PLC software for general equipment. To use this software on site, set it up in accordance with the instructions in the "ATA Card Setup Manual for Sales Company (WT04266)". To use each function, make each required setting as shown below.

### Monitoring/operation of general equipment or the schedule control of general equipment

- Make the settings for PLC for general equipment on the initial setting screen of TG-2000A. (Refer to the "TG-2000A Instruction Manual Site Adjustment (WT03901)".)
- Set the schedule for general equipment on the management screen of TG-2000A. (Refer to the "TG-2000A Instruction Manual Management (WT03902)".)

### Changing the output format to general equipment (including change of pulse width)

- Make the settings for only the "Setting PARA. CSV file" on the table setting tool, and write the setting to an ATA card. (Refer to the "Table Setting Tool Manual (WT04265)".)
- The initial setting is A-contact pulse output whose pulse width is 1 sec.

### Interlocking control (interlocking control of general equipment, indoor unit, and free contact of indoor unit)

- Make the settings for "Setting SET. CSV file" and "Setting table file" on the table setting tool, and write the setting to an ATA card. (Refer to the "Table Setting Tool Manual (WT04265)".)
- Register the license for "PLC software for general equipment" on the WEB to G-50A.
- Make the settings for PLC for general equipment on the initial setting screen of TG-2000A. (Refer to the "TG-2000A Instruction Manual Site Adjustment (WT03901)".)
- When the Fahrenheit unit is selected, use G-50A, table setting tools, or indoor units that have 1°F temperature setting function. The temperature cannot be set by 1°F increment by this PLC in the combination other than specified below.

G-50A	: Ver.3.00 or later
Table Setting Tool	: Ver.1.30 or later
Indoor unit /Remote controller	: Models with 1°F temperature setting function
PAC-YG21CDA	: Ver.2.20 or later

### Reporting general equipment error mails

- Set G-50A IP address of the report destination and PLC number on the initial setting WEB for G-50A. (Refer to the "Initial Setting WEB Operation Manual".)
- Make error mail setting for G-50A on the initial setting WEB for G-50A.
- It is not necessary to register license to G-50A.

### Using free contact of indoor unit

- Set the dip switches on the indoor units whose free contacts are used as follows.  
SW1-9 : ON  
SW1-10: ON  
Refer to the manual for TG-2000A (WT03901X09 or later), for the function of SW1.

### <General equipment error mail function>

PLC for general equipment reports errors or error recovery of general equipment, and G-50A sends error mails. This setting cannot be made with TG-2000A. Make the setting on the initial setting WEB of G-50A.

## 2-1 Expressions in This Manual

- Unless designated, Windows® 95, Windows® 98, Windows® Me, Windows® NT Workstation, Windows® 2000 Professional and Windows® XP are expressed as [Windows].  
\* Windows is a registered trademark or trademarks of Microsoft Corporation in the United States and/or other countries.
- PLC refers to the Programmable Logic Controller.

## 2-2 Parts and Tools Required for Installation

- The following parts and tools are required to install this PLC software for general equipment into the designated PLC.

**Table 2-1 Parts and tools required for installation**

No.	Item	Details
(1)	Memory card (ATA card)	Q2MEM-8MBA *Written in the software already
(2)	Manual	Installation Manual (* this manual)
(3)	Tool (for installation)	GX Developer Ver.8 or later (MELSEC PLC programming software)
(4)	Connection cable	QC30R2 (RS-232-C cable for connecting personal computer and CPU)
(5)	PLC	*Refer to chapter 2-3
(6)	Tool (for setting)	Table setting tool of PLC for general equipment control * Use as required. For detail, refer to the manual of the table setting tool.

- The following computer working environment is required to run the GX Developer tool.

**Table 2-2 Working environment**

Item	Details
Computer unit	Pentium® 133MHz or faster (For Windows®Me, recommend Pentium®150MHz or more)
Memory	32Mbyte or more, (64Mbyte or more for Windows 2000)
Screen resolution	800×600 or more
Compatible OS	Windows® 95/98/Me/NT4.0/2000 Pro (English Version)
Drive	CD-ROM disk drive
Communication interface	RS-232-C port
Others	Pointing device, such as a mouse

\* Refer to the GX Developer Operation Manual for the detailed working environment.

\* Pentium is the trademark or registered trademark of Intel corporation in the United States of America and other countries, or its subsidiary.

## 2-3 Applicable PLC Models

- The PLC models that can be used with this PLC software for general equipment are shown below.

**Table 2-3 Applicable PLC models**

Item	Details	Notes
Maker	Mitsubishi Electric	
CPU module	Q02HCPU	
Base unit	Q33B, Q35B, Q38B, Q312B	*Differs depending on the system configuration employed
Power supply module	Q61P-A2 (A1)	A1: 100VAC, A2: 200VAC
Ethernet module	QJ71E71-100	* Use 10Mbps LAN
Input module	QX40	* 24VDC/4mA plus common * External power supply (24VDC) for input is required
Output module	QY40P	* One 12/24VDC, 0.1A/point unit can be connected. * An external power supply (12/24VDC) for output is required.

## 2-4 Number of Connected General Equipment and Input/Output Functions

\*The function and connecting number of this PLC software for general equipment control are shown in the table below.

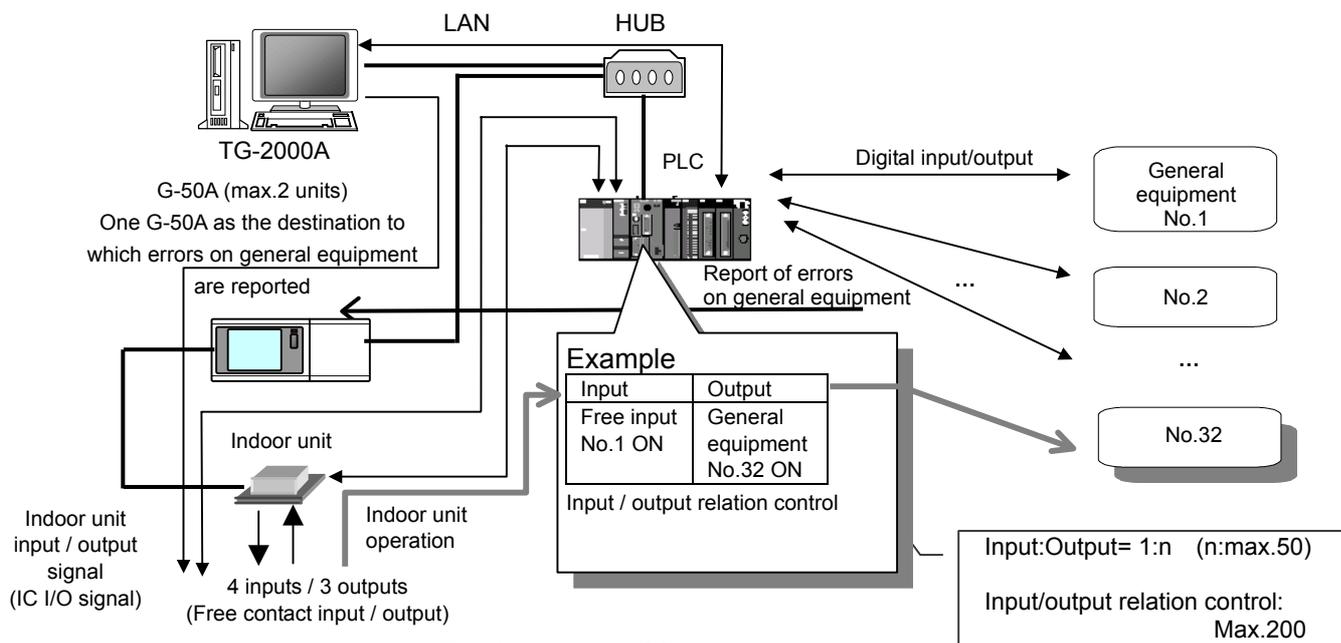
**Table 2-5 Function and connecting number of PLC software for general equipment control**

