NAiS

Programmable Operator Terminal

GV42/52/62

Hardware Manual

■ **Applicable Product**

- GV42C
- GV52S
- GV62S

Record of Revisions

Reference numbers are shown at the bottom left corner on the back cover of each manual.

Printing Date	Reference No.	Revised Contents
April, 2003	ARCT1F375	First edition

Preface

Thank you for selecting the GV.

For correct set-up of GV, you are requested to read through this manual to understand more about the product.

For more information about the GV42/52/62, refer to the following related manuals.

Manual Name	Contents	Reference No.
Reference Manual (Operation)	The GVWIN operating procedure is described.	ARCT1F377E
Reference Manual (Function)	The functions and instructions of the GV series are explained.	ARCT1F376E

For further details about PLCs (programmable logic controllers), see the manual attached to each PLC.

Notes:

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4. All other company names or product names are trademarks or registered trademarks of their respective holders.
5. This manual is intended to give accurate information about GV42/52/62 hardware. If you have any questions, please contact your local distributor.

Notes on Safe Use of GV

In this manual, you will find various notes categorized under the following levels with the signal words “DANGER,” and “CAUTION.”

DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and could cause property damage.

Note that there is a possibility that the item listed with **CAUTION** may have serious ramifications.

DANGER

- Never use the input function of GV for operations that may threaten human life or to damage the system, such as switches to be used in case of emergency. Please design the system so that it can cope with malfunction of a touch switch.
- Turn off the power supply when you set up the unit, connect cables or perform maintenance and inspection. Failure to do so could cause an electric shock or damage to the unit.
- Never touch any terminals while the power is on. An electric shock may occur.
- You must put a cover on the terminals on the unit when you turn the power on and operate the unit. Without the terminal cover in place, an electric shock may occur.
- The liquid crystal in the LCD panel is a hazardous substance. If the LCD panel is damaged, never swallow the leaked liquid crystal. If the liquid crystal spills on your skin or clothing, use soap and wash off thoroughly.

⚠CAUTION

[Notes on System Design]

- Never bundle control cables and input/output cables with high-voltage and large-current carrying cables such as power supply cables. Keep these cables at least 200 mm away from the power supply or high-voltage cables. Otherwise, malfunction may occur due to noise.
- For use in a nuclear energy facility, or other facility of such official importance, please consult your local distributor.

[Notes on Installation]

- Operate (or store) GV under the conditions indicated in this manual and related manuals. Failure to do so could cause fire, malfunction, physical damage or deterioration.
- Understand the following environmental limits for use and storage of GV. Otherwise, fire or damage to the unit may result.
  - Avoid locations where there is a possibility that water, corrosive gas, flammable gas, solvents, grinding fluids or cutting oil can come into contact with the unit.
  - Avoid high temperature, high humidity, and outside weather conditions, such as wind, rain or direct sunlight.
  - Avoid locations where excessive dust, salt, and metallic particles are present.
  - Avoid installing the unit in a location where vibration or physical shock may be transmitted.
- Equipment must be correctly mounted so that the main terminal of GV will not be touched inadvertently.
- Tighten the GV mounting screws to the specified torque. Excessive tightening may distort the panel surface. Loose tightening may cause GV to come off, malfunction or be short-circuited.
- Tighten terminal screws on the power input terminal block equally to a torque of 0.5 N•m.
- Check the appearance of GV when it is unpacked. Do not use the unit if any damage or deformation is found.
- GV has a glass screen. Do not drop or give physical shock to the unit.

[Notes on Cable Connection]

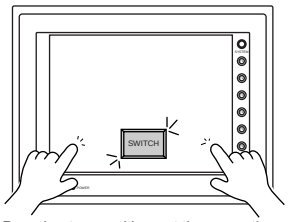
- Connect the cables correctly to the terminals of GV in accordance with the specified voltage and wattage. Over-voltage, over-wattage or incorrect cable connection could cause fire, malfunction or damage to the unit.
- Be sure to establish a ground of GV. The FG terminal must be used exclusively for the unit with the level of grounding resistance less than 100Ω.
- Prevent any conductive particles from entering into GV. Failure to do so may lead to fire, damage or malfunction.

⚠CAUTION

[Notes on Maintenance and Operation]

- Matsushita Electric Works , Ltd. is not responsible for any damages resulting from repair, overhaul or modification of GV that was performed by an unauthorized person.
- Do not use thinners for cleaning because they may discolor the GV surface. Use alcohol or benzine commercially available.
- Do not use a sharp-pointed tool when pressing a touch switch.
- Only experts are authorized to set up the unit, connect the cables or perform maintenance and inspection.
- GV is equipped with a lithium battery. Lithium batteries contain combustible material such as lithium or organic solvent. Mishandling may cause heat, explosion or ignition resulting in fire or injury. Read this manual and related manuals carefully and handle the lithium battery correctly as instructed.
- If a data receive error occurs when GV and the counterpart (PLC, temperature controller, etc.) are started at the same time, read the manual for the counterpart unit and handle the error correctly.
- Switch resolution of the GV series is determined by the analog-type resistance film. Do not press two or more positions on the screen at the same time.

  If two or more positions are pressed at the same time, the switch located between the pressed positions activates. Please take note of this.



Pressing two positions at the same time activates the switch in the center.

[Notes on Disposal]

- At the time of disposal, GV must be treated as industrial waste.

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Chapter 2 GV42/52/62 Operations

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Chapter 5 Connection to PLCs

Hardware Specifications

1. Features

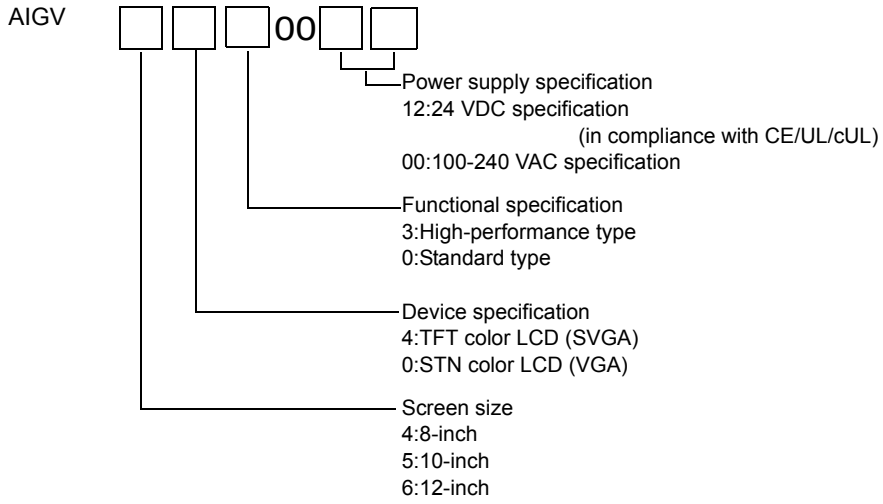
The GV42/52/62 inherits and heightens the features of the GV40/50/60 as described below.

1. 32k-color Display
   32,768-color display makes colorful expression possible. Bitmap files are clearly displayed in brilliant colors.
2. CF Card Interface as Standard
   The CF card can be used for saving multiple screen data, sampling data, recipe data, hard copy images, and other various usages. Large-sized video capture images, JPEG or WAV files can be saved.
3. Connector for 10BASE-T (for high-performance type only)
   This connector enables Ethernet connection with a host computer. High-speed communications are possible via Ethernet for uploading/downloading screen data and reading/writing data from/to the server.
4. Video Display Upgraded (for high-performance type only, optional)
   The video display function is upgraded drastically to allow: saving the current video screen, taking snapshots of multiple exposures, superimposing a semi-transparent operation screen on a video display, showing four video channels at the same time, and so on.
5. Web Server Function (for GV52/62 only)
   The GV52/62 screens are converted into HTML files and displayed on the WWW browser using the Ethernet.
6. Animation Function
   The animation function enables representation of the field close to the real image.
7. Play of WAV File (for GV52/62 only, optional)
   WAV files can be played with ease simply by connecting the option unit to the speaker. It is possible to use sound for notifying the field conditions, such as an occurrence of an error. The monitoring operator can work from a distance.

2. Models and Peripheral Equipment

GV Models

The model name consists of the following information.

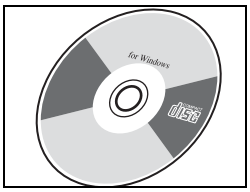


The following models are available.

Series and Size	Model Name	Specifications	Remarks
GV42C 7.7-inch	AIGV4020012	STN color, 640 × 480 dots, standard, DC power supply	Compliant with CE/UL/cUL
GV52S series 10-inch	AIGV5430000	TFT color, 800 × 600 dots, high-performance, AC power supply	
	AIGV5430012	TFT color, 800 × 600 dots, high-performance, DC power supply	Compliant with CE/UL/cUL
GV62S series 12-inch	AIGV6430000	TFT color, 800 × 600 dots, high-performance, AC power supply	
	AIGV6430012	TFT color, 800 × 600 dots, high-performance, DC power supply	Compliant with CE/UL/cUL

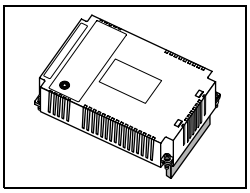
Peripheral Equipment

The following options are available for using the GV42/52/62 more effectively.



GVWIN (drawing software: English version)

Application software for editing display data for the GV series. (Windows98/NT4.0/Me/2000/XP compatible) The GV42/52/62 is supported with ver. 2.00 and later.



AIGV88xx (option unit)

(* This option unit can only be mounted on the GV52/62 model.)

AIGV880 → Video input + sound output unit

Video images can be displayed on GV52/62 directly. WAV files can be played at an external speaker.

AIGV881 → RGB input + sound output unit

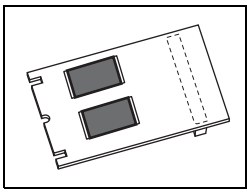
Screen images displayed on a CRT display can be shown on GV52/62. WAV files can be played at an external speaker.

AIGV882 → RGB output + sound output unit

Screen images displayed on GV52/62 can be shown on a CRT display. WAV files can be played at an external speaker.

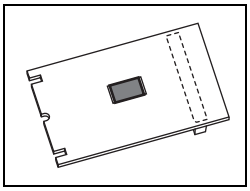
AIGV883 → Sound output unit

WAV files can be played at an external speaker.



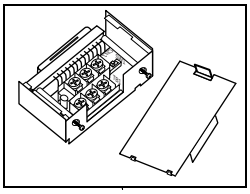
AIGV824 (FLASH memory cassette)

Extension print circuit board to extend the memory for screen data. The capacity of FLASH memory is 8 Mbyte.



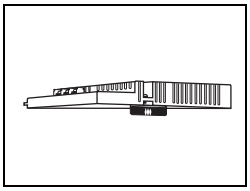
AIGV825 (SRAM cassette)

Extension print circuit board to back-up the memory for sampling data, GV42/52/62 internal memory and memo pad. The capacity of an SRAM cassette is 512 kbyte.



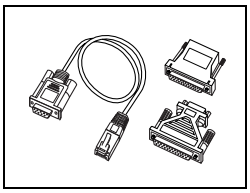
AIGV830 (terminal converter)

Used for connection between the GV42/52/62 and a PLC at the RS-422/485 terminal block.



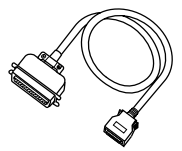
AIGV833 → Ethernet

Used for communications with each network. This unit enables connection of multiple GV42/52/62 to a single PLC. Since other devices on the same network can be connected, it brings about the reduction in costs of the whole system.



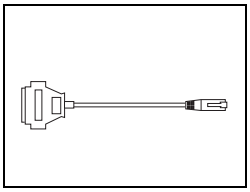
AIGV8103 (screen data transfer cable) 3 m

Used for connection between the GV42/52/62 and a personal computer, or a personal computer and the card recorder (CREC).



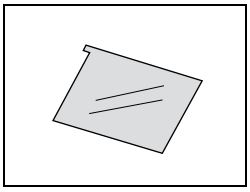
AIGV890 (printer cable) 2.5 m

Used for connection between the GV42/52/62 and a printer.



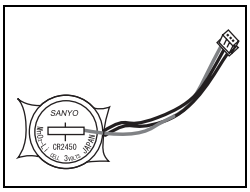
AIGV895 (MJ-to-D-sub conversion cable) 0.3 m under development

Used for connection between the GV42/52/62 and a PLC via PLC2Way.

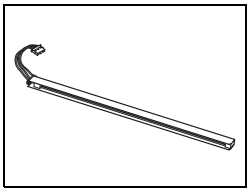


AIGV6833 (for 12.1inch protective sheet)
AIGV5834 (for 10.4inch protective sheet)
AIGV4835 (for 7.7inch protective sheet)

This anti-glare sheet protects the operation panel surface.
(5 sheets/set)



AIGV841 (battery for replacement)
Replacement lithium battery for the GV42/52/62.

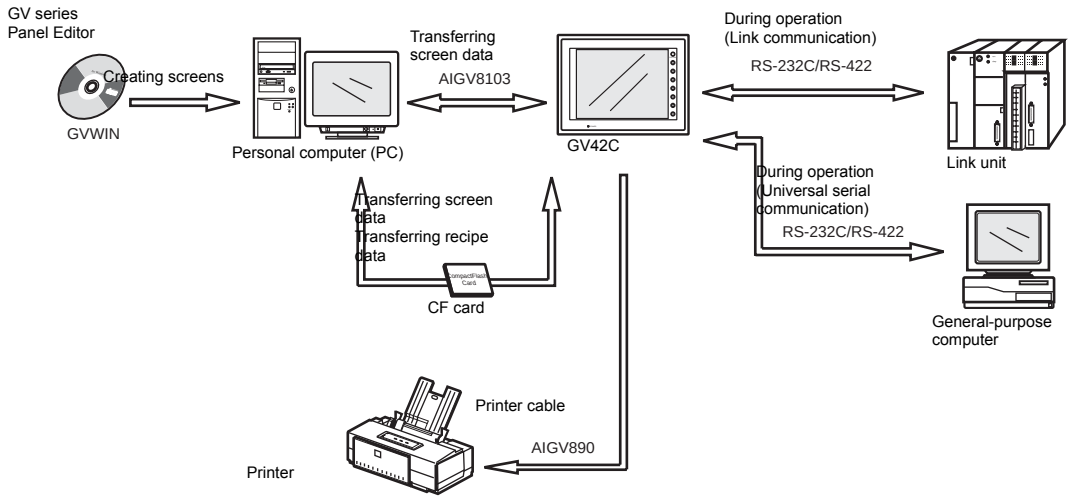


AIGV6801 (for GV62S/60T backlight for replacement)
AIGV5801 (for GV52S/50S backlight for replacement)
AIGV5802 (for GV50T backlight for replacement)
AIGV5803 (for GV52C/50C backlight for replacement)
AIGV4800 (for GV42C/40C backlight for replacement)
Replacement backlight parts for the GV42/52/62.

3. System Composition

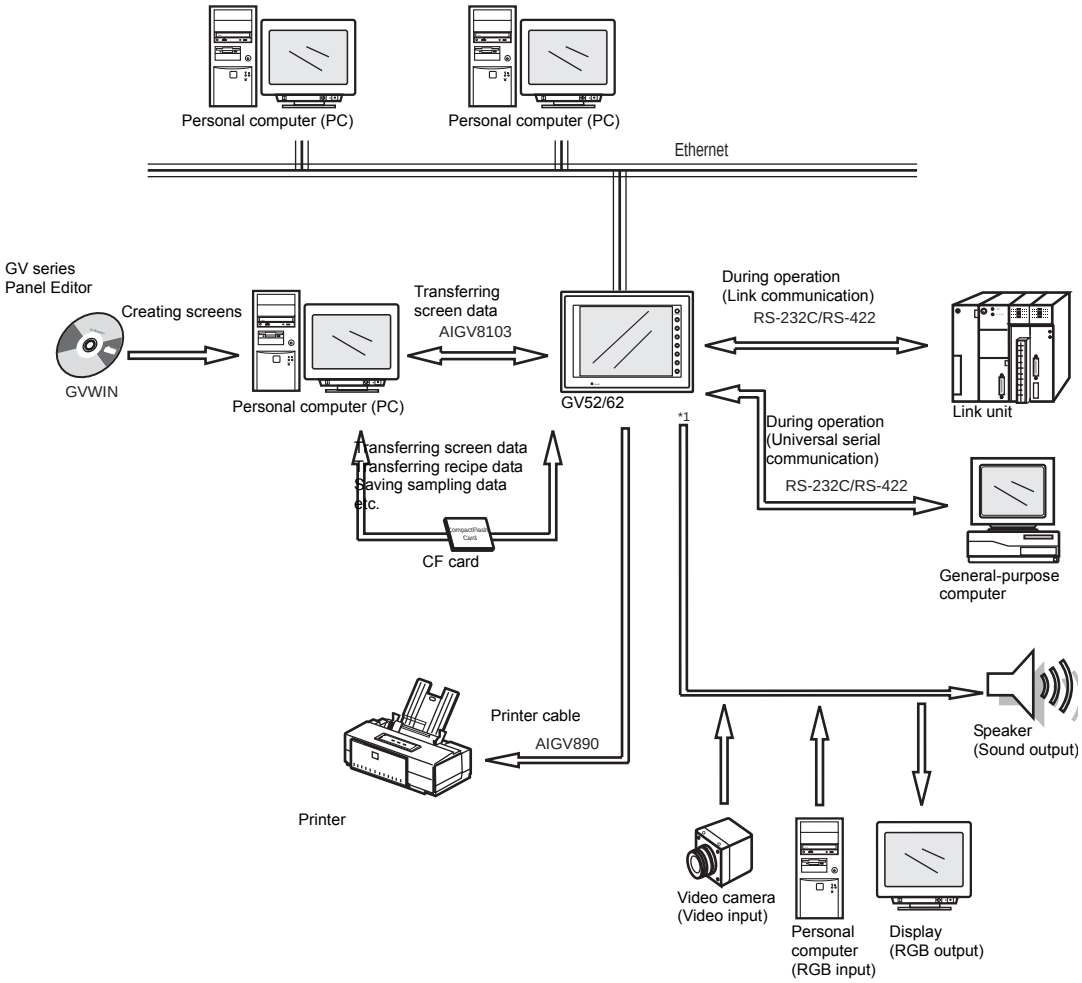
System Composition of GV42C

The following illustration shows possible system configurations using the GV42C.



System Composition of GV52/62

The following illustration shows possible system configurations using the GV52/62.



*1 The option unit (AIGV88x) is required.

4. Specifications

General Specifications

Item \ Model		GV42C		GV52S		GV62S	
		DC power supply		AC power supply	DC power supply	AC power supply	DC power supply
Power Supply	Rated Voltage	24 VDC		100 - 240 VAC	24 VDC	100 - 240 VAC	24 VDC
	Permissible Range of Voltage	24 VDC ±10%		100 - 240 VAC ±10%	24 VDC ±10%	100 - 240 VAC ±10%	24 VDC ±10%
	Permissible Momentary Power Failure	Within 1 ms		Within 20 ms	Within 1 ms	Within 20 ms	Within 1 ms
	Power Consumption (Maximum Rating)	GV42/52/6208C 15 W or less	GV42/52/6208S/iS 22 W or less	60 VA or less	30 W or less	60 VA or less	30 W or less
	Rush Current	25 A, 0.7 ms		For 100 VAC: 16 A, 6 ms For 200 VAC: 32 A, 7 ms	30A, 1 ms	For 100 VAC: 16 A, 6 ms For 200 VAC: 32A, 7 ms	30 A, 1 ms
	Withstand Voltage	DC external terminals to FG: 500 VAC, 1 minute		AC external terminals to FG: 1500 VAC, 1 minute	DC external terminals to FG: 500 VAC, 1 minute	AC external terminals to FG: 1500 VAC, 1 minute	DC external terminals to FG: 500 VAC, 1 minute
Insulation Resistance		500 VDC, 10 MΩ or above					
Physical Environment	Ambient Temperature	0°C to +50°C					
	Storage Ambient Temperature	−10°C to +60°C					
	Ambient Humidity	85%RH or less (without dew condensation)					
	Solvent Resistance	No cutting oil or organic solvent attached to the unit					
	Atmosphere	No corrosive gas or conductive dust					
Mechanical Working Conditions	Vibration Resistance	Vibration frequency:10 to 150 Hz, Acceleration: 9.8 m/s^2 (1.0G) Single amplitude:0.075 mm, X, Y, Z: 3 directions for one hour					
	Shock Resistance	Pulse shape:Sine half wave Peak acceleration:147 m/s^2 (15G), X, Y, Z: 3 directions six times each					
Electrical Working Conditions	Noise Resistance	1500Vp-p (pulse width 1 μs, rising time: 1 ns)					
	Static Electricity Discharge Resistance	Compliant with IEC1000-4-2, contact: 6 kV, air: 8 kV					
Mounting Conditions	Grounding	Grounding resistance: less than 100 Ω					
	Structure	Protection structure:front panel compliant with IP65 (when using gasket) rear case: compliant with IP20 Form:in a body Mounting procedure:inserted in a mounting panel					
	Cooling System	Cooling naturally					
	Weight (kg)	Unit: approx. 1.5		Unit: approx. 2.4		Unit: approx. 2.7	
	Dimensions W × H × D (mm)	233 × 178 × 66.1		303.8 × 231.0 × 72.0		326.4 × 259.6 × 72.0	
	Panel Cut-out (mm)	220.5 +0 × 165.5 +0		289.0 +0 × 216.2 +0		313.0 +0 × 246.2 +0	
Case Color		Black (Munsell N2.0)					

Model	GV42C	GV52S	GV62S
Material	PC/PS resin (Tarflon)		

Display Specifications

Model / Item	GV42C	GV52S	GV62S
Display Device	STN color LCD	TFT color LCD	
Effective Display Area	7.7-inch	10.4-inch	12.1-inch
Colors	128 colors +16-color blinks	32,768 colors +16-color blinks	
Resolution W × H (dots)	640 × 480	800 × 600	
Dot Pitch W × H (mm)	0.246 × 0.246	0.264 × 0.264	0.3075 × 0.3075
Brightness (cd/m^2)	200	280	350
Contrast Ratio	25 : 1	300 : 1	350 : 1
Angle of Vertical Visibility (°)	+40, –30	+35, –45	+40, –45
Angle of Horizontal Visibility (°)	±50	±50	±55
Backlight	Cold cathode rectifier (exchangeable by users)		
Backlight Average Life *1	Approx. 40,000 h	Approx. 50,000 h	
Backlight Auto OFF Function	Always ON, random setting		
Contrast Adjustment	Provided *2	Not provided	
Brightness Adjustment	Not provided	3 levels *2	
Surface Sheet	Material: Polycarbonate, 0.3 mm thick		
POWER Lamp	ON when the power is supplied		

*2 When the normal temperature is 25°C, and the surface luminance of the display is 50% of the initial setting.
*3 Adjustable with function switches

Touch Panel Specifications

Item	Specifications
Method	Analog resistance film type
Switch Resolution	1024 (W) × 1024 (H)
Mechanical Life	One million activations or more
Surface Treatment	Hard-coated, anti-glare treatment 5%

Function Switch Specifications

Item	Specifications
Number of Switches	8
Method	Pressure sensitive
Mechanical Life	One million activations or more

Interface Specifications

Item	Specifications
Serial Interface for PLC Connection (D-sub 25-pin, female)	RS-232C, RS-422/485 Asynchronous type Data length:7, 8 bits Parity:even, odd, none Stop bit:1, 2 bits Baud rate: 4800, 9600, 19200, 38400, 57600, 76800, 115 kbps
Serial Interface 1, 2 for Screen Data Transfer/External Connection (Modular jack, 8-pin)	RS-232C, RS-422/485 (2-wire connection) Barcode, Multi-link 2,Temperature control network/PLC2Way, GV-link, etc.
Printer Interface for Printer Connection	Compliant with Centronics, half-pitch 36-pin NEC:PR201 EPSON:ESC/P-J84, ESC/P super function, ESC/P24-J84 CBM292/293 printer *1, HP PCL Level 3 Barcode printer MR400
CF Card Interface	Compliant with CompactFlash™
10BASE-T for Ethernet Connection (Standard with GV42/52/62i)	Compliant with IEEE802.3 Baud rate:10 Mbps Cables: 100 Ω unshielded twist-pair, Category 5, maximum length = 100 m

*4 The CBM292/293 printer cannot print screen hard copies.

Clock and Backup Memory Specifications

Item	Specifications
Battery Specification	Coin-type lithium primary cell
	Battery type: Sanyo CR2450-CN21
Backup Memory	SRAM 64 kbyte
Backup Time Period	5 years (ambient temperature at 25°C)
Battery Voltage Drop Detection	Provided (internal memory allocated)
Calendar Accuracy	Monthly deviation ±90 sec (ambient temperature at 25°C)

Drawing Environment

Item	Specifications
Drawing Method	Exclusive drawing software
Drawing Tool	Name of exclusive drawing software:GVWIN (Ver. 2.00 and later) Personal computer:Pentium II 450 MHz or above recommended OS:Windows98/Me/NT Ver. 4.0/2000/XP Capacity of hard disk required:Free space of approx. 460 Mbyte or more (For minimum installation: approx. 105 Mbyte) Display:Resolution 800 × 600 or above recommended

Display Function Specifications

Item		Specifications				
Display Language*		Japanese	English/ European	Chinese	Chinese (Simplified)	Korean
Characters	1/4-size 1-byte	ANK code	Latin 1	ASCII code	ASCII code	ASCII code
	2-byte 16-dot	JIS #1, #2 level	–––	Chinese	Chinese (simplified)	Hangul (without Kanji)
	2-byte 32-dot	JIS #1 level	–––	–––	–––	–––
Character Size		1/4-size:8 × 8 dots 1-byte:8 × 16 dots 2-byte:16 × 16 dots or 32 × 32 dots Enlarge:W: 1 to 8 times, H: 1 to 8 times				
Number of Displayable Characters		Resolution	640 × 480		800 × 600	
		1/4-size	80 columns × 60 lines		100 columns × 75 lines	
		1-byte	80 columns × 30 lines		100 columns × 37 lines	
		2-byte	40 columns × 30 lines		50 columns × 37 lines	
Characters Properties		Display properties:Normal, reverse, blink, bold, shadow Colors:32,768 colors + blink 16 colors (GV42C: 128 colors + blink 16 colors)				
Graphics		Lines:Line, continuous line, box, parallelogram, polygon Circles:Circle, arc, sector, ellipse, elliptical arc Others:Tile patterns				
Graphic Properties		Line types:6 (thin, thick, dot, chain, broken, two-dot chain) Tile patterns:16 (incl. user-definable 8 patterns) Display properties:Normal, reverse, blink Colors:32,768 colors + blink 16 colors (GV42C: 128 colors + blink 16 colors) Color selection:Foreground, background, boundary (line)				

* Refer to the Reference Manual (Operation) for HK fonts.

Function Performance Specifications

Item		Specifications
Screens		Max. 1024
Screen Memory		Flash memory: Appox. 4,992 kbyte (varies depending on the font)
Switches		768 per screen
Switch Actions		Set, reset, momentary, alternate, to light (Possible to press a function switch and a display switch at the same time)
Lamps		Reverse, blink, exchange of graphics 768 per screen
Graphs		Pie, bar, panel meter and closed area graph:No limitation within 256 kbyte per screen *1 Statistics and trend graphs:Max. 256 per layer *2
Data Setting	Numerical Data Display	No limitation within 256 kbyte per screen *1
	Character Display	No limitation within 256 kbyte per screen *1
	Message Display	Resolution:640 × 480, max. 80 characters (1-byte) 800 × 600, max. 100 characters (1-byte) No limitation within 256 kbyte per screen *1
Sampling		Sampling display of buffer data (Constant sample, bit synchronize, bit sample, relay sample, alarm function)
Graphic Library		Max. 1024
Multi-Overlaps		Max. 1024
Data Blocks		Max. 2560
Messages		Max. 6144 lines
Patterns		Max. 1024
Macro Blocks		Max. 1024
Page Blocks		Max. 1024
Direct Blocks		Max. 1024
Screen Blocks		Max. 1024
Data Sheets		Max. 1024
Screen Library		Max. 1024
Animation (Frames)		Max. 1023
Temperature Control Network/ PLC2Way Table		Max. 32
Time Display		Time display function: provided
Hard Copy		Screen hard copy function: provided
Buzzer		Buzzer: provided, 2 sounds (short beep, long beep)
Auto OFF Function		Always ON, random setting
Self-diagnostic Function		Switch self-test function Communication parameter setting check function Communication check function

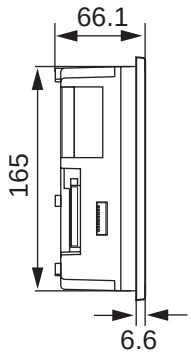
*5 The number of setting memory locations is limited to 1024 per screen.
*6 Layer: 4 per screen (base + 3 overlaps)

5. Dimensions and Panel Cut-out

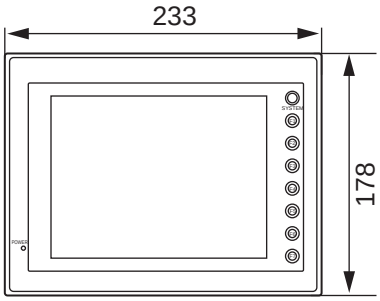
GV42C External View and Dimensions

(Unit: mm)

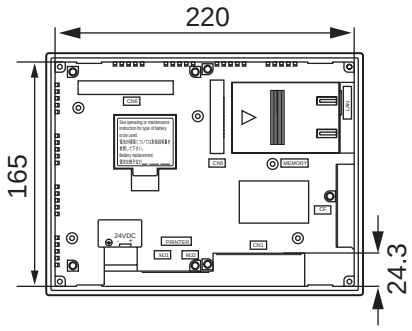
- Side View



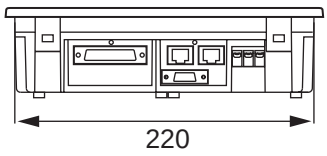
- Front View



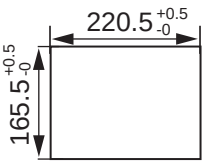
- Rear View



- Bottom View



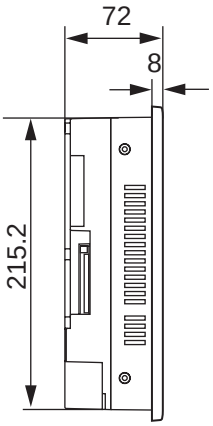
- Panel Cut-out Dimensions



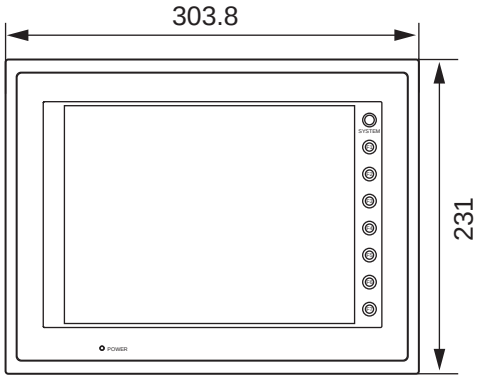
GV52S External View and Dimensions

(Unit: mm)

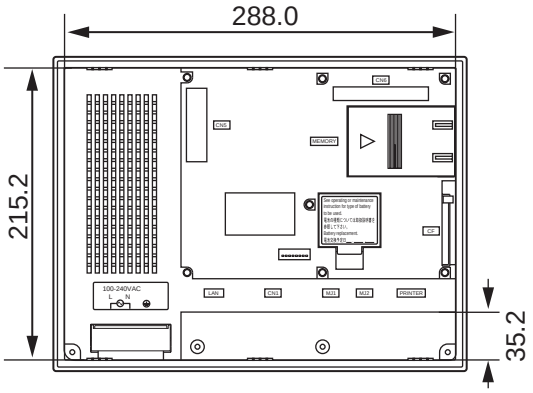
- Side View



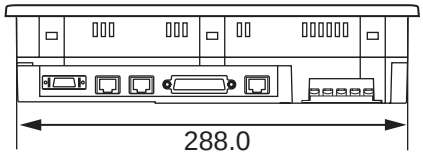
- Front View



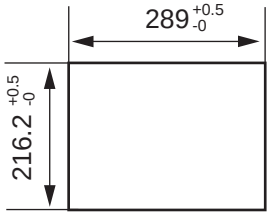
- Rear View



- Bottom View



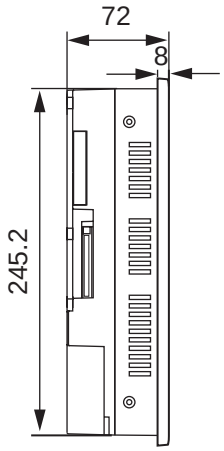
- Panel Cut-out Dimensions



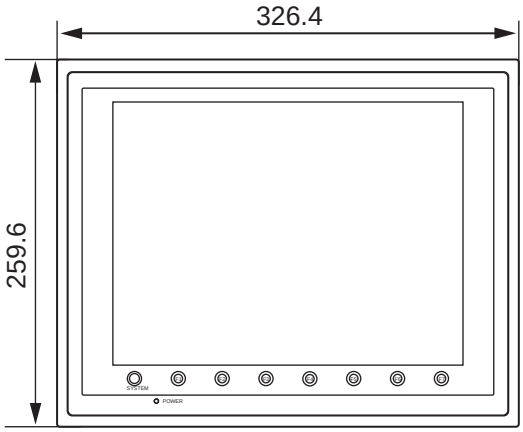
GV62S External View and Dimensions

(Unit: mm)

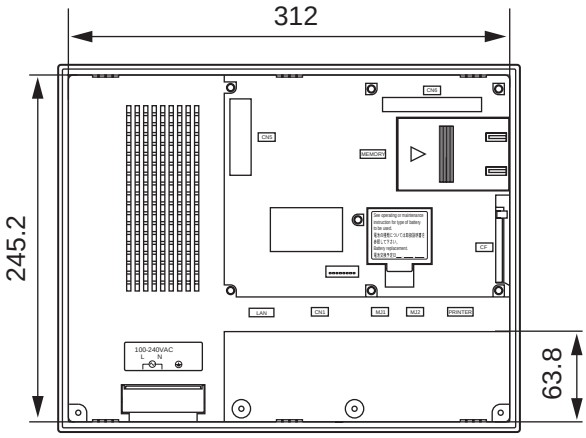
- Side View



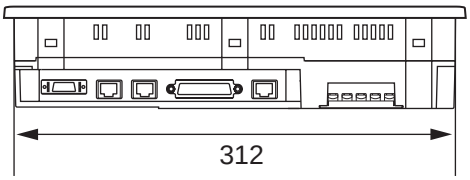
- Front View



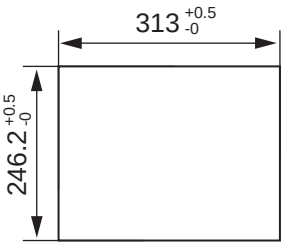
- Rear View



- Bottom View

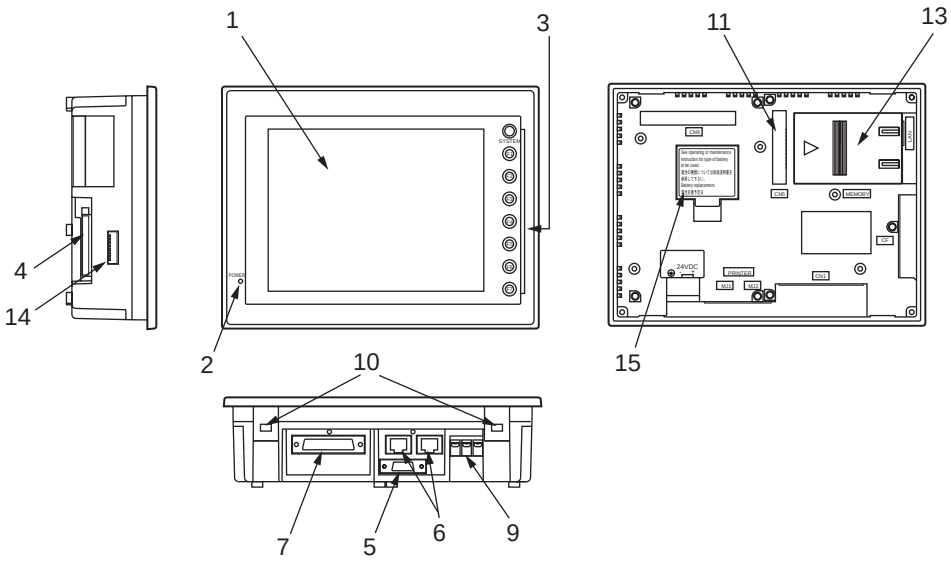


- Panel Cut-out Dimensions

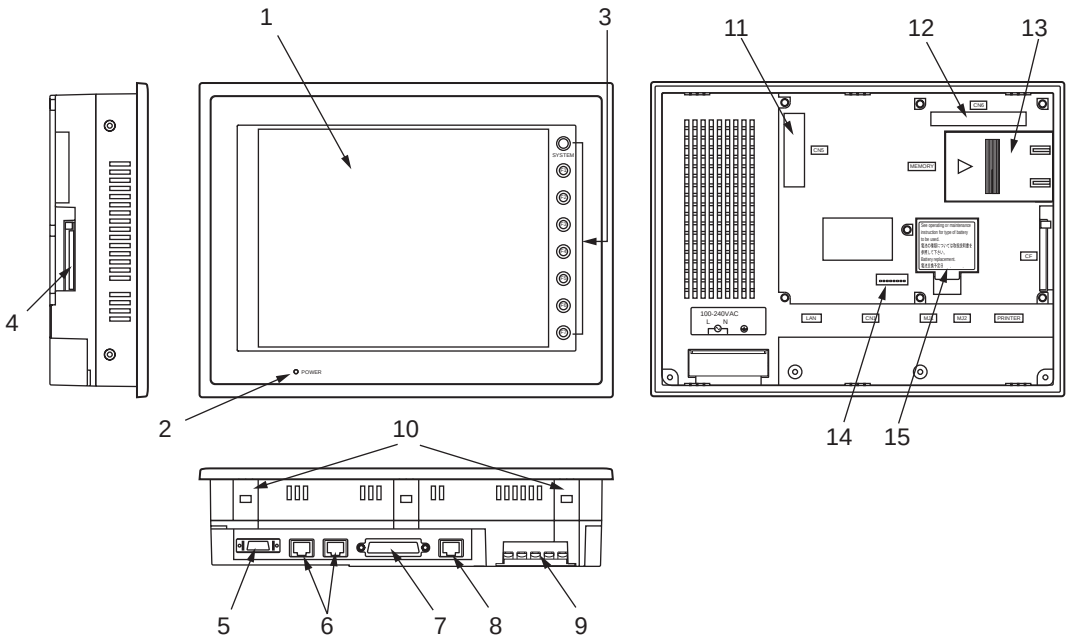


6. Names and Functions of Components

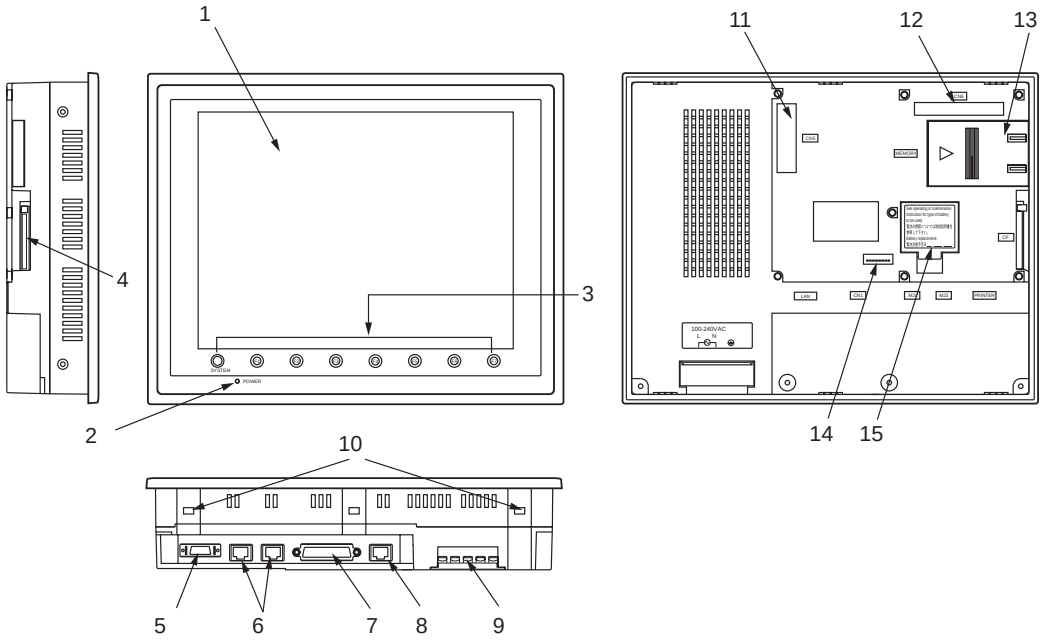
GV42C



GV52S



GV62S



1. Display
   This is the display unit.

2. Power Lamp (POWER)
   Illuminates (green) when the power is supplied to the GV42/52/62.

3. Function switches
   Used for RUN /STOP selection, contrast adjustment, brightness adjustment and backlight ON/OFF (according to the setting). These switches can be used as user switches in the RUN mode.

