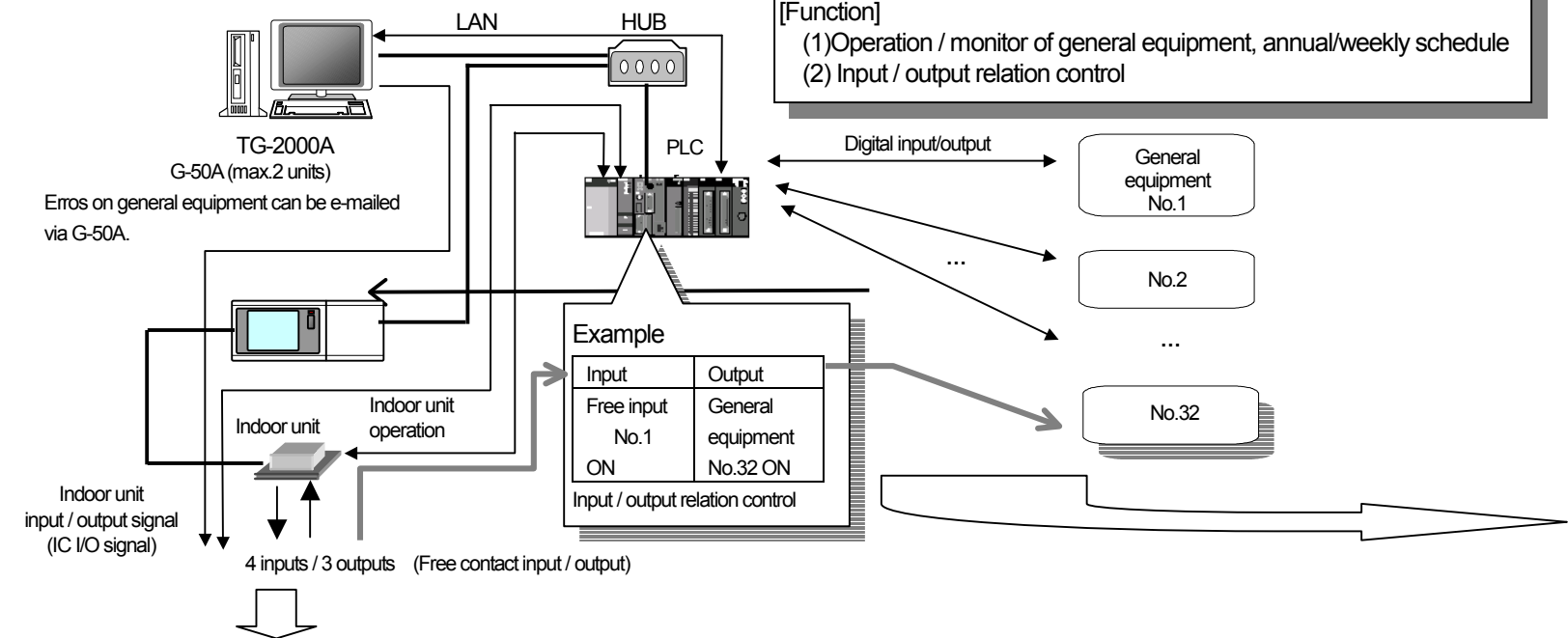# Simplified Instruction Manual of PLC Software for General Equipment