Items	Details	Notes	
General equipment connected with PLC	Quantity	Max. 32 units (0, 8, 16, 24 or 32 sets ---according to the connected Input/output module numbers)	*General equipment connected to PLC unit.
	Output function	Run (ON) and stop (OFF) by one-shot pulse or level signal	* Per general equipment
	Input function	Run state (ON/OFF) and error state (normal/abnormal) *Only level	* Per general equipment
	Schedule function	Annual and weekly schedule (12 times per 1 day. Annual schedule: max 50 days)	* Per general equipment
G-50A	Control quantity	Max. 2 units (Per PLC)	G-50A : Ver.2.70 or later
	Report destination	Max. 1 unit (general equipment error mail function only)	G-50A : Ver.2.90 or later
General equipment connected to indoor unit *1	Quantity	(Reference) 100 units (Per PLC)	*Differs by applicable function
	Output function	Run (ON) and stop (OFF) by level signal	
	Input function	State (ON/OFF or normal/abnormal) by level	
Air conditioner group	Control quantity	Max. 100 units	* Per PLC
	Monitor input	ON/OFF status	*Usable only for input /output relation control
	Operation output	ON/OFF, mode, set temperature(*3), air velocity, local operation prohibit (ON/OFF, mode, set temp., filter reset), interlocked ventilation ON/OFF	*Usable only for input/output relation control
Input/output relation control *2	Set number	Max. 200 sets	
	Input number	1 status for 1 input	*Per 1 input/output relation control
	Output number	50 outputs (1 status for 1 output)	*Per 1 input/output relation control

\*1 : Indicates the general equipment connected to the external input/output(free contact ) of the indoor unit. The dip switch of the indoor unit is required to be set so that external input and output can be used for free contact.

\*2 : The function to operate plural outputs according to the change of the input status. Control runs only at the time of input change.

\*3 : When the temperature setting by 1°F increment is necessary, use G-50A or indoor units that have 1°F temperature setting function.



**Fig. 2-1 Image of function**

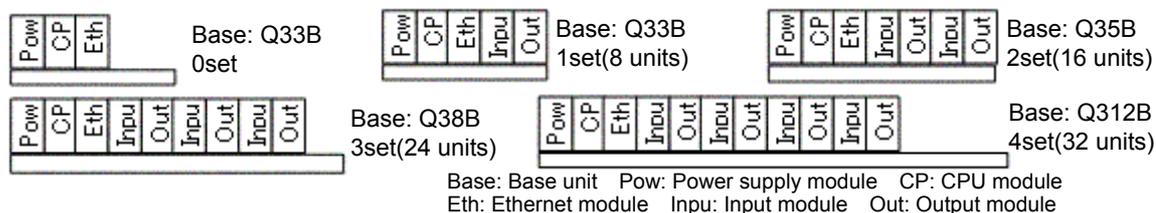
## 2-5 Input/Output Unit Configuration of General Equipment

Here, the configuration of general equipment connected to the PLC input/output unit and the input/output specification are shown.

### [PLC layout]

**\* No function is performed with other layout than that configured as below.**

Depending on the numbers of general equipment, the layout of PLC differs requiring to install the input and output units additionally in a set. General equipment of 8 sets can be connected in one set, and the model name to be used also changes according to the unit numbers.



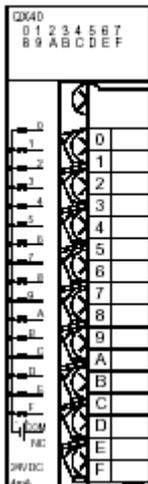
When input/output units are not necessary, PLC for general equipment can be operated without putting the unnecessary unit. Do not delete an empty slot for the unnecessary unit. Do not change the PLC layout shown above. Use a blank cover (type: QG60), which is an optional part for PLC, to protect the unused slot from dust.

(Example) Although 16 pieces of general equipment are connected, no output units are necessary because only monitoring is performed by TG-2000A.



- It is not necessary to change the type of the base unit, even if the output unit is not used.
- Do not delete the empty slot between input units. If the empty slot is deleted, the PLC does not operate.
- Use a blank cover for the empty slot.

[Input module]



**Table 2-6 Input specifications**

No.	Target equipment	Input details	Notes
0	General equipment 001	Run/stop state	Hi level: Run
1		Abnormal/normal state	Hi level: Abnormal
2	General equipment 002	Run/stop state	Hi level: Run
3		Abnormal/normal state	Hi level: Abnormal
4	General equipment 003	Run/stop state	Hi level: Run
5		Abnormal/normal state	Hi level: Abnormal
6	General equipment 004	Run/stop state	Hi level: Run
7		Abnormal/normal state	Hi level: Abnormal
8	General equipment 005	Run/stop state	Hi level: Run
9		Abnormal/normal state	Hi level: Abnormal
A	General equipment 006	Run/stop state	Hi level: Run
B		Abnormal/normal state	Hi level: Abnormal
C	General equipment 007	Run/stop state	Hi level: Run
D		Abnormal/normal state	Hi level: Abnormal
E	General equipment 008	Run/stop state	Hi level: Run
F		Abnormal/normal state	Hi level: Abnormal

[Output module]



**Table 2-7 Output specifications**

No.	Target equipment	Output details		Notes
		Pulse *1	level	
0	General equipment 001	Run output	Run/Stop output	
1		Stop output	-	
2	General equipment 002	Run output	Run/Stop output	
3		Stop output	-	
4	General equipment 003	Run output	Run/Stop output	
5		Stop output	-	
6	General equipment 004	Run output	Run/Stop output	
7		Stop output	-	
8	General equipment 005	Run output	Run/Stop output	
9		Stop output	-	
A	General equipment 006	Run output	Run/Stop output	
B		Stop output	-	
C	General equipment 007	Run output	Run/Stop output	
D		Stop output	-	
E	General equipment 008	Run output	Run/Stop output	
F		Stop output	-	

The initial setting is A-contact pulse output whose pulse width is 1 sec. Use the table setting tool to change the output format.