4. CF card connector (CF)
   This is the connector where the CF card is inserted.

5. Printer connector (PRINTER)
   Used for printer connection.

6. Modular jack connectors (MJ1, MJ2)
   Used for screen data transfer and connection with temperature controller, barcode reader, etc.

7. PLC communication connector (CN1)
   Used for connection between the GV42/52/62 and a PLC or an external control unit (computer, custom controller, etc).

8. 10BASE-T connector (LAN) ..... GV52/62 only
   Used for Ethernet connection.

9. Power input terminal block
   Supplies the power to the GV42/52/62 (100 to 240 VAC, 24 VDC)

10. Mounting holes
    Used for inserting fixtures when securing the GV42/52/62 to the mounting panel.

11. Communication interface unit connector (CN5)
    This is the connector where the communication unit (AIGV83x, optional) for CC-Link, Ethernet or PROFIBUS-DP is mounted.

12. Option unit connector (CN6).....GV52/62 only
    This is the connector where the option unit (AIGV88x) for video, sound, RGB IN or RGB OUT is mounted.

13. Add-on memory connector (MEMORY)
    This is the connector where the optional FLASH memory cassette (AIGV824) or SRAM cassette (AIGV825) is mounted.

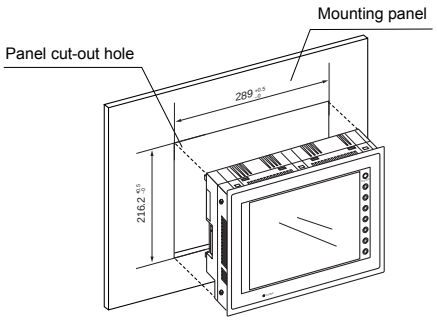
14. DIP switch
    8-bit DIP switch used for setting terminating resistance of the CN1 signal line and the MJ1/MJ2 RS-422/485 signal line.

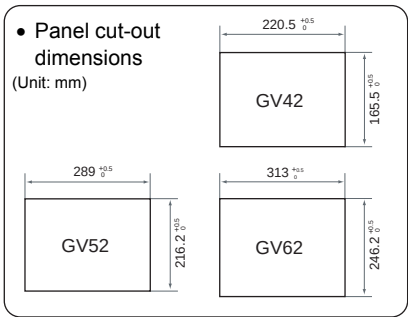
15. Battery holder
    Contains a backup battery for SRAM and clock. When the battery voltage drops, replace the battery with a new one (AIGV841).

7. Mounting Procedure

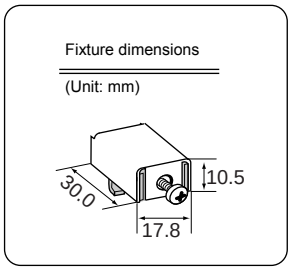
Mounting Procedure

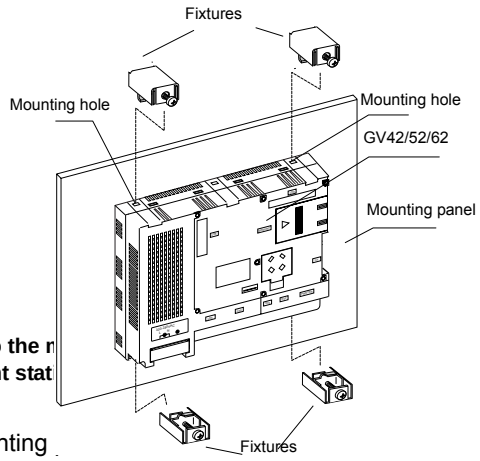
1. Cut out the mounting panel (max. thick: 5 mm) to match the dimensions shown below.





2. Insert four fixtures attached to the GV42/52/62 into the mounting holes, and tighten them with the locking screws.
   Tightening torque
   GV42/52:0.3 to 0.5 N•m
   GV62 :0.5 to 0.7 N•m



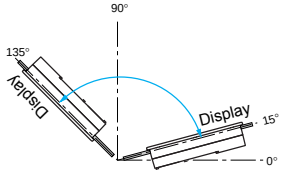


*** When the GV42/52/62 unit is attached to the r grounds (FG) are connected. To prevent stat mounting panel to the frame ground.**

3. Mount the gasket in contact with the mounting securely between the unit and the mounting plate.

Mounting Angle

Install the unit within the angle of 15° to 135° degrees as shown on the right.



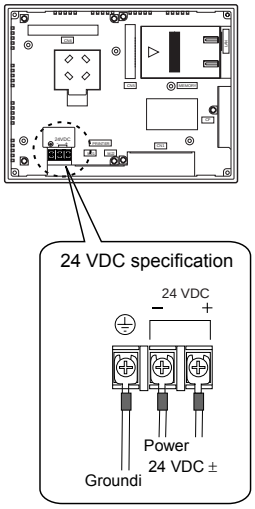
8. Power Supply Cable Connection

DANGER	Electric shock hazard Shut the power off before connecting the power supply cable.

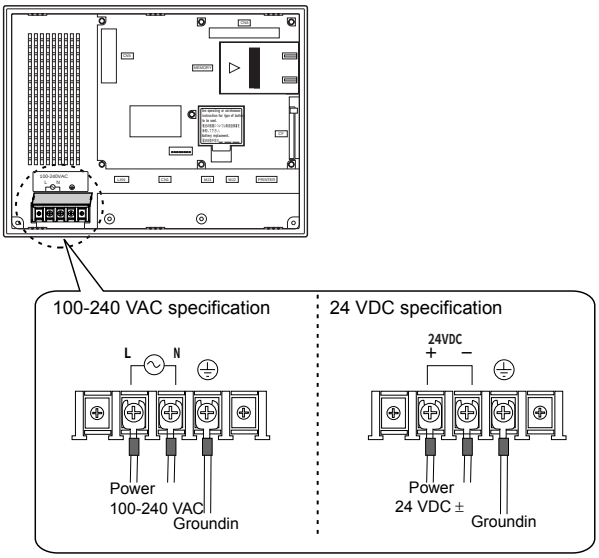
Power Supply Cable Connection

- Connect the power supply cable to the terminal on the backside of the unit.

- GV42C



-GV52/62 i

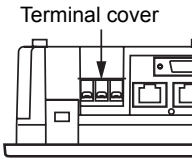


- When connecting the power supply cable, tighten the terminal screws to the following torque.

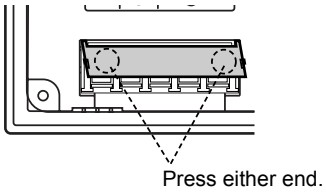
Terminal Screw / Model	Screw Size	Tightening Torque	Crimp-style Terminal (Unit: mm)
GV42C	M3.5	0.5 N•m	7.1 MAX / 7.1 MAX
GV52/62	M4	0.5 N•m	7.9 MAX / 7.0 MAX

- The power source must be within the allowable voltage fluctuation.
- Use a power source with low noise between the cables or between the ground and the cable.
- Use as thick a power supply cable as possible to minimize drop in voltage.
- Keep cables of 100 VAC and 24 VDC sufficiently away from high-voltage, large-current carrying cables.
- Be sure to attach the terminal cover to the terminal block.

  - For GV42C:
    Attach the terminal cover (supplied) to the terminal block.

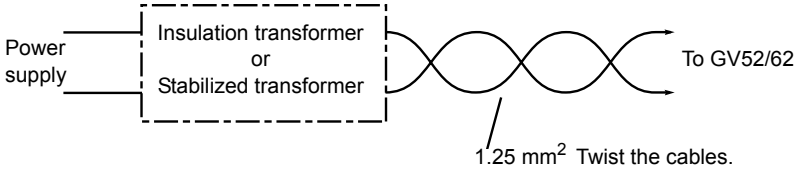


  - For GV52/62:
    When closing the terminal cover, hold one end of the cover as shown below.



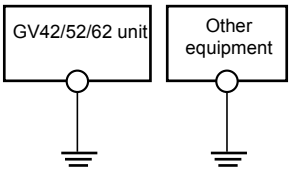
Notes on Usage of 100-240 VAC Specifications

- Generally, an isolating transformer improves noise resistance. However, if the display unit is far away from the secondary port of the transformer and noise gets mixed in, an isolating transformer becomes unnecessary.
- If any power voltage fluctuation caused by noise is expected, it is recommended that a voltage stabilizer (effective in noise resistance) be used.



Grounding

⚠CAUTION	Be sure to establish a ground of GV. (The level of grounding resistance should be less than 100 Ω.)



- An independent earth pole must be used for GV.
- Use a cable which has a nominal cross section of more than 2 mm^2 for grounding.
- Set the grounding point near the GV to shorten the distance of grounding cables.
- When the unit is grounded along with other machines or is grounded to a part of a building, it may be adversely affected.
- If any input-output error occurs due to the grounding, detach the FG terminal (*) from the ground.

*** When the GV42/52/62 unit is attached to the mounting panel, the fixtures and frame grounds (FG) are connected. To detach the FG terminal from the ground, attach the insulating sheet to the fixtures and the mounting panel for insulation.**

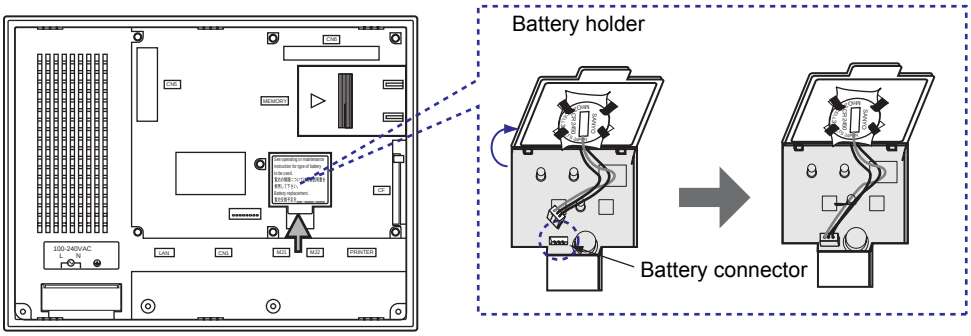
9. Coin-type Lithium Battery

⚠CAUTION	Be sure to set the battery when using the calendar function or the SRAM cassette. Without a battery, the contents in the SRAM or calendar data will not be retained.

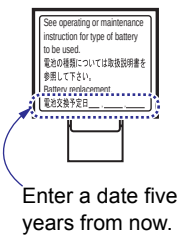
Battery Mounting Procedure

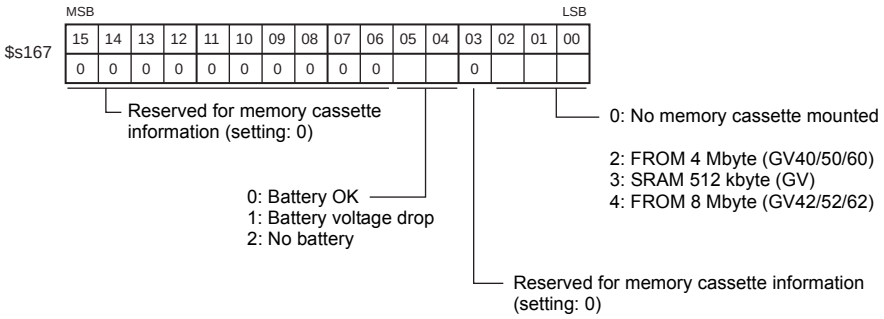
⚠DANGER	Electric shock hazard Steps 2 to 5 must be performed while the power is not supplied to the GV42/52/62 unit.

1. A coin-type lithium battery is attached to the battery holder without connection in the backside of the unit before delivery.
2. Turn the unit off. Open the battery holder cover. To open the cover, press the end of the cover in the direction of the arrow as shown in the left illustration below.

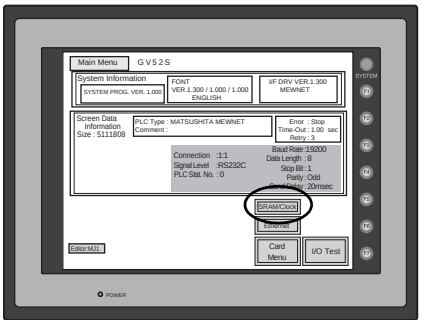


3. Check that the battery is securely attached to the backside of the cover, and connect the battery connector.
4. Close the battery holder cover.
5. Enter a date five years from now for “Battery Replacement” on the sticker on the battery holder.
   * **The battery status is output to the internal memory $s167 of the GV42/52/62. If the battery voltage drops before five years has elapsed, replace the battery immediately.**





6. Check that the battery is correctly connected on the Main Menu screen.
   When the battery is not connected, the [SRAM/Clock] switch blinks and the message “Battery not set” is displayed at the bottom left corner. When the battery is correctly connected, the [SRAM/Clock] switch goes out and the message is cleared. When the battery voltage has dropped, the message “Brownout Battery” is displayed.



Battery Replacement

Safety Instructions on Handling the Battery

Lithium batteries contain combustible material such as lithium or organic solvent. Mishandling may cause heat, explosion or ignition resulting in fire or injury. To prevent accidents, pay attention to the following cautions when handling the lithium battery.

⚠CAUTION

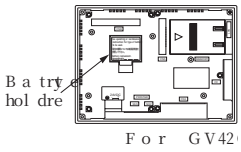
- Be sure to discharge static electricity from your body before battery replacement.
- Use the battery “AIGV841” (replacement battery for the GV42/52/62) for replacement.
- Rough handling of the battery may cause a fire or chemical burn hazard.
- Do not disassemble, incinerate or heat the battery above 212°F.
- Observe the local and governmental regulations when disposing of waste batteries.
- Keep batteries out of reach of children (If swallowed, immediately consult a doctor.)
- Never re-charge the battery.
- When the battery leaks or smells, the leaking battery electrolyte may catch a fire. Keep from heat or flame.

Battery Replacement Procedure

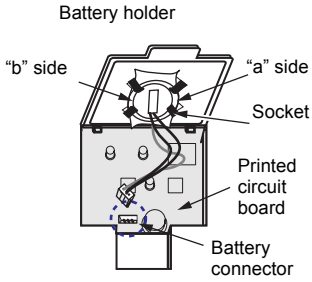
Replacement batteries are available from Matsushita Electric Works, Ltd..

Name	Type	Contents
Replacement battery for the GV42/52/62	AIGV841	• Coin-type lithium primary cell (Sanyo) 1 pce • Cautions sticker 1 pce

1. Replace the battery “AIGV841” within three minutes after the GV42/52/62 unit is turned off. If it is not possible to replace within three minutes, use the GVWIN editor (cable: AIGV8103) or a CF card and make a backup copy of data in the SRAM cassette.
   - When using the GVWIN editor:
     1) Start the GVWIN editor.
     2) Click the [Transfer] icon. The [Transfer] dialog is displayed.
     3) Select [Display] for [Transfer Device], and [SRAM Data] for [Transfer Data]. To save a backup copy from the GVWIN editor on the server via Ethernet, check [Transfer through Ethernet/IP Address of the GV42/52/62 Equipped with SRAM]. Keep [Use Simulator] and [Read Comments in Data Transfer] unchecked.
     4) Click the [PC ←] under [Transfer Mode].
     5) Save the read data in the “*.RAM” file.
   - When using a CF card:
     For the backup procedure with a CF card, refer to “Chapter 2 GV Operations.”
2. Turn the unit off, and open the battery holder. A battery is set at the socket.
3. Unplug the battery connector, and remove the battery from the socket. When removing the battery, push the center of the battery holder cover .



4. Set a new battery. Hold the battery with its Black cable side facing towards the printed circuit board and the cable hanging down, and insert the battery into the socket. Insert the battery in the “a” side first, and push it down to “a” while inserted in the “b” side.
5. Plug the battery connector and close the battery holder cover.



6. Remove the existing caution sticker. Enter a date five years from now for “Battery Replacement” on the new caution sticker, and attach it to the backside of the GV42/52/62 unit.
7. When a RAM file is saved in step 1, turn the GV42/52/62 unit on and load the RAM file to the unit.

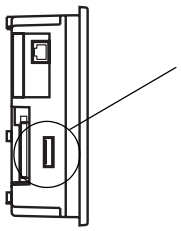
10. DIP Switch Setting

DIP Switch (DIPSW) Setting

Set the terminating resistance for RS-422/485 connection with the DIP switch. When setting the DIP switch, turn the power off.

- For GV42C:

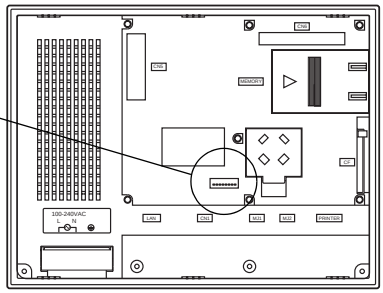
Side View

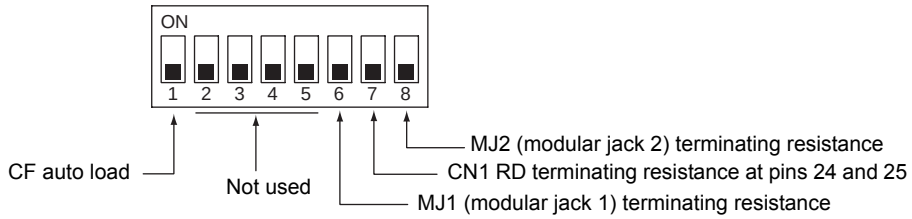


DIP switch

- For GV52/62:

Rear View





*** Set DIPSW2 to 5 (not used) to the OFF position.**

Terminating Resistance Setting (DIPSW6, 7, 8)

- When connecting the PLC at CN1 via RS-422/485 interface, set DIPSW7 to the ON position.
- For the following connections at modular jack 1 (2), set DIPSW 6 (DIPSW8) to the ON position.
  - Master station for multi-link 2 connection
  - Temperature controller network/PLC2Way connection via RS-485
  - Connection to the GV42/52/62 unit at the termination of GV-link connection via RS-485

CF Auto Load (DIPSW1)

A screen data file saved on a CF card can be auto-loaded as described below.

1. Transfer screen data from the computer to a CF card. (Refer to the Reference Manual for more information.)
2. Set DIPSW1 in the ON position, and insert the CF card that contains the screen data file.
3. Turn the GV42/52/62 unit on. The screen data is automatically loaded into the FLASH memory of the unit.

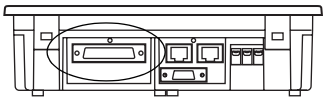
11. Serial Connector (CN1)

Serial Connector for PLC Connection

1. To communicate with the PLC (RS-232C, RS-422/485), connect the cable to the serial connector (CN1) at the bottom of the GV42/52/62 unit.

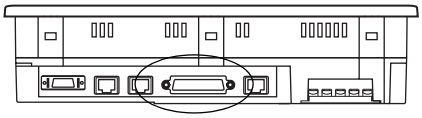
- For GV42C:

Bottom View

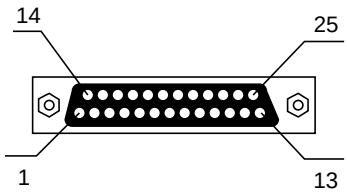


- For GV52/62:

Bottom View



2. The serial connector pins correspond to signals as given below.

CN1 (D-sub 25-pin, female)	Pin No.	Signal Name	Contents
	1	FG	Frame ground
	2	SD	RS-232C send data
	3	RD	RS-232C receive data
	4	RS	RS-232C request to send
	5	CS	RS-232C clear to send
	6		Not used
	7	SG	Signal ground
	8		Not used
	9	+5V	Use prohibited
	10	0V	Use prohibited
	11		Not used
	12	+SD	RS-422 send data (+)
	13	–SD	RS-422 send data (–)
	14	+RS	RS-422 RS send data (+)
	15		Not used
	16		Not used
	17	–RS	RS-422 RS send data (–)
	18	–CS	RS-422 CS receive data (–)
	19	+CS	RS-422 CS receive data (+)
	20		Not used
	21	–	Use prohibited (GV42/52/6208: not used)
	22	–	Use prohibited (GV42/52/6208: not used)
	23		Not used
	24	+RD	RS-422 receive data (+)
	25	–RD	RS-422 receive data (–)

3. The following connector is recommended.
   DDK-make 17JE23250-02 (D8A)D-sub 25-pin, female, metric thread, with hood

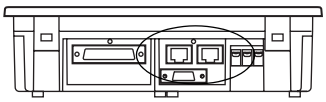
12. Modular Jack (MJ1/MJ2)

Modular Jack 1 (MJ1)/2 (MJ2)

1. This is a modular connector used for connection for screen data transfer, temperature controller, barcode reader.

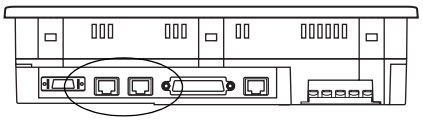
   - For GV42C:

   Bottom View

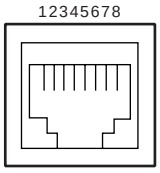


   - For GV52/62:

   Bottom View



2. Pins of modular jacks 1 and 2 correspond to signals as given below.

MJ1/2	Pin No.	Signal Name	Contents
	1	+SD/RD	RS-485 + data
	2	–SD/RD	RS-485 – data
	3	+5V	Externally supplied +5 V MAX 150 mA
	4	+5V	
	5	SG	Signal ground
	6	SG	
	7	RD	RS-232C receive data
	8	SD	RS-232C send data

GVWIN Setting

1. The use of modular jacks 1 and 2 can be set on the GVWIN editor.
2. Select [Modular] from the [System Setting] menu. The [Modular Jack] dialog is displayed. Select the use of modular jacks 1 and 2 from the following options.

Modular Jack 1	Modular Jack 2
[Editor Port]*1	[Not used]
[Multi-Link]*5	[Multi-Link]*5
[Temp. CTRL/PLC2Way]*6	[Temp. CTRL/PLC2Way]*6
[GV-Link]*7	[GV-Link]*7
[Touch Switch]*8	[Touch Switch]*8
[Ladder Tool]*9	[Ladder Tool]*9
[Modbus Slave]*10	[Modbus Slave]*10
[Printer (Serial Port)]*11	[Serial Printer (Serial Port)]*11

*7 Refer to the next section “Transferring Screen Data.”
*8
*9 Refer to the next section “10BASE-T (LAN).”
*10
*11 Select this open when “Multi-link 2” is selected for [Connection] and “1” is set for [Local Port] on the [Comm. Parameter] dialog.
*12 Select this option when connecting the temperature controller network or PLC2Way.
*13 Select this option for GV-Link connection.
*14 Refer to “AIGV881 (RGB input + sound output unit).”
*15 Select [Ladder Tool] when using the ladder transfer function with MITSUBISHI’s QnHCPU port (Q mode) selected for the PLC type.
*16 Select this option for Modbus slave connection.
*17 Select this option when connecting the printer with serial interface. Refer to page 1-38.

3. Do not select [Multi-link] and [Temp. CTRL/PLC2Way] for [Modular Jack 1/2] at the same time.

- Combination of MJ1 and MJ2 Functions

O: Usable at the same time,△: Usable from system program Ver. 1.010,×: Not usable at the same time

MJ1 / MJ2	Multi-Link 2	Barcode	Temp. CTRL/PLC 2Way	GV-Link	Touch Switch	Ladder Tool	Printer (Serial Port)
Multi-Link 2		O	△	O	O	×	O
Barcode	O		O	O	O	O	O
Temp. CTRL/PLC 2Way	△	O		O	O	O	O
GV-Link	O	O	O		O	O	O
Touch Switch	O	O	O	O		O	O
Ladder Tool	×	O	O	O	O		O
Printer (Serial Port)	O	O	O	O	O	O	

Supplemental Remark:Multi-link communication and temperature control network/PLC2Way can be used at the same time.

- Combination of Communication Unit (AIGV83x) and Modular Jack Function

O: Usable at the same time,×: Not usable at the same time

MJ / Communication Unit		Multi-Link 2	Barcode	Temp. CTRL/PLC2Way	GV-Link	Touch Switch	Ladder Tool	Printer (Serial Port)	Built-in Ethernet
AIGV832	CC-Link	×	O	O	O	O	O	O	O
AIGV833	Ethernet	△*1	O	O	O	O	O	O	×
AIGV834	PROFIBUS-DP	×	O	O	O	O	O	O	O

*18 This is not possible when the GV42/52/62 and the PLC are connected via Ethernet.

Transferring Screen Data

- Use modular jack 1 (MJ1) when transferring screen data.
- When [Editor Port] is selected for [Modular Jack 1] on the GVWIN editor, it is possible to transfer data in the RUN mode because the RUN/STOP mode (on the Main Menu screen) can be automatically selected. Also RUN/STOP mode is automatically selected for on-line editing and simulation.
- When an option other than [Editor Port] is selected for [Modular Jack 1], select the STOP mode (on the Main Menu screen) and transfer screen data. Simulation or on-line editing is not available.
- When transferring screen data, use data transfer cable (AIGV8103) 3 m to connect the GV42/52/62 to a personal computer.

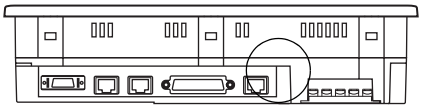
13. 10BASE-T (LAN)

The connector for 10BASE-T is provided as standard on GV52/62. To connect Ethernet with GV42C, use the communication unit “AIGV833.” If AIGV833 is attached to GV52/62, it has priority over the built-in 10BASE-T; 10BASE-T cannot be used.

10BASE-T Connector

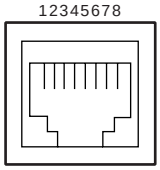
- Use this connector for Ethernet connection.
  - For GV52/62:

Bottom View



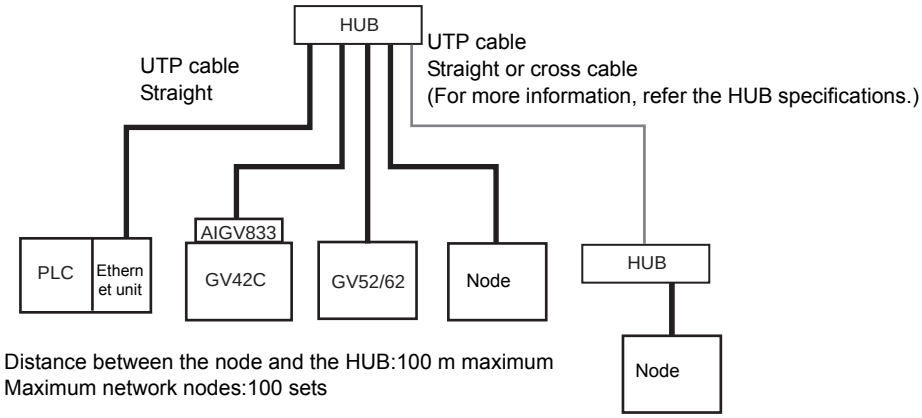
⚠CAUTION MJ1/2 and LAN connector are 8-pin modular jacks. Check the name plate and insert the connector in the correct position.

- The LAN (10BASE-T) pins correspond to signals as given below.

LAN	Pin No.	Signal Name	Contents
	1	TX+	Ethernet send signal (+)
	2	TX-	Ethernet send signal (–)
	3	RX+	Ethernet receive signal (+)
	4	NC	Not used
	5	NC	Not used
	6	RX–	Ethernet receive signal (–)
	7	NC	Not used
	8	NC	Not used

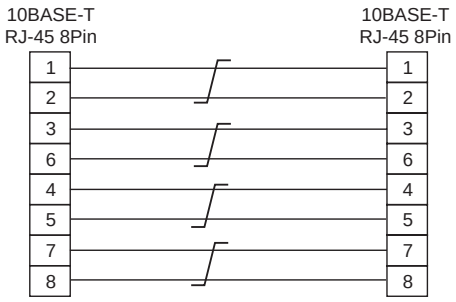
Notes on Wiring

⚠CAUTION When using the LAN port, keep the LAN cable away from the power supply cable as much as possible.



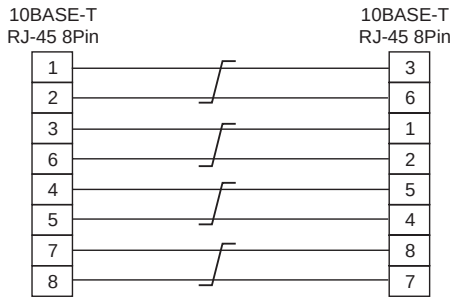
Cable Connection Diagram

Straight cable (with HUB)



* Unshielded twist-pair cable

Cross cable (without HUB)



* Unshielded twist-pair cable

Notes on Cables

Use the following recommended cable.

Recommended cable (10BASE-T)
Type: Twist-pair cable, category 5

14. CF Card (CF)

Recommended CF Card

CF cards in compliance with CompactFlash™ can be used. The following card is recommended.

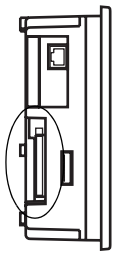
Manufacturer	Type	Capacity
TDK	TC032HS	32 MB
Kodak	KPCN-32	32 MB
SanDisk	SDCFB-64-505	64 MB
I-O Data Device	PCCF-H128MS	128 MB
	PCCF-xxxMS (xxx: 16, 32, 48, 64, 96, 128, 192)	16 to 192 MB

Mounting and Dismounting the CF Card

1. The CF card interface is provided on the side of the unit.

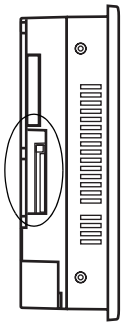
   - For GV42C:

   Side View

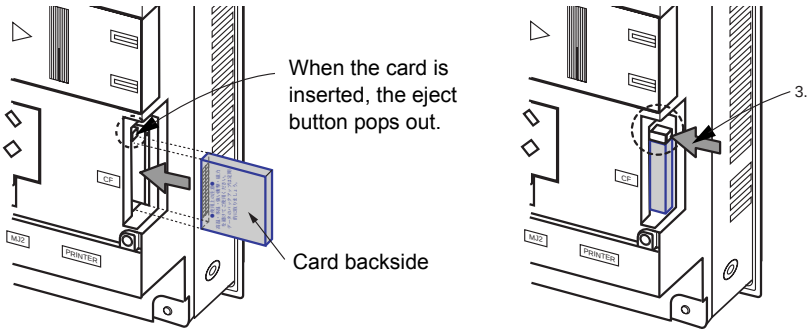
   

   - For GV52/62:

   Side View

2. Insert the card securely into the interface with the card backside outwards viewed from the rear of the unit as shown below.



3. To remove the card, press the eject button. The card pops out.

Notes on Handling the CF Card

1. Do not insert or remove the CF card during access. Doing so may destroy data on the CF card. The CF card can be inserted or removed safely when the Main Menu screen is displayed. However, if the [Card Menu] switch is pressed on the Main Menu screen and the CF card operation screen is displayed, it is not possible to insert or remove the CF card. Before mounting or removing the CF card, be sure to check that the CF card is not being accessed.
2. Do not turn the power off or on during access to the CF card.
3. Make a backup copy of the CF card at regular intervals.
4. If a disk error occurs and data read/write operation is disabled, perform a scan disk on Windows and try to restore the disk. If not restored, initialize the CF card. (For information on scan disk and Windows operations, refer to the manual for Windows.)
5. The number of writing times per CF card is limited (approx. 300,000 times). Consequently, frequent writing at short intervals may shorten service life of the CF card. To use the CF card for saving sampling data, check the setting for sampling time. Also, avoid repeated writing using a CYCLE macro command.

15. Printer Connection (PRINTER)

When the GV42/52/62 is connected to a printer, a screen hard copy, data sheet or sampling data can be printed. To connect a printer with parallel interface, insert the cable into the printer connector (PRINTER); to connect a printer with serial interface, insert the cable into a modular jack (MJ1/MJ2).

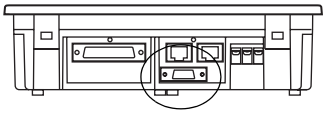
⚠CAUTION Be sure to turn the printer off when the GV42/52/62 unit is turned off.

Printer Connector (PRINTER)

- This is the printer connector for parallel interface.

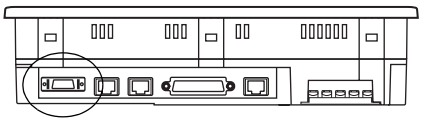
- For GV42C:

Bottom View

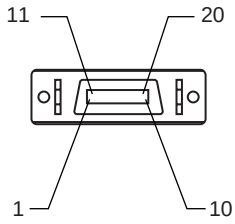


- For GV52/62:

Bottom View

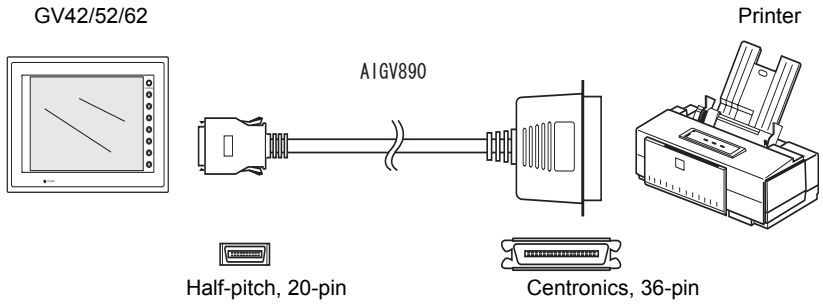


- The printer interface pins correspond to signals as given below.

PRINTER (half-pitch 20-pin)	Pin No.	Signal Name	Contents
	1	STB#	Strobe
	2	PD0	Data 0
	3	PD1	Data 1
	4	PD2	Data 2
	5	PD3	Data 3
	6	PD4	Data 4
	7	PD5	Data 5
	8	PD6	Data 6
	9	PD7	Data 7
	10	GND	
	11	BUSY#	Busy
	12	GND	
	13	SELECT	
	14	INTP#	INP PROME#
	15	PFAT#	FAULT#
	16	GND	
	17	GND	
	18	P+5V	PRN+5
	19	GND	
	20	GND	

Connecting Cable

- To connect the GV42/52/62 to a printer, use printer cable “AIGV890” 2.5 m for 20-pin parallel interface.



Compatible Printer Models

Control code system:

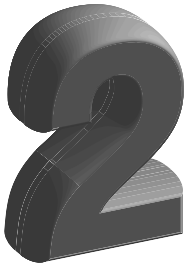
- NECPC-PR201 series compatible with MS-DOS computer
- EPSONESC/P24-J84, ESC/P-J84, ESC/super function compatible with MS-DOS computer
- CBM292/293CBM’s line thermal printer (Screen hard copying is not possible.)

Barcode printers:
(It is not possible to print a screen hard copy, data sheet or sampling data.)

- MR400Sato's barcode printer "MR400 series"

Connection with Printer through Serial Interface

- To connect a printer through serial interface, connect the cable to a modular jack (MJ1/MJ2).
- Refer to the specification sheet of the printer to be used for the connecting cable for serial interface. For information on MJ1/MJ2 signals, refer to page 1-30.
- When two printers are connected through parallel interface and serial interface, the one connected to MJ1/MJ2 (refer to page 1-30 for the setting) takes precedence.
- Printer models and available print functions are the same as those for parallel interface.



GV42/52/62 Operations

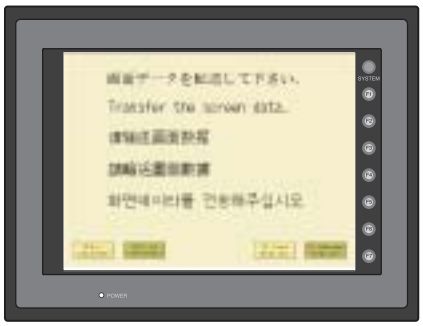
1. Operation of GV42/52/62 Main Menu
   Initial Screen
   1. Main Menu Screen
   2. I/O Test
   3. Card Menu Screen
   4. Ethernet
   5. SRAM/Clock
   6. Extension Program Information
   7. Extended Function Setting
2. Function Switches
   Types
   [SYSTEM] Switch
3. Errors Displayed on the GV42/52/62
   1. Communication Error
   2. Check
   3. Warning
   4. SYSTEM ERROR
   5. Touch Switch is Active

1. Operation of GV42/52/62 Main Menu

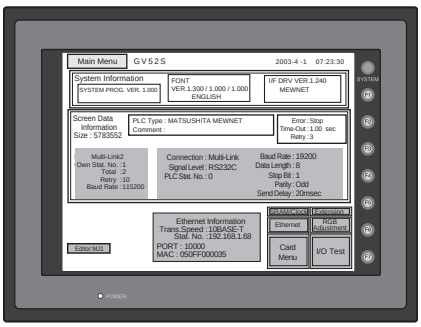
Initial Screen

When the power of GV is turned on for the first time, the Main Menu screen shown below on the left is displayed.

Initial screen displayed when power is turned on for the first time



Main Menu screen after transferring screen data



Transferring Screen Data for the First Time

There are four methods for transferring screen data for the first time.

- Transferring screen data via the AIGV8103 cable
  Transfer screen data while the initial screen is displayed.
- Transferring screen data using the CF card or the memory card and the card recorder (CREC)
  1) Connect the personal computer with the card recorder and save screen data on the memory card.
  2) Insert the CF card into the GV42/52/62 unit or connect the card recorder and insert the memory card into the card recorder.
  3) Press the [CF Card (English)] switch. The “Card Menu” screen is displayed.
  4) Follow the instructions as described in “Card Menu Screen” (page 2-12) and transfer screen data.

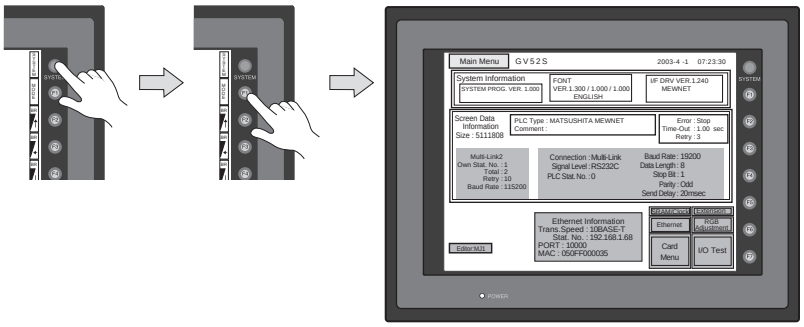
- Transferring screen data via Ethernet
  1) Press the [IP Address (English)] switch.
  2) The “Ethernet” screen is displayed.
  3) Follow the instructions as described in “Ethernet” (page 2-22) and set the IP address.
  4) Press the [Setting Finished] switch. The initial screen displayed again.
  5) Transfer screen data from the computer via Ethernet.