This Manual explains simply about the functional restriction and connection examples of PLC software for general equipment (PAC-YG21CDA Ver.2 Series).
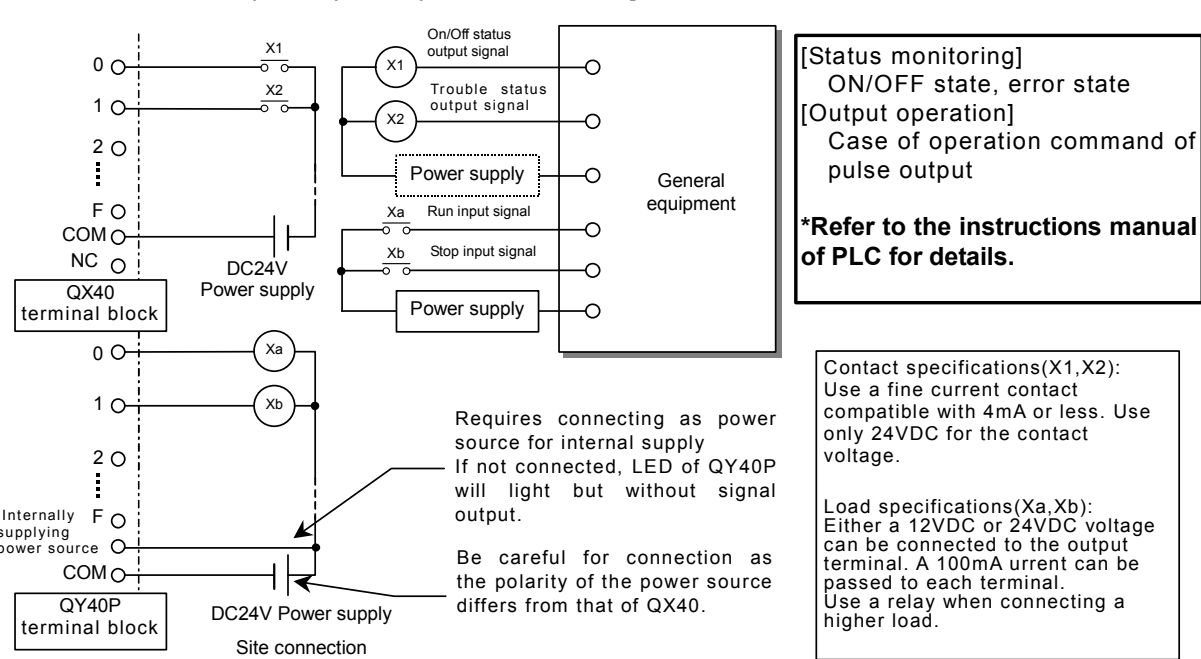
1. System configuration example

[Connecting number]
Max. 32 General Equipments(*1)/PLC   *1:PLC connection
Max. 2 G-50As/PLC

[Function]
(1)Operation / monitor of general equipment, annual/weekly schedule
(2) Input / output relation control

[PLC parts]

Item	Details	Notes
Manufacturer	Mitsubishi Electric Corporation	
CPU module	Q02HCPU	
ATA card	Q2MEM-8MBA	
Base unit	Q33B,Q35B,Q38B,Q312B	* Differs by system condition applied.
Power supply module	Q61P-A1(A2)	
Ethernet module	QJ71E71-100	*Not acceptable other than the left.
Input module	QX40	*High speed type QX40-S1 not acceptable.
Output module	QY40P	

LAN   HUB

TG-2000A
G-50A (max.2 units)
Erros on general equipment can be e-mailed via G-50A.

PLC

Digital input/output

General equipment No.1
No.2
...
No.32

Indoor unit operation
Indoor unit

Indoor unit input / output signal (IC I/O signal)

4 inputs / 3 outputs   (Free contact input / output)

Example

Input	Output
Free input	General
No.1	equipment
ON	No.32 ON
Input / output relation control	

[Circuit connection example of input / output modules of PLC]

On/Off status output signal
Trouble status output signal
Power supply
Run input signal
Stop input signal
Power supply
General equipment

QX40 terminal block
DC24V Power supply

IInternally supplying power source
QY40P terminal block
DC24V Power supply
Site connection

[Status monitoring]
ON/OFF state, error state
[Output operation]
Case of operation command of pulse output

*Refer to the instructions manual of PLC for details.

Requires connecting as power source for internal supply
If not connected, LED of QY40P will light but without signal output.

Be careful for connection as the polarity of the power source differs from that of QX40.

Contact specifications(X1,X2):
Use a fine current contact compatible with 4mA or less. Use only 24VDC for the contact voltage.

Load specifications(Xa,Xb):
Either a 12VDC or 24VDC voltage can be connected to the output terminal. A 100mA urrent can be passed to each terminal.
Use a relay when connecting a higher load.