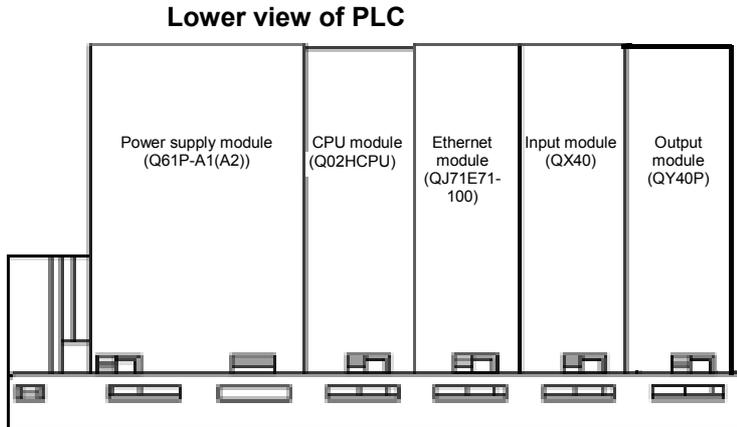
**Note:**

- In the input and output specifications, the objective general equipment is described only for 1 set of NO. 1 ~ 8. For the second set or later, the objective general equipment No. is to be shown by adding a multiple of 8.

### 3. Checking the PLC Installation State

#### 3-1 Check the PLC Module Installation

Check that the PLC system modules are arranged in the following order. The system will not operate if the modules are not installed in order.



\*The input and output units of general equipment are connected by pairing the input unit and output unit in a set as shown left. Please refer to Chapter 2.5.

**Fig. 3-1 PLC module layout drawing (Case of max. 8 General equipments)**

#### 3-2 Checking the Wiring Connections

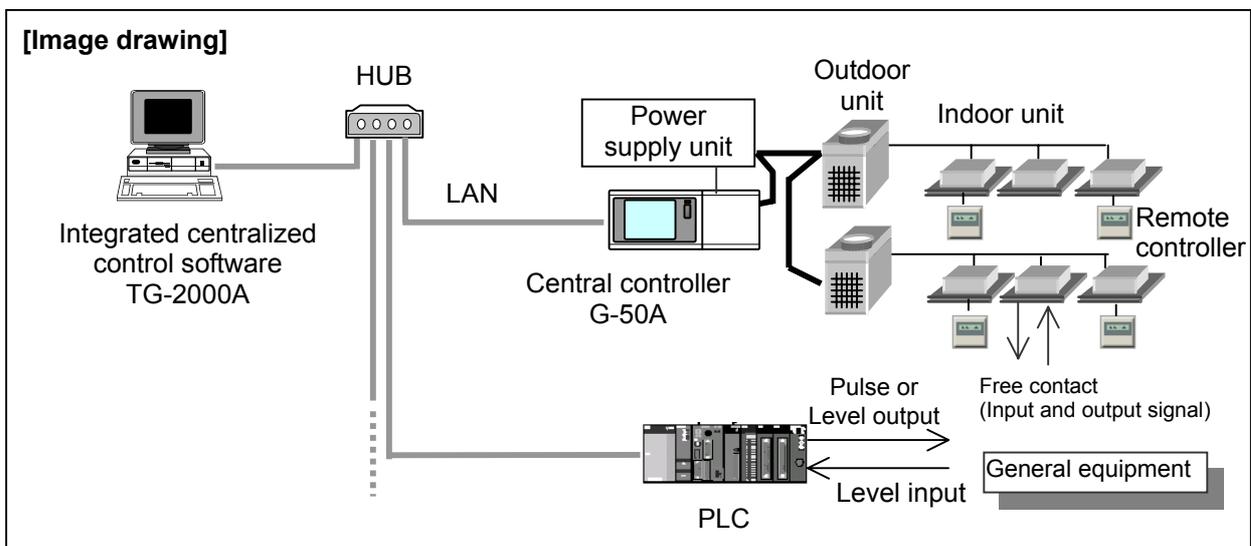
Check the wires connected to the PLC.

**Table 3-1 Items to be confirmed**

Item	Confirmation details	Remarks
Power cable	Confirm that the power cable is connected to the PLC power supply module.	
LAN	Confirm that the LAN cable is connected to the Ethernet module.	* This cable does not need to be connected to install this software.
Input cable	Confirm that the pulse/level output or level input wire is connected to the output or input module.	* This cable does not need to be connected to install this software.
Others	Confirm that the external input power supply (24VDC) is connected to the input module, and the external output power supply (12/24VDC) is connected to the output module.	* This cable does not need to be connected to install this software.

\* Refer to each PLC module instruction manual for details on the connected cable's specifications and connection methods, etc.

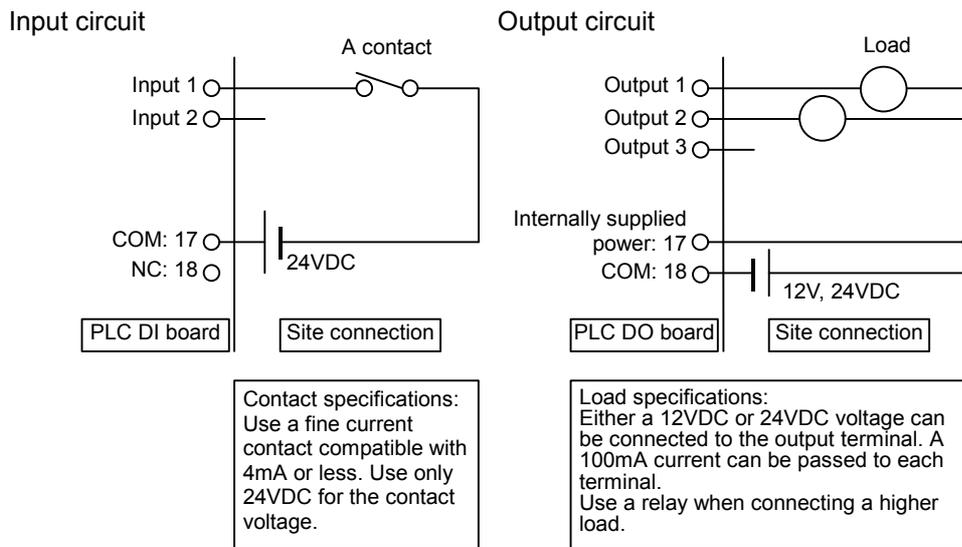
#### 3-3 System Configuration Example



\*Do not configure such system that a router is intermediated between G-50A and PLC.