- Auto-uploading screen data from the CF card to the GV42/52/62 unit
  1) Transfer screen data from the computer to a CF card.
  2) Turn the GV42/52/62 unit off. Set the DIPSW1 on the GV42/52/62 unit to the ON position, and insert the CF card.
  3) Turn the GV42/52/62 unit on. The screen data is automatically uploaded from the CF card to the GV42/52/62 unit.

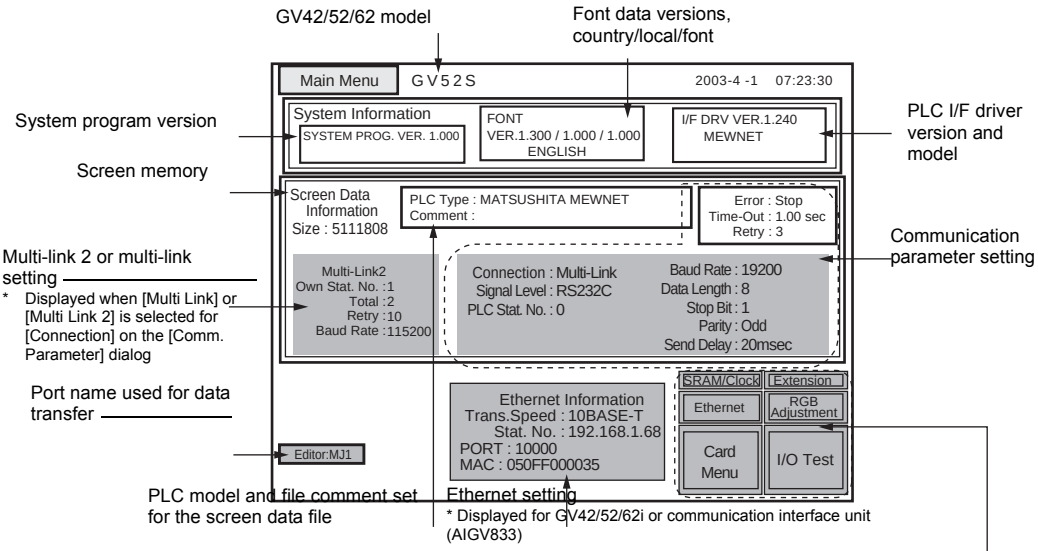
1. Main Menu Screen

- To bring up the Main Menu screen in the RUN mode, press the [SYSTEM] switch and the [F1] switch.

Main Menu screen



- The Main Menu screen indicates theGV42/52/62 model, system information, and screen data information.
- The Main Menu screen is the system menu screen for transferring screen data between a personal computer and the GV42/52/62. When transferring screen data from a personal computer to the GV42/52/62, this Main Menu screen must be displayed. (However, if [Editor Port] is selected for [Modular Jack 1] or on-line editing is used, it is not necessary to bring up this screen.)



SRAM/Clock
Initializes SRAM and adjusts calendar data. (See page 2-25.)

Ethernet
Sets the IP address. (See page 2-21.)

Card Menu
Transfers screen data between the CF card and the GV42/52/62. (See page 2-12.)

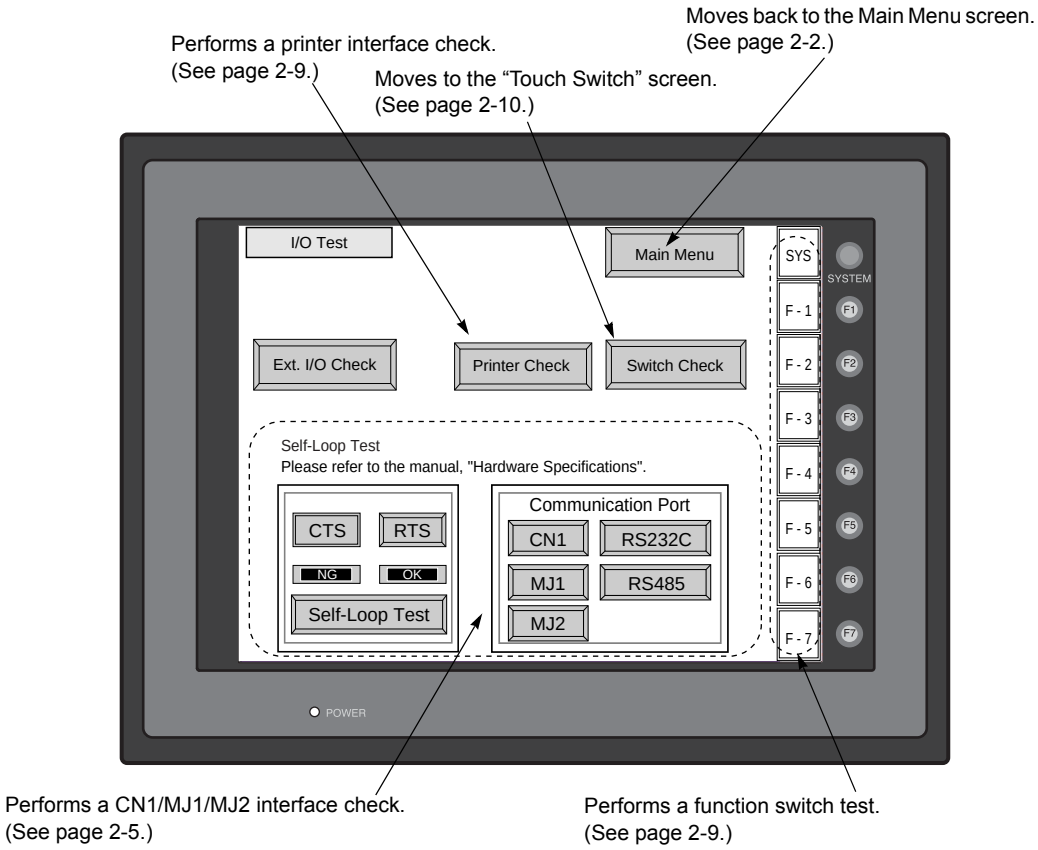
Extension
Indicates the driver setting and parameter setting for temperature controller/PLC2Way communication, ladder transfer function, Modbus slave communication, etc. (See page 2-26.)

RGB Adjustment
Appears when the option unit AIGV881 is provided. For more information, refer to the instruction manual for the AIGV881 option unit.

I/O Test
Checks the GV42/52/62 interfaces and performs a touch switch test. (See page 2-4.)

2. I/O Test

When the [I/O Test] switch on the Main Menu screen is pressed, the following “I/O Test” screen appears. This screen is used to check that there is no problem with the GV42/52/62 interfaces and touch switch operation.

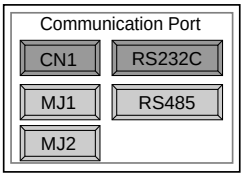


2-1. Self-loop Test

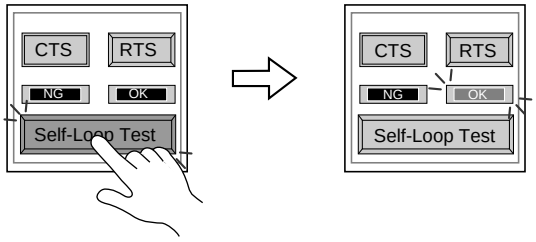
This is a signal test for communications through the CN1, MJ1 or MJ2 connector. Perform this test if the communication is not successful when transferring screen data through MJ1, connecting the PLC using CN1, or selecting multi-link 2, temperature controller/PLC2Way or PLC for MJ1/2, or connecting the card recorder .

CN1: RS-232C Signal Test

Turn the [CN1] and [RS232C] switches on.

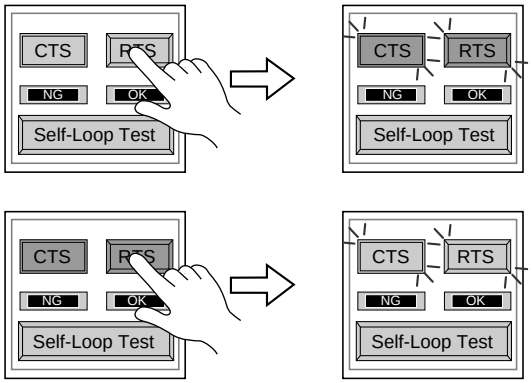


- SD/RD Test
  Check the signals [SD] and [RD].
  1. Install a jumper between pins 2 and 3 of CN1 on the backside of the GV42/52/62 unit.
  2. Press the [Self-Loop Test] switch. When the [OK] lamp lights up, the test is successfully completed.



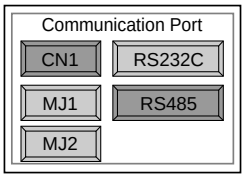
*** If the [NG] lamp lights up, consult your local distributor.**

- CTS/RTS Test
  Check the signals [CTS] and [RTS].
  1. Install a jumper between pins 4 (RTS) and 5 (CTS) of CN1 on the backside of the GV42/52/62 unit.
  2. Press the [RTS] switch and check that both [RTS] and [CTS] lamps light up at the same time. Press the [RTS] switch again and check that both [RTS] and [CTS] lamps go off at the same time.

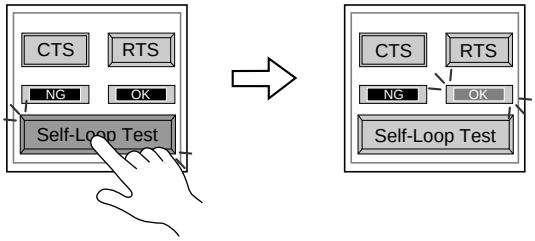


CN1: RS-485 Signal Test

Turn the [CN1] and [RS485] switches on.

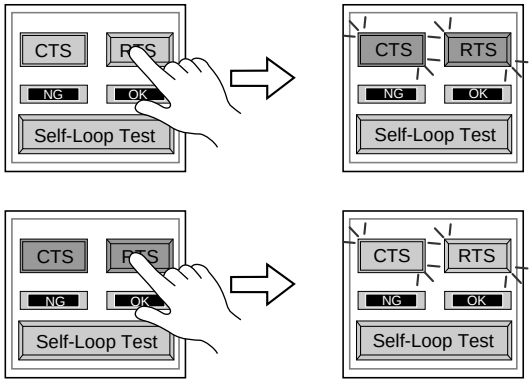


- SD/RD Test
  Check the signals [SD] and [RD].
  1. Install a jumper between pins 12 and 24 and between pins 13 and 25 of CN1 on the backside of the GV42/52/62 unit.
  2. Press the [Self-Loop Test] switch. When the [OK] lamp lights up, the test is successfully completed.



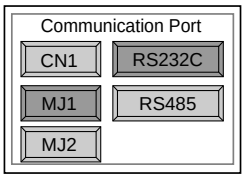
*** If the [NG] lamp lights up, consult your local distributor.**

- CTS/RTS Test
  Check the signals [CTS] and [RTS].
  1. Install a jumper between pins 14 (+RTS) and 19 (+CTS) of CN1 and between pins 17 (–RTS) and 18 (–CTS) on the backside of the GV42/52/62 unit.
  2. Press the [RTS] switch and check that both [RTS] and [CTS] lamps light up at the same time. Press the [RTS] switch again and check that both [RTS] and [CTS] lamps go off at the same time.

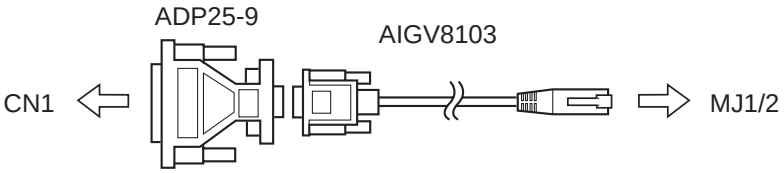


MJ1/2: RS-232C Signal Test

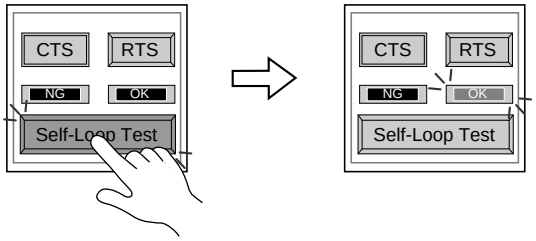
Turn the [MJ1] (or [MJ2]) and [RS232C] switches on.



- RS-232C Self-loop Test
  Check the signals [SD] and [RD]. Connect the data transfer cable (AIGV8103) to CN1 for the test.



1. Set the adaptor ADP25-9 (attached to AIGV8103) to the cable AIGV8103. Connect the modular jack side of the cable to MJ1 (or MJ2) and the ADP25-9 side to CN1.
2. Press the [Self-Loop Test] switch. When the [OK] lamp lights up, the test is successfully completed.



*** If the [NG] lamp lights up, consult your local distributor.**

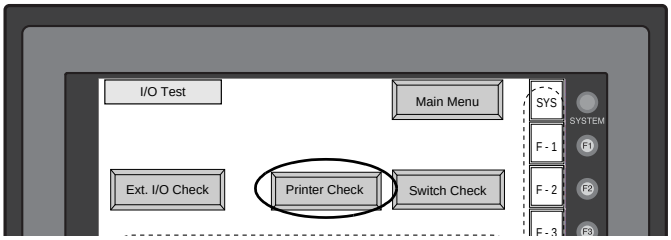
MJ1/2: RS-485 Signal Test

If you would like to perform MJ1/2 RS-485 signal test, consult your local distributor.

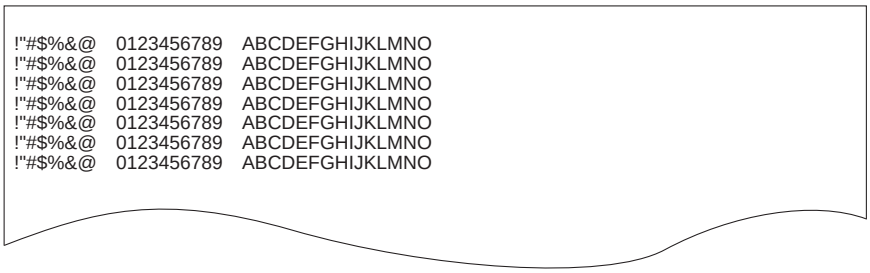
2-2. Print Check

Check that the GV42/52/62 transmits the signals to the printer correctly.

1. Connect the GV42/52/62 to the printer.
2. Press the [Printer Check] switch. The test is successful when a test page is printed out without problem.

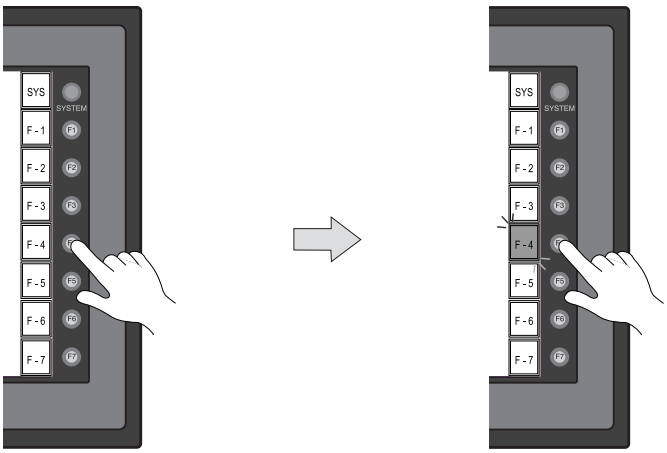


Example:



2-3. SYSTEM & Function Switch Test

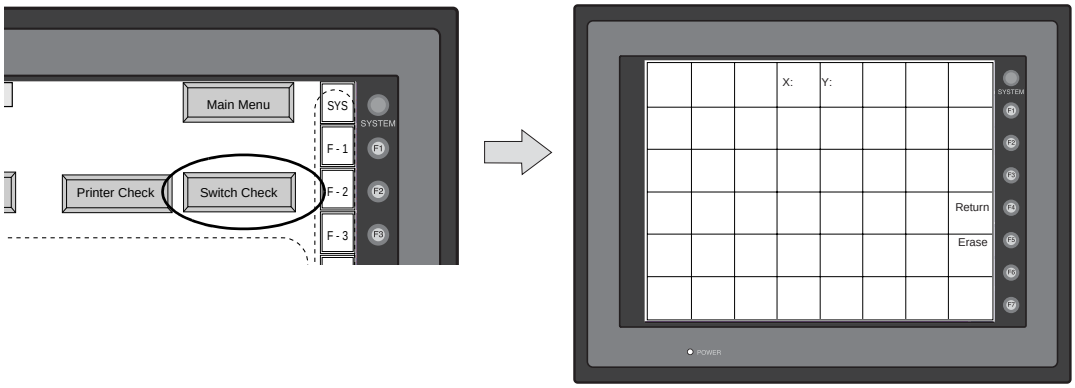
Check operations of eight switches provided vertically on the right side of the GV42/52/62 panel. Press the switch, and check that the lamp on the screen lights up while the switch is held down.



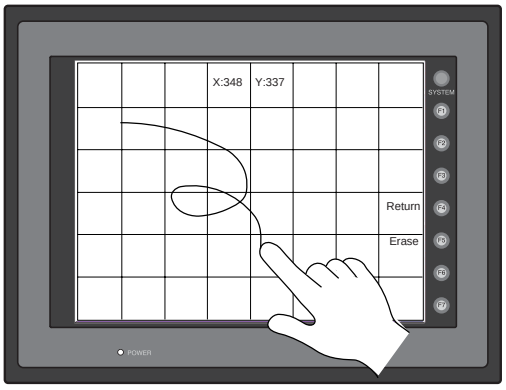
2-4. Touch Switch Test

If a touch switch does not activate at all or if an operation is performed without pressing any touch switch, check that the touch switches on the GV42/52/62 panel are working properly.

1. Press the [Switch Check] switch. Grids appear on the screen as shown below.



2. Press a position on the panel, and check that the pressed position turns white. The white color means that the touch switch activates correctly. To move back to the "I/O Test" screen, press the [F4] switch. To delete white dots press the [F5] switch.

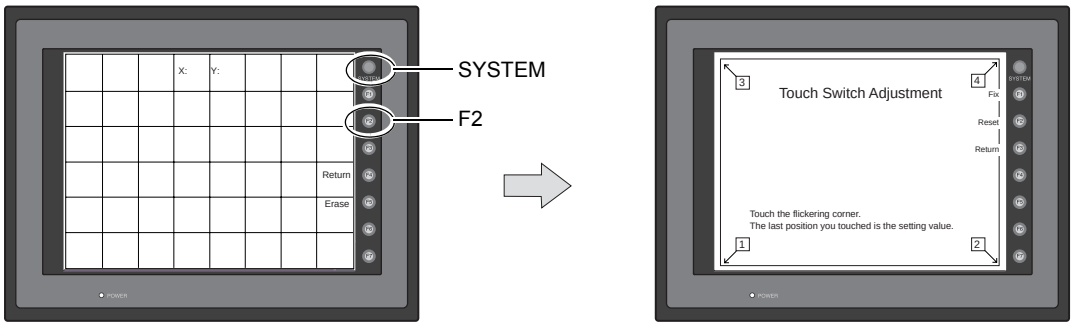


3. If a position different from the pressed position turns white, refer to "Touch Switch Adjustment" on the next page and adjust the touch switch position.

Touch Switch Adjustment

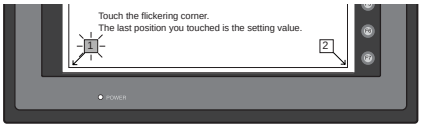
If a position different from the pressed position turns white on the touch switch test screen, follow the steps described below to adjust the touch switch position.

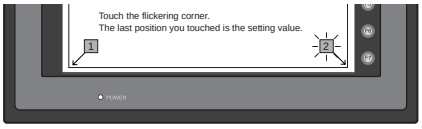
1. Hold down the [SYSTEM] switch and press the [F2] switch on the touch switch test screen. The “Touch Switch Adjustment” screen appears.



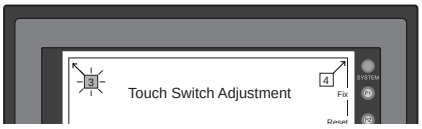
2. Press on “1” that is flashing at the corner on the touch switch adjustment screen. When the finger is released, a beep sounds and the position is set. “2” flashes.

3. Press on “2” that is flashing at the corner. When the finger is released, a beep sounds and the position is set. “3” flashes.

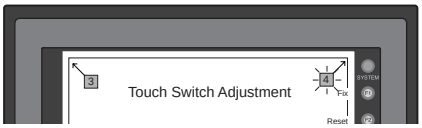




4. Press on “3” that is flashing at the corner. When the finger is released, a beep sounds and the position is set. “4” flashes.



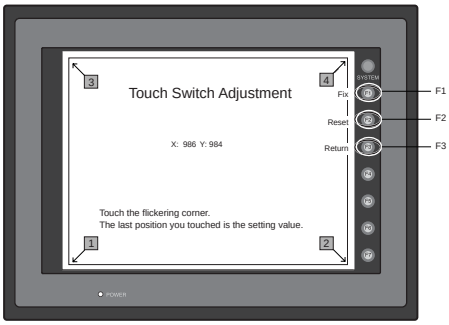
5. Press on “4” that is flashing at the corner. When the finger is released, a beep sounds and the position is set.



6. To re-set the positions, press the [F2] switch and follow step 2 and later.

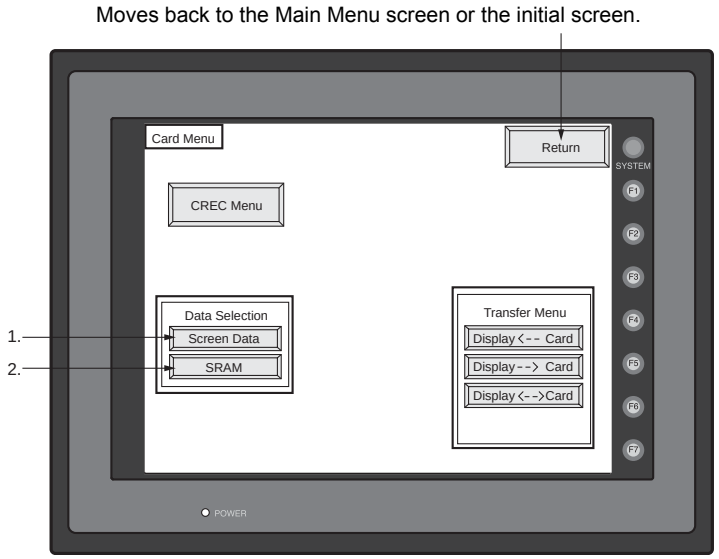
7. Press the [F1] switch. A long beep sounds and the positions are determined. The touch switch test screen is displayed again.

8. To cancel the setting, press the [F3] switch. The touch switch test screen is displayed again.



3. Card Menu Screen

When the [Card Menu] switch on the Main Menu screen is pressed, the following “Card Menu” screen appears. This screen is used to transfer screen data between the GV42/52/62 and a CF card or a memory card.



1.

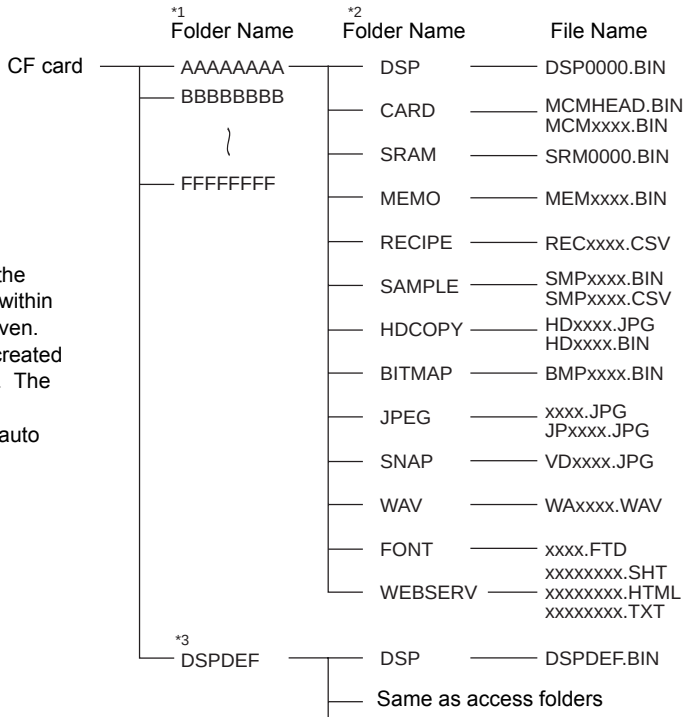
2. [Screen Data] switch
   Press this switch when transferring screen data between the GV42/52/62 and a CF card.

3. [SRAM] switch
   Press this switch when saving backup copies of the SRAM memory or AIGV825 (SRAM cassette) or when uploading the backup data from the CF card to the GV42/52/62.

3-1. Transferring Screen Data from a CF Card

CF Card Folder Configuration

Folders in the CF card are configured as shown below.



*1 These are access folders set by the GVWIN editor. Any folder name within eight 1-byte characters can be given.
*2 These folders are automatically created when access folders are created. The folder name cannot be changed.
*3 The folder name for screen data auto uploading cannot be changed.

DAT0000 (access folder)

Folder Name	Contents	Folder Name	Contents
BITMAP	Saves pattern data (bitmap data) to reduce the screen data capacity.	RECIPE	Reads and writes recipe data.
CARD	Write recipe data from theGV42/52/62 using the V6-compatible memory manager function.	SAMPLE	Saves history data of the data logging function.
DSP	Reads and writes screen data.	SNAP	Saves video snap images.
FONT	Saves Gothic fonts or language data to reduce the screen data capacity.	SRAM	Saves backup data of SRAM.
HDCOPY	Writes hard copy images in the JPEG file format from the GV42/52/62 (for GV42C: BIN file).	WAV	Saves WAV files for sound output to reduce the screen data capacity.
JPEG	Saves JPEG files for display on the screen (except for GV42C).	WEBSERV	Saves files to be accessed from the Web browser.
MEMO	Saves memo pad data drawn with the GV42/52/62.		

DSPDEF (screen data auto upload folder)

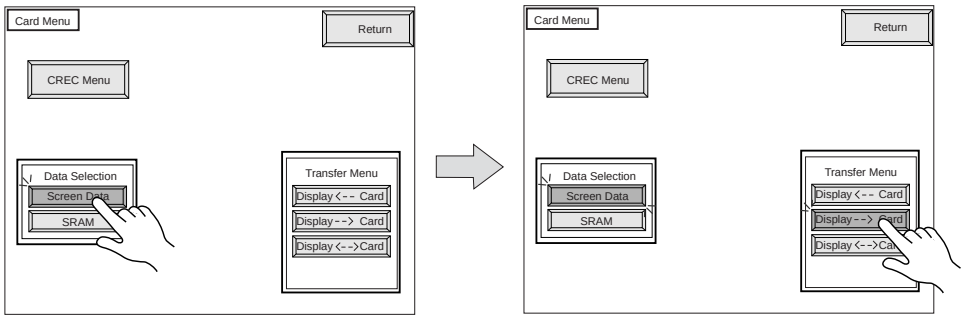
Folder Name	Contents
DSP	Automatically reads screen data in this folder when the CF card is inserted in the GV42/52/62 unit after the DIP switch is set.

(Other folders are the same as access folders.)

Transferring Screen Data from a CF Card

The procedure of transferring data between the GV42/52/62 and a CF card is described below.

1. Mounting the CF Card
   Insert the CF card into the CF card connector at the side of the GV42/52/62 unit.
   *** Do not remove or insert the CF card in the later steps.**
2. Data selection
   Select [Screen Data]. When the lamp is red, it is selected.
3. Transfer selection
   Select [Display <-- Card], [Display --> Card] or [Display <--> Card].

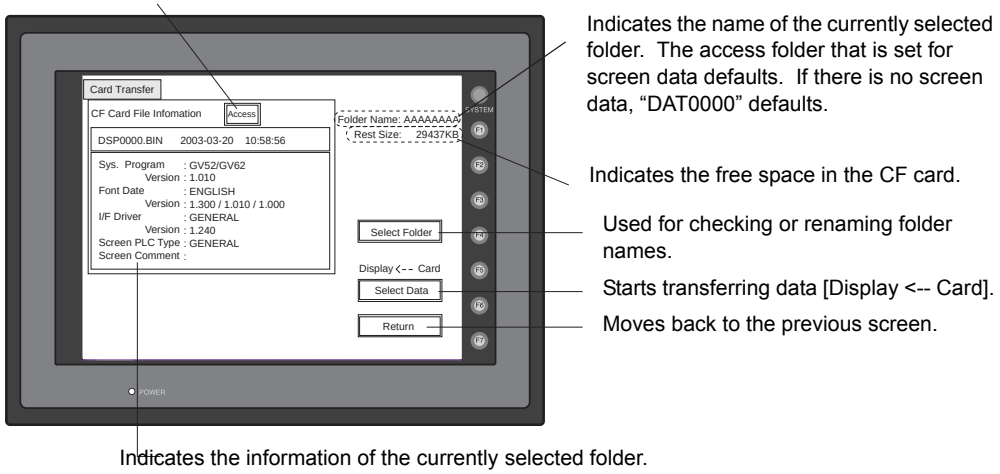


Data selection Transfer selection

When [Display <-- Card] is Selected:

Transfer screen data from the computer to the CF card.

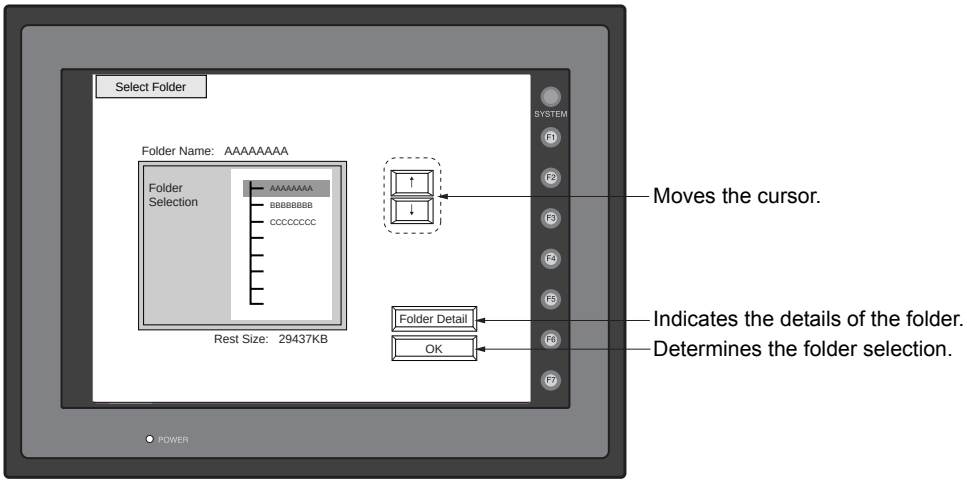
1. When [Display <-- Card] is selected, the “Card Transfer” screen is displayed.



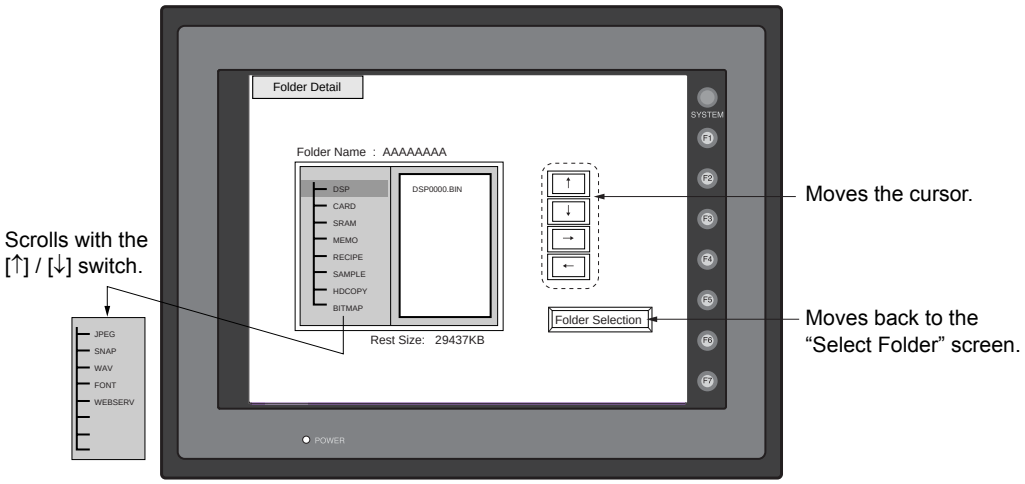
2. Check the folder name, free space, and CF card file information. If the correct folder is selected, move to step 4.

   - Folder Name
     Indicates the name of the currently selected folder. The access folder that is set for screen data defaults. If there is no screen data, “DAT0000” defaults.
   - Rest Size
     Indicates the free space in the CF card.
   - CF Card File Information
     Indicates the information of the currently selected folder.

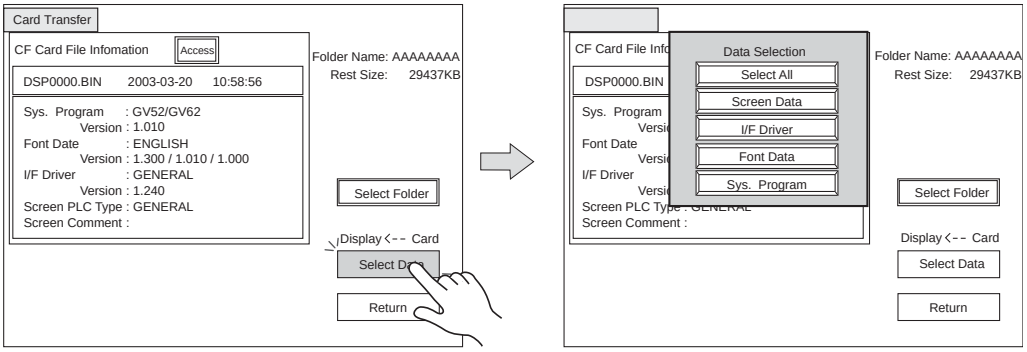
3. To change to another folder, press the [Select Folder] switch. The “Select Folder” screen is displayed.



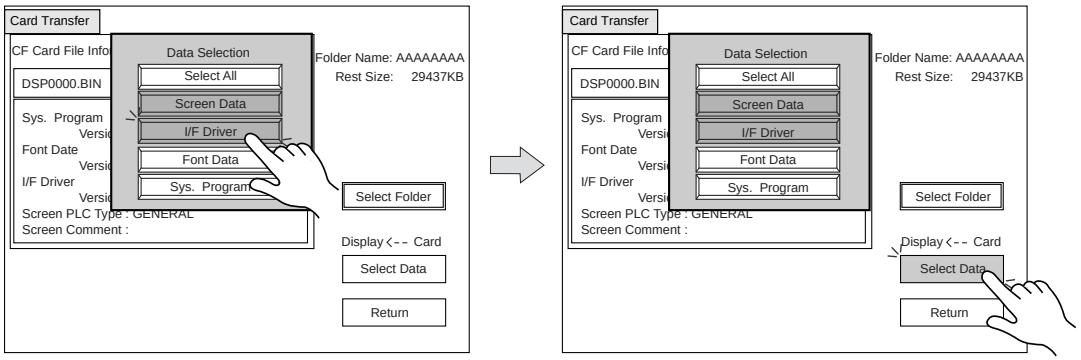
   - Select the desired folder using the [↑] / [↓] switch, and press the [OK] switch. The Card Transfer screen is displayed again and the CF card file information of the selected file is indicated.
   - To see the details of the folder, press the [Folder Detail] switch. The “Folder Detail” screen is displayed.



4. Press the [Select Data] switch. The [Data Selection] window is displayed and the [Select Data] switch changes to [Start].

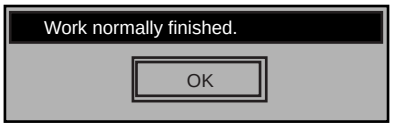


Select the desired data, and press the [Select Data] switch.



To cancel the [Data Selection] window, press the [Return] switch.

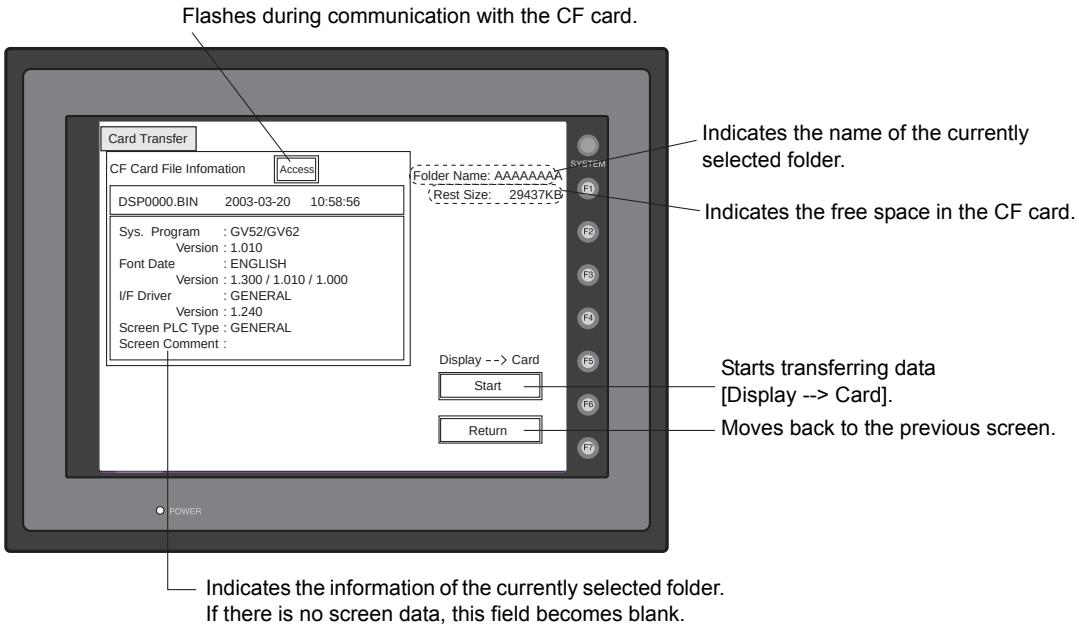
5. During data transfer, the [Start] switch changes into [Busy] and flashes. When data has been transferred successfully, the following window is displayed. However, when [Sys. Program] or [Select All] is selected, the “Main Menu” screen is displayed without this message window on completion of data transfer.



Press the [OK] switch. The “Card Menu” screen is displayed. If any other message is displayed, refer to page 2-21.

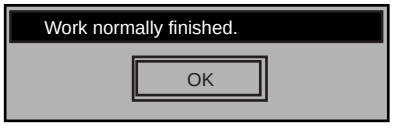
When [Display --> Card] is Selected:

1. When [Display --> Card] is selected, the “Card Transfer” screen is displayed.



2. Check the folder name and CF card file information, and press the [Start] switch.
   * **When the access folder name of screen data is the same as that in the CF card, the CF card file information is indicated on the screen, and data in the GV42/52/62 overwrites the CF card data. Note that the CF card data is lost when data in the GV42/52/62 overwrites.**
   When the CF card file information is blank, a new file “DSP0000.BIN” is created in the DSP folder.

3. During data transfer, the [Start] switch changes into [Busy] and flashes. When data has been transferred successfully, the following window is displayed.