[Connection example of input / output circuit of indoor unit]

CN51   [Usable input / output] CN51-2 port (Input)

Distant control board   Relay circuit   Adapter   Indoor unit control board
CN51

SW : Switch
L1 : Status lamp
L2 : Error lamp
X : Relay (a point of contact, fixed DC1mA)
Y, Z : Relay (Coil with fixed DC12V, a power consumption of 0.9W or less)

Maximum cable length is 10m

CN32   [Usable input/output] CN32-2 port (Input) CN32-3 port (Input)

Distant control board   Relay circuit   Adapter   Indoor unit control board
CN32

SW1 : Switch 1
SW2 : Switch 2
X, Y : Relay (a point of contact, fixed DC1mA)

Maximum cable length is 10m

Caution!
1.Wiring should be covered by insulation tube with supplementary insulation.
2.Use relays or switches with IEC or equivalent standard.
3. The electric strength between accessible parts and control circuit should have 2750V or more.

CN52   [Usable input / output] CN52-5 port (Input)   CN52-2 port (Output)
CN52-3 port (Output)   CN52-4 port (Output)

Distant control board   Relay circuit   Adapter   Indoor unit control board
CN52

X, Y, Z : Relay (Coil with fixed DC12V, a power consumption of 0.9W or less)

Maximum cable length is 10m

Distant control board   Relay circuit   Adapter   Indoor unit control board
CN52

SW1 : Switch 1
X : Relay (Coil with fixed DC12V, a power consumption of 0.9W or less)
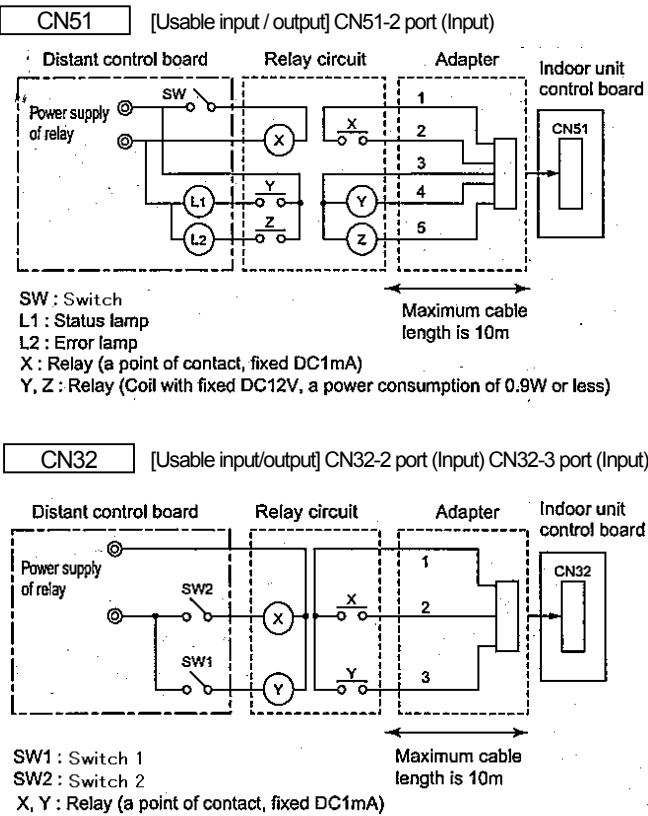
Maximum cable length is 10m
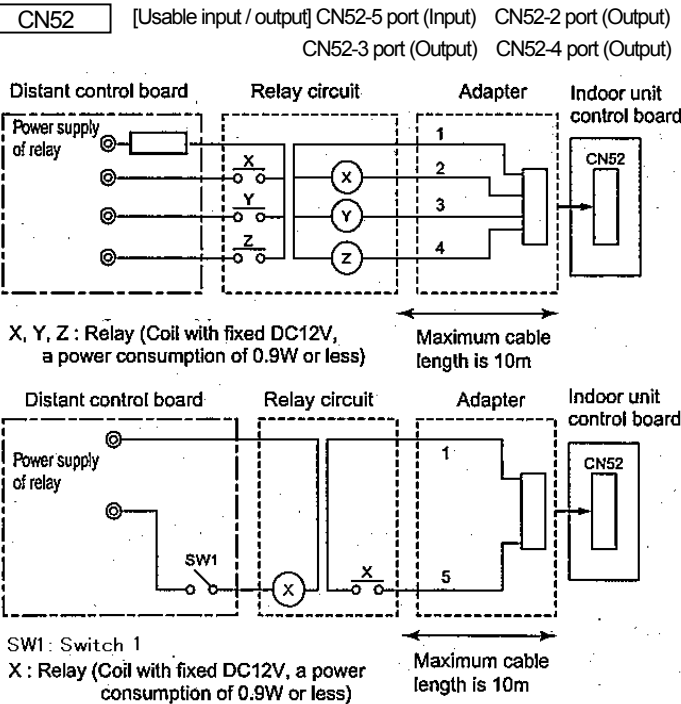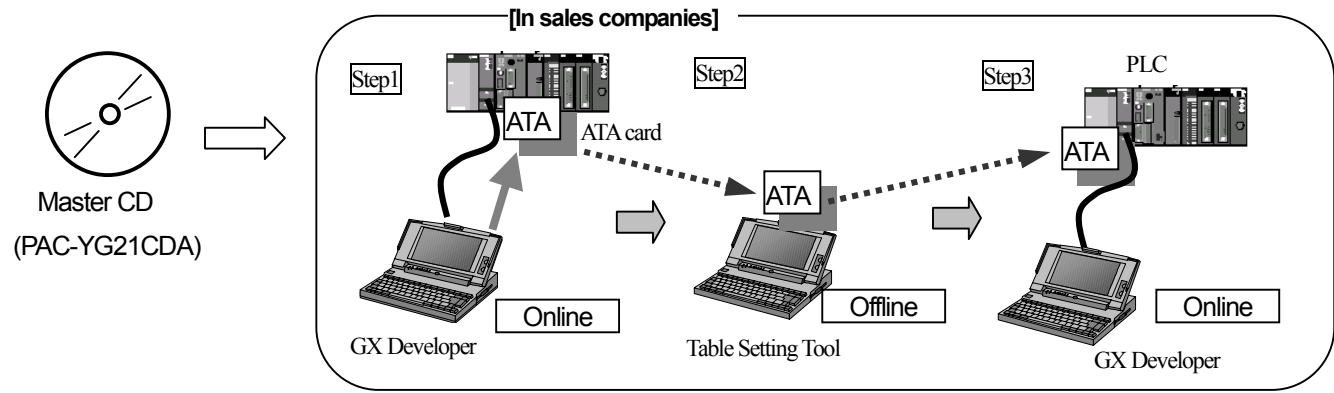
[Restrictions/Cautions]
- Do not use for the control of disaster prevention and security.
  (Don't use for applications that endanger human life.)
       Example: Fire shutter, burglar switch, etc.
- If equipment composing the system is not powered or in machine trouble, the entire system may not operate normally.
- At the initial starting-up like when powering G-50A or air conditioners, the system may not operate normally.