### 3-4 Example of Input/Output Wire Connection

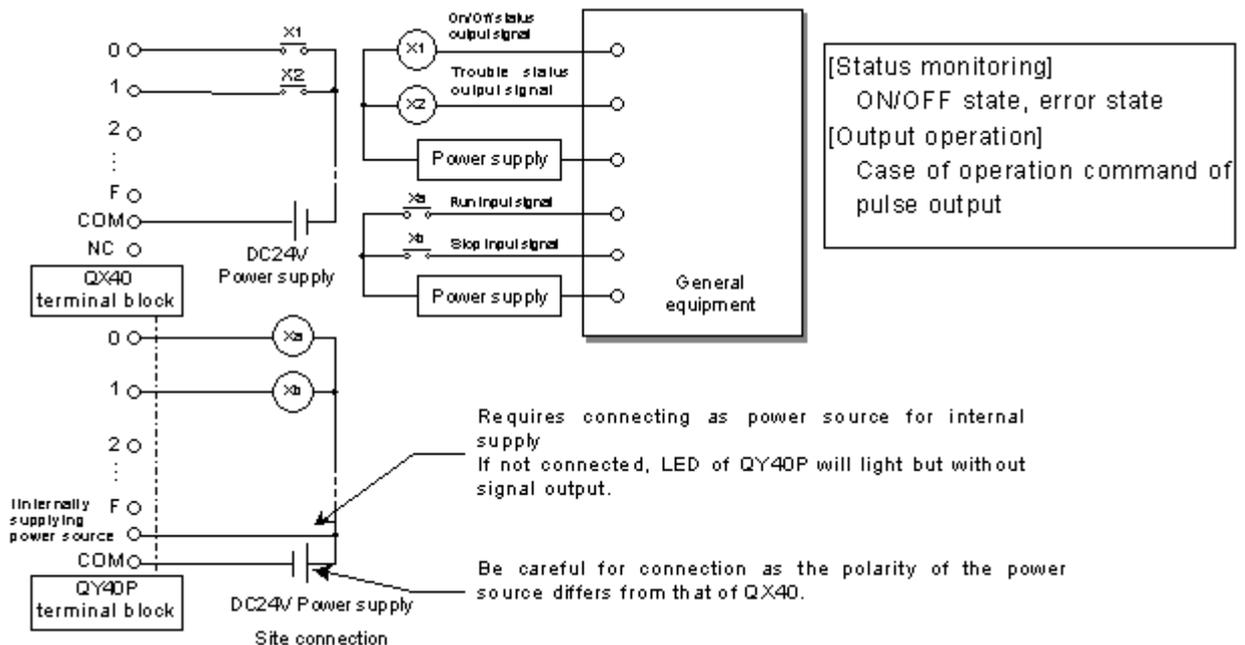
An example of the input/output wire connection is shown below.



**Note:**

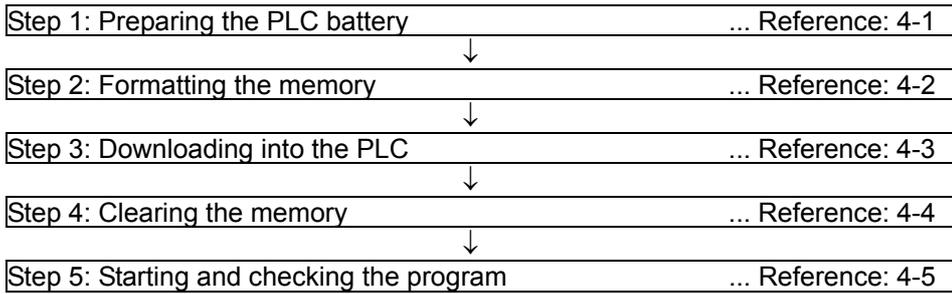
- Prepare a system that can take an immediate action at the trouble of PLC or the disconnection of wiring. (Example: local switch)

The connection example of the general equipment No.1 is shown below.



## 4. Setting Up the PLC Software

This PLC software for general equipment is set up in the PLC in the following order.

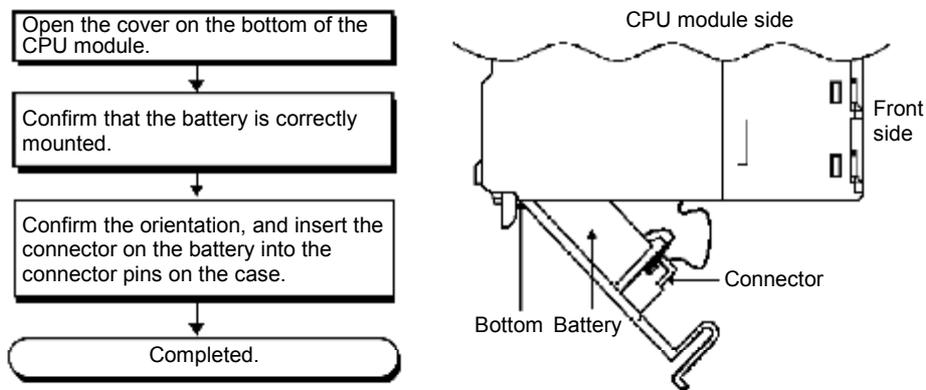


### 4-1 Preparing the PLC Battery (Step 1)

#### [Procedure 1] Connect the battery

Connect the CPU module's backup battery to run the PLC.