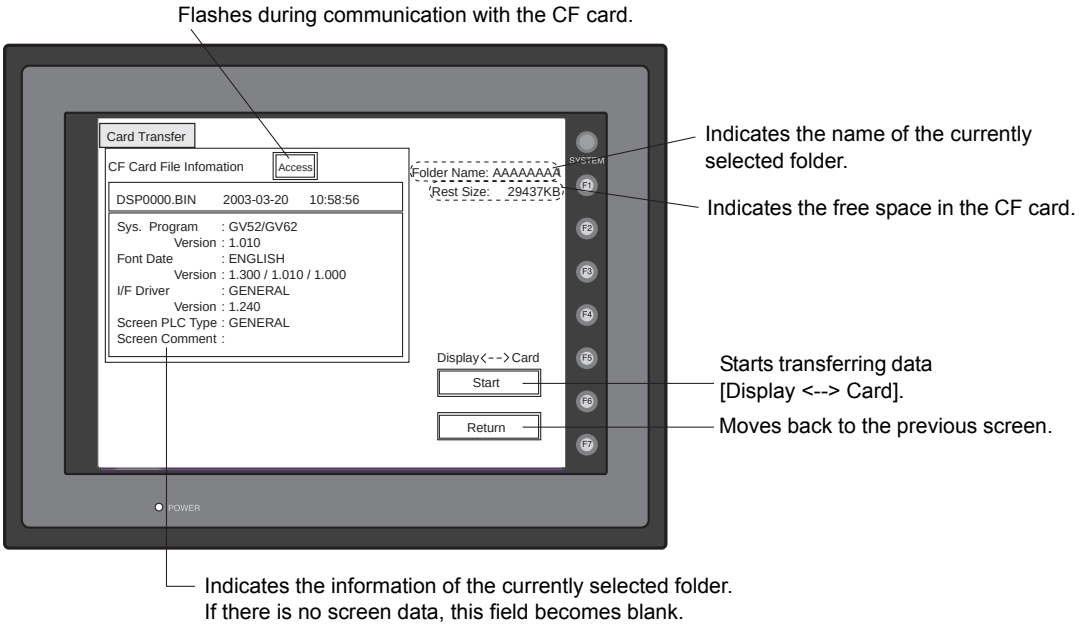


   Press the [OK] switch. The CF card file information shows data that has been transferred. If any other message is displayed, refer to page 2-21.

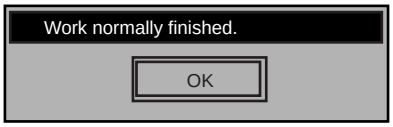
4. Press the [Return] switch. The “Card Menu” screen is displayed again.

When [Display <--> Card] is Selected:

1. When [Display <--> Card] is selected, the “Card Transfer” screen is displayed. Screen data used for comparison is that in the DSP folder under the folder having the same name as the access folder that is set by the GVWIN editor.



2. Press the [Start] switch.
3. During data transfer, the [Start] switch changes into [Busy] and flashes. When data has been transferred successfully, the following window is displayed.



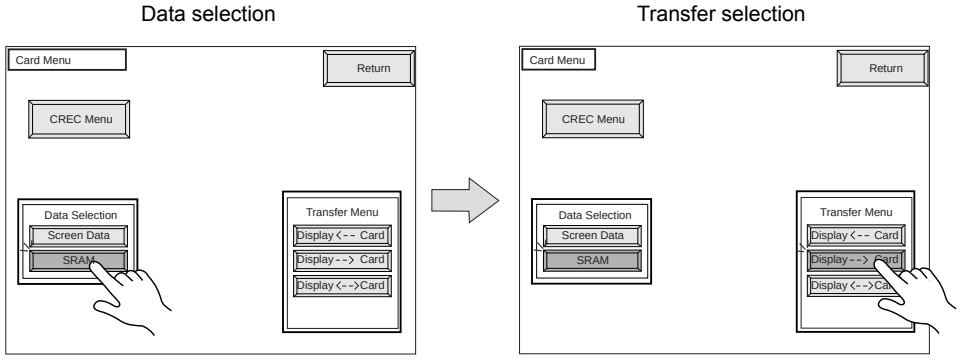
Press the [OK] switch. If any other message is displayed, refer to page 2-21.

4. Press the [Return] switch. The “Card Menu” screen is displayed again.

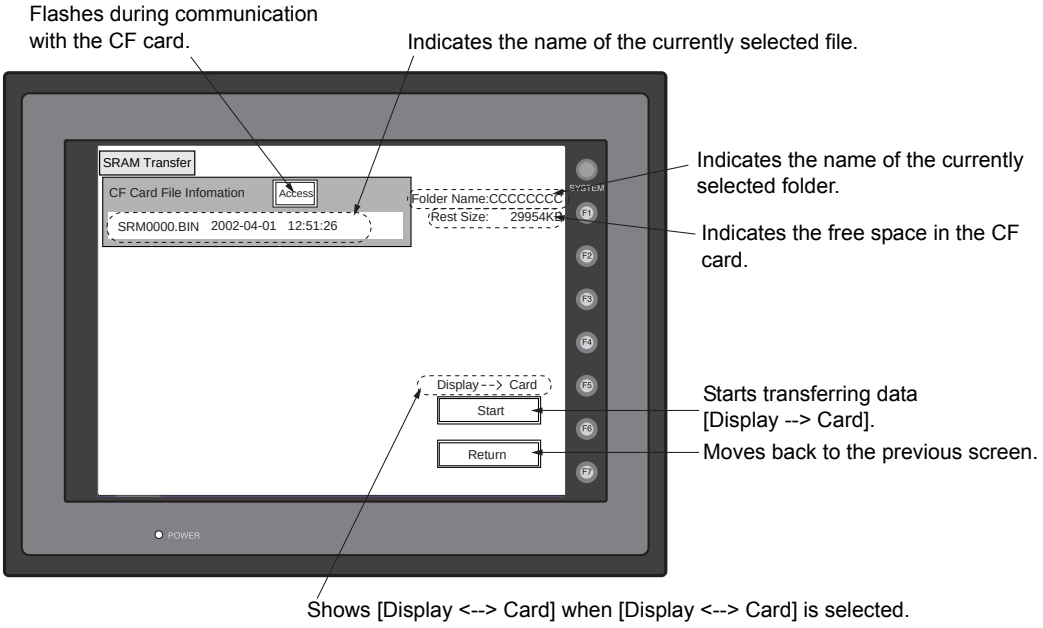
3-2. Saving Backup Copies of SRAM

In this section, the procedure for saving backup copies of the SRAM memory or AIGV825 (SRAM cassette) for battery replacement is explained.

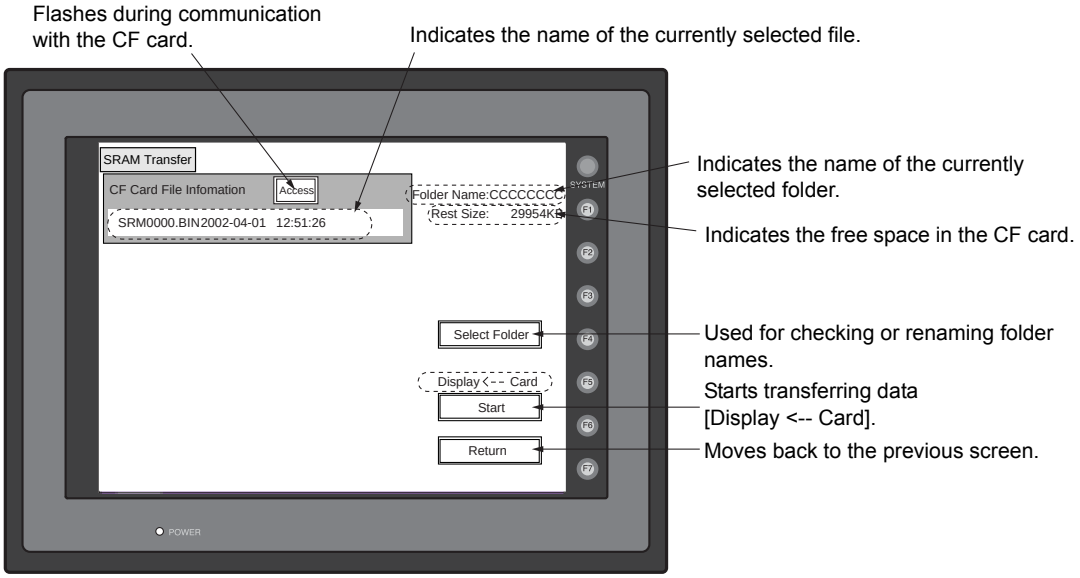
1. Press the [SRAM] switch on the “Card Menu” screen. When the lamp is red, it is selected.
2. Select [Display <-- Card], [Display --> Card] or [Display <--> Card].



3. The “SRAM Transfer” screen is displayed.
   - When [Display --> Card] or [Display <--> Card] is selected, the following screen is displayed. Select the CF card folder having the same name as the access folder for screen data in the GV42/52/62. The name is shown on the screen. The transferred file is named as “SRAM0000.BIN.”



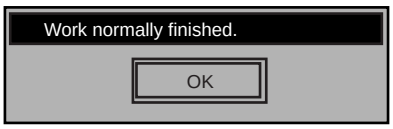
- When [Display <-- Card] is selected, the following screen is displayed.



1) To change another folder, press the [Select Folder] switch. (The folder name must be “SRAM0000.BIN.”)
2) The “Select Folder” screen is displayed as shown on page 2-15. Select the desired folder (refer to page 2-15), and press the [OK] switch.
3) Moves back to the “SRAM Transfer” screen.

4. Starting Data Transfer
   Check the folder name, free space and transfer selection, press the [Start] switch. Data transfer is started.

5. Ending Data Transfer
   When data has been transferred successfully, the following window is displayed.



   Press the [OK] switch. If any other message is displayed, refer to the next page.

6. Pressing the [Return] switch moves back to the “Card Menu” screen.

3-3. Messages during Data Transfer

If an error occurs during data transfer, the message window shown on the right is displayed.

The kinds and the contents of the messages are shown below. The same messages are used for the memory card and CF card. When using the CF card, the “memory card” in the explanation should read as the “CF card.”

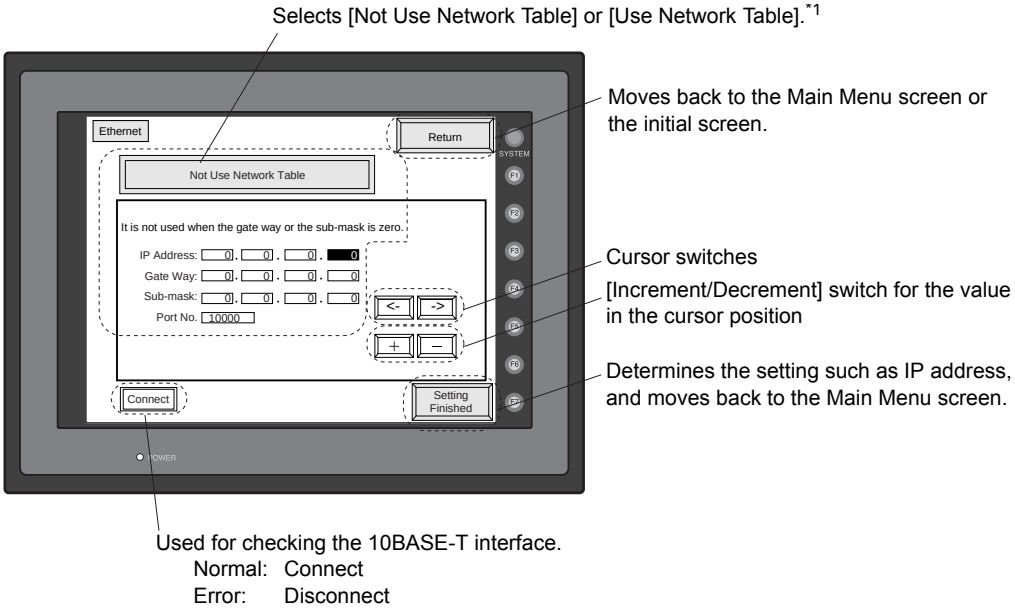
Messages	Contents
Work normally finished.	The specified operation has been concluded normally.
Memory-Card not setting	A memory card is not inserted.
Memory-Card Capacity over	Cannot write the data into a memory card because the data size in GV42/52/62 is larger than the capacity of a memory card.
Write Protect: ON	Cannot write data into a memory card because the write protect switch in a memory card is ON.
Writing Error occurred.	The error occurred while writing data into a memory card.
Selected data does not exist.	The data in the reading target does not exist.
GV42/52/62 type is different.	The specified type of the data in GV42/52/62 is different from the type of the memory card data.
Selected data can not be read.	The data in a memory card cannot be read.
Reading Error occurred.	The error occurred during writing data into a flash ROM of GV42/52/62.
Data discrepant	There is some discrepancy in data, when comparing data between a memory card and GV42/52/62.
Screen data on GV42/52/62 will be broken.	Warning about data destruction in GV42/52/62 that may occur when transferring the font data larger than the present data from a memory card to GV42/52/62. (The [OK] switch continues transferring; the [Cancel] switch stops transferring.)
Undefined Error occurred.	The error occurred due to some cause other than mentioned above.

4. Ethernet

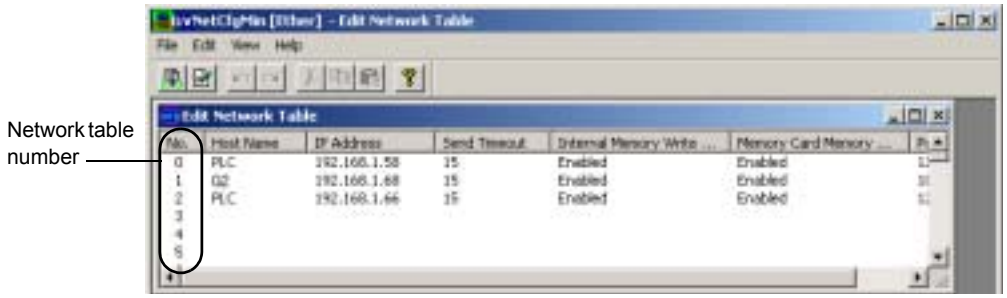
The “Ethernet” screen is displayed by pressing the [IP Address (English)] switch on the initial screen when transferring screen data via Ethernet for the first time, or by pressing the [Ethernet] switch on the Main Menu screen when transferring screen data to the GV42/52/62. This screen is used for setting the IP address (a number that identifies the GV42/52/62 on the network) that is indispensable for Ethernet communications.

Depending on whether the LAN (10BASE-T) connector at GV52/62 or the communication interface unit AIGV833 for GV42/52/62 is used, the “Ethernet” screen contents and the required settings vary as described below.

Connection with LAN (10BASE-T) Connector at GV52/62



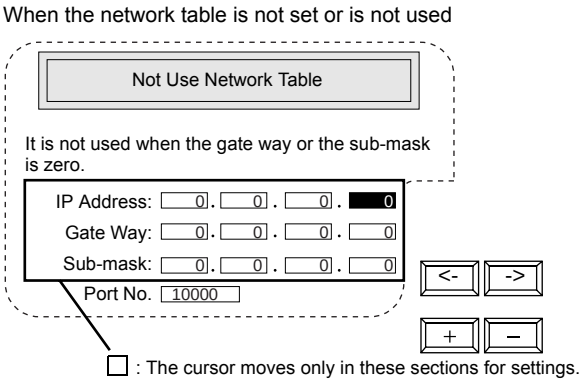
*1 Network Table
Register IP addresses and other information for the GV series, PLCs or computers that should be included for Ethernet communications on the GVWIN editor. ([System Setting] → [Network Table Setting] → [Ethernet] → Edit Network Table) The registered network table can be used or not used depending on the [Not Use Network Table/Use Network Table] switch.



Not Use Network Table

In the following cases, select [Not Use Network Table].

- Screen data is transferred for the first time via Ethernet.
- The network table is not set for screen data of the GV42/52/62.
- If the network table is set for screen data of the GV42/52/62 but you would like to use an IP address that is different from that set on the network table tentatively, press the [Use Network Table] switch to select [Not Use Network Table].

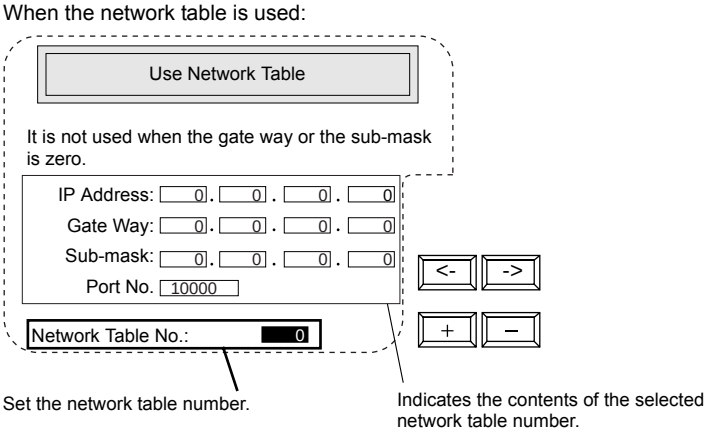


1. Set the IP address. (If necessary, set the default gateway and subnet mask.)
2. Press the [Setting Finished] switch. The IP address is determined.
3. The Main Menu screen is displayed again. (If the “Ethernet” screen is displayed from the initial screen, the initial screen is displayed again.)

Use Network Table

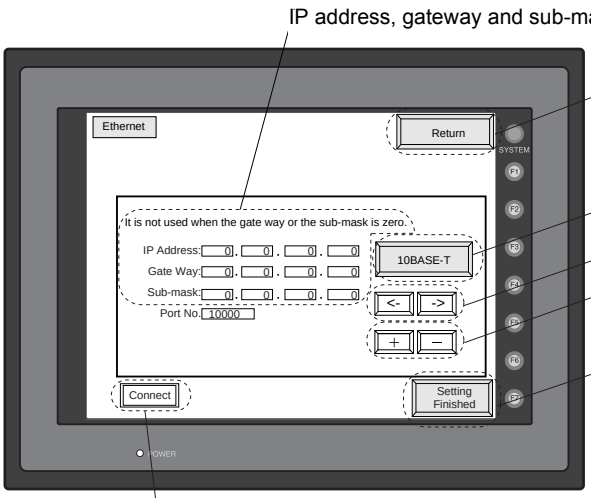
In the following cases, select [Use Network Table].

- The network table is set for screen data of the GV42/52/62 and you would like to change the network table number.



1. Set the network table number.
2. Press the [Setting Finished] switch. The IP address is determined.
3. The Main Menu screen is displayed again.

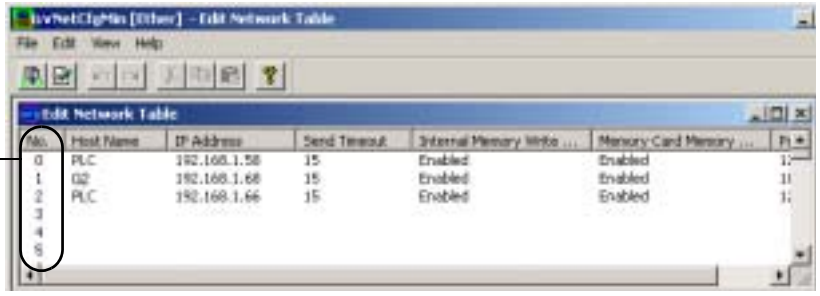
Connection with AIGV833 on GV42/52/62



1. Select either [10BASE-T] or [AUI] for the connecting method.
2. Set the IP address. (If necessary, set the default gateway and subnet mask.)
3. Press the [Setting Finished] switch. The settings are determined.
4. The Main Menu screen is displayed again.

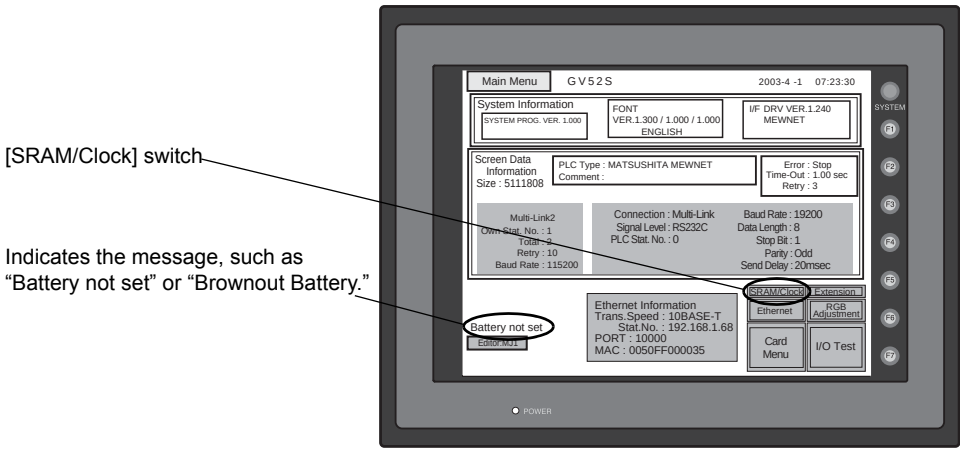
- Rotary Switch and Network Table
  Register IP addresses and other information for the GV series, PLCs or computers that should be included for Ethernet communications on the GVWIN editor. ([System Setting] → [Network Table Setting] → [Ethernet] → [Edit Network Table]) Set the network table number with the rotary switch on the communication interface unit AIGV833.

Port number to be set with the rotary switch on the communication interface unit AIGV833

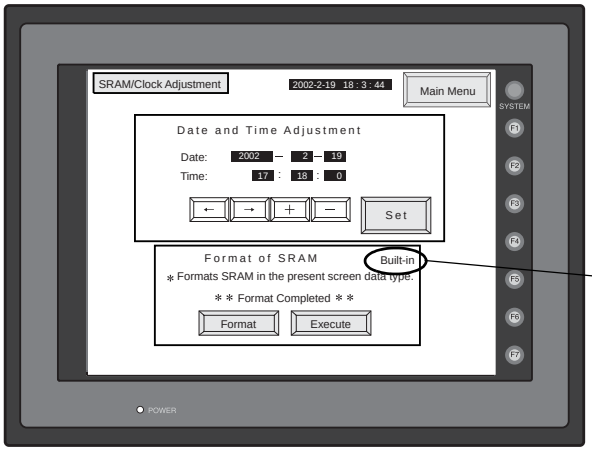


5. SRAM/Clock

- To use the built-in clock of the GV42/52/62 or to use the SRAM memory or cassette, it is necessary to select [SRAM/Clock Setting] from the [System Setting] menu and make the SRAM/clock setting. For the setting procedure, refer to the Reference Manual.
- Be sure to set the battery when using the built-in clock of the GV42/52/62 or the SRAM memory or cassette. Without battery, the contents in the SRAM or clock data will not be retained. When the battery is not connected, the message “Battery not set” is displayed and the [SRAM/Clock] switch flashes on the Main Menu screen. Connect the battery immediately. When the battery is to be replaced, the message “Brownout Battery” is displayed.



- When the [SRAM/Clock] switch on the Main Menu screen is pressed, the following “SRAM/Clock Adjustment” screen appears. This screen is used for adjusting the built-in calendar and for initializing the SRAM area.



AIGV825 mounted: Extension
AIGV825 not mounted: Built-in
The above is displayed.

Date and Time Setting

1. Move the cursor using the [←] / [→] switch, and change the value by pressing the [+] / [–] switch.
2. When the desired date and time are set, press the [Set] switch to determine the setting.
3. The calendar data is updated as set.

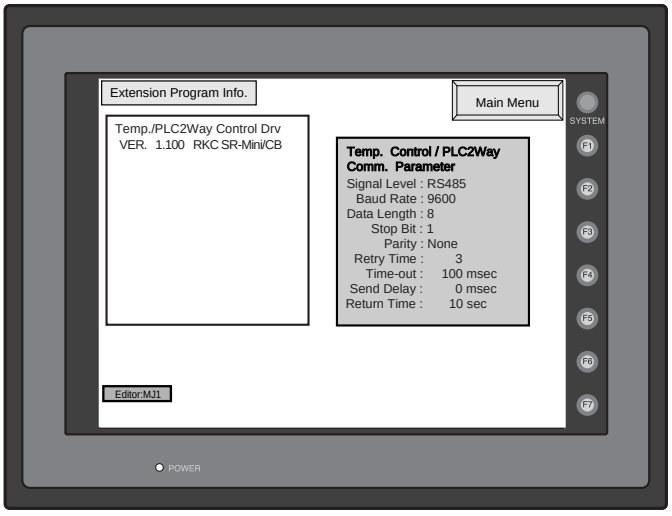
Initializing SRAM

When the SRAM memory or cassette is initialized, the data contained is cleared. Double-check before initializing the SRAM memory or cassette.

1. “Extension” is shown when AIGV825 (SRAM cassette) is mounted; “Built-in” is shown when it is not mounted.
2. Press the [Format] switch and the [Execute] switch. The SRAM area is initialized in the current screen data format. When initialization has been completed, the message “∗∗Format Completed∗∗” is displayed.

6. Extension Program Information

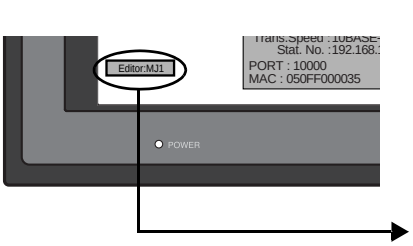
When the [Extension] switch on the Main Menu screen is pressed, the following “Extension Program Info.” screen appears. The driver setting and parameter setting for temperature controller/PLC2Way communication, ladder transfer function, Modbus slave communication, etc. are displayed.



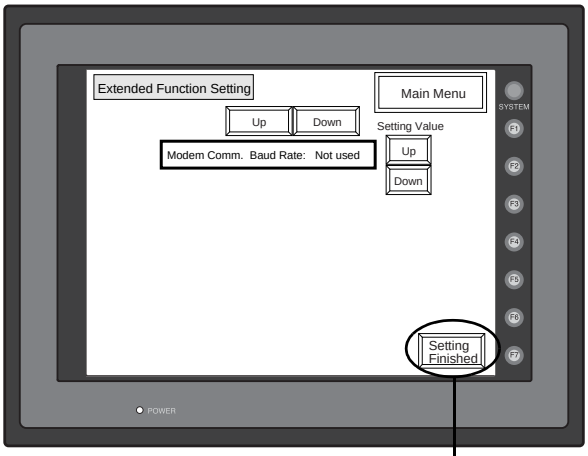
7. Extended Function Setting

When the [Editor: MJ1] switch on the Main Menu screen is pressed, the following "Extended Function Setting" screen appears. Set the baud rate to be used when transferring screen data between the GV42/52/62 and a modem.

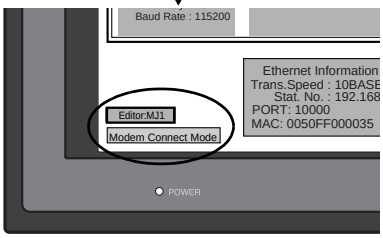
1. Select the desired baud rate using the [↑] / [↓] switch, and press the [Setting Finished] switch. (Setting range: 4800, 9600, 19200, 38400, 57600, 115200)
   * **The function switches and switches on the Main Menu screen are not valid for 15 seconds after the [Setting Finished] switch is pressed.**
   * **When the [Setting Finished] switch is pressed, an AT command is automatically sent to the modem and the baud rate used between the GV42/52/62 and the modem is set.**
2. The Main Menu screen is displayed automatically, and "Modem Connect Mode" is displayed below the [Editor: MJ1] switch.
3. To transfer screen data without a modem, select "Not used" for [Modem Comm. Baud Rate]. To transfer screen data by connecting the GV42/52/62 series and the computer via AIGV8103, select "Not used" for [Modem Comm. Baud Rate].



Pressing the [Editor: MJ1] switch brings up the "Extended Function Setting" screen.



Pressing the [Setting Finished] switch moves back to the Main Menu screen.



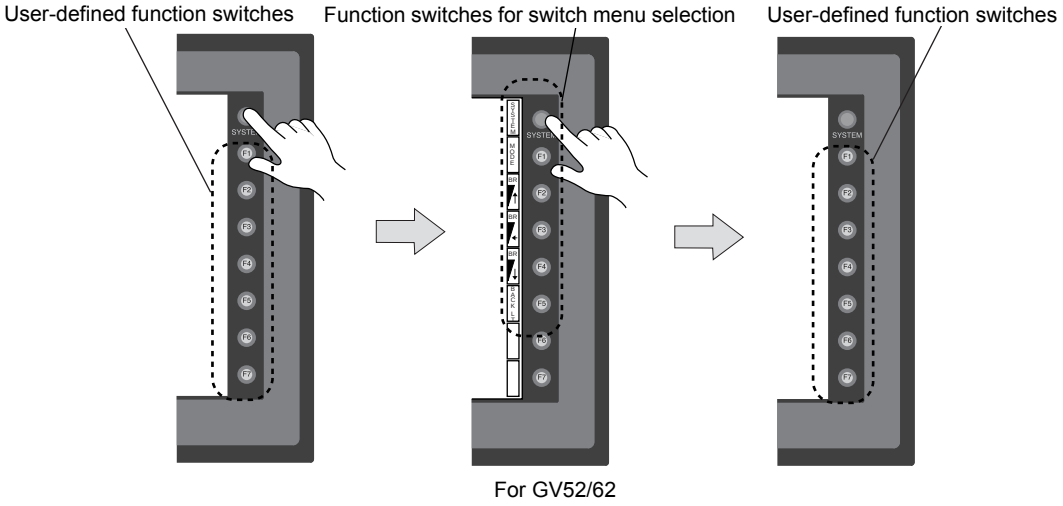
2. Function Switches

Types

- There are eight function switches provided.
  [SYSTEM], [F1], [F2], [F3], [F4], [F5], [F6], [F7]

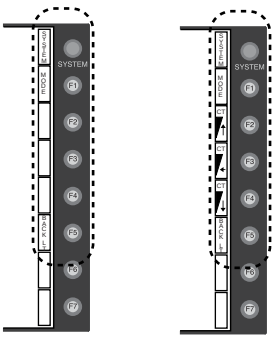
[SYSTEM] Switch

The [SYSTEM] switch works in “alternate” operations. When this switch is pressed once, the switch menu is displayed at the side of the function switches [F1] to [F5], and each function switch corresponds to the menu item displayed in the switch menu. When the [SYSTEM] switch is pressed again, the switch menu disappears, and the function switches [F1] to [F7] work as defined by the user.



For GV52/62

For GV42C:



User-defined Function Switches [F1] to [F7]

- User-defined function switches [F1] to [F7] do not work in the STOP mode.
- When the GV42/52/62 is in the RUN mode and the switch menu by the [SYSTEM] switch is not displayed, the function switches can be defined by the user.
- User-defined function switches should be set in the following dialogs of the GVWIN editor.
  - Settings for each screen
    [Edit] → [Local Function Switch Setting] → [Function Switch Setting] dialog
  - Setting for all screens
    [System Setting] → [Function Switch Setting] → [Function Switch Setting] dialog

[F1] to [F5] Switch Functions with Switch Menu

<table>
<tr><td></td><td>Functions</td><td colspan="6">Contents</td></tr>
<tr><td>F1</td><td>Mode</td><td colspan="6">Selects the operation mode between STOP ↔ RUN.</td></tr>
<tr><td rowspan="4">F2
F3
F4</td><td rowspan="4">Contrast
Brightness</td><td rowspan="2">Item</td><td colspan="2">Contrast Adjustment</td><td colspan="3">Brightness Adjustment</td></tr>
<tr><td colspan="2">Adjust the contrast. Holding down the switch for one second or more changes the contract rapidly.</td><td colspan="3">Adjusts the screen brightness in three levels.</td></tr>
<tr><td>Applicable models</td><td colspan="2">GV42C</td><td colspan="3">GV52/62</td></tr>
<tr><td>Adjustment</td><td colspan="2">F2 F3 F4
← →
Dark Medium Pale</td><td>F2</td><td>F3*1</td><td>F4*1</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td>1
Bright</td><td>2
Medium</td><td>3
Dark</td></tr>
<tr><td rowspan="3">F5</td><td rowspan="3">Backlight</td><td colspan="6">Turn the backlight on and off.
Backlight control should be set on the GVWIN editor.
([System Setting] → [Unit Setting] → [Unit Setting] dialog, [Backlight] tab window)</td></tr>
<tr><td>Always ON</td><td colspan="2">Auto 1/Auto 2</td><td colspan="3">Manual/Manual 2</td></tr>
<tr><td>Ignored</td><td colspan="2">• When the [F5] switch is pressed, the backlight goes off even before the setting OFF time is reached.
• This is valid when the backlight control bit (bit 11) in the read area “n + 1” in the system memory is reset (OFF: 0).</td><td colspan="3">• The [F5] switch turns the backlight on and off.
• [Backlight Power ON Time Control] that determines the backlight status at power-up becomes valid.
When the power is turned on:
ON → Backlight ON
OFF → Backlight OFF
The backlight will be in the above status.</td></tr>
</table>

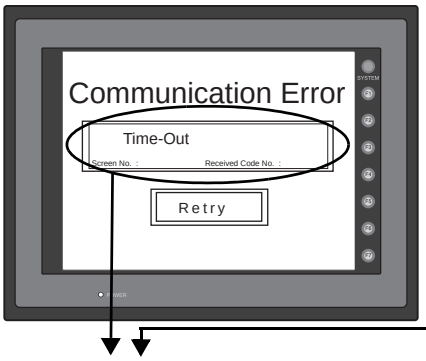
*1 When a medium or dark brightness is set, the backlight service life may become shorter.

3. Errors Displayed on the GV42/52/62

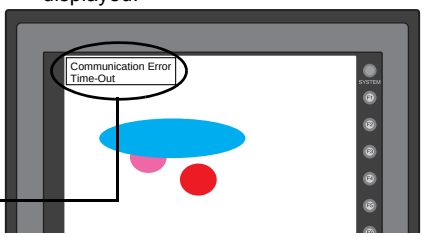
There are five kinds of error messages displayed on the GV series:

1. Communication Error
2. Check
3. Warning
4. SYSTEM ERROR
5. Touch switch is active

1. Communication Error



* When you go to [Comm. Parameter], bring up the [Detail] tab window and set [Continue] for [Comm. Error Handling], a screen like the one shown below is displayed.



Error Message	Contents	Solution	Remarks
Time-Out	Although a request to send is given to the PLC, no answer is returned within the specified time.	1) Check the communication parameters. 2) Check the cables and wiring.	1
		3) Data may be disrupted because of noise. Fix noise.	2
Parity	An error occurred in parity check.	1) Check the cables and wiring.	1
		2) Data may be disrupted because of noise. Fix noise.	2
Framing	Although the stop bit must be [1], it is detected as [0].	1) Check the communication parameters. 2) Check the cables and wiring.	1
		3) Data may be disrupted because of noise. Fix noise.	2
Overrun	After one character is received, the next character is received before internal processing is completed.	1) Check the communication parameters.	1
		2) Data may be disrupted because of noise. Fix noise.	2
Check Code	The check code in the PLC response was not correct.	1) Check the communication parameters.	1
		2) Data may be disrupted because of noise. Fix noise.	2

*** If the above error messages are displayed on the GV42/52/62 without establishing communication between GV42/52/62 and PLC, test the solution of remark "1." If the error occurs suddenly in communication, test the solution of remark "2."**

Error Message	Contents	Solution
Error code received	An error code was sent to the link unit by the CPU of the PLC.	Examine the CPU error code and solve the problem.
Break	The PLC's SD (TXD) remains at the low level.	Examine the connection between the PLC's SD (TXD) and the GV42/52/62's RD (RXD).
Invalid memory (applicable to MITSUBISHI CPU)	You specified an address that exceeds the memory range of the PLC that you are linked to.	Check the type and range of memory that you set.
Invalid CPU model (applicable to MITSUBISHI CPU)	The PLC currently being supported does not have a corresponding CPU.	Confirm whether or not the CPU that you are using can be used with the GV Series.
Format	The code of the received data is invalid.	Check 1, 2, 3 described below.
Compare (applicable to HIDIC S10)	Transmission data and received data are different.	Check 1, 2, 3 described below.
NAK (applicable to Allen-Bradley PLC)	A NAK code is received.	Check 1, 2, 3 described below.
TNS discrepant (applicable to Allen-Bradley PLC)	Transmitted TNS data and received TNS data are not in agreement.	Check 1, 2, 3 described below.
Communication Error	An unclear communication error is detected.	Check 1, 2, 3 described below.
Count error (applicable to MITSUBISHI CPU/Q link unit)	The expected data amount is different from the count value.	Check 1, 2, 3 described below.
Command error (applicable to MITSUBISHI CPU/Q link unit)	The response code differs from the expected code.	Check 1, 2, 3 described below.
Invalid cassette (applicable to MITSUBISHI ACPU)	This cassette is not included in the memory cassettes currently being supported.	Contact your local distributor.
Password error (applicable to MITSUBISHI QCPU)	The password is incorrect.	Contact your local distributor.

Solution

1. Confirm link unit settings. (After making settings, cut power to the PLC.)
2. Go to the editor (GVWIN) and confirm the settings in the [Comm. Parameter] dialog in the [System Setting] menu.
3. If errors only occur from time to time, it is possible that there is a noise-based communication error.

*** If you still cannot solve the error even after following the suggestions above, contact your local distributor.**

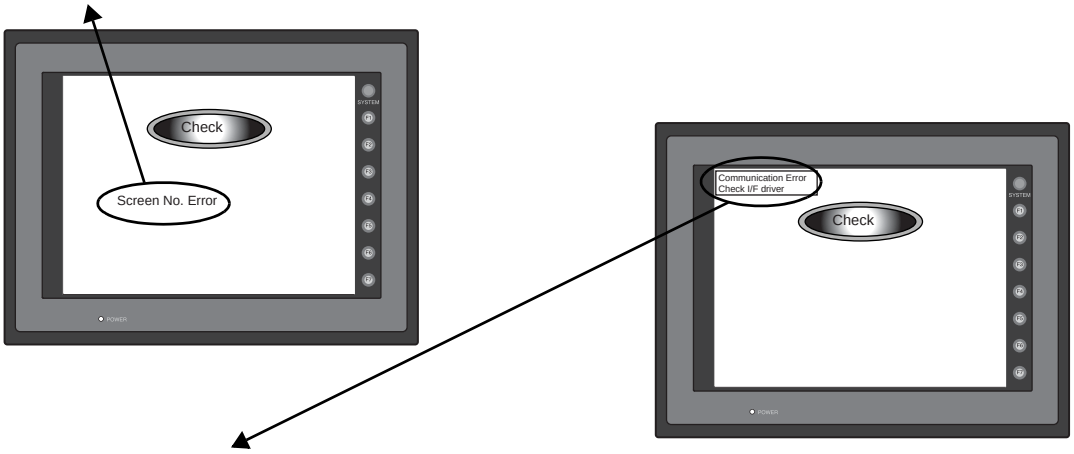
Error Messages for Network Communication

- Ethernet

Error Message	Contents	Solution
Ethernet Error: XXXX	The Ethernet status is saved at system memory address $s518 and a code other than “0” (normal) is received. XXXX: Error No.	For the contents and solution to each error number, refer to “Chapter 4 Network Communications/Error Display.”

2. Check

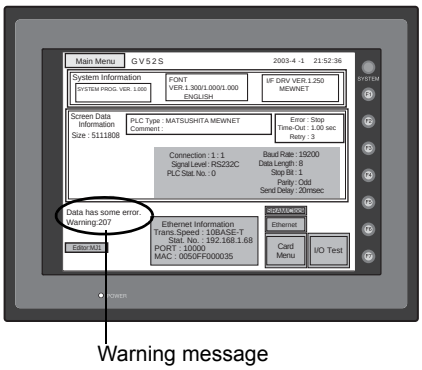
Error Message	Contents	Solution
Screen No. Error	There is no setting for the received screen.	At the start of communications, the GV42/52/62 regards the value in the read area “n + 2” as the screen number. Check that this value is an existing screen number on the PLC.
Data has some error. Error : XX (XX : XXX)	There is an error in the created screen data.	“Error : XX (XX : XXX)” indicates the edited screen and the contents of the error. For the error details and solutions, refer to “Reference Manual” and correct screen data.



Error Message	Contents	Solution
Communication Error Check I/F driver	Although a request to send is given to the computer, no answer is returned within the specified time.	The I/F driver for simulator is transferred. If you don't use the simulator, uncheck [Use Simulator] before transferring data.