- In the input/output relating control, the output setting to the indoor unit by the status input of indoor unit is operationally prohibited (Don't set up).
- The input / output relating control may take a time until its action depending on the system status.
- The input / output relating control is only interlocked at the change of the input condition without providing interlocked control at all times The system applicable with the input/output relating control and local control or central control follows the latest control.

- To monitor/control the input/output of indoor units from PLC, set DIP-SW of the indoor unit as follows.
       SW1–9 : ON   SW1-10 : ON
- **The maximum output usable simultaneously by indoor unit counts for 4.**
  (Maximum of four use is possible among status output, error output, and free contact output.)

2. Installing PLC software for general equipment

The installation method of PLC software for general equipment (PAC-YG21CDA Ver.2) is outlined below.

[Required materials]

Item	Details	Notes
Computer (PC)	*1	*1:Refer to manual (WT04104X**,WT04265X**,WT04266X**)
Connection Cable	QC30R2	*Cable exclusive for PC-PLC connection.
PC card adapter	Q2MEM-ADP	*For confirming of the writing details to ATA card.
Master CD	PAC-YG21CDA's CD	*Contains Manual, PLC software and table setting tool
Tool	GX developer	*Ver.8 or more (English version)
	Table Setting Tool	* Located in Master CD
PLC	*2	*2:Refer to chapter 1 and manual(WT04104X**)

[Installation procedure]

Step 1 : Writing of PLC software in ATA card → Refer to manual (WT04266X01 or later)

Step 2 : Setting of PLC function and input/output relation table → Refer to manual (WT04265X01 or later)

Step 3 : Installation of PLC and setting up of PLC software → Refer to manual (WT04104X02 or later)

[Initial setting at system installation]

Step 1 : Register the license of [PLC for general equipments] to G-50A.