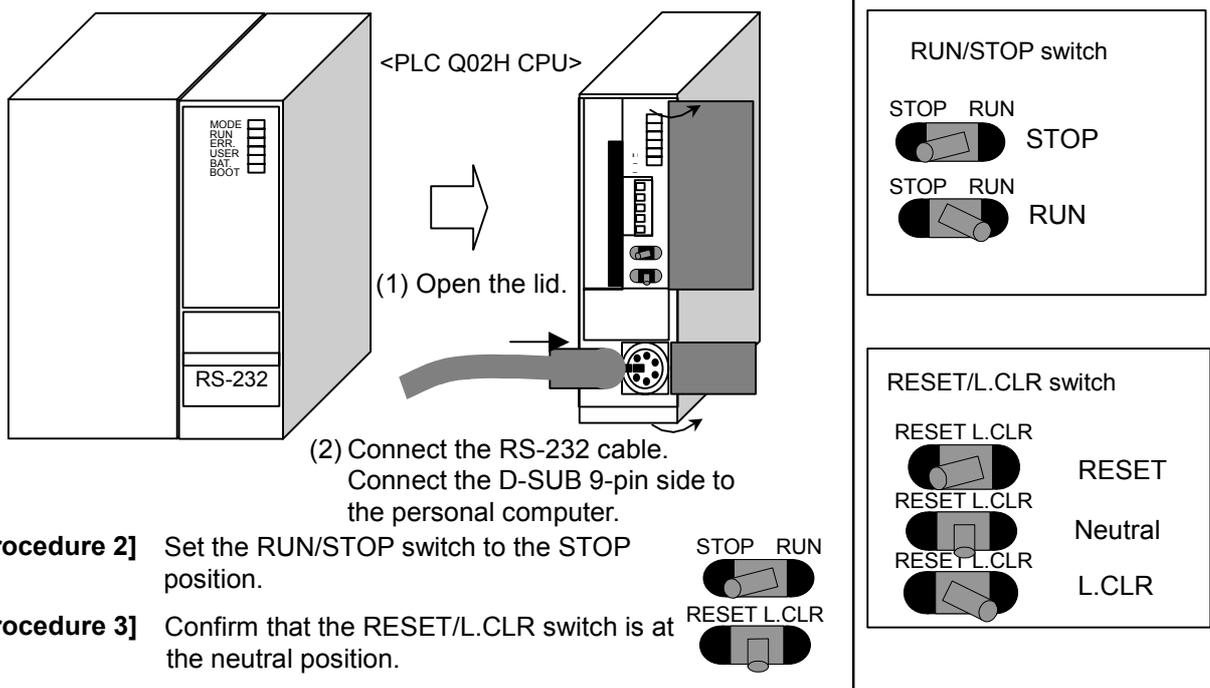
Confirm that the PLC power is OFF, and remove the CPU module from the base module. Connect the battery lead wires, and mount the battery onto the base.



### 4-2 Formatting the Memory (Step 2)

#### (1) Connecting the RS-232-C connection cable

[Procedure 1] Open the CPU module's lid, and connect the RS-232-C cable.



[Procedure 2] Set the RUN/STOP switch to the STOP position.

[Procedure 3] Confirm that the RESET/L.CLR switch is at the neutral position.

## (2) Turning ON the PLC power

**[Procedure 1]** Turn the PLC power ON.

Battery normal : BAT LED is OFF  
Battery abnormal : BAT LED is ON

\* If the LED turns ON, there is a problem with the battery connection, so turn the power OFF and check the connection.

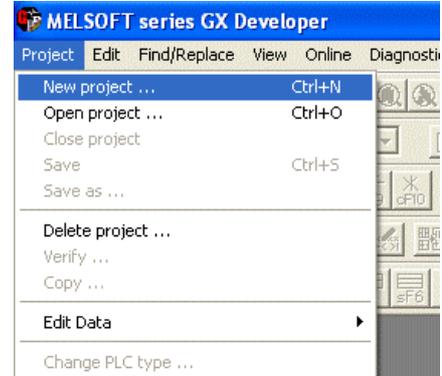
## (3) Starting GX Developer and formatting

**[Procedure 1]** Start the GX Developer application.

**[Procedure 2]** Open a new project.

Select: [Project] – [New Project...]

The New Project screen will open.

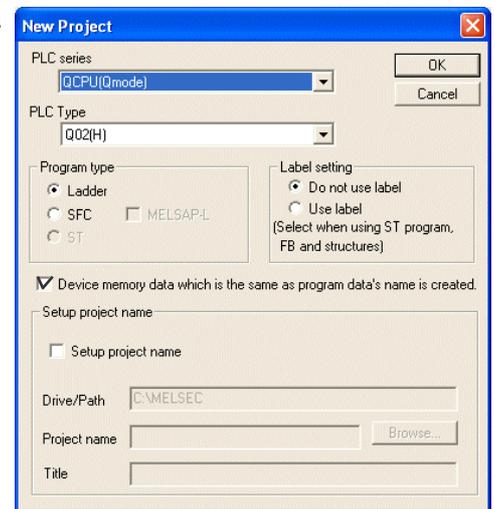


**[Procedure 3]** Set the various items for creating a new project.

– Setting details –

PLC series : QCPU (Q mode)  
PLC Type : Q02(H)  
Program type : Ladder  
Label setting : Do not use label  
Device memory data which is the same name as program data's name is created : Select  
Setup project name : Do not select

Set the above details, and then select [OK].



**[Procedure 4]** Select the connection destination.

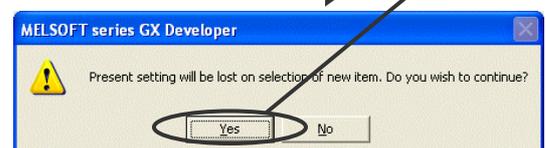
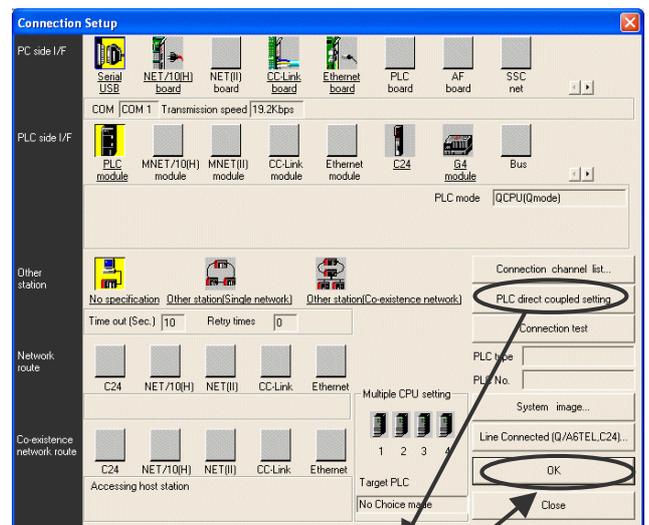
Select: [Online] – [Transfer Setup]

**[Procedure 5]** Select PLC Direct Coupled Setting.

Select: [PLC Direct Coupled Setting] → [Yes] → [OK]

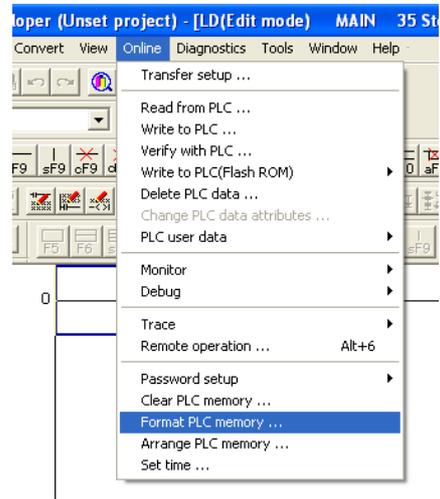
### NOTE:

- If communication is impossible, check the port number on the PC to see whether it corresponds with the setting for GX Developer. To check the port number on GX Developer, click "PC side I/F"-"Serial USB".