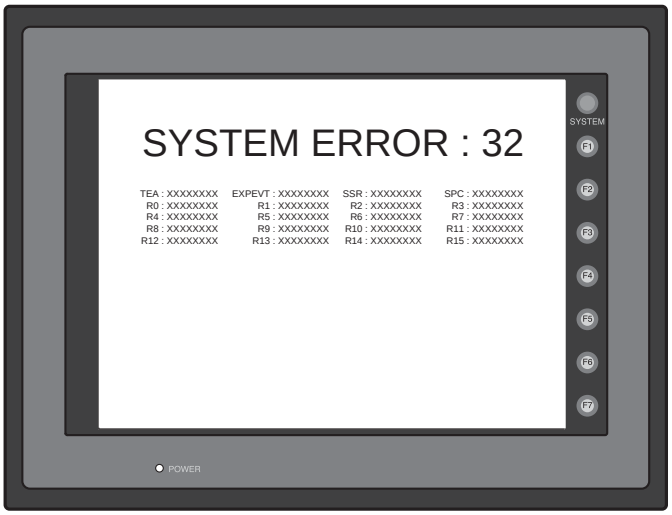
3. Warning

An error may be displayed on the Main Menu screen during data transfer. This is a warning message. For the warning details and solutions, refer to the Reference Manual and correct screen data.



4. SYSTEM ERROR

When a system error is detected, the following error screen is displayed.



ERROR: XX

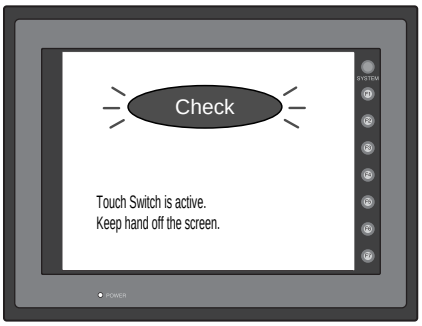
- 1: Watch dock timer error
- 11: Switch table error
- 30: Request for displaying full error
- 31: Memory allocation system error
- 32: General exceptions/MMU address system error
- 33: RTOS system error
- 34: Memory error
- 35: Inaccurate memory error

The source of the error could be one of the following three problems. Contact your local distributor.

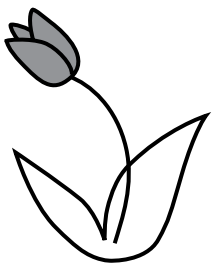
1) Program crash due to noise
2) Hardware problem
3) Bad program

5. Touch Switch is Active

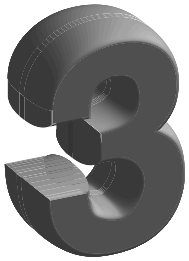
If the power is turned off while a touch switch is activated, the following error screen is displayed. Remove your finger from the screen.



MEMO



Please use this page freely.



Serial Communications

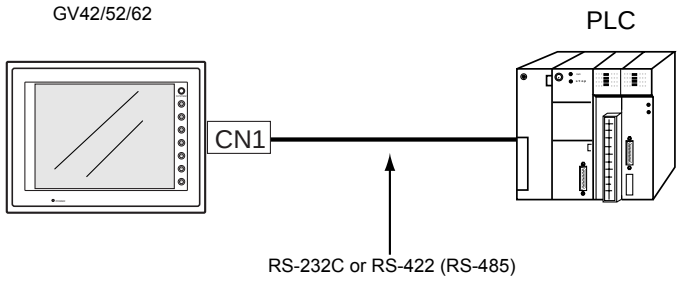
1. 1 : 1 Connection

2. 1 : n Connection (Multi-drop)
3. n : 1 Connection (Multi-link)
4. Universal Serial Communications
5. GV-Link
6. PLC2Way

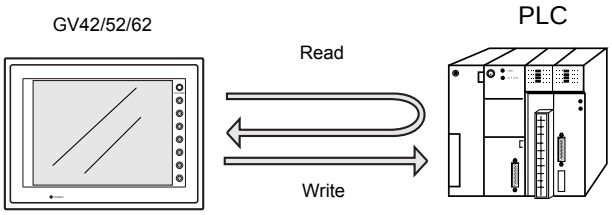
1. 1 : 1 Connection

1 : 1 Connection

- One set of the GV42/52/62 is connected to one PLC (1 : 1 connection).



- The host link unit of the PLC or the CPU port is used and the GV42/52/62 (master station) establishes communications according to the protocol of the PLC. Consequently, it is not necessary to have the dedicated communication program on the PLC (slave station). The GV42/52/62 reads the PLC memory for screen display. It is also possible to write switch data or numerical data entered through the keypad directly to the PLC memory.



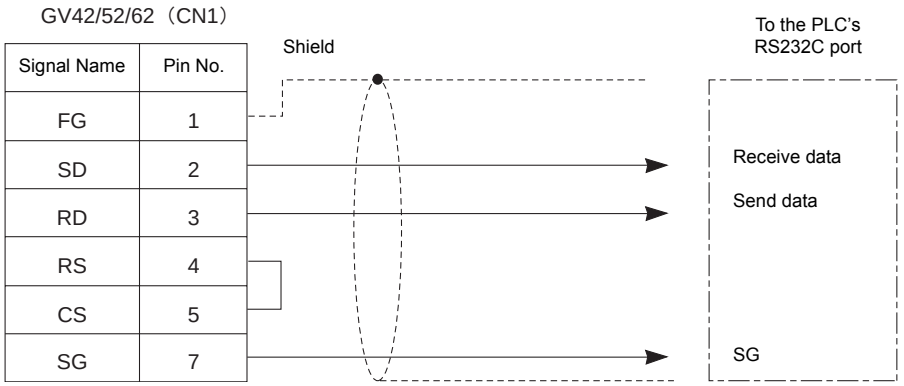
Wiring

DANGER	Electric shock hazard Shut the power off before connecting cables.

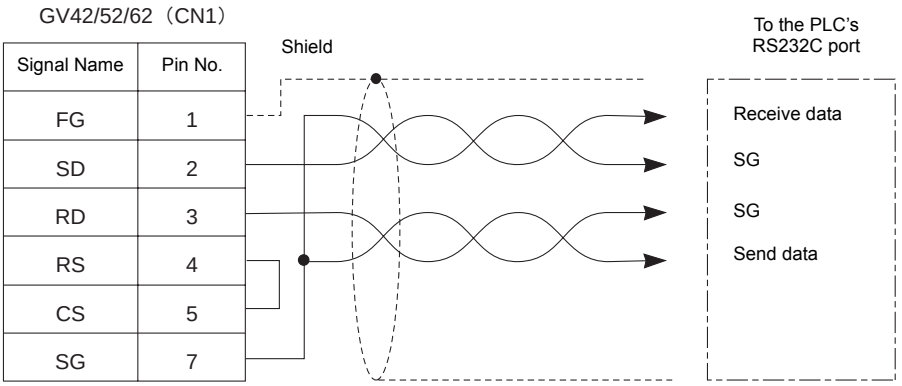
Prepare the communication cable with the PLC on your side. Refer to the following information for the cable. For more information on the connection to respective PLCs, refer to “Chapter 5 Connection to PLCs.”

RS-232C Connection

- Connect the shielded cable either to the GV42/52/62 or PLC side. This connection diagram shows the case where the shielded cable is connected on the GV42/52/62 side. When connecting the shielded cable to the GV42/52/62 side, connect it to pin 1 of the connector or the connector case cover.
- Twisted pairs of 0.3 mm sq. or above are recommended.



- If noise disturbs communications, use twist-pair cables between SD/SG and RD/SG.



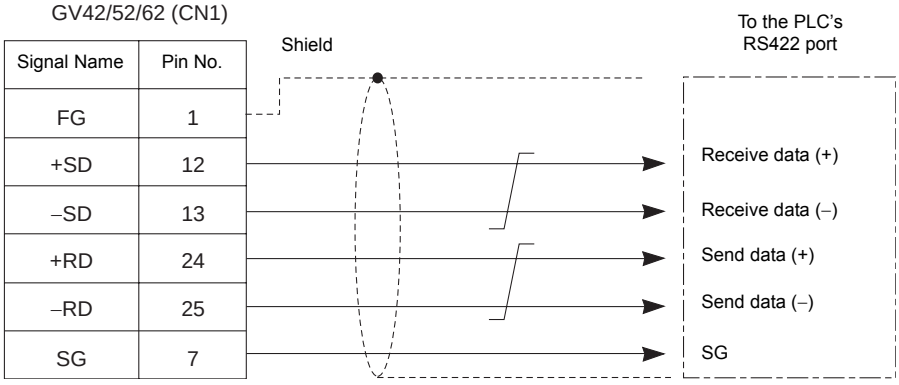
RS-422/485 Connection

- Connect twist-pair cables between +SD/–SD and +RD/–RD.
- If the PLC has the terminal for signal ground (SG), be sure to connect a wire.
- Connect the shielded cable either to the GV42/52/62 or PLC side. This connection diagram shows the case where the shielded cable is connected on the GV42/52/62 side. When connecting the shielded cable to the GV42/52/62 side, connect it to pin 1 of the connector or the connector case cover.
- To use a terminal block for connection, use "AIGV830" optionally available.
- For the terminating resistance on the GV42/52/62, turn the DIP switch (DIPSW7) to the ON position on the side towards the rear.
- Twist-pair cables of 0.3 mm sq. or above are recommended.

4-wire system:

GV42/52/62 (CN1)

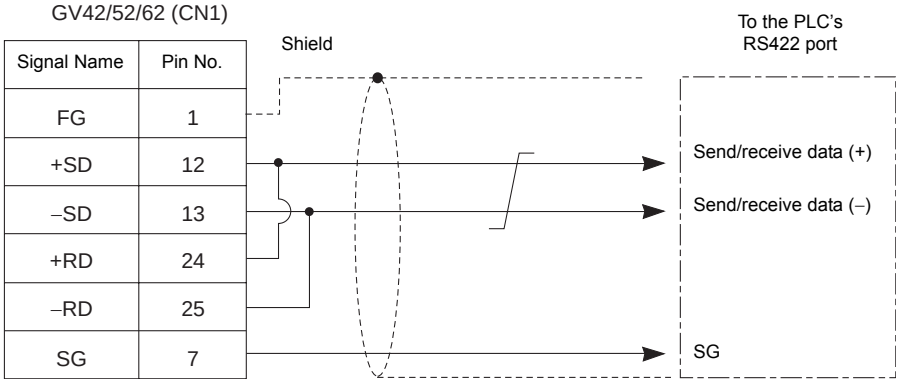
Signal Name	Pin No.
FG	1
+SD	12
–SD	13
+RD	24
–RD	25
SG	7



2-wire system:

GV42/52/62 (CN1)

Signal Name	Pin No.
FG	1
+SD	12
–SD	13
+RD	24
–RD	25
SG	7



GVWIN Setting

For serial communications, the following settings on the GVWIN editor are required. The settings in the [Select PLC Type] and [Comm. Parameter] dialogs are shown on the Main Menu screen of the GV42/52/62. (Refer to "Chapter 2 GV Operations.")

PLC Selection

Select the PLC that is connected.

- Setting Position
  [System Setting] → [PLC Type] → [Select PLC Type] dialog

Communication Parameter Setting

The communication parameter setting is essential for successful communications between the GV series ↔ PLC. Check the communication parameter setting on the PLC before making the setting on GV.

- Setting Position
  [System Setting] → [Comm. Parameter] → [Comm. Parameter] dialog
- Setting Items
  - [Connection] (1 : 1 / 1 : n / Multi-Link / Multi-Link 2)
    Select the type of connection between the GV42/52/62 and the PLC. There are four types available. Depending on the selected type, the setting items in the [Comm. Parameter] dialog or those for the memory vary. Select [1 : 1] for 1 : 1 connection.
  - [Local No.]
    Set the port number of the PLC.
  - [Trans. Mode] (Trans. Mode 1/Trans. Mode 4)
    When the PLC has a transmission mode setting, set the same on the GV42/52/62. (This setting must be used for PLCs of MITSUBISHI, OMRON, HITACHI, YOKOGAWA, Toyoda Machinery and YASKAWA.)
  - [Baud Rate] [Signal Level] [Data Length] [Stop Bit] [Parity]
    Make the same setting as the PLC. (Refer to “Chapter 5 Connection to PLCs.”)

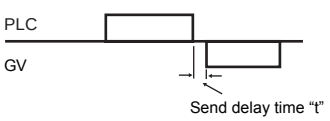
    [Baud Rate] (4800, 9600, 19200, 38400, 57600, 76800, 115 kbps)
    Set the same communication speed as the PLC.

    [Signal Level] (RS232C/RS422)
    Set the same communication interface as the PLC.

    [Data Length] (7-bit/8-bit)
    Choose either data length for communication.

    [Stop Bit] (1-bit/2-bit)
    Choose either stop bit for communication.

    [Parity] (None/Odd/Even)
    Choose any of the parity options for communication.
  - [Send Delay Time] (0 to 255) (Unit: × 1 msec)
    Set a time delay in sending the next command to the PLC after receipt of a response from the PLC. Normally use the default setting.



  - [Start Time]
    Set a time delay in seconds in starting communications on the GV42/52/62 to avoid a delay in PLC processing that may occur when the GV42/52/62 and the PLC are turned on at the same time.

- Choose the action to be taken against communication errors.

  [Comm. Error Handling]
  Set error handling routine in the case that a communication error between the GV42/52/62 and the PLC occurs.

  [Stop] If any communication error has arisen, the communications are stopped. When restoring, use the Retry switch (found on the error screen of the GV42/52/62).

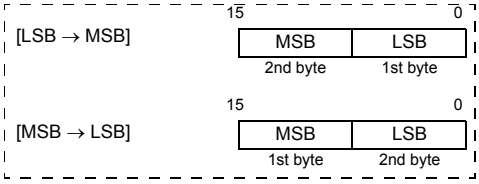
  [Continuous] If any communication error has arisen, it is indicated at the top left corner on the GV42/52/62 screen. The GV42/52/62 conducts polling of the PLC, and if OK, the error state is automatically reset.

Supplemental Information:	Polling "Polling" means to constantly monitor and check the state of the other station.

  [Time-out Time] (0 to 999) (Unit: ×10 msec)
  Specify a time for monitoring the receiving of a response from the PLC. If no response is received within the specified time, a retrial is attempted.

  [Retrials] (1 to 255)
  Specify the number of retrial times. When the problem persists even after as many retrials as specified, the system will start the error handling routine.

- [Text Processing]
  (LSB → MSB / MSB → LSB)
  When processing characters, choose either option for arranging 1st/2nd bytes in one word.



- [Code] (DEC/BCD)
  Choose the code for entering numerical data. For some numerical data, such as those for data displays or data sampling in the sampling mode, this setting is not applied because BCD or DEC should be chosen for [Input Format].

- [Read Area] [Write Area]
  Refer to the next section "System Memory."

- [☐ Use Ethernet]
  When using Ethernet communications, check this option. For more information, refer to "Chapter 4 Network Communications/1. Ethernet."

System Memory

[Read Area]/[Write Area] of the system memory must be secured for communications between the GV42/52/62 and the PLC.

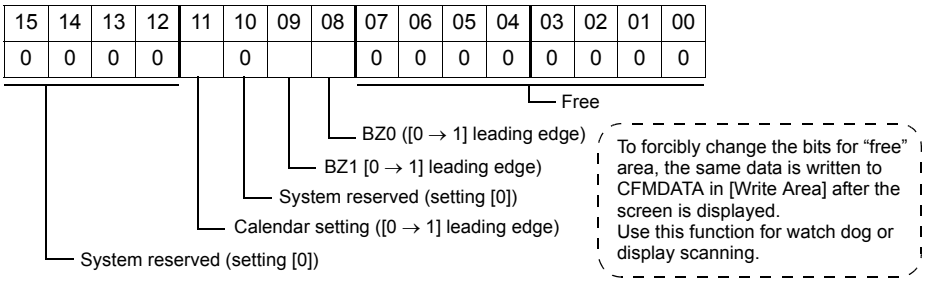
- Setting Position
  [System Setting] → [Comm. Parameter] → [Comm. Parameter] dialog
- Setting Items
  [Read Area] (3 words or more)*
  - This is the area where commands from the PLC are received for screen display changes. Consecutive three words from the specified memory address are used as "read area."

Address	Name	Contents
n	RCVDAT	Sub command/data
n + 2	SCRN_COM	Screen status command
n + 1	SCRN_No	Screen number command

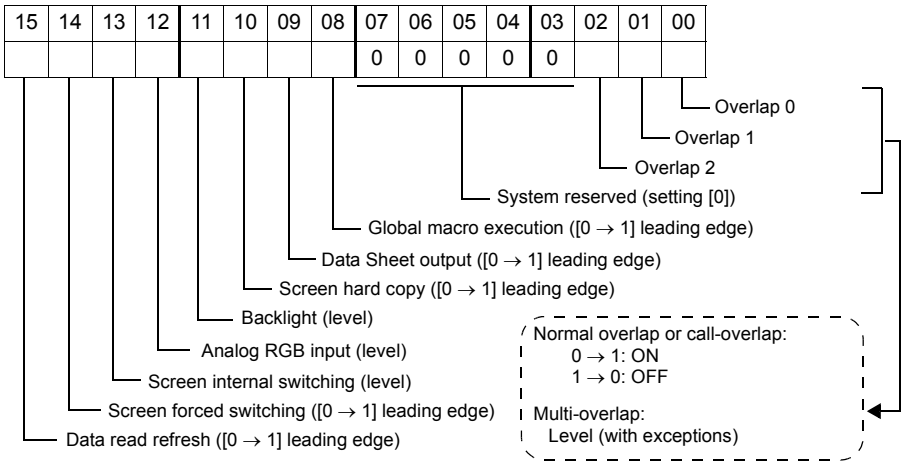
*** When you have created screens with the following function,the number of required memory addresses vary.**
- **When the sampling function is used:**
  Refer to the Reference Manual (Function).

- Set "0" for all the bits not used in the read area.

- RCVDAT (n) Sub command/data



- SCRN_COM (n + 1) Screen status command



- SCRN_No. (n + 2) Screen number command

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
0	0	0													

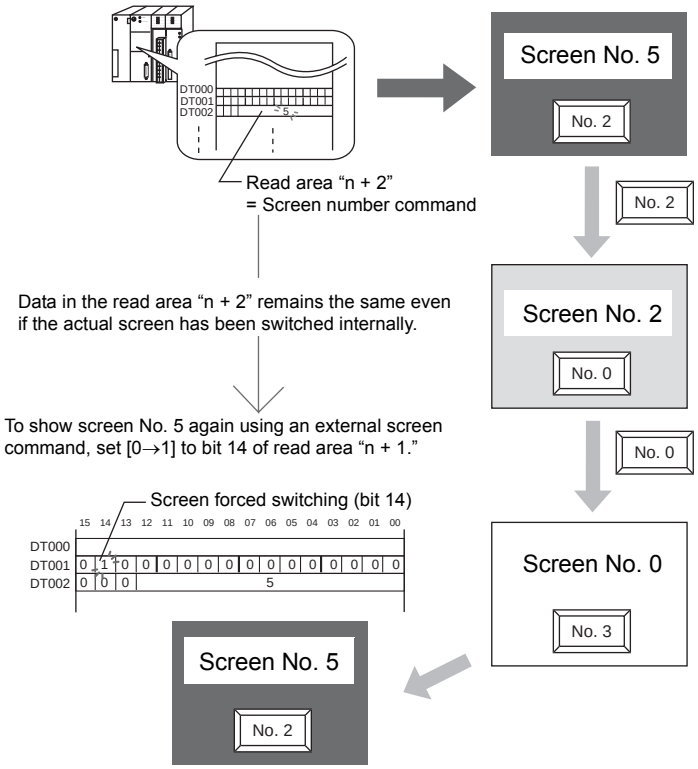
System reserved (setting [0])

Screen number

Use example: To specify a screen number from the PLC:
When “D0” is set for [Read Area], the screen number is written in “D2” of the PLC.

Problem example: The screen display does not change when a screen number is specified from the PLC.

If the same number as the one specified for “n + 2” is already contained in this memory address, the screen display does not change even if it is specified again. For example, if screen No. 5 is specified from the PLC and it was once changed to screen No. 2 → No. 0 by internal switches, normally it cannot be returned to the former screen No. 5 that was specified by an external command, because the external screen command number (5) remains the same as before in the memory address (“D2” in the read area) for the screen number command.In such a case, it is possible to forcibly switch the screen to the screen number contained in “D2” in the read area at the leading edge [0 → 1] of bit 14 of the memory address for the screen status command (“D1” in the read area).

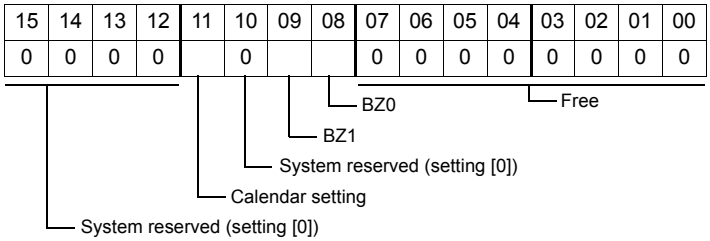


[Write Area] (3 words)*

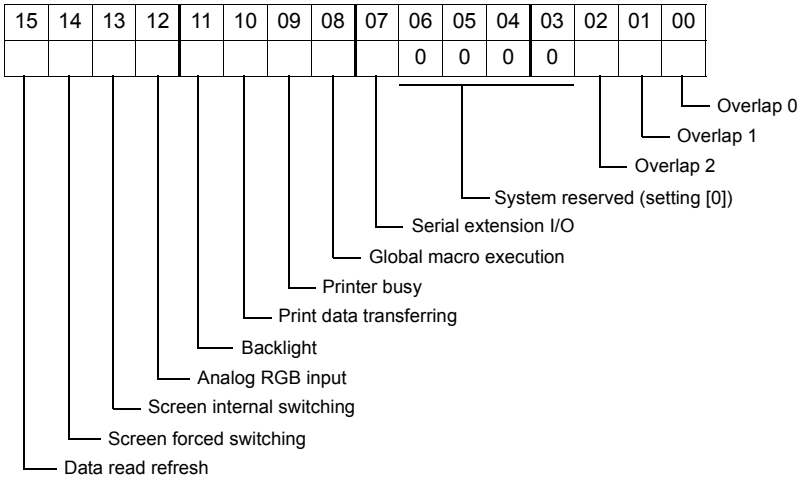
This is an area where the screen status is written. Consecutive three words from the specified memory address are used as “write area.”

Address	Name	Contents
n	CFMDAT	Same as data in read area “n”
n + 2	SCRN_COM	Screen status
n + 1	SCRN_No	Displayed screen number

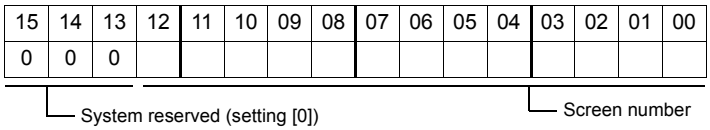
- CFMDAT (n)



- SCRN_COM (n + 1) Screen status



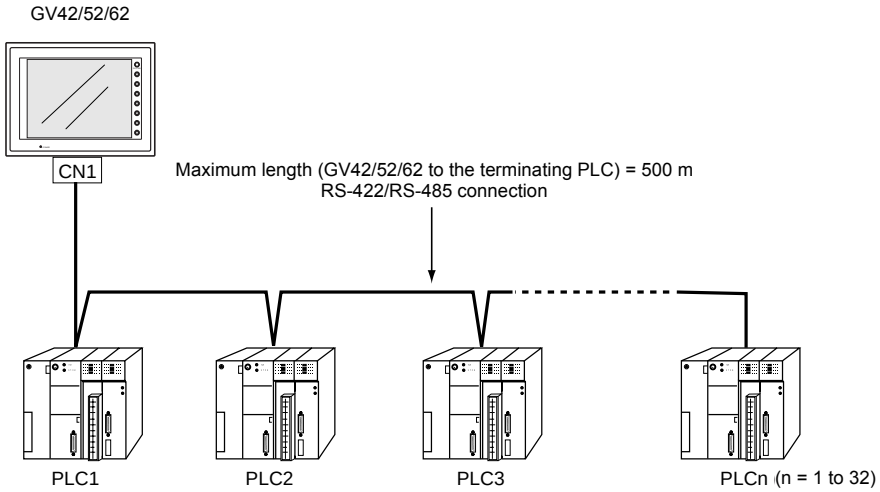
- SCRN_No. (n + 2) Displayed screen number



2. 1 : n Connection (Multi-drop)

1 : n Connection

One GV42/52/62 is connected to multiple PLCs. (Maximum connectable PLCs: 32)

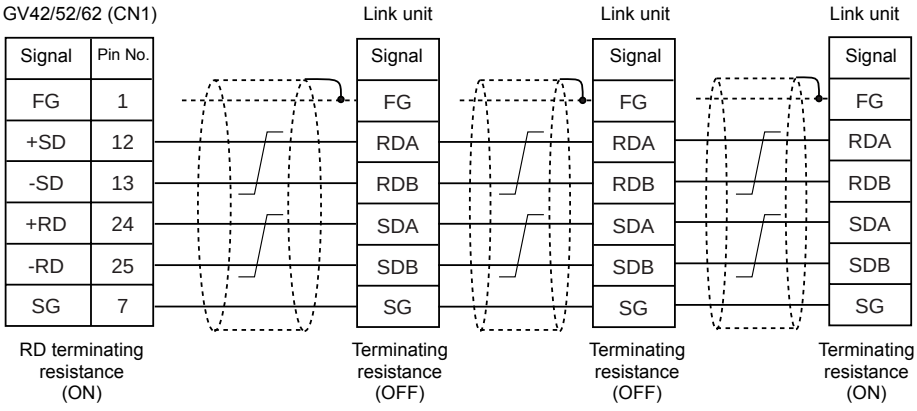


Wiring (RS-422/485)

For connecting information, refer to the instruction manual for the PLC.

Example:

The following example shows how one GV42/52/62 is connected to three PLCs made by MITSUBISHI. For more information, refer to the MITSUBISHI's instruction manual for the PLC.



* Use shielded twist-pair cables.

GVWIN Setting

The following settings must be made on the GVWIN editor. Only the points different from those described in “1 : 1 Connection/GVWIN Setting” (page 3-3) are explained here.

PLC Selection

Select the PLC that is connected. Check that the PLC to be connected is ready for 1 : n connection. Refer to the Appendix.

- Setting Position
  [System Setting] → [PLC Type] → [Select PLC Type] dialog

Communication Parameter Setting

- Setting Position
  [System Setting] → [Comm. Parameter] → [Comm. Parameter] dialog
- Setting Items
  Select “1 : n” for [Connection].

PLC Port Setting

Set the port number of each PLC not in the [Comm. Parameter] dialog but in the [Memory Setting] dialog for each part.

Notes on Communication Errors

- Be sure to select the PLC memory either for [Read Area] or [Calendar] in the [Comm. Parameter] dialog.
- Processing for PLC failure
  When a communication error or timeout has been detected during communications with a PLC, no further communication with this PLC is attempted until the display screen changes. The information of PLC failure is stored in the GV42/52/62 internal system memory address $s114 to 129.

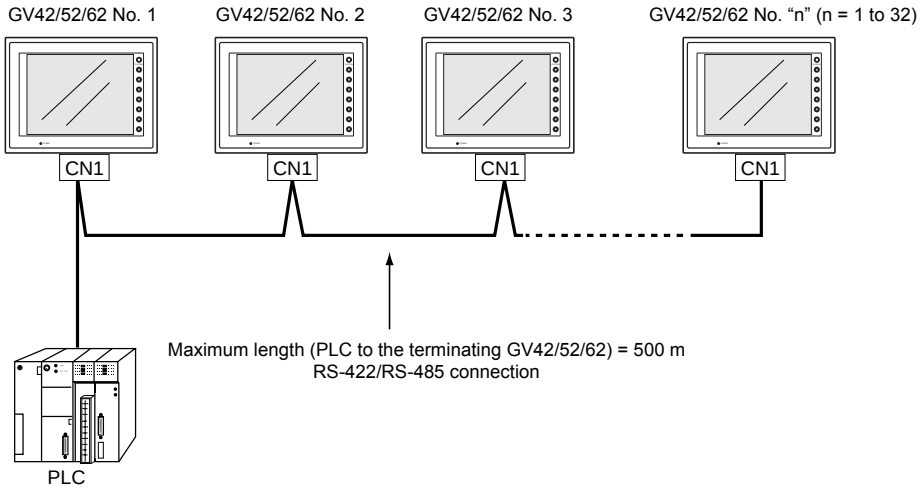
Supplemental Information:	Internal system memory The internal system memory is the one for the GV42/52/62 system.

- In the case that the internal memory is set for [Read Area], [Write Area] and [Calendar], no initial connection check is performed, and calendar information is read when the GV42/52/62 establishes communications with the PLC for the first time. A communication error occurs on the GV42/52/62 if a timeout is detected while accessing the PLC.

3. n : 1 Connection (Multi-link)

Multi-link

- One PLC is connected to multiple GV42/52/62. (Maximum connectable GGV series: 32)



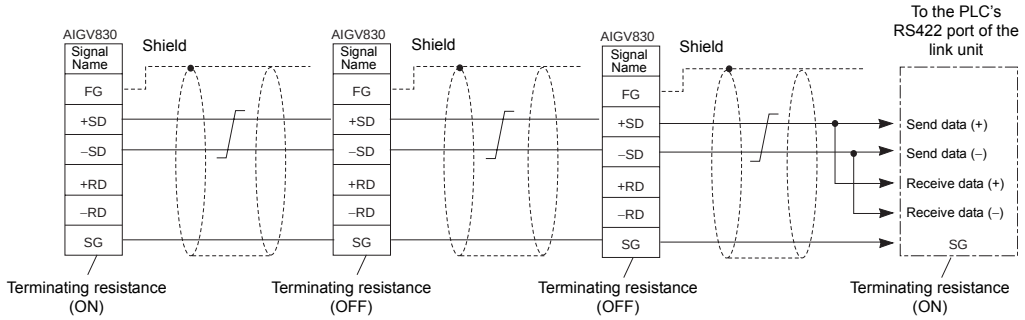
- The PLC must be of the type of signal level RS422/RS485 with port numbers. RS422 connection between the GV42/52/62 ↔ PLC must be in 2-wire connection.
- The GV42/52/62 and GV40/50/60 can be used together.

Wiring

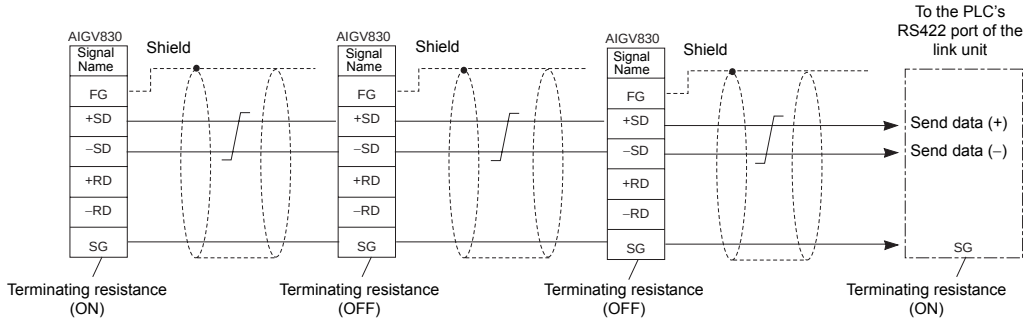
Connection with Link Unit

Use the RS-485 2-wire connection. (It is recommended that optional terminal converter "AIGV830" be used.)

- When AIGV830 is used:
  Set "2-wire connection" at the DIP switch (SW1) on AIGV830. When a jumper is required on the PLC:



When no jumper is required on the PLC:



- When AIGV830 is not used:
  Install jumpers between +RD/+SD and –RD/–SD.

GVWIN Setting

The following settings must be made on the GVWIN editor. Only the points different from those described in "1. 1 : 1 Connection/GVWIN Setting" (page 3-3) are explained here.

PLC Selection

Select the PLC that is connected. Check that the PLC to be connected is ready for multi-link connection. Refer to the Appendix.

- Setting Position
  [System Setting] → [PLC Type] → [Select PLC Type] dialog

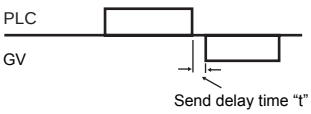
Communication Parameter Setting

- Setting Position
  [System Setting] → [Comm. Parameter] → [Comm. Parameter] dialog
- Setting Items

[Connection]
Select [Multi-Link]. Click [Setting]. The [Multi-Link] dialog is displayed. Make the necessary settings.

[Local Port] (1 to 32)
Set the port number of the GV42/52/62. Set the unique port number for each GV42/52/62. If the number duplicates, communications will not be performed correctly.

[Send Delay Time] (0 to 255) (Unit: ×1 msec)
Set a time delay in sending the response to the PLC after receipt of data from the PLC. (Default setting: 20 msec)



[Total] (2 to 32)
Set the total number of the GV42/52/62 included in the connection.

[Retry Cycle] (×10)
When the GV42/52/62 has a problem, it is temporarily removed from the communication targets, and the master station sends an inquiry for restoration every number of cycles specified for [Retry Cycle]. This setting does not affect the communication speed if no problem is occurring; however, if there is any problem, it does affect the communication speed.

- When the setting value is small: It will not take a long time before restoration.
- When the setting value is large: It will take a longer time before restoration.

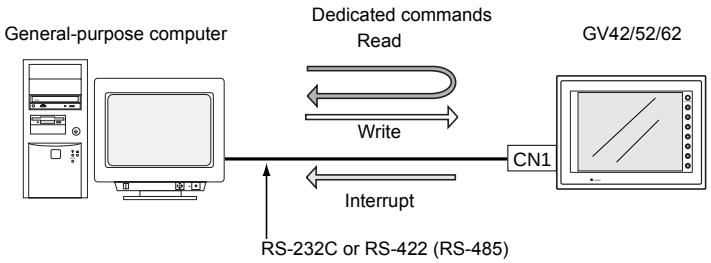
Supplemental Information:	[Retrials] in the [Detail] tab window of the [Comm. Parameter] dialog is the number of retrials that the GV42/52/62 sends an inquiry to the PLC.

*** For [Send Delay Time], [Total] and [Retry Cycle], the same values must be set on all the GV42/52/62 that are connected in the same communication line.**

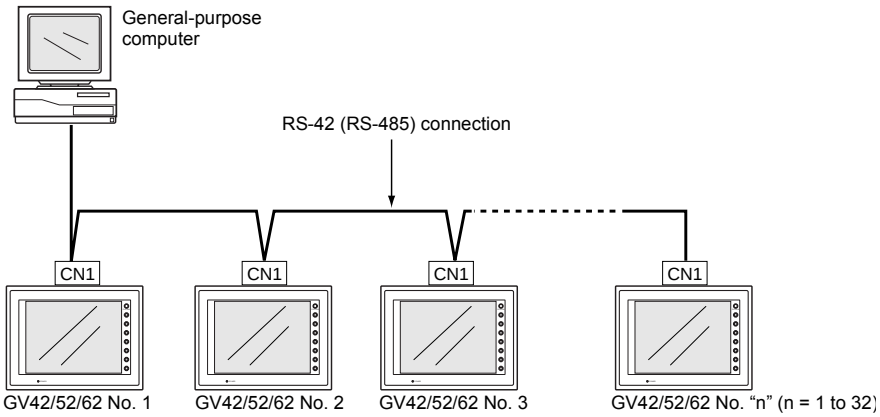
4. Universal Serial Communications

Universal Serial Communications

- A general purpose computer or an ASCII unit of the PLC (master station) controls the GV42/52/62 (slave station) using dedicated commands.



- The GV42/52/62 internal user memory addresses ($u) must be used for memory allocation for switch, lamp or data display parts. When the master station specifies a screen number, data is written to the internal memory address ($u) allocated for the screen. If the screen is switched internally, the new screen number is read and is written to the internal memory address ($u) allocated for the screen.
- For 1 : 1 connection, the GV42/52/62 can send an interrupt to the master station through switch activation, write command from the keypad, and screen change.
- Use CN1 of the GV42/52/62 for connection with a general-purpose computer. Either signal level RS-232C or RS-422 (RS-485) can be selected.
- In addition to 1 : 1 connection, 1 : n connection is available between the general-purpose computer and the GV42/52/62 via RS-422. (A maximum of 32 GV42/52/62 can be connected.) For 1 : n connection, interrupts cannot be used.

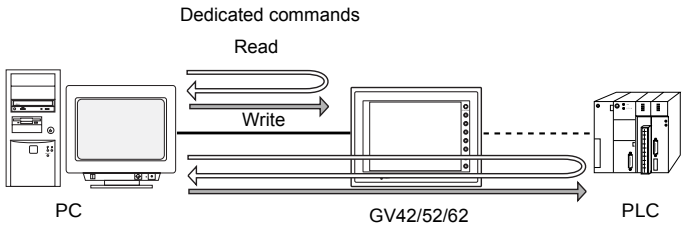


- For more information, refer to the GGV series Universal Serial Connection Manual.

5. GV-Link

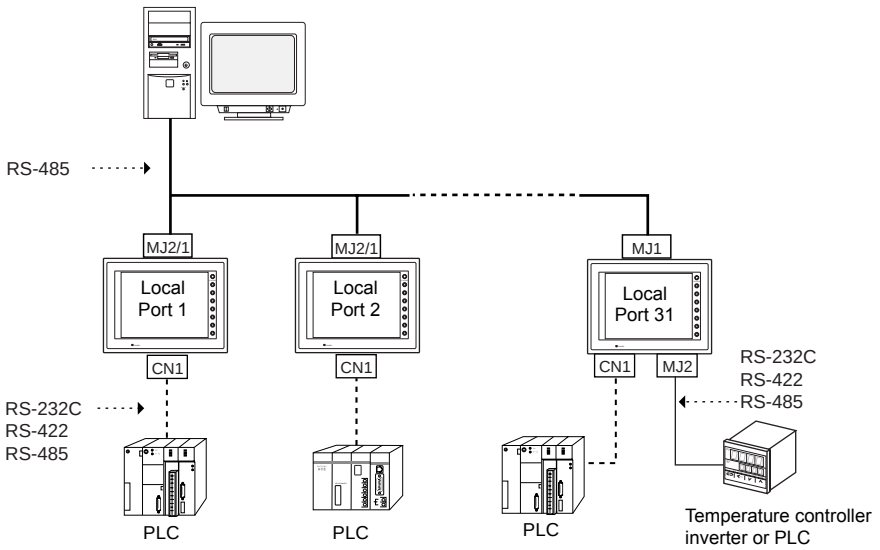
GV-Link

- “GV-Link” is the network where the computer reads from and writes to the internal memory of the GV42/52/62, memory card, PLC memory or temperature control/PLC2 memory using a dedicated protocol.



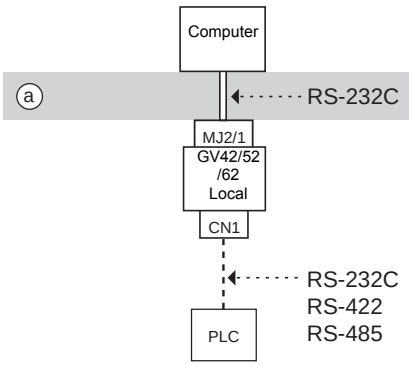
- Use the MJ port of the GV42/52/62 for connection with a general-purpose computer. For connection with the PLC using a temperature controller or the PLC2Way function, use the other MJ port and use CN1 for communications with the PLC. Data of the PLC or temperature controller can be collected through communications with the GV42/52/62. Data collection is available even between the products of different manufacturers.
- Either signal level RS-232C or RS-485 can be selected. With RS-232C, one GV42/52/62 can be connected; with RS-485, a maximum of 31 GV42/52/62 can be connected.