Step 2 : Execute initial setting from TG-2000A.

"PLC for General Equipment set-up", "Time set-up", etc.

Step 3 : Make the setting for general equipment error mail from initial setting WEB. (when using the general equipment error mail function)
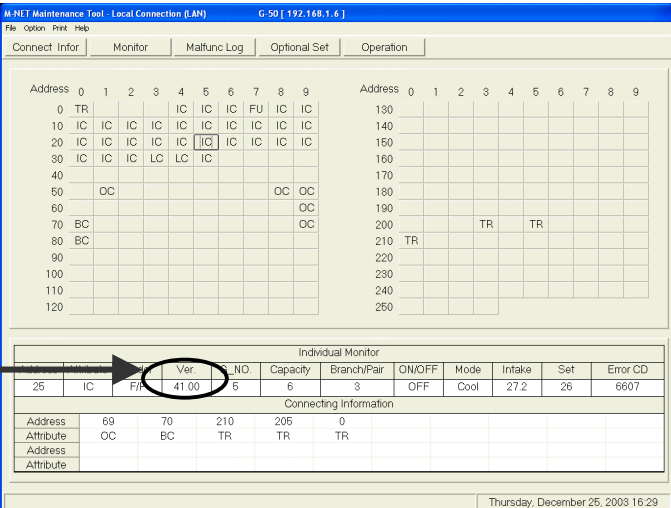
3. Applicable models of indoor unit for free contact

The indoor units for which the input/output of the indoor unit can be used by PLC for general equipment are as follows.

Indoor unit using R410A

Indoor unit Ver.33 or later using R407C

Check the version with the maintenance tool.

Check the Ver. Column.

4. Re: License

(1) For G-50A, the license registration of "PLC for general equipments" is required.

Without the license registration to G-50A, the control from PLC to indoor units can not be performed.

Obtain the license of "PLC for general equipments", and register the license on WEB screen of G-50A.

(2) Action can be confirmed by the test run setting.

Applying the test run setting to PLC from TG-2000A allows normal operation for one day only (from the time set with test run to AM2:20) without registering the license of PLC to G-50A.

In this case, the IP address setting of G-50A to PLC from TG-2000A is required as same as in the normal setting.

* With TG-2000A, operating/monitoring control of general equipment(*1) can not be performed if the formal license of "PLC for general equipments" is not registered to G-50A.   *1: General equipment of PLC connection and indoor unit connection

License registration and PLC action

Test run setting from TG-2000A	First G-50A license	Second G-50A license	PLC action
No test run	No	No	No action
Test run set	No	No	Normal action until AM 2 :20 for 2 G-50As
No test run	Yes	No	Normal action for fist G-50A only
No test run	No	Yes	Normal action for second G-50A only
No test run	Yes	Yes	Normal action for 2 G-50As
Test run set	Yes	Yes	Normal action for 2 G-50As
Test run set	Yes	No	Normal action for first G-50A only / Normal action for second G-50A until AM 2:20
Test run set	No	Yes	Normal action for second G-50A only / Normal action for first G-50A until AM 2:20

[Caution about PLC]

(1) The input/output relation control is only interlocked at the change of the input condition without providing interlocked control at all times. The schedule control is that only for the time of change.

(2) Based on the G-50A number setting in the [SET.CSV] file saved in ATA card, PLC communicates with G-50A.

As no communication with G-50A is made when the setting is 0 (set), the input/output relation control can not be operated.

(3) Without setting of the IP address of G-50A to PLC from TG-2000A, PLC does not communicate with G-50A even though the number of G-50A is being set to SET.CSV. This setting is once executed, the IP address of G-50A is memorized and acts accordingly thereafter.

(4) If the license of PLC is not registered to G-50A, PLC can not control indoor units even the above setting was normally made.

(5) Use G-50A Ver2.70 or later. When using the general equipment error mail function, use V2.90 or later.