**[Procedure 6]** Select Format PLC Memory ...

Select: [Online] – [Format PLC Memory]  
The PC MEMORY FORMAT screen will open.



**[Procedure 7]** Format the "Program Memory/ Device Memory" and "Standard RAM".

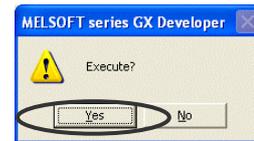
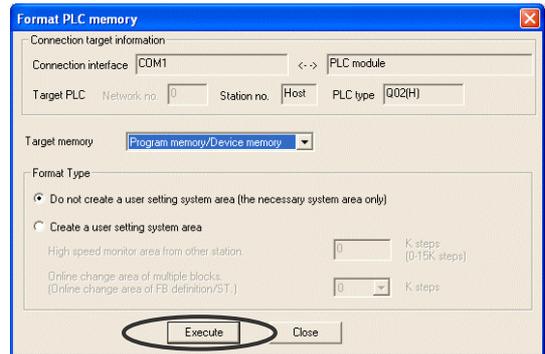
- 1) Check the setting value, and then select [Execute].

Target memory: "Program memory/ Device memory"

Format type:

Do not create a user setting system area

When the confirmation screen opens, select [Yes], and then select [OK] on the completion screen.



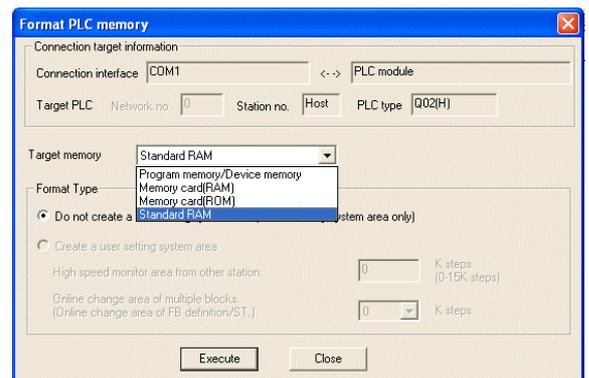
- 2) Change the Target Memory to "Standard RAM", and then format.

Target memory: "Standard RAM"

Format type:

Do not create a user setting system area

Set the target memory to "Standard RAM", and then select [Execute]. When the confirmation screen opens, select [Yes], and then select [OK] on the completion screen.



**[Procedure 8]** Close the FORMAT PC MEMORY screen.

Select: [Close]

### 4-3 Downloading into the PLC (Step 3)

#### (Loading from memory card to PLC standard ROM)

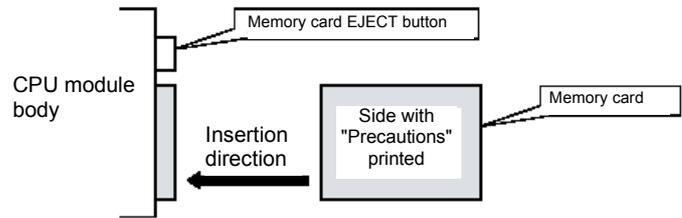
**[Procedure 1]** Turn OFF the PLC power.

\* Inserting the memory card while the power is ON will result in trouble.

**[Procedure 2]** Insert the memory card into the PLC.

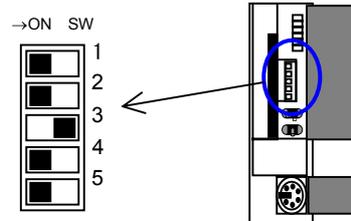
**Maintenance Tip:**

- Pay attention to the memory (ATA) card's insertion direction.



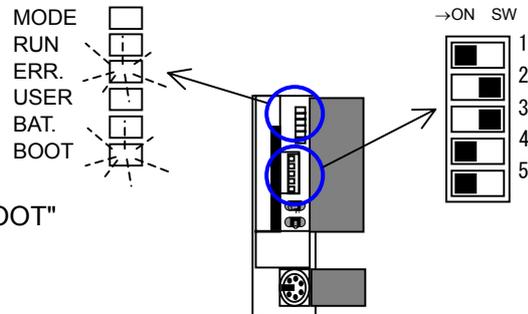
**[Procedure 3]** Turn ON DIP switch 3.

This sets the settings for the Flash/ATA card mounting.



**[Procedure 4]** Turn ON the PLC power.

Boot the memory card's file into the program memory. After booting, load the program memory contents into the standard ROM.



**[Procedure 5]** Confirm that the "ERR" LED and "BOOT" LED are flickering.

The "ERR" LED and "BOOT" LED flicker when automatic loading to the standard ROM is completed.

**[Procedure 6]** Turn OFF the PLC power.

**[Procedure 7]** Turn ON DIP switch 2.

(This sets the parameter valid drive to the standard ROM. SW2, 3 = ON)

### 4-4 Clearing the Memory (Step 4)

Using GX Developer, clear the PLC memory so that the PLC can be run.

**[Procedure 1]** Turn ON the PLC power.

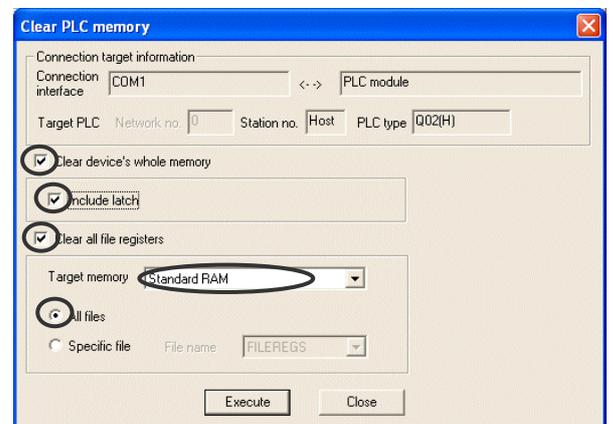
**[Procedure 2]** Select Clear PLC Memory.