<RS-485 connection>



Wiring

RS-232C (GV42/52/62: 1 set)



Wiring example of above (a)

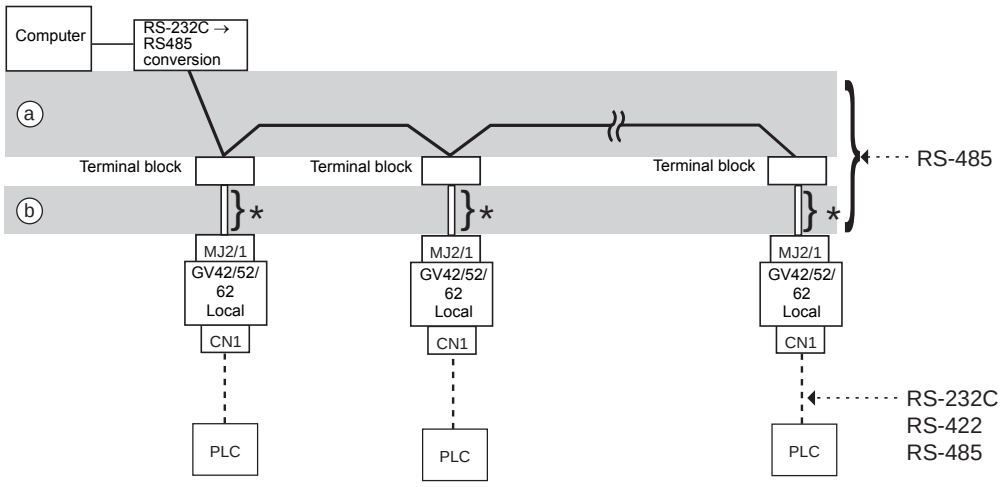
GV42/52/62
Modular jack, 8-pin

Signal Name	Pin No.
FG	
TXD(Yellow)	8
RXD(Orange)	7
SG (Red)	5

Computer
D-sub 9-pin (female)

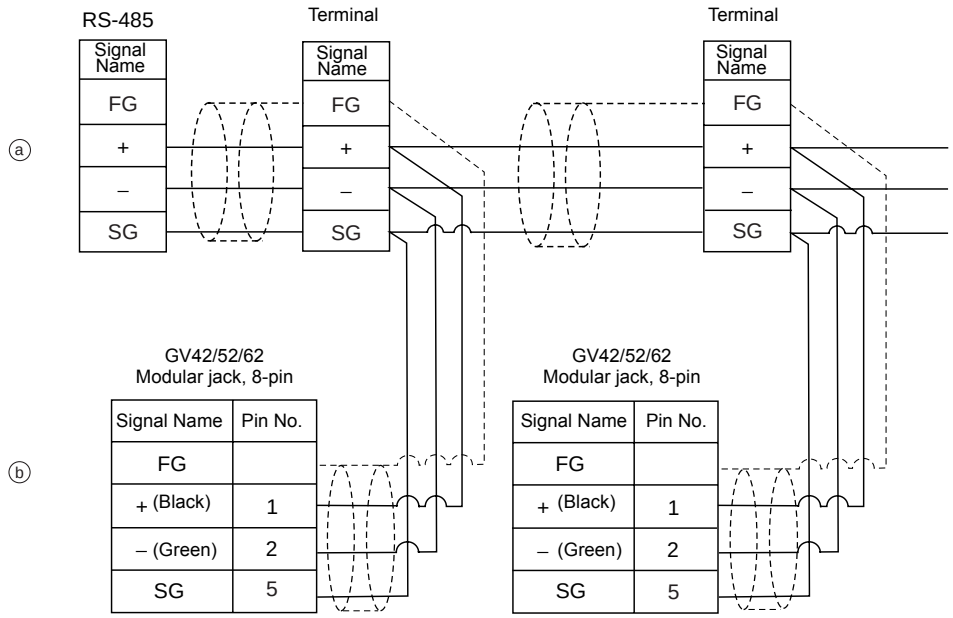
Signal Name	Pin No.
RD	2
SD	3
SG	5
DR	6
RS	7
CS	8

RS-485 (GV42/52/62: maximum 31 sets)



* 0.5 m recommended (1.0 m maximum)

Wiring example of above (a) and (b)



GVWIN Setting

The GVWIN settings required for GV-Link are explained.

GV-Link Setting

1. Click [System Setting] → GV-Link Setting].
2. The [GV-Link Setting] dialog is displayed.
3. Check [☐ Use MJ port as GV-Link] and make the setting for communications between the GV42/52/62 and the computer.

   [Refer to Modular]
   Select the modular jack to be used. Modular Jack 1/Modular Jack 2

   [Baud Rate]
   4800 / 9600 / 19200 / 38400 / 57600 / 115 kbps

   [Local Port] (1 to 31)
   Set the port number of the GV42/52/62.

   [Send Delay Time] (msec)
   Set a time delay in sending a response after receipt of data.

   [Parity]
   None/Odd/Even

   [Signal Level]
   RS-232C / RS-485
   With RS-232C, one GV42/52/62 can be connected; with RS-485, a maximum of 31 GV42/52/62 can be connected.

   [Data Length]
   7-bit/8-bit

   [Stop Bit]
   1-bit/2-bit

   [Use sum check]
   Check this option when using a sum check.

   [Add CR/LF]
   Check this option when adding CR/LF.

Protocol

Read (with sum check and CR/LF)

Read Command

Command

STX	GV local No.	Read command	Number of words to read	* Read target memory setting	ETX	SUM	CR	LF
1	2	2	2	18	1	2	1	1

Bytes

Response

(Normal communication)

STX	GV local No.	ACK	Memory data 0	...	Memory data n	ETX	SUM	CR	LF
1	2	2	4		4	1	2	1	1

Bytes

(When an error occurs)

STX	GV local No.	NAK	ETX	SUM	CR	LF
1	2	2	1	2	1	1

Bytes

* Read target memory setting

GV internal memory

Model	Type	Address	Reserved for system
2	2	4	10

PLC memory within 16 bits
Temperature cotrol/
PLC memory within 16 bits

Model	Type	Address	Expansion code	Reserved for system	Station Number (in [n:1] connection)	Reserved for system
2	2	4	2	2	2	4

PLC memory over 16 bits
Temperature cotrol/
PLC memory over 16 bits

Model	Type	Address	Expansion code	Reserved for system	Station Number (in [n:1] connection)
2	2	8	2	2	2

Memory card

Model	File No.	Record No.	Address	Reserved for system
2	2	4	4	4

Bytes

e.g. Reads the 2-word data, "ABCD" starting with the address $u0020(0014H) on the GV of the station number 1.

Command

STX	GV local No.	Read command	Number of words to read	Model	Type	Address	Reserved for system	ETX	SUM	CR	LF
	01H	20H	02H	00H	00H	0014H	0000000000H		8FH		
02H	30H 31H	32H 30H	30H 32H	30H 30H	30H 30H	30H 30H 31H 34H	30H 30H 30H 30H 30H 30H 30H 30H 30H 30H	03H	38H 46H	0DH	0AH

Response

(Normal communication)

STX	GV local No.	ACK	Data A	Data B	Data C	Data D	ETX	SUM	CR	LF
	01H	00H	41H	42H	43H	44H		60H		
02H	30H 31H	30H 30H	34H 31H	34H 32H	34H 33H	34H 34H	03H	36H 30H	0DH	0AH

Write (with sum check and CR/LF)

Write Command

Command

STX	GV local No.	Write command	Number of words to write	* Write target memory setting	Memory data 0	...	Memory data n	ETX	SUM	CR	LF
1	2	2	2	18	4		4	1	2	1	1

Bytes

Response

(Normal communication)

STX	GV local No.	ACK	ETX	SUM	CR	LF
1	2	2	1	2	1	1

Bytes

(When an error occurs)

STX	GV local No.	NAK	ETX	SUM	CR	LF
1	2	2	1	2	1	1

Bytes

* Write target memory setting

GV internal memory

Model	Type	Address	Reserved for system
2	2	4	10

PLC memory within 16 bits
Temperature cotrol/
PLC memory within 16 bits

Model	Type	Address	Expansion code	Reserved for system	Station Number (in [n:1] connection)	Reserved for system
2	2	4	2	2	2	4

PLC memory over 16 bits
Temperature cotrol/
PLC memory over 16 bits

Model	Type	Address	Expansion code	Reserved for system	Station Number (in [n:1] connection)
2	2	8	2	2	2

Memory card

Model	File No.	Record No.	Address	Reserved for system
2	2	4	4	4

Bytes

e.g. Writes "AB12" to the addresses DT0100 to 101(0064 to 0065H) on the PLC connected to theGV of the station number 1.

Command

STX	GV local No.	Write command	Number of words to write	Model	Type	Address	Reserved for system	Data A	Data B	Data 1	Data 2	ETX	SUM	CR	LF
	01H	21H	02H	01H	00H	0064H	0000000000H	41H	42H	31H	32H		2AH		
02H	30H 31H	32H 31H	30H 32H	30H 31H	30H 30H	30H 30H 36H 34H	30H 30H 30H 30H 30H 30H 30H 30H 30H 30H	34H 31H	34H 32H	33H 31H	33H 32H	03H	32H 41H	0DH	0AH

Response

(Normal communication)

STX	GV local No.	ACK	ETX	SUM	CR	LF
	01H	00H		C6H		
02H	30H 31H	30H 30H	03H	43H 36H	0DH	0AH

Data Items for Protocols

- Transmission control code: 1 byte

Signal Name	Code (Hexadecimal)	Contents
STX	02H	Start of transmission block
ETX	03H	End of transmission block
CR	0DH	Carriage return
LF	0AH	Line feed

- GV42/52/62 port number: 2 bytes
  Port numbers are used so that the host computer can identify each GV42/52/62 for access. The data range is from 01H to 1FH (1 to 31) and is converted into the ASCII code before use. The port number of the GV42/52/62 should be set on the GVWIN editor. (Refer to "GVWIN Setting.")

- Command: 2 bytes
  Available commands are shown below.

Name	Code (Hexadecimal)	ASCII	Contents
Read	20H	32 30	Read from memory
Write	21H	32 31	Write to memory

- The number of words to be read or written: 2 bytes
  Set the number of words to be read or written by one command. The data range is from 01H to FFH (1 to 255) and is converted into the ASCII code before use.

- Memory address to be read or written: 18 bytes
  Specify the memory address to be accessed. Set the following code in the format as shown for "Read target memory setting" on page 3-20 and "Write target memory setting" on page 3-21.

  - Model

		Code (Hexadecimal)	ASCII
GV42/52/62 internal memory		00H	3030
PLC memory	16-bit	01H	3031
	32-bit	81H	3831
Memory card		02H	3032
Temperature control/PLC2 memory	16-bit	03H	3033
	32-bit	83H	3833

- Type

	Type	Code (Hexadecimal)	ASCII
GV42/52/62 internal memory	$u (user memory)	00H	3030
	$s (system memory)	01H	3031
	$L (non-volatile word memory)	02H	3032
	$LD (non-volatile double-word memory)	03H	3033
PLC memory	Depends on the PLC to be used. Set the type number indicated for "Available Memory" of respective PLCs on the Hardware Manual.		
Temperature control/PLC2 memory	Depends on the PLC to be connected to the temperature controller and PLC2 function. Set the type number indicated for "Available Memory" of respective temperature controllers on the Temperature Control Network Manual. Set the type number indicated for "Available Memory" of respective PLCs on the Hardware Manual when using the PLC2Way function.		

- Address
  Specify the memory address to be accessed.

- Expansion code
  Set the slot number of the SPU memory of the MITSUBISHI PLC or the CPU number of the YOKOGAWA PLC.

  Example:
  MITSUBISHI Slot No. 0: 00H
  MITSUBISHI Slot No. 1: 01H
  YOKOGAWA CPU No. 1: 00H
  YOKOGAWA CPU No. 2: 01H

  *** If no expansion code or port number is required, enter "00" (= 3030 in the ASCII code).**

- Port number
  1 : 1, Multi-link ..... Not used
  Multi-drop ..... PLC port number
  Temperature controller ..... Temperature controller port number

- File No.
  Specify the file number set in the [Memory Card Setting] dialog of the GVWIN editor.

- Record No.
  Specify the record number set in the [Memory Card Setting] dialog of the GVWIN editor.

- System reserved
  Enter "0" (= 30 in the ASCII code) for the number of bytes. The number of bytes for "system reserved" varies depending on the model.

  Example:

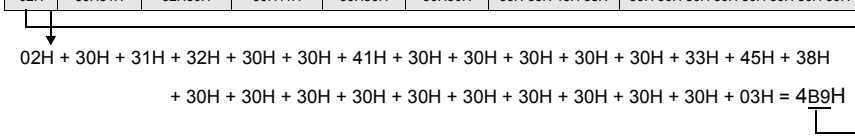
Model	No. of Bytes	Code (Hexadecimal)	ASCII
GV42/52/62 internal memory	10	0000000000H	30303030303030303030

Sum Check Code (SUM): 2 bytes

Data is added up (SUM), and the lower one byte (8 bits) of the sum is converted into the 2-digit ASCII code (hexadecimal). A sum check code is shown below.

Example: Transmission mode: without CR/LF, with sum check
Command: 20 (data read)
Address: 10 words from $u1000 (03E8H)
When reading, a sum check will be performed as shown below.

STX	GV Port number	Command	Read Words	Memory Model	Memory Type	Address	System reserved	ETX	SUM
	01H	20H	0AH	00H	00H	03E8H	0 0 0 0 0 0 0 0 0 0H		B9H
02H	30H31H	32H30H	30H41H	30H30H	30H30H	30H 33H 45H 38H	30H 30H 30H 30H 30H 30H 30H 30H 30H 30H	03H	42H39H



Response Code: 2 bytes

[ACK]
This code is received at normal termination.
00H (3030: ASCII)

[NAK]
This code is received at abnormal termination. (ASCII) Refer to the next page for more information.

NAK: Error Codes

02H: Overrun/Framing error
An overrun or framing error is detected in the received data. Send the command again.

03H: Parity error
A parity error is detected in the received data. Send the command again.

04H: Sum check error
A sum error occurs with the received data.

06H: Count error
The memory read/write count is “0.”

0FH: ETX error
No ETX code is found.

11H: Character error
A character not used in the received data is found. (other than 0 to F) Check the character and send the command again.

12H: Command error
An invalid command is given.

13H: Memory setting error
The address or device number is invalid.

1-byte Character Code List

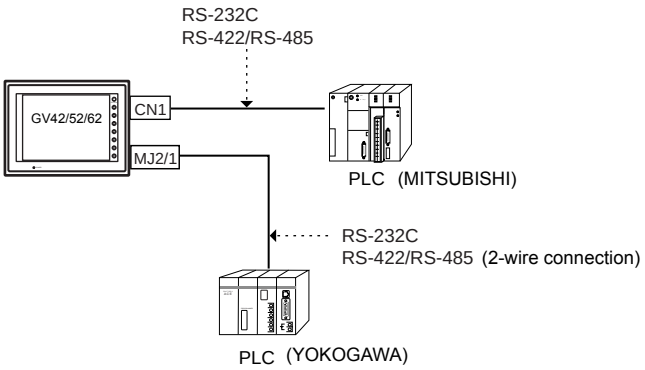
Upper

Lower	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	’	p								
1			!	1	A	Q	a	q								
2			"	2	B	R	b	r								
3			#	3	C	S	c	s								
4			$	4	D	T	d	t								
5			%	5	E	U	e	u								
6			&	6	F	V	f	v								
7			’	7	G	W	g	w								
8			(	8	H	X	h	x								
9			)	9	I	Y	i	y								
A			*	:	J	Z	j	z								
B			+	;	K	[	k	{								
C			,	<	L	¥	l	|								
D			-	=	M	]	m	}								
E			.	>	N	^	n	~								
F			/	?	O	_	o	■								

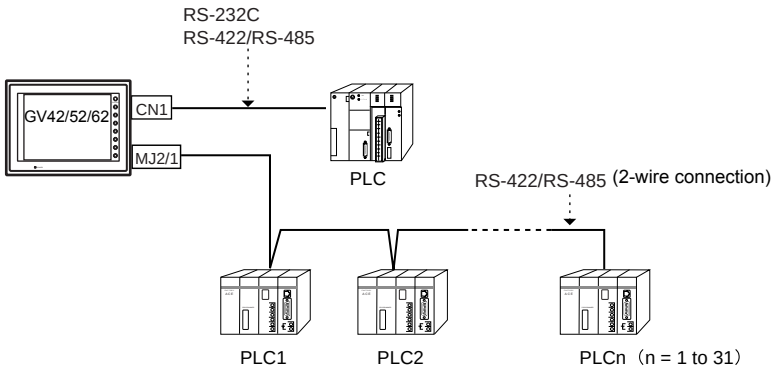
6. PLC2Way

PLC2Way

- The “PLC2Way” function is an original network function where one GV42/52/62 can be connected to two PLCs. Even if the manufacturers of these PLCs are not the same, they can be connected to one GV42/52/62.



- Connect one PLC to the CN1 connector, and the second PLC to the MJ port.
- With the PLC2Way function, it is possible to communicate with PLCs without special program in the same way as 1 : 1 connection. Two PLCs that are connected to the GV42/52/62 are controlled at the same time, and memory read/write operations are available with these two PLCs.
- Connection at the MJ port can be performed via RS-232C or RS-485 (2-wire). With RS-232C, one PLC can be connected; with RS-485, a maximum of 31 PLCs can be connected.



- Constant reading/sampling of PLC data connected to the MJ port
  When read/write memory addresses are preset on the temperature control network/PLC2Way table, background data transfer is performed at regular intervals. It is also possible to save the read data in the GV42/52/62 internal buffer, SRAM or CF card.
- Data transfer between PLCs
  The PLC memory data can be transferred to another PLC in blocks using a macro command.

Connection at the CN1 connector is described in “1. 1 : 1 Connection” to “3. n : 1 Connection (Multi-link).” Hereunder the PLC connection at the MJ port and settings required for PLC2Way connection are described.

Limitations on Connection at the MJ Port

There are some limitations on the connection at the MJ port.

1. It is not possible to make a selection for [Code] and [Text Processing] in the communication parameter setting.
   [Code]: Fixed to DEC or BCD appropriate for the PLC.
   [Text Processing]: Fixed to [LSB → MSB].
2. Even if a communication error occurs, it is not possible to stop communications. Only error codes are stored in $s730 to 763 for each station.
3. Multi-link 2 connection is not available.
4. RS-232C or RS-485/485 (2-wire) connection must be used. The PLC that allows RS-422 (4-wire) connection only cannot be connected directly.

PLCs Compatible with PLC2Way Connection at MJ Port

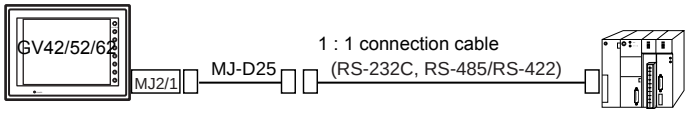
- When connecting the GV42/52/62 to the PLC at the MJ port using PLC2Way function, use the RS232C or RS-485 (RS-422) 2-wire connection. The PLC that allows RS-485 (RS-422) (4-wire) connection only cannot be connected directly.
- PLCs compatible with PLC2Way connection at MJ port as of April 1, 2002 are shown below.
  MITSUBISHI, OMRON, SHARP, YOKOGAWA, FUJI ELECTRIC
  For the applicable PLCs, refer to the “PLC2Way” column in “Available PLCs” in “Chapter 5 Connection to PLCs.” (○: Connectable ×: Not connectable)
- The communication parameter setting and available memory for the PLC connected at the MJ port for PLC2Way connection are the same as those for 1 : 1 connection. Refer to the communication parameter setting and the available memory for each manufacturer in “Chapter 5 Connection to PLCs.”

Wiring

Two kinds of cables are available for PLC2Way connection at the MJ port. Cable connections are explained.

Connecting method 1 (using MJ-D25)

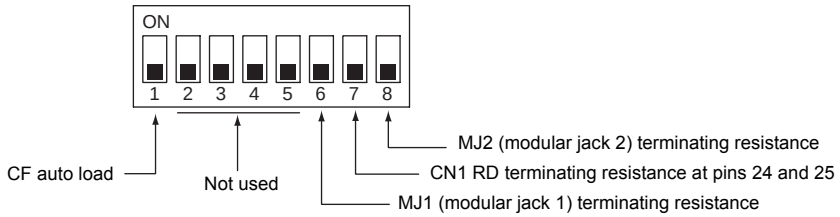
- To connect the PLC and the GV42/52/62 at the MJ port, use the MJ to D-sub conversion cable “MJ-D25” (0.3 m, metric thread) and the cable for 1 : 1 connection at CN1. For more information on the cable for 1 : 1 connection at CN1, refer to “Wiring” in “Chapter 5 Connection to PLCs.”
- This combination of cables (MJ-D25 + 1 : 1 connection cable) can be used either for RS-232C or RS-485 (RS-422) 2-wire connection.



- With RS-485 (2-wire connection), a maximum of 31 PLCs can be connected. For information on connection between PLCs, refer to the instruction manual for the PLC.

Terminating Resistance Setting

- The terminating resistance of the GV42/52/62 should be set on the DIP switch in the backside of the unit.
- When MJ1 is used: Set DIPSW6 to the ON position.
  When MJ2 is used: Set DIPSW8 to the ON position.



GVWIN Setting – System Setting

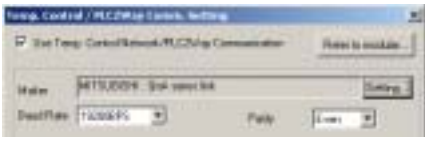
PLC model selection and parameter setting to be made on the GVWIN editor for the PLC2Way connection at the MJ port are explained.

Temp. CTRL/PLC2Way Setting

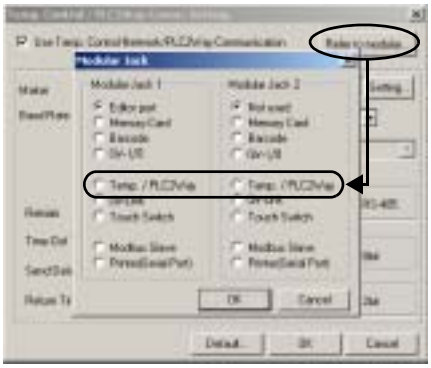
Select the PLC model and make the parameter setting as described below.

1. Select [System Setting] → [Temp. CTRL/PLC2Way Setting] → [Temp. CTRL/PLC2Way Comm. Setting]. The [Temp. Control/PLC2Way Comm. Setting] dialog is displayed.

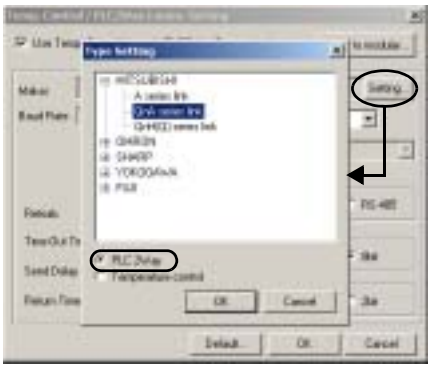
2. Check [Use Temp. Control Network/PLC2Way Communication].



3. Select the MJ port.
   Click the [Refer to Modular] button. The [Modular Jack] dialog is displayed. Select [Temp./PLC2Way] for modular jack 1 or 2 that is used for PLC2Way communication.



4. Select the PLC model to be connected at the MJ port. Click the [Setting] button. The [Type Setting] dialog is displayed. Select [PLC2Way]. The PLC manufacturer names who support PLC2Way communication are displayed. Click [+]. The available model names of the selected manufacturer are displayed. Select the PLC model name and click [OK]. The message communication "Communication parameters are reset. OK?" is displayed.
Click [Yes].



5. Set the parameters for the PLC to be connected at the MJ port.

[Baud Rate] (4800, 9600, 19200, 38400, 57600, 115000, 115 kbps)
Select the communication speed with the PLC connected at the MJ port.

[Parity] (None/Odd/Even)
Select the parity setting for communications with the PLC connected at the MJ port.

[Data Length] (7-bit/8-bit)
Select the data length for communications with the PLC connected at the MJ port.

[Stop Bit] (1-bit/2-bit)
Select the stop bit setting for communications with the PLC connected at the MJ port.

[Signal Level] (RS232C/RS485)
Select the signal level for communications with the PLC connected at the MJ port.

[Retrials]
Set the number of retrials to be attempted in the case that a communication error occurs.

[Time-out Time] (×100 msec)
Select the receive time of the response from the PLC connected at the MJ port. If no response is received within the specified time, a retrial is attempted.

[Send Delay Time] (× msec)
Set a time delay in sending the response to the PLC after receipt of data from the PLC connected at the MJ port.

[Return Time] (×10 sec)
When the PLC in the PLC2Way communication is turned off, data read from the PLC is temporarily prohibited. An inquiry for restoration is sent each time the specified return time has elapsed.

The following options may be set depending on the PLC model.

- MITSUBISHI: A series Link
  [Trans. Mode] (Trans. Mode 1/Trans. Mode 4)
  Trans. Mode 1: Without CR/LF
  Trans. Mode 4: With CR/LF
- OMRON: SYSMAC C, SYSMAC CV, SYSMAC CS1
  [Trans. Mode] (Trans. Mode 1/Trans. Mode 2)
  Trans. Mode 1: Standard (BCD without signs)
  Trans. Mode 2: Special BCD (BCD with sign)
- YOKOGAWA: FA-M3, FAM3R
  [Trans. Mode] (with sum check/without sum check)

6. To reset the setting, click the [Default] button, or set the desired value.

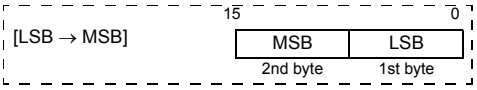
Code and Text Processing

For the PLC connected at the MJ port, [Code] and [Text Processing] cannot be set in the [Temp. Control/PLC2Way Comm. Setting] dialog.

- Code (numerical data input format)
  The code is fixed as shown below. For some numerical data, such as those for data displays or data sampling in the sampling mode, BCD or DEC should be chosen for [Input Format].

Manufacturer	Model	Code	Text Processing
MITSUBISHI	A series link	DEC	LSB → MSB
	QnA series link		
	QnH (Q) series link		
OMRON	SYSMAC C	BCD	
	SYSMAC CV		
	SYSMAC CS1		
SHARP	JW series	BCD	
	JW100/70H COM Port		
	JW20 COM Port		
YOKOGAWA	FA-M3	DEC	
	FA-M3R		
FUJI ELECTRIC	MICREX-F series	BCD	
	FLEX-PC series	DEC	

- Text Processing
  When processing characters, choose either option for arranging 1st/2nd bytes in one word. As shown on the right, it is fixed to [LSB → MSB].



Setting the PLC Memory Connected at the MJ Port

1. Open the [Memory Input] dialog for the part where the PLC memory connected at the MJ port should be allocated.

2. For the PLC memory connected at the MJ port, select [PLC2 Memory] for [Type] and specify the memory address.
3. Set the port number of the PLC.

GVWIN Setting
When the temperature control network/PLC2Way table is used:

The following operations are available when the temperature control network/PLC2Way table is used.

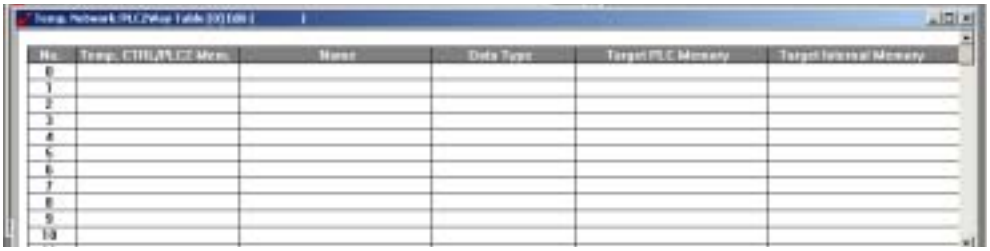
1. Constant read from the PLC memory
   When the temperature control network/PLC2Way table is set, the data read from the PLC2 memory can be stored in the PLC memory or the GV42/52/62 internal memory at regular intervals.
2. Data Sampling from the PLC Memory Connected at the MJ Port
   It is possible to link the temperature control network/PLC2Way table with the buffering area and perform sampling of data in the PLC memory that is connected at the MJ port.
3. Data transfer from the PLC2 memory
   Data in the PLC2 memory can be transferred to the PLC memory, GV42/52/62 internal memory or a memory card at one time according to the temperature control network/PLC2Way table.

Temperature Control Network/PLC2Way Table

1. Starting
   Click [System Setting] → [Temp. CTRL/PLC2Way Setting] → [Temp. CTRL/PLC2Way Network Table]. ([Temp. CTRL/PLC2Way Network Table] becomes active only when the setting in the [Temp. Control/PLC2way Comm. Setting] dialog has been completed as described in the previous section.)

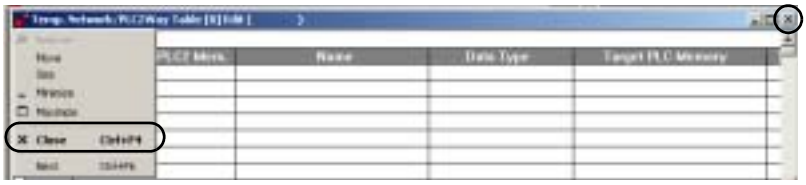
Set the temperature control network/PLC2Way table number (0 to 31) and click [OK].

   The [Temp. Network/PLC2Way Table Edit] window is opened.



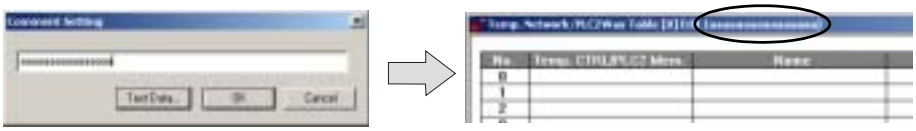
   There are 32 tables of temperature control network/PLC2Way table No. 0 to 31. A maximum of 128 addresses of the PLC2 memory can be set for each table.

2. Closing
   Click [Close] in the drop-down menu, or click the [Close] button at the top right corner.



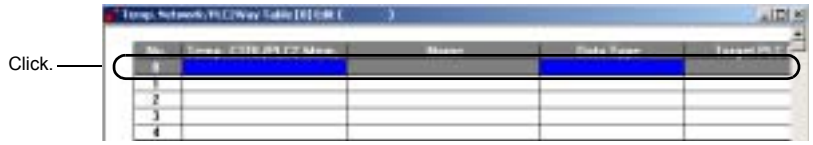
3. Comment setting
   There are 32 temperature control network/PLC2Way tables and a comment can be set for each table.

   Click [Edit] → [Comment]. The [Comment Setting] dialog is displayed.

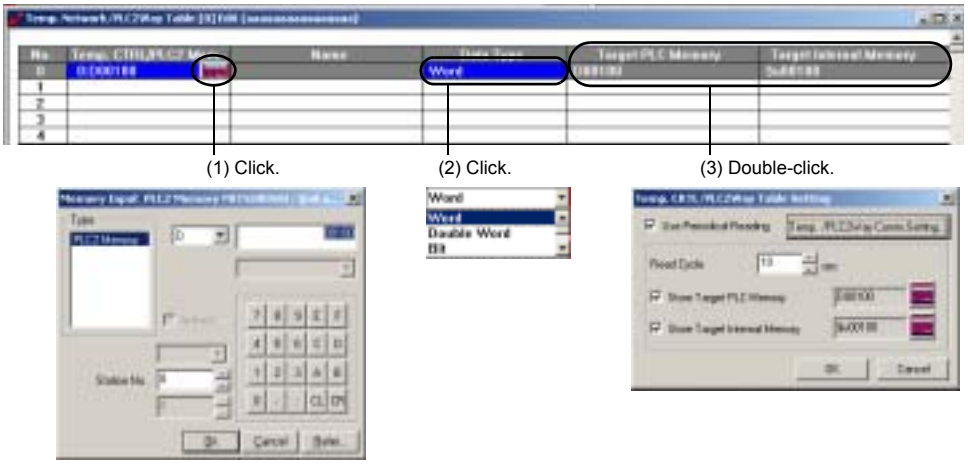


Enter the desired comment and click [OK]. The entered comment is displayed at the top right corner.

4. Setting data in the table
Click on a line in the table. The selected line turns blue.



Double-clicking brings up the default setting for the PLC2 memory, data type, etc.



When (1) is clicked, the [Memory Input] dialog is displayed.
Set the memory address to be read from the PLC connected at the MJ port.

When (2) is clicked, a data type for the PLC2 memory can be set.

[Word]
This is the data length setting for the memory address to be used. Numerical data of one word is handled. Data is transferred to the target memory address in the numerical data code of the PLC2 memory.

[Double Word]
This is the data length setting for the memory address to be used. Numerical data of two words is handled. Data is transferred to the target memory address in the numerical data code of the PLC2 memory.

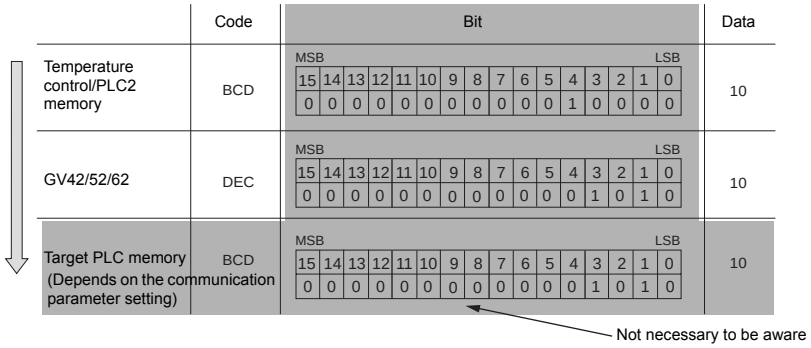
[Bit]
Data in the PLC2 memory is handled as bit information of one word. Data is transferred to the target memory address without conversion.

[Dummy Word] [Dummy Double]
The memory addresses for [Target PLC Memory] and [Target Internal Memory] are automatically allocated consecutively in the [Temp. CTRL/PLC2Way Table Setting] dialog. If you would like to skip any memory address, keep the cell in the [Temp. CTRL/PLC2 Mem.] column blank (no setting). It is regarded as a dummy word or double-word. In this case, “0” is stored in the target memory address.

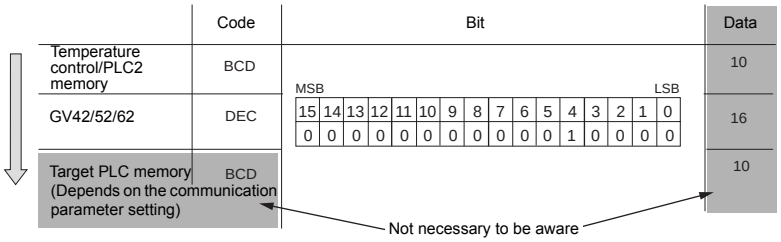
When the data code in the target memory address is BCD:

The code (numerical data format) for the PLC2 memory is fixed as mentioned above. (Refer to page 3-31.) Normally the GV42/52/62 handles numerical data as “DEC with signs.” For numerical data to be handled on the PLC connected to the MJ port, select [Word] or [Double Word] for [Data Type]; for data to be handled as bits, select [Bit].

Example: [Word] [Double Word]



Example: [Bit]



When (3) is double-clicked, the [Temp. CTRL/PLC2Way Table Setting] dialog is displayed.

Set the memory addresses of the target PLC memory and target internal memory at one time in the [Temp. CTRL/PLC2Way Table Setting] dialog.

[Use Periodical Reading]

Check this option when the following operation is required.

- Constant read from the PLC memory
- Data sampling in the PLC2 memory

[Read Cycle] (sec)

Set the cycle of reading data in the PLC2 memory.

[Store Target PLC Memory]

When storing data read from the PLC2 memory into the PLC memory, check this box and set the desired memory address.

[Store Target Internal Memory]

When storing data read from the PLC2 memory into the GV42/52/62 internal memory, check this box and set the desired memory address.

[Temp. CTRL/PLC2Way Comm. Setting]

Clicking this button brings up the [Temp. CTRL/PLC2Way Comm. Setting] dialog and allows you to review the setting.

Data Sampling in the PLC2 Memory

To perform data sampling in the PLC2 memory, the following settings are required.

- Temperature control network/PLC2Way table editing
- Buffering area setting
- Memory card setting (when [SRAM] or [CF Card] is selected for [Store Target] in the [Buffering Area Setting] dialog)
- Trend sampling or data sampling setting (setting for displaying data stored in the specified buffer)

1. Buffering area setting
   Click [System Setting] → [Buffering Area Setting]. The [Buffering Area Setting] dialog is opened.

[Sampling Method]
Temperature Control Net/PLC2

[No. of Table]
Select the temperature control network/PLC2Way table number for sampling.

[Sampling Time]
Specify the number of sampling times.

[Store Target] (Internal Buffer/SRAM/SF Card)
Choose the desired medium for storing sampling data.

Internal Buffer:	Stores data in the internal buffer of the GV42/52/62. (RAM)
SRAM:	Stores data in the SRAM area. (SRAM mounted on the unit, GV42/52/62EM-S, REC-MCARD SRAM)
CF Card:	Stores data in the CF card.

[Full Processing] (Continuous/Stop)
Choose the desired processing when the target medium space has been used up.

- Continuous: When [Sampling Time] has been exceeded, data from the oldest is discarded.
- Stop: When [Sampling Time] has been exceeded, sampling is stopped.

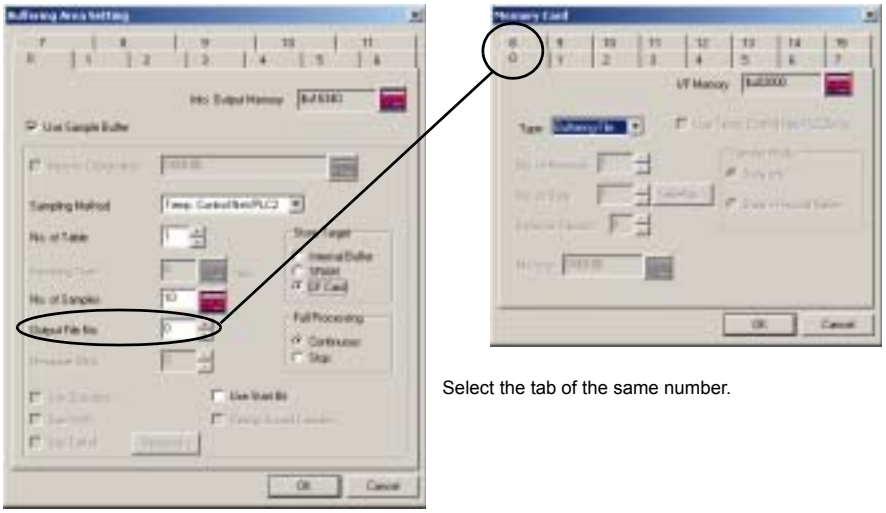
- Calculating the buffering area capacity
  When [Internal Buffer] is selected for [Store Target] in the [Buffering Area Setting], the maximum available capacity is 32K words. When [Temp Control Net/PLC2] is selected for [Sampling Method], the required capacity can be calculated as shown below.
  1 sample = [Words*] + 2 words
  Buffer size = [Sampling Times] × 1 sample
  *** [Words] here means the number of words in the memory addresses used in the temperature control network/PLC2Way table that is set for [No. of Table].**

2. Memory card setting
   When [SRAM] or [CF Card] is selected for [Store Target] in the [Buffering Area Setting] dialog, the memory card setting is required.
   *** The used memory capacity of SRAM and CF card can be calculated in the same way as the buffering area.**

   1) Click [System Setting] → [Memory Card Setting]. The [Memory Card] dialog is opened.

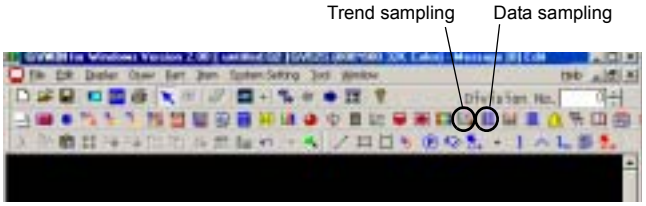
   2) Select [Buffering File] for [Type].

   3) Match the file number (tab) in the [Memory Card] dialog with [Output File No.] in the [Buffering Area Setting] dialog.



Select the tab of the same number.

3. Trend sampling or data sampling setting
   To show data stored in the specified buffer number, trend sampling or data sampling must be set. Click the [Trend Sampling] or [Data Sampling] icon and make the setting. For more information, refer to the Reference Manual (Function).