(Select: [Online] – [Clear PLC Memory])

**[Procedure 3]** Set the following items, and then select [Execute].

– Setting details –

- Clear device's whole memory: Select
- Include latch : Select
- Clear all file register : Select
- Target Memory : Standard RAM
- All Files/Specific file : All Files



Select the [OK] button on the completion screen that opens when the clearing process is completed.

[Procedure 4] Turn OFF the PLC power.

[Procedure 5] Quit the GX Developer application.

[Procedure 6] Disconnect the RS-232-C cable.

#### 4-5 Starting and Checking the Program (Step 5)

Start the downloaded PLC software for general equipment with the PLC, and confirm that it runs.

[Procedure 1] Set the RUN/STOP switch to the RUN position.



[Procedure 2] Set the RESET/L.CLR switch to the neutral position.



[Procedure 3] Turn ON the PLC power.

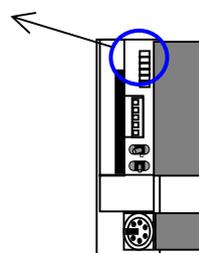
The contents of the standard ROM are written to the program memory, and the PLC software starts up.

[Procedure 4] Confirm the PLC operation state.

Check the following details to confirm that the program is running correctly.

- MODE.LED is ON
- RUN.LED is ON
- ERR.LED is OFF
- USER.LED is OFF
- BAT.LED is OFF
- BOOT.LED is ON

MODE	<input checked="" type="checkbox"/>
RUN	<input checked="" type="checkbox"/>
ERR	<input type="checkbox"/>
USER	<input type="checkbox"/>
BAT.	<input type="checkbox"/>
BOOT	<input checked="" type="checkbox"/>



#### Note:

- Leave DIP switch 2 and 3 set to ON.
- Before starting operation with this PLC software for general equipment, the state must be initialized, etc., from the integrated centralized control software TG-2000A.
- If the PLC operation state is not "correct", start again from the start.
- Refer to Section 6 and the PLC Instruction Manual for details on troubles.
- The operation/monitoring using the indoor unit and its free contact require registering the license of [PLC for general equipment] to G-50A.  
No license is required when only the general equipment at the PLC side is used.
- The schedule setting to general equipment should be executed from TG-2000A.
- The input/output relation control will function by writing the set content into ATA card with the table setting tool separately applied. For setting, ask a specialist vendor.
- When the setting of air conditioner group for G-50A is desired, make sure to reset the PLC.
- The PLC will execute the input/output relation control 5 minutes after resetting by following the current system status. To operate the system, wait for 5 minutes or more after resetting of the PLC.

#### Maintenance Tip

- Do not turn the power OFF after starting operation with this PLC for general equipment software running. The general equipment cannot be controlled while the power is OFF.
- Leave the memory card (ATA card) set in the PLC's memory slot. The system will not run correctly if the ATA card is removed.
- Make the initial settings for "PLC for general equipment Set-up", "Monitoring Screen Set-up", and "Time Set-up" on the TG-2000A initial setting screen.

## 5. Precautions for Running the PLC Software

The precautions for running this PLC software for general equipment with the PLC are given below. Always read through these precautions before starting use.

### 5-1 License

By using this PLC for general equipment software, the user agrees to the conditions of this License. Always read through this License before starting use.

- (1) License  
This user is permitted to install this software into the user's PLC. This software may not be duplicated, leased, sold, rented, transferred or resold without permission from Mitsubishi Electric Corp.
- (2) Property  
This software and all copies authorized by Mitsubishi Electric Corp. are the property of Mitsubishi Electric Corp.
- (3) Software Revisions  
This software may be revised for improvements without prior notice.
- (4) Limitation of Liability  
In no event will Mitsubishi Electric Corp. or its dealers be liable to the user for any damages whatsoever or any consequential, secondary, special damages, even if a Mitsubishi dealer has been advised of the possibility of such damages.  
Mitsubishi will also not be liable to any claims by any third party.

### 5-2 Precautions for Operation

- (1) PLC power supply
  - When using this software, always leave the switch set to "RUN" after the trial operation, and leave the power ON 24 hours. The general equipment cannot be operated or monitored while the power is OFF.
- (2) Battery
  - Always connect a battery while using this software. (Refer to Section 4-1.) If the battery is not connected during a power failure, all of the saved power rate data will be lost.
  - If the battery voltage low detection is indicated, replace the battery with a new one as soon as possible.  
(The battery voltage low alarm can be confirmed on the integrated software's screen or by the lighting of the CPU module's BAT. LED (ON).)
- (3) ATA card
  - Leave the memory (ATA) card containing the software installed in the CPU module memory slot. The data saved in the memory card (ATA card) is used.
- (4) Precautions for starting operation
  - The PLC for general equipment software will not run correctly just by carrying out the matters explained in this installation manual. Various settings related to initialization must be made with TG-2000A before starting operation.  
("PLC for general equipment Set-up", "Monitoring Screen Set-up", and "Time Set-up")
- (5) Precautions for connection work, confirmation and trial operation
  - Before wiring to the general equipment or confirming the connection, always notify the controller or work supervisor of the destination equipment (general equipment), and start or stop the general equipment at the site.
- (6) General equipment monitor/operation
  - It may not be possible to monitor or operate the general equipment if the wires with the general equipment are disconnected or the PLC fails.  
Prepare the system that can take an immediate action at the occurrence of trouble.

- (7) About restrictions on operation
- **Do not use to control disaster prevention and security systems.**  
**(Never use for the control that may endanger human life.**
  - The input/output relation control may take a considerable time until its starting depending on the system status. Further the normal operation may be hindered due to the status of connected equipment.
  - Recommend to install a circuit enabling ON/OFF operation with an external switch when the operation can not be performed due to the trouble of PLC or connected equipment.
  - The input/output relation control can not be applied with interlocked control normally. It is controlled for interlock operation only at change of the input condition. For the system with the function to operate the input/output relation from the local or centralized controlling spot, the latest command will be effective.
  - The input/output relation response may become late according to a use situation.
- (8) About restrictions on operation
- To effectuate the function of this PLC software for general equipment, you are kindly requested to register the license of "PLC for general equipment" to G-50A.  
Without registering the license, you are not able to operate or monitor the indoor units.
  - No license number is required in the case when the control of air conditioner group and free contact, and the input/output relation control are not used (controlling only general equipment).
- (9) Miscellaneous
- The functions and specifications may be changed for improvements without prior notice.
  - The liability for the defect of a PLC simple substance etc. cannot be taken.
- (10) G-50A sends general equipment error mails after receiving a report of errors or error recovery of general equipment from PLC for general equipment. If chattering occurs during general equipment error input, or if LAN is not properly connected to the G-50A, mails may not be sent normally.
- (11) TG-2000A monitors errors on general equipment every one minute. If the status of any piece of general equipment goes from error to normal or normal to error within one minute, general equipment error mails will be sent, and error history for general equipment may not remain in TG-2000A.