Data Transfer from the PLC2 Memory

Data in the PLC2 memory can be transferred to the PLC memory, GV42/52/62 internal memory or a memory card at one time. Conversely, it is also possible to transfer data in the PLC memory, GV42/52/62 internal memory or a memory card to the PLC2 memory at one time. To perform butch data transfer from the PLC2 memory, the following settings are required.

- Temperature control network/PLC2Way table editing
  For temperature control network/PLC2Way table editing, the setting in the [Temp. CTRL/PLC2Way Table Setting] dialog is not necessary.
- Macro (TEMP_READ/TEMP_WRITE)
- Memory card setting (when a memory card is used)

1. Macro

[TEMP_READ]

Data in the PLC2 memory addresses set in the temperature control network/PLC2Way table specified for F1 is transferred to the memory addresses starting from F0.

Usable Devices

	PLC Memory	Internal Memory	Constant (Temperature Control Table No.)	Memory Card	Indirect Designation
F0	○	○		○	○
F1		○	○		

TEMP_READ: Temperature control network table read

TEMP_READ F0 <- TABLE : F1

[TEMP_WRITE]

Data in memory addresses starting from F1 is transferred to the PLC2 memory of the temperature control network/PLC2Way table specified for F0.

Usable Devices

	PLC Memory	Internal Memory	Constant (Temperature Control Table No.)	Memory Card	Indirect Designation
F0		○	○		
F1	○	○		○	○

TEMP_WRITE: Temperature control network table write

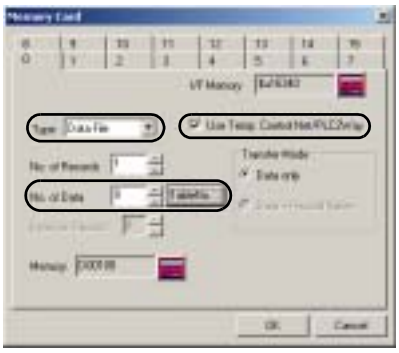
TEMP_WRITE TABLE : F0 <- F1

2. Memory card setting
   The memory card setting should be made when the memory card is used as the source or target memory for a macro command.

   1) Click [System Setting] → [Memory Card Setting]. The [Memory Card] dialog is opened.

   2) Select [Data File] for [Type].
      Check [Use Temp. Control Net/PLC2Way].

   3) Click the [Table No.] button and select the table number to be used. The appropriate number is automatically set for [No. of Data].



Indirect Memory Designation

It is possible to have access to the PLC2 memory using the indirect memory designation as a macro command. In this section, the indirect designation of the PLC2 memory is explained. The internal user memory ($u) is used for the indirect memory designation.

Designating the indirect memory

- PLC2 memory

Less than 16 bits

	15 8	7 0
n + 0	Model	Memory type
n + 1	Memory number (address)	
n + 2	00	Bit designation
n + 3	00	Port number

16 to 32 bits

	15 8	7 0
n + 0	Model	Memory type
n + 1	Memory number (address) upper	
n + 2	Memory number (address) lower	
n + 3	00	Bit designation
n + 4	00	Port number

- Model
  03: PLC2 memory (less than 16 bits)
  83: PLC2 memory (16 to 32 bits)

- Memory type
  Depends on the PLC model. Refer to “Chapter 5 Connection to PLCs/Available PLCs” when setting.

- Port number
  Set the port number of the PLC connected at the MJ port.

User Log Read for YOKOGAWA's PLC

The user log set with YOKOGAWA's PLC "FA-M3/FA-M3R" connected at the MJ port can be read using the macro command TEMP_CTL.

Macro

[TEMP_CTL]

This macro command controls the operation set in the memory addresses starting from the one specified for F0 for the number of words specified for F1.

Usable Devices

	PLC Memory	Internal Memory	Constant (Words)	Memory Card	Indirect Designation
F0		○			
F1			○		

TEMP_CTL: Temperature controller/PLC2Way control function

TEMP_CTL F0 F1

	F0 (= $u n)												F1
	n	n + 1	n + 2	n + 3	n + 4	n + 5	n + 6	n + 7	n + 8	n + 9	n + 10	n + 11	Words
User log registration number read	Port number	CPU No. −1*1 (0 - 3)	Command −1	Registration number*2	−	−	−	−	−	−	−	−	3
Latest user log read	Port number	CPU No. −1*1 (0 - 3)	Command 0	Header 0: Normal −1: Error*3	Year	Month	Day	Hour	Minute	Second	Main code	Sub code	3
					(ASCII)						(DEC)		
"n"th user log read	Port number	CPU No. −1*1 (0 - 3)	Command 1 to 63	Header 0: Normal −1: Error*3	Year	Month	Day	Hour	Minute	Second	Main code	Sub code	3
					(ASCII)						(DEC)		

Return data: Data stored from PLC2Way → GV42/52/62

*1 Set "0" for CPU No. 1.

*2 The registration number is stored in special register Z105.

*3 If there is no user log in the "n + 2" memory or there is an error in communications, [−1] is stored.

Processing Cycle

The processing cycle on the GV42/52/62 with the PLC2Way function is explained.

Fig. a. When the temperature control network/PLC2Way table is not used:

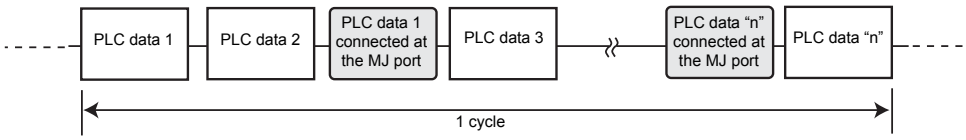
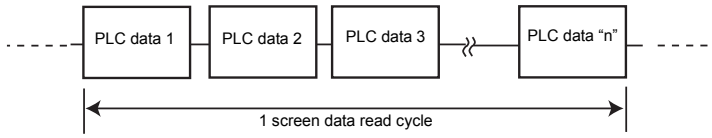
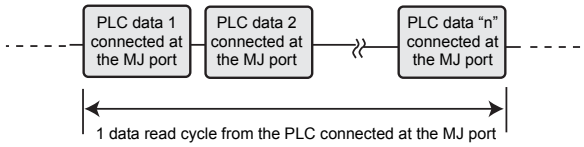


Fig. b. When the temperature control network/PLC2Way table is used:





When the temperature control network/PLC2Way table is not used (Fig. a), PLC data is not read while the data is read from the PLC connected at the MJ port. When the temperature control network/PLC2Way table is used (Fig. b), PLC data is read while the data is read from the PLC connected at the MJ port. Consequently, it is possible to communicate with the PLC connected at the MJ port without reducing the processing capacity between the GV42/52/62 ↔ the PLC.

When the temperature control network/PLC2Way table is used:

If periodical reading of the PLC data is performed while the PLC connected at the MJ port is accessed using a macro command, the macro execution may be delayed. It is possible to temporarily stop periodical reading from the PLC connected at the MJ port using the system memory address ($s762). For more information, refer to page 3-45.

Notes on Screen Data Transfer

Temperature Control/PLC2 Program

When using the temperature control network/PLC2Way communications, it is necessary to transfer the temperature control/PLC2 program to the GV42/52/62. When the temperature control network/PLC2Way setting has been made, the program is automatically transferred to the GV42/52/62 together with screen data. When [◉ Temp./PLC2] is selected in the [Transfer] dialog, only the temperature control/PLC2 program can be transferred to the GV42/52/62.

When the Main Menu screen is displayed after transferring screen data, the [Extension] switch appears. If the [Extension] switch does not appear, transfer font data. Pressing the switch brings up the “Extension Program Info.” screen where the temperature control/PLC2Way driver setting and temperature control network/PLC2way setting can be reviewed. For more information, refer to “Chapter 2 GV Operations.”

System Memory

The status of the PLC connected at the MJ port for PLC2Way communications is output to the system memory ($s) of the GV42/52/62. The memory addresses ($s730 to 763) of the PLC connected at the MJ port are explained.

List

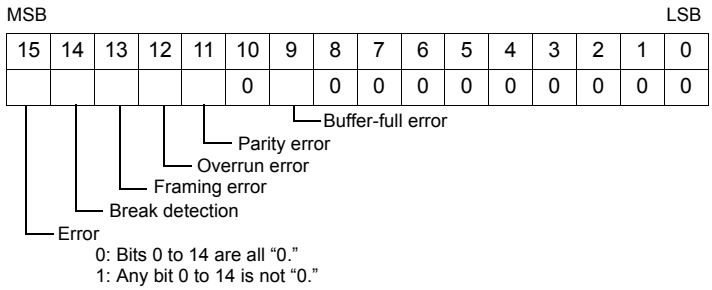
Address	Contents
⋮	⋮
$s730	Temperature controller/PLC2Way Station No. 00 status
731	Temperature controller/PLC2Way Station No. 01 status
732	Temperature controller/PLC2Way Station No. 02 status
733	Temperature controller/PLC2Way Station No. 03 status
734	Temperature controller/PLC2Way Station No. 04 status
735	Temperature controller/PLC2Way Station No. 05 status
736	Temperature controller/PLC2Way Station No. 06 status
737	Temperature controller/PLC2Way Station No. 07 status
738	Temperature controller/PLC2Way Station No. 08 status
739	Temperature controller/PLC2Way Station No. 09 status
740	Temperature controller/PLC2Way Station No. 10 status
741	Temperature controller/PLC2Way Station No. 11 status
742	Temperature controller/PLC2Way Station No. 12 status
743	Temperature controller/PLC2Way Station No. 13 status
744	Temperature controller/PLC2Way Station No. 14 status
745	Temperature controller/PLC2Way Station No. 15 status
746	Temperature controller/PLC2Way Station No. 16 status
747	Temperature controller/PLC2Way Station No. 17 status
748	Temperature controller/PLC2Way Station No. 18 status
749	Temperature controller/PLC2Way Station No. 19 status
750	Temperature controller/PLC2Way Station No. 20 status
751	Temperature controller/PLC2Way Station No. 21 status
752	Temperature controller/PLC2Way Station No. 22 status
753	Temperature controller/PLC2Way Station No. 23 status
754	Temperature controller/PLC2Way Station No. 24 status
755	Temperature controller/PLC2Way Station No. 25 status
756	Temperature controller/PLC2Way Station No. 26 status
757	Temperature controller/PLC2Way Station No. 27 status
758	Temperature controller/PLC2Way Station No. 28 status
759	Temperature controller/PLC2Way Station No. 29 status
760	Temperature controller/PLC2Way Station No. 30 status
761	Temperature controller/PLC2Way Station No. 31 status
762	Other than “0”: periodical reading suspended
763	Other than “0”: temperature control network/PLC2Way transfer macro forced execution

Details

- $s730-761
  The following status code for the PLC connected at the MJ port is stored.

Code	Contents
0000H	Normal
FFFFH	Timeout
8001H	Check code error
8002H	Data error
800BH	Error code received from the PLC connected at the MJ port

Errors other than the above are stored as shown below.



Error	Details	Solution
Timeout	Although a request to send is given to the PLC connected at the MJ port, no answer is returned within the specified time.	Check 1, 2, 3 described below.
Check code error	The check code in the PLC connected at the MJ port response was not correct.	Check 1, 3 described below.
Data error	The code of the received data is invalid.	Check 1, 2, 3 described below.
Error code received	An error occurs at the PLC connected at the MJ port.	Refer to the instruction manual for the PLC.
Buffer full	The GV42/52/62 buffer is full.	Contact your local distributor.
Parity	An error occurred in parity check.	Check 2, 3 described below.
Overrun	After one character is received, the next character is received before internal processing is completed.	Check 1, 3 described below.
Framing	Although the stop bit must be [1], it is detected as [0].	Check 1, 2, 3 described below.
Break detection	SD (TXD) of the PLC connected at the MJ port remains at the low level.	Examine the connection between SD (TXD) of the PLC connected at the MJ port and RD (RXD) of the GV42/52/62.

Solution

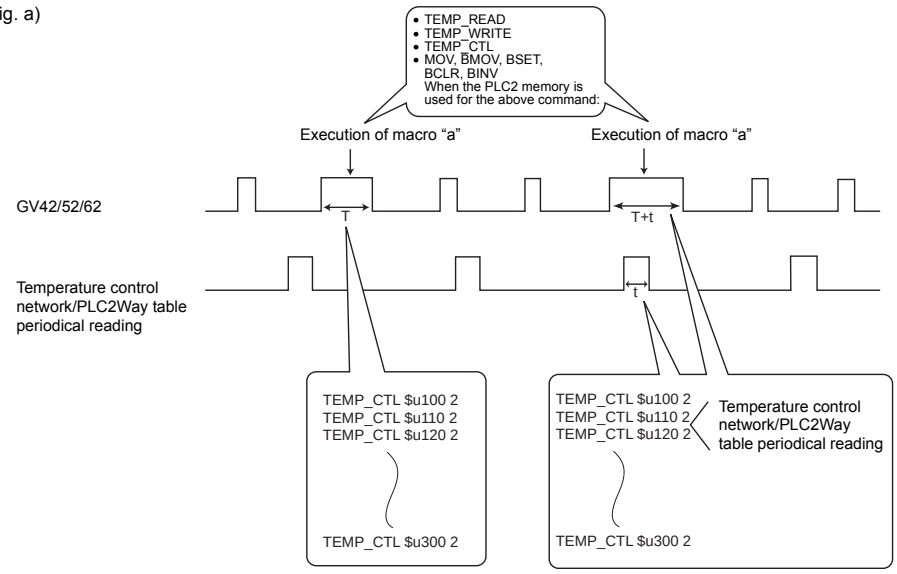
1. Check the parameter setting of the PLC connected at the MJ port and the setting in the [Temp. CTRL/PLC2Way Comm. Setting] dialog.
2. Check the cable connection.
3. Data may be disrupted because of noise. Fix noise.

*** If you still cannot solve the error even after following the suggestions above, contact your local distributor.**

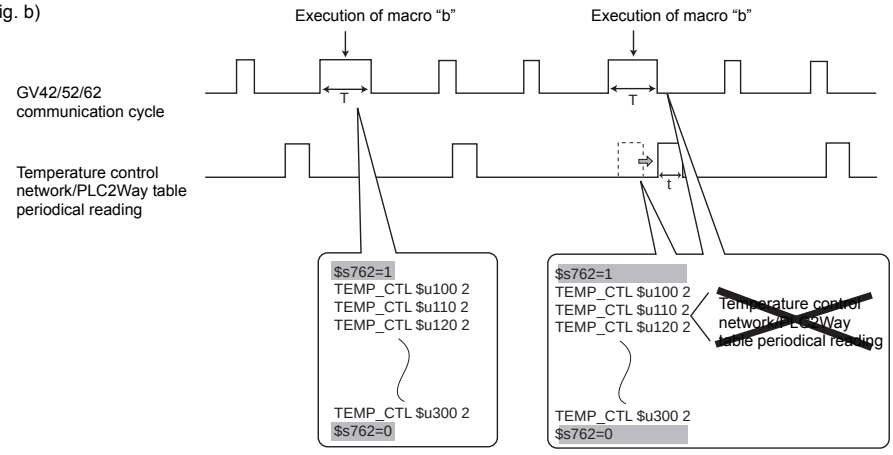
- $s762
  Periodical reading that is set in the [Temp. CTRL/PLC2Way Table Setting] dialog can be suspended.
  - [0]: Periodical reading is performed.
  - [Other than “0”]: Periodical reading is suspended.

  If periodical reading of the temperature control network/PLC2Way table is performed while the PLC2 memory is being accessed using a macro command, the macro execution will be delayed (Fig. a). To avoid this, periodical reading can be suspended using memory address $s762 (Fig. b).

(Fig. a)



(Fig. b)

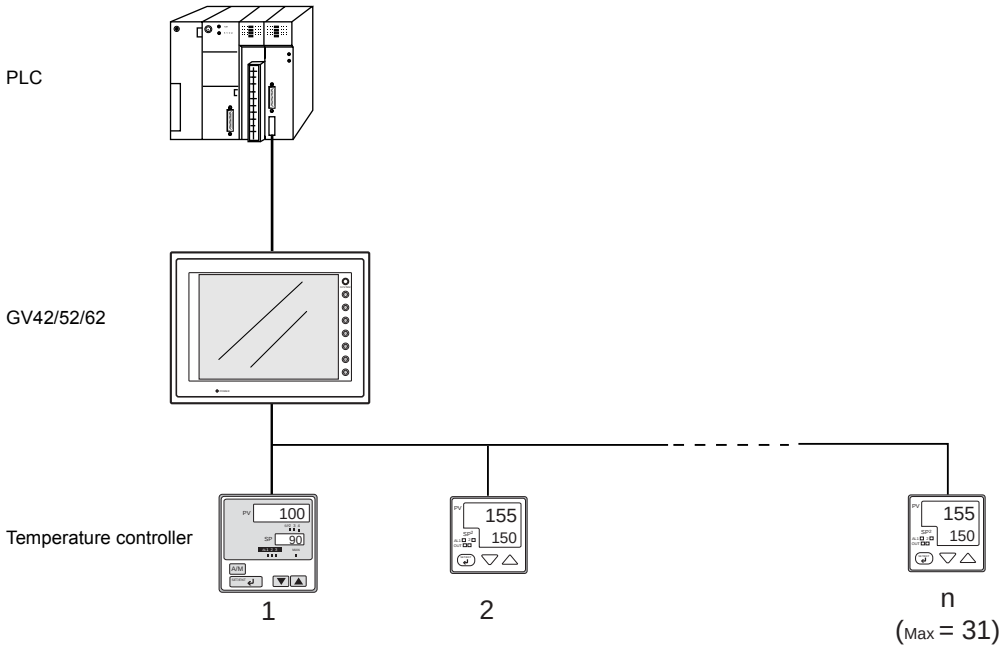


- $s763
  Forced execution of macro commands [TEMP_READ] and [TEMP_WRITE] using the temperature control network/PLC2Way table
  - [0]: When any station that has failed is included in the specified table, the macro command is not executed.
  - [Other than “0”]: The macro command is forcibly executed to the stations that are working properly.

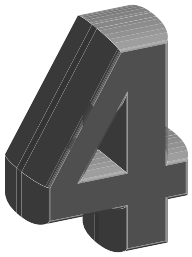
7. Temperature Control Network

Temperature Control Network

- Using the temperature control network, the GV42/52/62 can be connected to the temperature controller. With RS-232C, one PLC can be connected; with RS-485, a maximum of 31 temperature controllers can be connected.



- Data of temperature controllers connected to the GV42/52/62 can be set or monitored.
- Periodical reading/sampling of temperature controller data
  Temperature controller data can be read into the PLC memory or GV42/52/62 internal memory at regular intervals using the temperature control network table. It is also possible to save the read data in the GV42/52/62 internal buffer, SRAM or CF card.
- Data transfer
  It is also possible to transfer data in the PLC memory, GV42/52/62 internal memory or a memory card to the temperature controller at one time using a macro command. Conversely, data in the temperature controller can be transferred to the PLC memory, GV42/52/62 internal memory or a memory card at one time.
- For more information on compatible temperature controllers and the required settings, refer to “Temperature Control Network.”



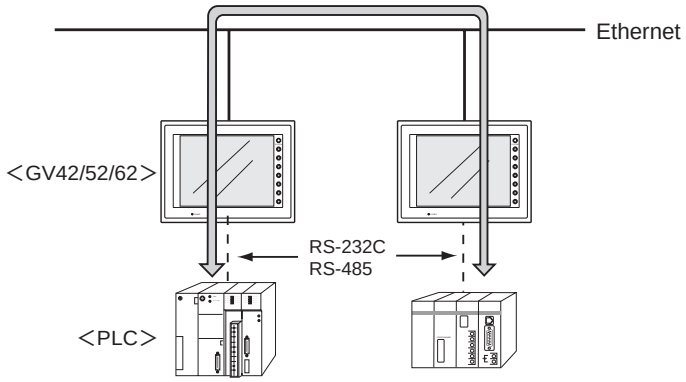
Network Communications

1. Ethernet

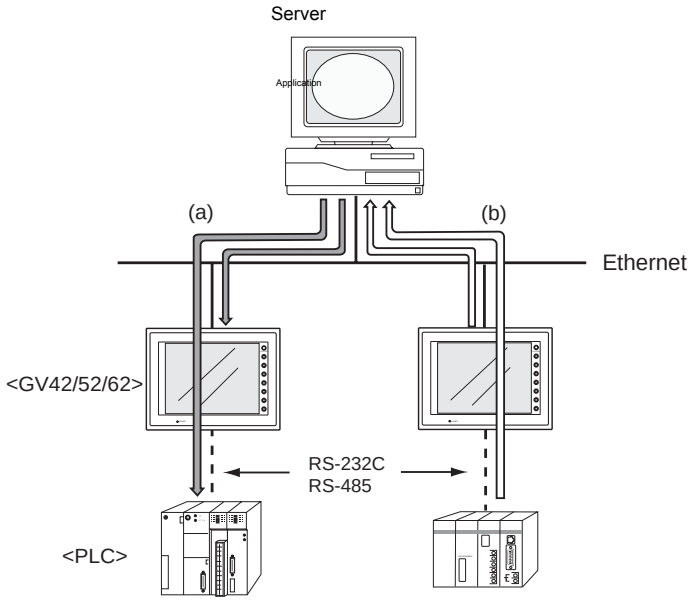
1. Ethernet

Ethernet

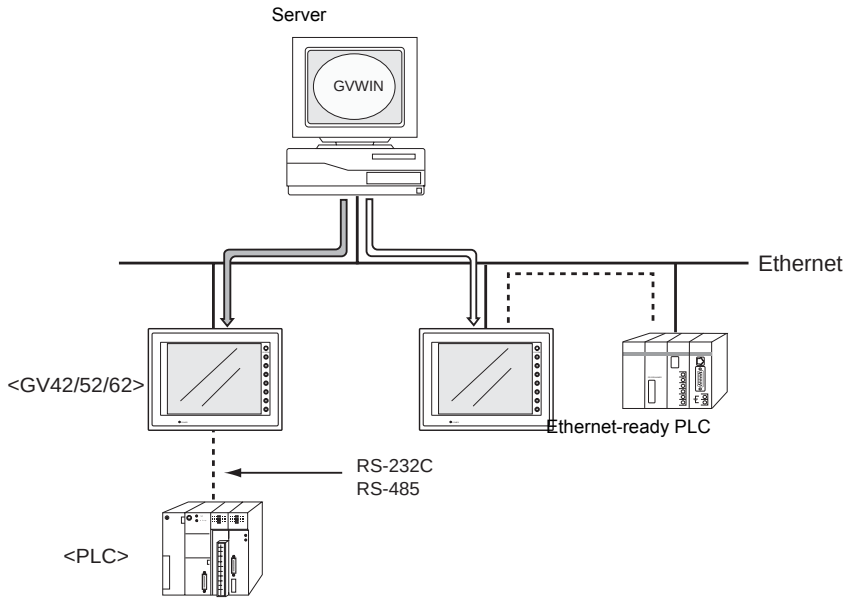
- Transferring data in memory
  Data in memory can be transferred to the GV42/52/62 on the Ethernet or to the PLCs linked to the GV42/52/62 as a host by using macro commands (EREAD/EWRITE).



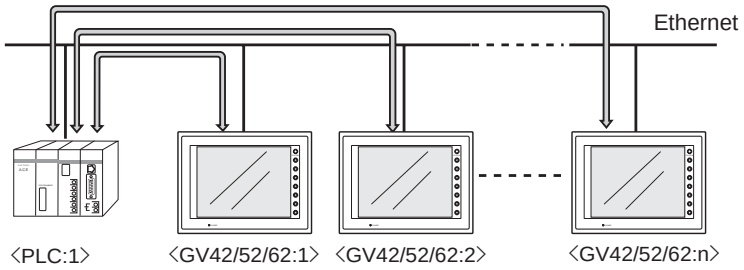
- Communications between the server and the GV42/52/62
  - "HKEtn10.dll" (for UDP/IP protocol) is provided so that the user can create an original application by using Visual C++ or Visual Basic, etc. to allow the server to access the memory device, such as GV42/52/62 internal memory, memory card or the PLC memory linked with the GV42/52/62 as a host..... (a)
  - The macro command (SEND) enables the GV42/52/62 to access the server..... (b)



- Screen data can be transferred from the GVWIN editor on the server to the GV42/52/62.

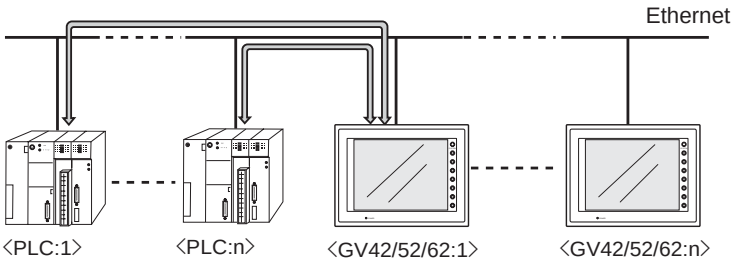


- Communications between the Ethernet-ready PLC and the GV42/52/62
  - The GV42/52/62 can communicate with the PLC on the Ethernet.



* Ethernet-ready PLC only

  - The GV42/52/62 can communicate with multiple PLCs on the Ethernet.



* Ethernet-ready PLC only

Notes on Ethernet Communications

For GV52/62:

- To use Ethernet communications on GV52/62, use the 10BASE-T connector (LAN) provided on the unit. It is not possible to use Ethernet communications by attaching the communication I/F unit AIGV833 to GV52/62 at the same time. When AIGV833 is mounted, the 10BASE-T connector (LAN) provided on the unit cannot be used.
- When using Ethernet communications with AIGV833 mounted, the Web server or e-mail function cannot be used.

For GV42/52/62:

- To use Ethernet communications on GV42/52/62, the communication interface unit "AIGV833" must be mounted. When GV42/52/62 is equipped with the communication interface unit AIGV833, it becomes Ethernet-ready. In this case, however, the Web server or e-mail function is not available.

IP Address for the GV42/52/62

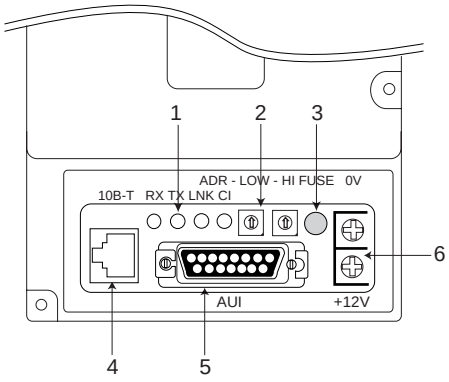
To enable Ethernet communications on the GV42/52/62, it is necessary to set the IP address for identification of the GV42/52/62 on the network. The IP address should be set on the Main Menu screen of the GV42/52/62. For more information, refer to "Chapter 2 GV42/52/62 Operations."

Communication Interface Unit AIGV833

Specifications of Communication Interface Unit AIGV833

Item	Specifications		
	AUI		10BASE-T
	10BASE5	10BASE2	
Baud rate	10 Mbps		
Transmission method	Base band		
Maximum network distance or maximum node interval	2500 m (5 segments)	925 m (5 segments)	500 m (4 HUBs)
Maximum segment length	500 m	185 m	100 m Between the node and the HUB
Maximum number of nodes	100/segment	30/segment	2/segment
Minimum node interval	2.5 m	0.5 m	None
Connecting cable	Ethernet coaxial cable (50 Ω)	RG58A/U, RG58C/U coaxial cable (50 Ω)	UTP (unshielded twisted pair) 22-26AWG

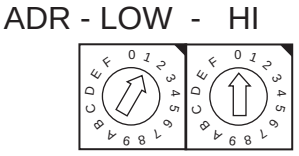
Nomenclature and Functions of Ethernet I/F Unit AIGV833



1. LED
   Indicates the status of the communication.

Name	Contents	On	Off
RX	Data receive status	Currently receiving	Not receiving
TX	Data send status	Currently sending	Not sending
LNK	Link status (for 10BASE-T only)	Normal	Error
CI	Collision	Data collision	Normal

2. Port number setting switches
   Set the port number of GV42/52/62 specified on the network table using the following rotary switches.
   Example: To set port No. 1:



*** Make sure that each I/F unit on the network has a unique port number.**

3. Fuse
   This is the fuse for 12 VDC power supply. (Rating 2A)

4. 10BASE-T connector
   This connector is used for 10BASE-T connection. (Compliant with IEEE802.3)

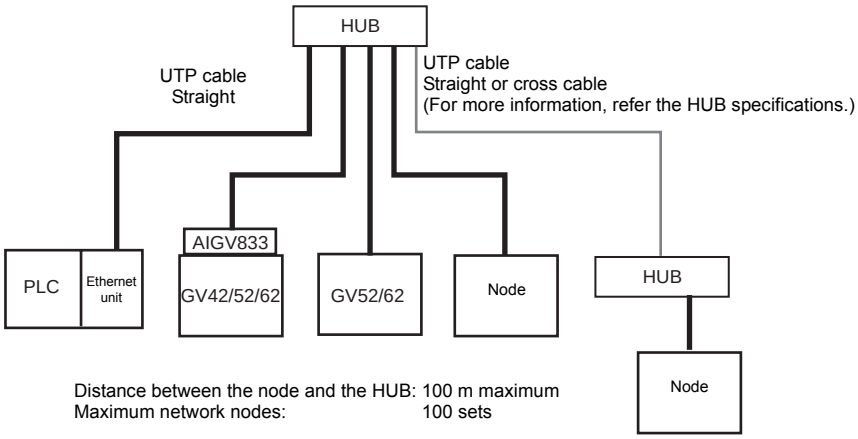
5. AUI connector
   This connector is used for connecting the transceiver cable in the case of 10BASE2 or 10BASE5.

6. 12 VDC power supply terminal
   The power source is required for the transceiver of AUI connection. Be sure to take account of a voltage drop at AIGV833 (max. 0.7 V).
   *** It is not necessary to use 10BASE-T.**

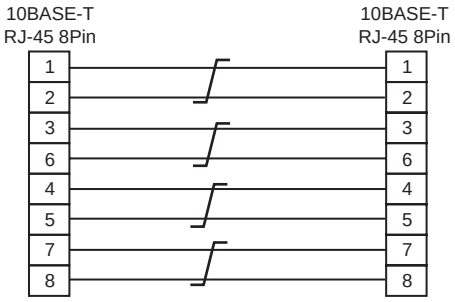
Wiring

10BASE-T Connection

- Cable connection diagram

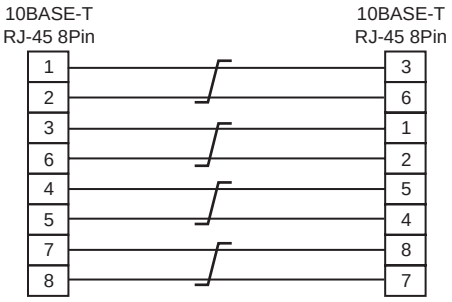


Straight cable (with HUB)



* Unshielded twist-pair cable

Cross cable (without HUB)



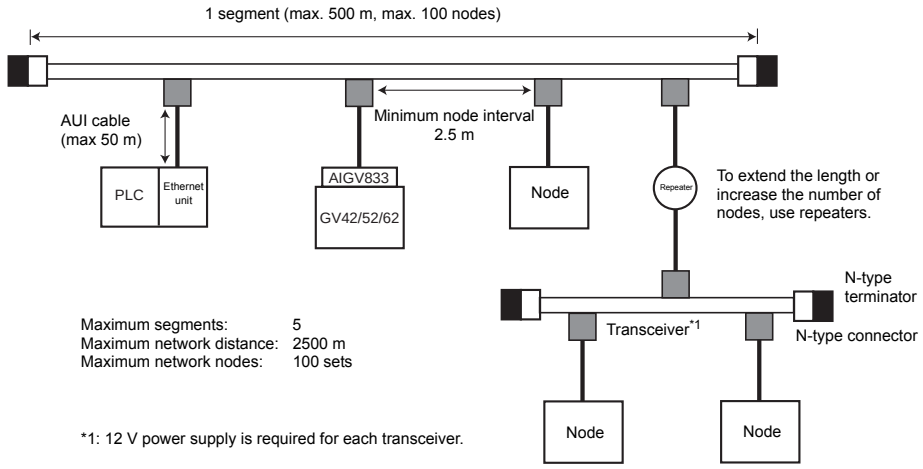
* Unshielded twist-pair cable

- Notes on cables
  Use the following recommended cable.

  Recommended cable (10BASE-T)
  Type: Twist-pair cable, category 5

AUI Connection

- 10BASE5
  The following devices are required for 10BASE5 connection:
  - Coaxial cable for 10BASE5
  - AUI cable
  - N-type connector
  - N-type terminator
  - Transceiver
  - Power supply for the transceiver: 12 VDC



- Transceiver
  Use the transceiver equipped with the SQE TEST function. (SQE TEST: Signal Quality Error Test)

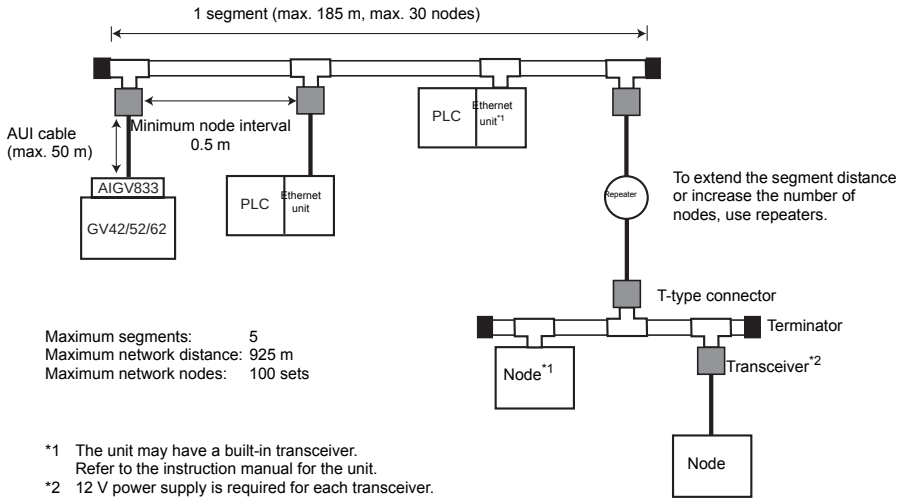
  Recommended transceiver

Manufacturer	Type
Allied Telesis	CentreCOM 107

  *** The I/F unit may be broken if the AUI connector is subject to strong force. Use the AUI cable when connecting the transceiver.**
  *** When the power lamp of the transceiver is not turned on, check the wiring of 12 VDC power supply, then replace the fuse (refer to page 4-4) of the I/F unit AIGV833. For the replacement procedure, refer to the manual "AIGV833 OPERATING INSTRUCTIONS," attached to AIGV833.**

- 10BASE2
  The following devices are required for 10BASE2 connection:
  - Coaxial cable for 10BASE2
  - AUI cable
  - T-type adaptor
  - Terminator for 10BASE2
  - Transceiver
  - Power supply for the transceiver: 12VDC

- Transceiver



Use the transceiver equipped with the SQE TEST function. (SQE TEST: Signal Quality Error Test)

Recommended transceiver

Manufacturer	Type
Allied Telesis	CentreCOM 107

*** The I/F unit may be broken if the AUI connector is subject to strong force. Use the AUI cable when connecting the transceiver.**

*** When the power lamp of the transceiver is not turned on, check the wiring of 12 VDC power supply, then replace the fuse (refer to page 4-4) of the I/F unit AIGV833. For the replacement procedure, refer to the manual "AIGV833 OPERATING INSTRUCTIONS," attached to AIGV833.**

Transferring Screen Data

This section describes the procedure for transferring screen data from the GVWIN editor on the server to GV via Ethernet. For the procedure using the AIGV8103 cable, refer to the Reference Manual (Operation).

Prerequisites

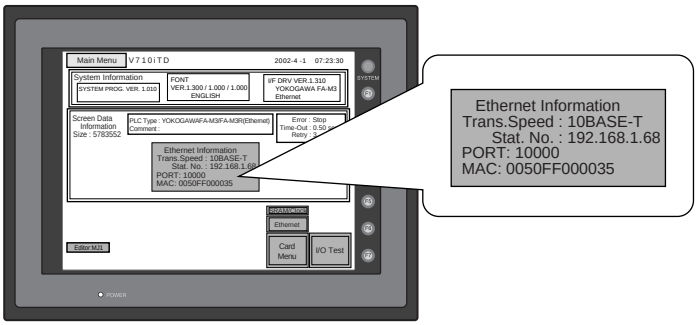
When screen data is to be transferred for the first time via Ethernet or when the GV42/52/62 has been replaced due to trouble, the server cannot transfer screen data because the network table has not been transferred to the GV42/52/62. In this case, the following setting must be made on the Main Menu screen:

- IP address
- Default gateway
- Subnet mask

Note that this is the tentative setting. The port number must be “10000.” When the network table is transferred from the GVWIN editor, the above data is updated.

- Setting procedure

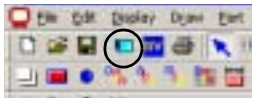
1. Press the [Ethernet] switch on the Main Menu screen.
2. The Ethernet screen is displayed. (For more information, refer to “Chapter 2 GV Operations.”) Set the IP address. If necessary, set the default gateway and subnet mask. (When attaching the I/F unit to GV42/52/62, set the connecting method (10BASE-T/AUI) as well.)
3. When the setting has been completed, press the [Setting Finished] switch. The Main Menu screen is displayed again.
4. The setting data can be reviewed on the Main Menu screen.



5. Transfer screen data from the server.

Transferring Screen Data from GVWIN Editor

1. Click the [Transfer] icon. The [Transfer] dialog is displayed.



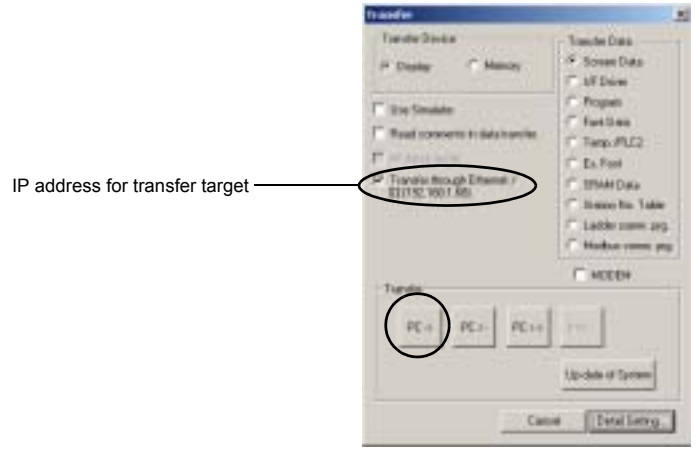
2. Attach a check mark (☑) to [☐Transfer through Ethernet].

3. Press the [Detail Setting] switch. The [IP Address Setting] dialog is displayed.

4. Enter the IP address of the GV42/52/62 to which the screen data is to be transferred.

When a list is shown, select the IP address of the GV42/52/62, and click the [<<] switch. The host name and the IP address are automatically entered.
Click [OK].

5. Check the IP address, and click [PC->].



6. Data transfer is started.

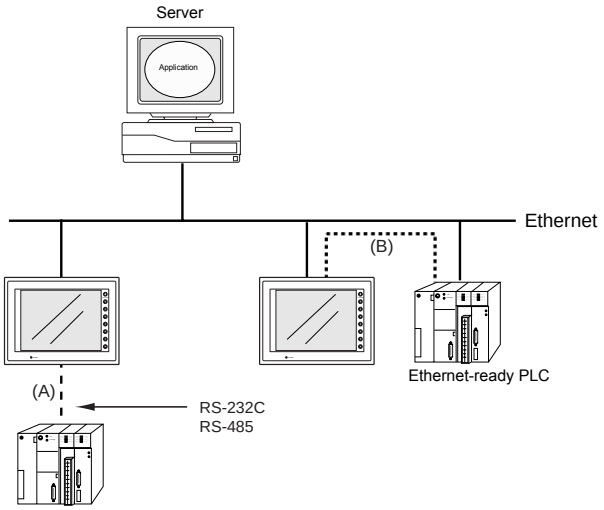
GVWIN Setting (PLC Type/Communication Parameter)

To enable Ethernet communications on the GV42/52/62, the following setting is required on the GVWIN editor.