### **5-3 Applicable System**

This PLC for general equipment software is applicable only with the "G-50A + TG-2000A" system.

## 6. Troubleshooting

The causes of trouble that may occur when installing this PLC for general equipment software into the PLC, and the countermeasures to be taken are explained below.

**Table 6-1 Troubleshooting**

Details of trouble	Speculated cause	Countermeasures
The "ERR." LED turns ON or flickers when the PLC for general equipment software is started.	The PLC module layout is incorrect.	Turn the PLC power OFF and arrange the modules as shown in section 3-1.
	The program is not installed correctly.	Turn all of the CPU module switches OFF, and start again from 4-2 "Formatting the Memory".
The "BAT." LED turns ON.	The battery is not mounted.	(1) Connect the connector installed on the battery. (2) Reset with the RESET/L.CLR switch.
	Battery voltage low	(1) Replace with a new battery. (2) Reset with the RESET/L.CLR switch.
Error appears when accessing PLC even from GX Developer.	The PLC power is not ON.	Turn the PLC power ON, and access the PLC from the GX Developer.
	The RS-232-C cable is not connected.	Check the RS-232-C cable connection to the personal computer and PLC, and reconnect if necessary.
The equipment cannot be operated or monitored after operation is started.	The "STOP/RUN" switch is set to "STOP".	Set the "STOP/RUN" switch to "RUN".
	The external power supply for input is OFF.	Turn ON the external power supply (24VDC) for input.
	The external power supply for input is incorrectly connected.	Check that the plus side of the external power supply (24VDC) for input for input is connected to the No. 17 terminal (COM) on the input module (QX40), and that the minus side wire is connected to the general equipment. Correct if the wiring is incorrect.
	The external power supply for output is OFF.	Turn ON the external power supply (12/24VDC) for output.
Input/output relation control does not run.	Erroneous table setting of input/output relations	Check the set detail using the table setting tool. Modify the set detail as required.
	Free control mode is not being applied to the external output of indoor unit.	Check whether the Dip-Switch of indoor unit are set as follows : SW1-9 : ON SW1-10 : ON When you change, please make an applicable indoor unit a stop.
	The "STOP/RUN" switch is set to "STOP".	Set the "STOP/RUN" switch to "RUN".
	The power source of G-50A is being turned OFF	Turn on the power source of G-50A.
	The external power source of the input unit is being turned OFF.	Refer to the countermeasure as same as "The equipment cannot be operated or monitored after operation is started."
	The external power supply for input unit is incorrectly connected.	
	The external power source of the output unit is being turned OFF.	
	The LAN wiring is disconnected or not connected.	Check the connection of the LAN wiring, and modify it if required.
	The power source of the HUB is not turned on.	Confirm that the power source of the HUB is turned on.
	The PLC with the same IP address is duplicated.	Change the IP address of the PLC of which IP address is being duplicated, and reset the PLC.
A router is locating between G-50A and PLC.	Remove the router.	

**(Continue)Table 6-1 Troubleshooting**

Details of trouble	Speculated cause	Countermeasures
(Continue) Input/output relation control does not run.	The setting of the indoor unit group of G-50A is being changed.	Reset the PLC.
	The traffic of LAN is busy.	Wait the control output for 2 or 3 minutes.
	The initial setting of the PLC is not executed from TG-2000A.	Execute the initial setting of the PLC from TG-2000A. When controlling the free contact and indoor unit, check the number of set to be connected to the PLC.
General equipment can be operated, but the external output of indoor unit or operating output can not be operated.	No license is registered yet.	Execute the license registration of [PLC for general equipment control] to G-50A, and reset the power source of PLC.
	The G-50A to be controlled is not registered yet.	Check the number of G-50A to be controlled with the table setting tool. Further using TG-2000A, the set detail of the G-50A controlled by PLC for general equipment control is to be confirmed.

\* Refer to the PLC Instruction Manual for trouble not listed above.

Q&A regarding this PLC for general equipment software is given below.

**Table 6-2 PLC for general equipment software Q&A**

Question	Answer	Notes
What is the PLC's IP address?	The IP address is shown below as basic. PAC-YG21CDA: 192. 168. 1. 171 * A label indicating the IP address is attached to the memory card (ATA card).	*The IP address may differ according to the site.
Are there any precautions for connecting to an existing LAN?	A router should be connected to prevent unnecessary data so that the PLC does not receive large volumes of data.	
How do we check the software version?	Check with Step 2 for setting the integrated centralized control software TG-2000A general equipment.	(Caution) Never select the "Initial Request" button.
If the run/stop status input cannot be connected from the facility equipment, can it be left disconnected?	Use is possible without this input connected. Wiring that directly inputs (RUN/STOP state) the run and stop output on the PLC side can also be designed.	
Can the test run be executed without registering the license of PLC for general equipment control?	The license can be effectuated for test run only for one day with TG-2000A. For detail, refer to the instruction manual (site adjustment section) of TG-2000A.	
What is the method to upgrade the version from Ver.1 series?	Turn off the power source of the sequencer and remove the CPU module. Then replace with the PLC materials of Ver.2 series, and set up Chapter 4 by using the ATA card of Ver.2. At this time, the version of TG-2000A should also be upgraded.	*The CPU module is changed from Ver. 1. Q02CPU →Q02HCPU
When versioned up from Ver. 1, can the schedule set detail be continued to use?	The schedule data can not be continued to use. After upgrading to Ver. 2 series, transmit the schedule set detail being held by TG-2000A again.	*The CPU module is required to change also.
Can we use the USB cable for connection between the CPU module and the computer?	The USB cable can be used. In this case, you are kindly requested to replace the Serial with the USB in the "PC side I/F Serial setting" by using GX Developer.	
Is it possible to use GB-50A?	Yes, it is. Read this manual changing the word from "G-50A" to "G-50A/GB-50A".	Only Ver.2.90 or later of GB-50A is released.
The temperature setting by 1°F increment is necessary. Which combination makes it possible?	G-50A : Ver.3.00 or later Table Setting Tool : Ver.1.30 or later Indoor unit : Models with 1°F temperature /Remote controller setting function PAC-YG21CDA : Ver.2.20 or later	



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