- PLC type setting
- Communication parameter setting
- Network table editing

In this section, the PLC type setting and communication parameter setting are explained.

Connection Example



There are two connecting methods between the GV42/52/62 and the PLC.
(A) Connecting to the PLC through RS-232C or RS-485 interface
(B) Connecting to the PLC on the Ethernet

The contents of the system setting vary depending on the method selected. Check the connecting method and make the setting on the GVWIN editor.

(A) Connecting to the PLC through RS-232C or RS-485 interface

1. PLC type setting
   Select [System Setting] → [PLC Type] and select the PLC to be used.
2. Communication parameter setting
   Select [System Setting] → [Comm. Parameter]. Attach a check mark (☑) to [Use Ethernet].
3. Select [System Setting] → [Network Table Setting] → [Ethernet] →. The network table edit window is displayed. Edit the network table. For more information on network table editing, refer to page 4-14.

(B) Connecting to the PLC on the Ethernet

1. PLC type setting
   Select [System Setting] → [PLC Type] and select the PLC that shows [xxxxx (Ethernet)]. At present (April 2002), the following PLC models are supported.

PLC Model Section on GVWIN	PLC	Unit	Connection
QnA series (Ethernet)	Q2A, Q3A, Q4A Q2ASx	AJ71QE71, AJ71QE71-B5 A1SJ71QE71-B2, A1SJ71QE71-B5	10BASE-T connection: Twist-pair cable Category 5 AUI connection*1: AUI cable
QnH (Q) series (Ethernet)	QnH (Q mode)	QJ71E71, QJ71E71-B2	
FA-M3/FA-M3 R (Ethernet)	FA-M3 FA-M3 R	F3LE01-5T, F3LE11-0T	

*1 For AUI connection, a transceiver is required.

- The memory use is the same as the one for 1 : 1 connection. (Refer to “Chapter 5 Connection to PLCs.”

*** The data code of the GV42/52/62 is fixed to the binary code. Be sure to set the binary code for the data code on the PLC.**

2. Communication parameter setting

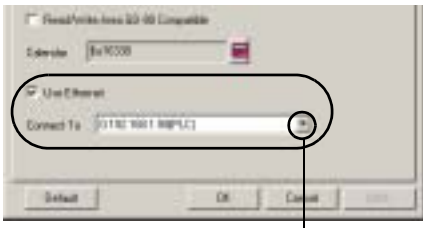
- Select [System Setting] → [Comm. Parameter]. Set the PLC to the GV42/52/62 which is connected.

When the network table is not set:

Network table No. 0 is displayed. It is not possible to select an option for [Connect To]. Select [System Setting] → [Network Table Setting] → [Ethernet]. The [Edit Network Table] window is displayed. Set the network table, and then go back to the communication parameter setting. For more information on network table editing, refer to page 4-14.

When the network table is set:

The IP addresses that are set on the network table are displayed. Select the IP address of the desired PLC.

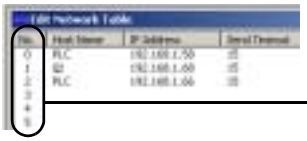


Click here. A drop-down list is displayed.

- When communicating with multiple PLCs (same model) on the Ethernet, select [1 : n] for [Connection] on the [Detail] tab window.

Set the port number (network table number) of the PLC in the [Memory Input] dialog for each part. For more information on the network table, refer to page 4-14.

[Edit Network Table]



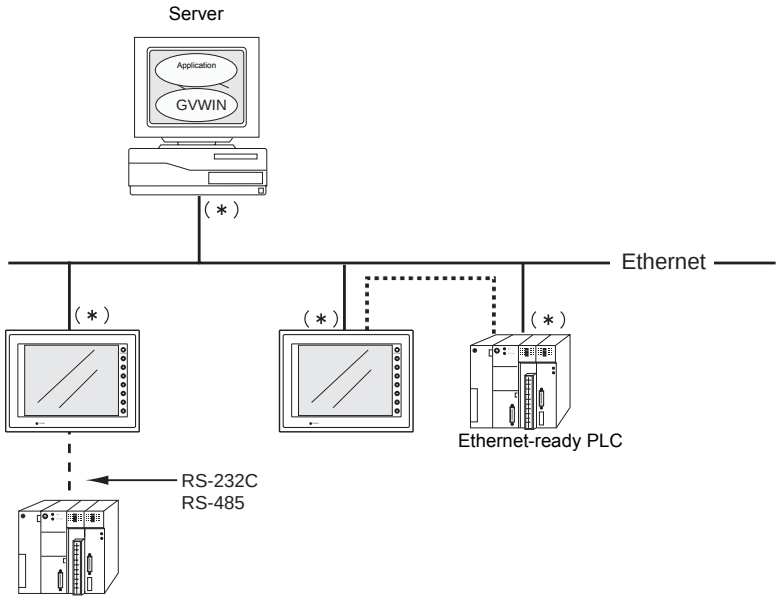
[Memory Input]

GVWIN Setting (Network Table Editing)

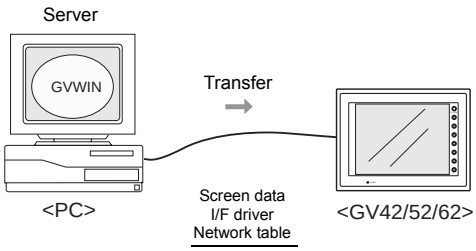
To enable Ethernet communications on the GV42/52/62, the following network table setting is required on the GVWIN editor.

Network Table

- The GV42/52/62, PLCs and PCs on the Ethernet must be registered on the network table. In the case of the network illustrated below, the nodes with (∗) should be registered on the network table.



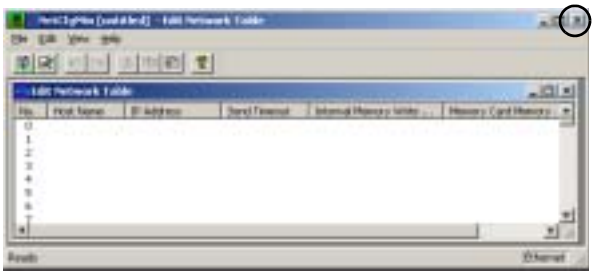
- The network table is transferred to the GV42/52/62 together with screen data.



When [Use Ethernet] is selected in the [Comm. Parameter] dialog, be sure to edit the network table.

Starting and Closing

- Starting
  Select [System Setting] → [Network Table Setting] → [Ethernet]. The network table edit window is displayed.

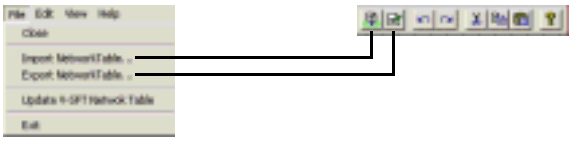


- Closing
  Select [File] → [Exit], or click the [Close] button.

Menu and Icons

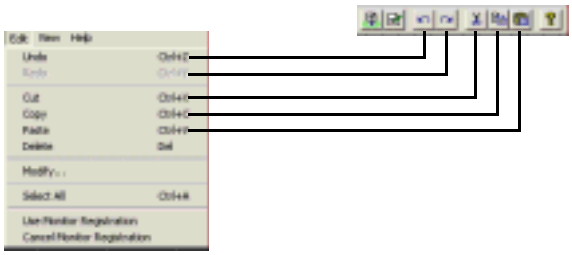
Each menu item corresponds to the icons as shown below.

- [File] menu



  - Import Network Table
    Imports a network table saved as a file “∗.ntb.”
  - Export Network Table
    Exports a network table as a file “∗.ntb.”

- [Edit] menu

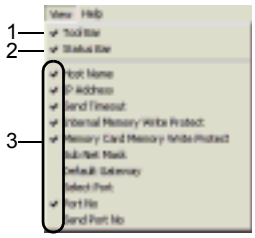


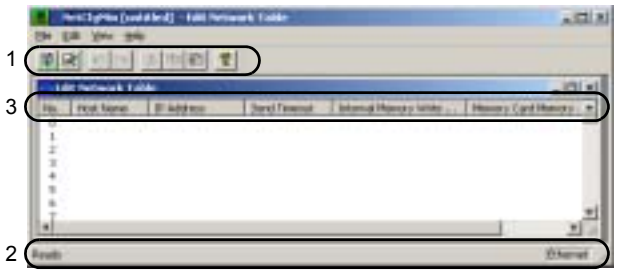
  - Use Monitor Registration
    Only one GV42/52/62 can be registered as the monitor for Ethernet communications.

    A mark is shown on the left of the network table number.

- Cancel Monitor Registration
  Click this menu when canceling monitor registration.

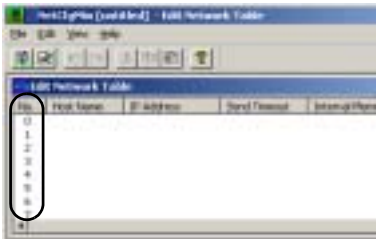
- [View] menu
  The items with a check mark are shown on the network table editing window.





Editing the Network Table

Double-click the number.



The [Set Network Table No. *] dialog is displayed.

[Host Name]
Set the name for the GV42/52/62, etc. to be used on the Ethernet.

[IP Address]
Set the IP address.

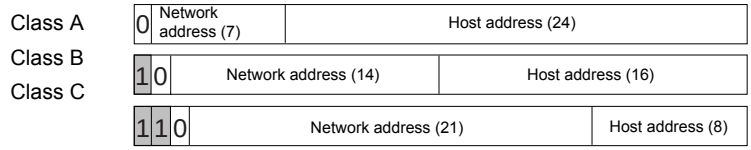
*** When registering Ethernet-ready PLC, set the same IP address as that of the PLC. For the setting procedure of the IP address on the PLC, see the manual attached to each PLC.**

*** When registering a computer as the server, set the same IP address as that of the computer.**
When setting the IP address on the computer, open [Property] of [TCP/IP] in [Network] on the Windows.

*** To connect to the intra-company network, consult with the network administrator.**

IP Address

This is an address that is used for recognizing each node on the Ethernet and should be unique. The IP address is 32-bit data which consists of the network address and the host address and can be classified into A to C depending on the network size.



Notation

A string of 32-bit data is divided into four, and each segment delimited with a period is in decimal notation.

Example: The IP address in class C shown below is represented as “192.128.1.50.”
11000000 10000000 00000001 00110010

[Send Timeout]

Set the time-out time for the GV42/52/62 to send a command on the Ethernet.

[Port No.] (2049 to 65535) (Default: 10000)

Set the port number. The port number may be fixed depending on the PLC model. Refer to the instruction manual for the PLC.

Example:	YOKOGAWA	FA-M3	12289: Fixed
	MITSUBISHI	Q series auto-open UDP port	5000: Default (changeable by sequence)

Port No.

Multiple applications are running on each node, and communications are carried out for each application between the nodes. Consequently, it is necessary to have a means to identify the application that data should be transferred to. The port number works as this identifier. Each port number is 16-bit data (from 0 to 65535). However, since some numbers are already used, the setting range available with GV52/62 is from 2049 to 65535. It is recommended to set a greater number.

[Select Port]

Select either AUI or 10BASE-T. When connecting to the 10BASE-T connector (LAN) of GV52/62, select [10BASE-T]. Select either [10BASE-T] or [AUI] when AIGV833 is mounted.

[Memory Protect]

Attach a check mark (☑) when write-protecting the internal memory or memory card.

[Default Gateway]

Attach a check mark (☑) when setting the default gateway.

Default Gateway

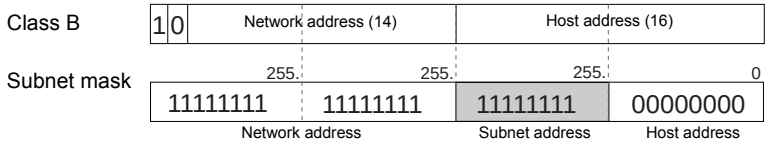
A gateway and a router are used for communicating between different networks. The IP address of the gateway (router) should be set to communicate with the node(s) on other network.

[Subnet Mask]

Attach a check mark (☑) when setting the subnet mask. When this option is checked, it is set to [255.255.255.0].

Subnet Mask

A subnet mask is used for dividing one network address into multiple networks (subnet). The subnet is assigned by specifying a part of the host address in the IP address as a subnet address.



GVWIN Setting (Macro)

This section explains the macro commands (SEND/EREAD/EWRITE) used for the Ethernet. For more information on macro commands, refer to the Reference Manual (Function).

Macro Command

[EREAD]

Words from the F1 memory in the GV42/52/62 of the network table number specified for F3 are read into the F0 memory. F2 designates the number of words to be read.

Usable Devices

	Internal Memory	PLC Memory	Constant	Memory Card	Indirect Designation	Double -word	IP Address
F0	○	○		○	○		
F1	○	○		○	○		
F2	○		○				
F3	○		○				○

EREAD: Read into memory

EREAD F0 = F1 C: F2 F3

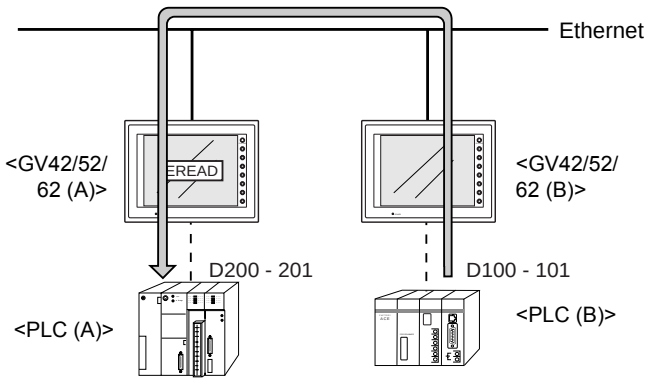
Example: Macro command at the GV42/52/62 (A)

The macro command for GV42/52/62 (A) to read data from PLC (B) and transfer it to PLC (A) is shown below.

[Description] EREAD D200 = D100 C: 2 B

- D200: Top memory address of the target
- D100: Top memory address of the source
- 2: The number of words to be transferred
- B: Address of the source (Network table number)

[Contents] Two words starting from D100 in PLC (B) are read into D200 in PLC (A).



[EWRITE]

Words from the F2 memory are written into the F0 memory in the GV42/52/62 of the network table number specified for F1. F3 designates the number of words to be written.

Usable Devices

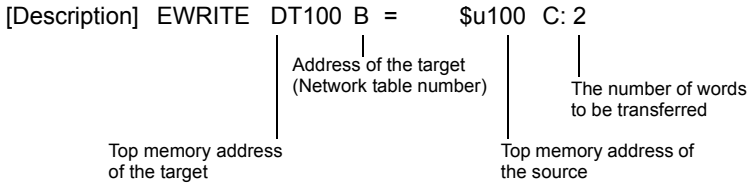
	Internal Memory	PLC Memory	Constant	Memory Card	Indirect Designation	Double-word	IP Address
F0	○	○		○	○		
F1	○		○				○
F2	○	○		○	○		
F3	○		○				

EWRITE: Write to memory

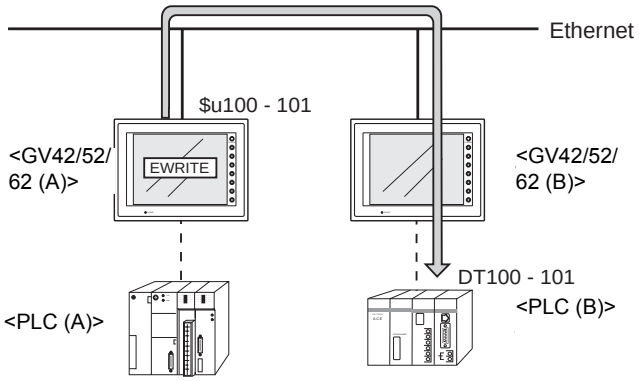
EWRITE F0 F1 = F2 C: F3

Example: Macro command at the GV42/52/62 (A)

The macro command for GV42/52/62 (A) to write data in GV42/52/62 (A) to PLC (B) is shown below.



[Contents] Two words starting from $u100 in GV42/52/62 (A) are written into DT100 in PLC (B).



[SEND]

Words from the F0 memory are transferred to the server of the network table number specified for F2. F1 designates the number of words to be transferred.

Usable Devices

	Internal Memory	PLC Memory	Constant	Memory Card	Indirect Designation	Double-word	IP Address
F0	○	○		○	○		
F1	○		○				
F2	○		○				○

SEND: Send to server

SEND F0 C: F1 TO: F2

Example: Macro command at the Gv42/52/62 (B)

The macro command for Gv42/52/62 (B) to transfer data to server (A) is shown below.

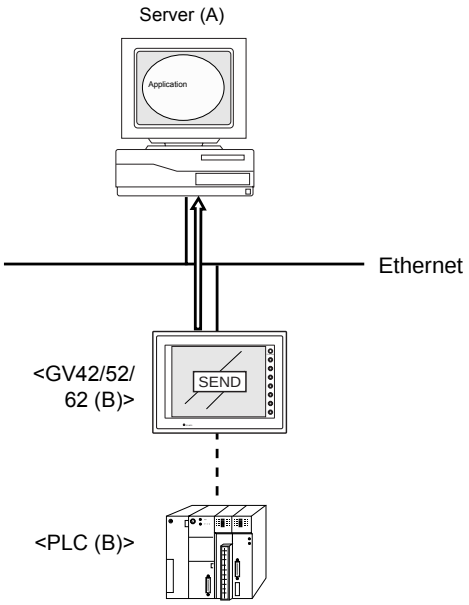
[Description] SEND $u100 C: 2 TO: A

The number of words to be transferred

Top memory address of the source

Address of the target (Network table number)

[Contents] Two words starting from $u100 in Gv42/52/62 (B) are transferred to server (A).



System Memory

The Ethernet status is output to the system memory ($s) of the GV42/52/62. This section explains the memory addresses ($s514 to 619) where the Ethernet status is output. For other memory addresses, refer to the Reference Manual (Function).

List

Address	Contents
⋮	⋮
$s514	Macro user request wait (0: absent 1: present)
515	Result of executing the macro user request wait
516	
517	
518	Ethernet status
519	
520	Network table 0 status
521	Network table 1 status
522	Network table 2 status
523	Network table 3 status
524	Network table 4 status
525	Network table 5 status
526	Network table 6 status
527	Network table 7 status
528	Network table 8 status
529	Network table 9 status
530	Network table 10 status
531	Network table 11 status
532	Network table 12 status
533	Network table 13 status
534	Network table 14 status
535	Network table 15 status
536	Network table 16 status
537	Network table 17 status
538	Network table 18 status
539	Network table 19 status
540	Network table 20 status
541	Network table 21 status
542	Network table 22 status
543	Network table 23 status
544	Network table 24 status
545	Network table 25 status
546	Network table 26 status
547	Network table 27 status
548	Network table 28 status

Address	Contents
$s549	Network table 29 status
550	Network table 30 status
551	Network table 31 status
552	Network table 32 status
553	Network table 33 status
554	Network table 34 status
555	Network table 35 status
556	Network table 36 status
557	Network table 37 status
558	Network table 38 status
559	Network table 39 status
560	Network table 40 status
561	Network table 41 status
562	Network table 42 status
563	Network table 43 status
564	Network table 44 status
565	Network table 45 status
566	Network table 46 status
567	Network table 47 status
568	Network table 48 status
569	Network table 49 status
570	Network table 50 status
571	Network table 51 status
572	Network table 52 status
573	Network table 53 status
574	Network table 54 status
575	Network table 55 status
576	Network table 56 status
577	Network table 57 status
578	Network table 58 status
579	Network table 59 status
580	Network table 60 status
581	Network table 61 status
582	Network table 62 status
583	Network table 63 status
584	Network table 64 status
585	Network table 65 status
586	Network table 66 status
587	Network table 67 status
588	Network table 68 status
589	Network table 69 status
590	Network table 70 status
591	Network table 71 status
592	Network table 72 status

Address	Contents
$s593	Network table 73 status
594	Network table 74 status
595	Network table 75 status
596	Network table 76 status
597	Network table 77 status
598	Network table 78 status
599	Network table 79 status
600	Network table 80 status
601	Network table 81 status
602	Network table 82 status
603	Network table 83 status
604	Network table 84 status
605	Network table 85 status
606	Network table 86 status
607	Network table 87 status
608	Network table 88 status
609	Network table 89 status
610	Network table 90 status
611	Network table 91 status
612	Network table 92 status
613	Network table 93 status
614	Network table 94 status
615	Network table 95 status
616	Network table 96 status
617	Network table 97 status
618	Network table 98 status
619	Network table 99 status

Addresses

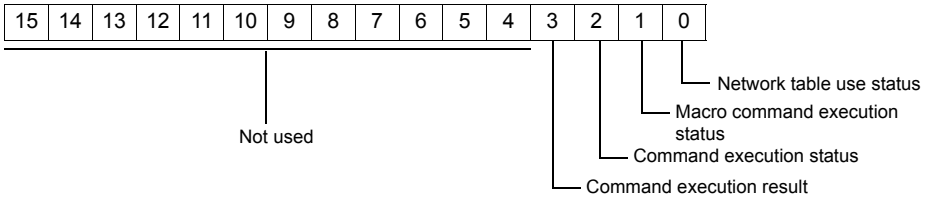
- $s514, 515
  These addresses are related to macro commands [SEND], [EREAD] and [EWRITE].

  $s514: Sets the executing status of the macro.
  In the case of "0," the next step of the macro is executed without waiting for the completion of the command when a command request is given to the Ethernet.
  In the case of other than "0," the wait status continues until the command completes, and then the next step of the macro is executed.

  $s515: Stores the result of macro execution. An error occurs if a value other than "0" is stored. For more information, refer to the error codes (page 4-47).
  However, when $s514 is "0," the data before the command request is stored.

- $s518
  Stores the current status of the Ethernet. An error occurs if a value other than "0" is stored. For more information, refer to the error codes (page 4-46).

- $s520 to 619
  Stores the statuses of network table No. 0 to 99.



  - Bit 0 (Network table use status)
    [0]: Not used [1]: Used
    For the current station, "0" (not used) is input.

  - Bit 1 (Macro command execution status)
    Stores the execution status of macro command [SEND], [EREAD] or [EWRITE].
    [0]: Waiting [1]: Executing

  - Bit 2 (Command execution status)
    Stores the execution status of the command from the server or other station.
    [0]: Waiting [1]: Executing (read/write command)

  - Bit 3 (Macro command execution result)
    Stores the execution result of macro command [SEND], [EREAD] or [EWRITE].
    [0]: Normal [1]: Error

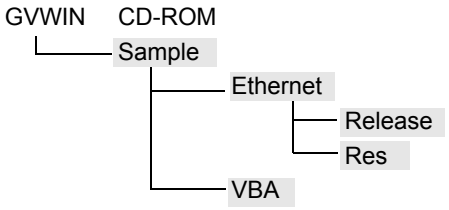
  - Bits 4 to 15 (System reserved)
    Not used at present. Always set "0."

Ethernet Access Functions (HKEtn10.DLL)

To enable Ethernet communications between the server and the GV42/52/62, it is necessary to create an application based on HKEtn10.dll (for UDP/IP) provided by us, using Visual C++, Visual Basic, etc.

Sample Folder

The “Sample” folder for Ethernet communications is included in the GVWIN CD-ROM. The [Ethernet] folder contains sample programs created using Visual C++, and the [VBA] folder contains those created using VBA. Refer to these sample program when creating an application. If necessary, you can copy and tailor the program to your requirements.



- Ethernet
  The following files are contained in the respective folders.

  [Ethernet]
  - ESmpl.dsp - ESmpl.h - ESmpl.cpp - ESmpl.rc
  - ESmpl.clw - MainFrm.h - MainFrm.cpp - ESmplDoc.h
  - ESmplDoc.cpp - ESmplView.h - ESmplView.cpp - StdAfx.h
  - StdAfx.cpp - Resource.h - ReadMe.txt - HKEtn10.h

  [Release]
  - HKEtn10.dll - HKEtn10.lib

  [res]
  - ESmpl.ico - ESmpl.rc2 - Toolbar.bmp - ESmplDoc.ico

- VBA
  The following files are contained in this folder.

  [VBA]
  - HKEtn10.dll
  - VBA_Sample.xls

  *** To execute this program, copy the above files to the “C:\TEST” folder.**
  Port No. 10000 and IP address 192.168.1.52 are set.
  When changing the copy target, the port number or the IP address, change the setting in the program accordingly.

- Notes on use of the sample programs
  The data type to be set when creating a program varies depending on whether Visual C++ or Visual Basic is used. For the data type and range, refer to the following tables.

Visual C++	VB
BYTE	Byte
short	Integer
unsigned short	
WORD	
int	Long
long	
DWORD	
char	String

Visual C++

Data Type	Bytes	Data Range
BYTE	1	0 to 255
short	2	–32768 to 32767
unsigned short	2	0 to 65535
int	4	–2147483648 to 2147483647
long	4	–2147483648 to 2147483647
WORD	2	0 to 65535
DWORD	4	0 to 4294967295
char	1	–128 to 127

Visual Basic

Data Type	Bytes	Data Range
Byte	1	0 to 255
Boolean	2	TRUE(0) / FALSE(–1)
Integer	2	–32768 to 32767
Long	4	–2147483648 to 2147483647
Double	8	4.94E–324 to 1.79E+308
String	Variable	0 to 2 GB

Function Specifications

List

- Read

PLC memory Word	int HKEtn_ReadPlcMemory(WORD *dp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-29
PLC memory Double-word	int HKEtn_ReadPlcMemory2(DWORD *dp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-30
Internal memory Word	int HKEtn_ReadInternalMemory(WORD *dp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-31
Memory card memory Word	int HKEtn_ReadCardMemory(WORD *dp,unsigned short Wordcnt,int FileNo,int RecordNo,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-32
PLC memory Bit	int HKEtn_ReadPlcBitMemory(int *lpOnFlag,int DeviceType,DWORD addr,int BitNo,char *lpAddr)	Page 4-33
Internal memory Bit	int HKEtn_ReadInternalBitMemory(int *lpOnFlag,int DeviceType,DWORD addr,int BitNo,char *lpAddr)	Page 4-34
Memory card memory Bit	int HKEtn_ReadCardBitMemory(int *lpOnFlag,int FileNo,int RecordNo,DWORD addr,int BitNo,char *lpAddr)	
PLC memory Word (block)	int HKEtn_ReadBlockMemory(WORD *sp,BYTE *pReadblockData,int BlockCnt,char *lpAddr)	Page 4-34

- Write

PLC memory Word	int HKEtn_WritePlcMemory(WORD *sp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-35
PLC memory Double-word	int HKEtn_WritePlcMemory2(DWORD *sp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-36
Internal memory Word	int HKEtn_WriteInternalMemory(WORD *sp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-37
Memory card memory Word	int HKEtn_WriteCardMemory(WORD *sp,unsigned short Wordcnt,int FileNo,int RecordNo,DWORD addr,char *lpAddr,int DFlag=1)	Page 4-38
PLC memory Bit	int HKEtn_WritePlcBitMemory(int DeviceType,DWORD addr,int BitNo,int OnFlag,char *lpAddr)	Page 4-39
Internal memory Bit	int HKEtn_WriteInternalBitMemory(int DeviceType,DWORD addr,int BitNo,int OnFlag,char *lpAddr)	Page 4-40
Memory card memory Bit	int HKEtn_WriteCardBitMemory(int FileNo,int RecordNo,DWORD addr,int BitNo,int OnFlag,char *lpAddr)	

- Others

Initialization function	int HKEtn_Init(unsigned short Port=10000,int Retry=3,int RecvTime=2,int RecvTime2=10)	Page 4-41
Receive wait from Gv42/52/62	int HKEtn_Recvfrom(BYTE *dp,short *lpCnt)	
Cancel receive wait function	void HKEtn_Cancel(void)	Page 4-41
Request connection information	int HKEtn_GetInf(struct inf *lpinf,char *lpAddr)	
Close processing	int HKEtn_Close()	
Get source's IP Address	int HKEtn_GetSinAddr(char *lpAddr)	
Get error contents	int HKEtn_GetLastError()	Page 4-43

Read

Read Words from PLC Memory

int HKEtn_ReadPlcMemory(WORD *dp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr, int DFlag=1)

This function is retained until PLC data is transferred from the GV42/52/62.

- Parameters

*dp Target pointer of the data to be read

Contents	Word Count
No. 1	1
No. 2	1
⋮	⋮
No. n	1

Wordcnt Word count to be read (max. 2000 words)

DeviceType Address of the device to be read (Refer to “Chapter 5 Connection to PLCs.”)

addr Top memory address to be read
For YOKOGAWA or YASKAWA PLCs, specify a number “−1” for the address (addr).
Example: D400 → 399 D25 → 24

*lpAddr IP address shown as a string of characters separated by dots
Example: “192.168.XXX.XXX”

DFlag 0, 1, 2 (Refer to the table below.)

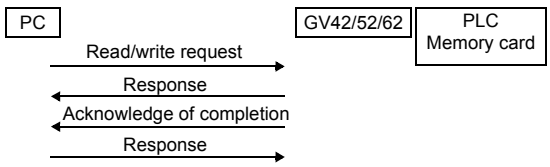
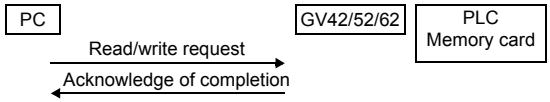
- Return values

Success TRUE

Failure FALSE

Error details Get using HKEtn_GetLastError ().

- Priority and communication procedure depending on the DFlag setting are shown below.

DFlag	Priority	Communication Procedure
0	Communications	
1	Display	
2	Display	

Read Double-words from PLC Memory

int HKEtn_ReadPlcMemory2(DWORD *dp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr, int DFlag=1)

This function is retained until PLC data is transferred from the GV42/52/62.

- Parameters

*dp — Target pointer of the data to be read

Contents	Word Count
No. 1	2
No. 2	2
⋮	⋮
No. n	2

Wordcnt — Word count to be read (max. 1000 words)

DeviceType — Address of the device to be read (Refer to “Chapter 5 Connection to PLCs.”)

addr — Top memory address to be read
For YOKOGAWA PLCs, specify a number “–1” for the address (addr).
Example: D400 → 399 D25 → 24

*lpAddr — IP address shown as a string of characters separated by dots
Example: “192.168.XXX.XXX”

DFlag — 0, 1, 2 (Refer to page 4-29.)

- Return values

Success — TRUE
Failure — FALSE
Error details — Get using HKEtn_GetLastError ().

Read Words from Internal Memory

int HKEtn_ReadInternalMemory(WORD *dp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr,int DFlag=1)

This function is retained until data is transferred from the GV42/52/62.

- Parameters

*dp Target block pointer

Contents	Word Count
No. 1	1
No. 2	1
⋮	⋮
No. n	1

Wordcnt	Word count to be transferred (max. 2000 words)
DeviceType	0: $u 1: $s
addr	Top memory address to be read
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”
DFlag	0, 1, 2 (Refer to page 4-29.)

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Read Words from Memory Card Memory

int HKEtn_ReadCardMemory(WORD *dp,unsigned short Wordcnt,int FileNo,int RecordNo,DWORD addr,char *lpAddr,int DFlag=1)

This function is retained until data is transferred from the GV42/52/62.

- Parameters

*dp Target block pointer

Contents	Word Count
No. 1	1
No. 2	1
⋮	⋮
No. n	1

Wordcnt Word count to be transferred (max. 2000 words)
FileNo File number
RecordNo Record number
addr Top memory address to be read
*lpAddr IP address shown as a string of characters separated by dots
Example: “192.168.XXX.XXX”
DFlag 0, 1, 2 (Refer to page 4-29.)

- Return values

Success TRUE
Failure FALSE
Error details Get using HKEtn_GetLastError ().

Read Bits from PLC Memory

int HKEtn_ReadPlcBitMemory(int *lpOnFlag,int DeviceType,DWORD addr,int BitNo,char *lpAddr)

This function is retained until PLC data is transferred from the GV42/52/62.

- Parameters

*lpOnFlag	Returns the bit status. 0: OFF 1: ON
DeviceType	Address of the device to be read (Refer to “Chapter 5 Connection to PLCs.”)
addr	Top memory address to be read For YOKOGAWA or YASKAWA PLCs, specify a number “−1” for the address (addr). Example: D400 → 399 D25 → 24
BitNo	Bit number to be read Example 1: When accessing to D20-05 of MITSUBISHI PLC DeviceType 0 addr 20 BitNo 5 Example 2: When accessing to M20 of MITSUBISHI PLC 20 ÷ 16 = 1 ... 4 DeviceType 6 addr 1 BitNo 4
*lpAddr	IP address shown as a string of characters separated by dots Example:“192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Read Bits from Internal Memory

int HKEtn_ReadInternalBitMemory(int *lpOnFlag,int DeviceType,DWORD addr,int BitNo,char *lpAddr)

This function is retained until data is transferred from the GV42/52/62.

- Parameters

*lpOnFlag	Returns the bit status. 0: OFF 1: ON
DeviceType	0: $u 1: $s
addr	Top memory address to be read
BitNo	Bit number to be read
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Read Bits from Memory Card Memory

int HKEtn_ReadCardBitMemory(int *lpOnFlag,int FileNo,int RecordNo,DWORD addr,int BitNo,char *lpAddr)

This function is retained until data is transferred from the GV42/52/62.

- Parameters

*lpOnFlag	Returns the bit status. 0: OFF 1: ON
FileNo	File number
RecordNo	Record number
addr	Top memory address to be read
BitNo	Bit number to be read
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Read Words (Blocks) from PLC Memory

int HKEtn_ReadBlockMemory(WORD *sp,BYTE *pReadblockData,int BlockCnt,char *lpAddr)

This function is retained until data is transferred from the GV42/52/62.

- Parameters

*sp	Returns the read data.
*pReadblockData	Top pointer of the read data

Word Count	2 bytes
Source PLC memory	9 bytes

BlockCnt	Block count to be read
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Write

Write Words to PLC Memory

int HKEtn_WritePlcMemory(WORD *sp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr, int DFlag=1)

This function is retained until write completion is received from the GV42/52/62. (It is reset on receipt of write completion to the PLC memory.)

- Parameters

*sp Target block pointer

Contents	Word Count
No. 1	1
No. 2	1
⋮	⋮
No. n	1

Wordcnt Word count to be transferred (max. 2000 words)

DeviceType Address of the device to be written (Refer to “Chapter 5 Connection to PLCs.”)

addr Top memory address to be written
For YOKOGAWA or YASKAWA PLCs, specify a number “−1” for the address (addr).
Example: D400 → 399 D25 → 24

*lpAddr IP address shown as a string of characters separated by dots
Example: “192.168.XXX.XXX”

DFlag 0, 1, 2 (Refer to page 4-29.)

- Return values

Success TRUE

Failure FALSE

Error details Get using HKEtn_GetLastError ().

Write Double-words to PLC Memory

int HKEtn_WritePlcMemory2(DWORD *sp,unsigned short Wordcnt,int DeviceType,DWORD addr,char *lpAddr, int DFlag=1)

This function is retained until write completion is received from the GV42/52/62. (It is reset on receipt of write completion to the PLC memory.)

- Parameters

*sp Target block pointer

Contents	Word Count
No. 1	2
No. 2	2
⋮	⋮
No. n	2

Wordcnt Word count to be transferred (max. 1000 words)
DeviceType Address of the device to be written (Refer to “Connection to PLCs.”)
addr Top memory address to be written
For YOKOGAWA or YASKAWA PLCs, specify a number “–1” for the address (addr).
Example: D400 → 399 D25 → 24
*lpAddr IP address shown as a string of characters separated by dots
Example: “192.168.XXX.XXX”
DFlag 0, 1, 2 (Refer to page 4-29.)

- Return values

Success TRUE
Failure FALSE
Error details Get using HKEtn_GetLastError ().

Write Words to Internal Memory

int HKEtn_WriteInternalMemory(WORD *sp,unsigned short Wordcnt,int DeviceType,DWORD addr,chr *lpAddr,int DFlag=1)

This function is retained until write completion is received from the GV42/52/62. (It is reset on receipt of write completion to the internal memory.)

- Parameters

*sp Target block pointer

Contents	Word Count
No. 1	1
No. 2	1
⋮	⋮
No. n	1

Wordcnt Word count to be transferred (max. 2000 words)
DeviceType 0: $u 1: $s
addr Top memory address to be written
*lpAddr IP address shown as a string of characters separated by dots
Example: “192.168.XXX.XXX”
DFlag 0, 1, 2 (Refer to page 4-29.)

- Return values

Success TRUE
Failure FALSE
Error details Get using HKEtn_GetLastError ().

Write Words to Memory Card Memory

int HKEtn_WriteCardMemory(WORD *sp,unsigned short Wordcnt,int FileNo,int RecordNo,DWORD addr,char *lpAddr,int DFlag=1)

This function is retained until write completion is received from the GV42/52/62. (It is reset on receipt of write completion to the memory card memory.)

- Parameters

*sp Target block pointer

Contents	Word Count
No. 1	1
No. 2	1
⋮	⋮
No. n	1

Wordcnt Word count to be transferred (max. 2000 words)
FileNo File number
RecordNo Record number
addr Top memory address to be written
*lpAddr IP address shown as a string of characters separated by dots
Example: “192.168.XXX.XXX”
DFlag 0, 1, 2 (Refer to page 4-29.)

- Return values

Success TRUE
Failure FALSE
Error details Get using HKEtn_GetLastError ().

Write Bits to PLC Memory

int HKEtn_WritePlcBitMemory(int DeviceType,DWORD addr,int BitNo,int OnFlag,char *lpAddr)

This function is retained until write completion is received from the GV42/52/62. (It is reset on receipt of write completion to the PLC memory.)

- Parameters

DeviceType	Address of the device to be written (Refer to “Chapter 5 Connection to PLCs.”)
addr	Top memory address to be written For YOKOGAWA PLCs, specify a number “–1” for the address (addr). Example: D400 → 399 D25 → 24
BitNo	Bit number to be accessed Example 1: When accessing to D20-05 of MITSUBISHI PLC DeviceType 0 addr 20 BitNo 5 Example 2: When accessing to M20 of MITSUBISHI PLC 20 ÷ 16 = 1 ... 4 DeviceType 6 addr 1 BitNo 4
OnFlag	0: OFF 1: ON
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Write Bits to Internal Memory

int HKEtn_WriteInternalBitMemory(int DeviceType,DWORD addr,int BitNo,int OnFlag,char *lpAddr)

This function is retained until write completion is received from the GV42/52/62. (It is reset on receipt of write completion to the internal memory.)

- Parameters

DeviceType	0: $u 1: $s
addr	Top memory address to be written
BitNo	Bit number to be accessed
OnFlag	0: OFF 1: ON
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Write Bits to Memory Card Memory

int HKEtn_WriteCardBitMemory(int FileNo,int RecordNo,DWORD addr,int BitNo,int OnFlag,char *lpAddr)

This function is retained until write completion is received from the GV42/52/62. (It is reset on receipt of write completion to the memory card memory.)

- Parameters

FileNo	File number
RecordNo	record number
addr	Top memory address to be written
BitNo	Bit number to be accessed
OnFlag	0: OFF 1: ON
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Others Functions

Initialization Function

int HKEtn_Init(unsigned short Port=10000,int Retry=3,int RecvTime=2,int RecvTime2=10)

Creates a socket.

- Parameters

Port	Set 10000 or above.
Retry	Number of send retrials
RecvTime	Receive timeout
RecvTime2	Receive timeout 2

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Receive Wait from GV42/52/62

int HKEtn_Recvfrom(BYTE *dp,short *lpCnt)

This function is retained internally until data is received from the GV42/52/62. The function returns a response and ends only when a command is received. The user should interpret the received data and create the next action. This function must be executed within the thread.

- Parameters

*dp	Top pointer of receive buffer Allocate 5000 bytes.
*lpCnt	Returns the number of bytes received.

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Cancel Receive Wait Function

void HKEtn_Cancel(void)

Cancels the function in the receive wait status, such as Recvfrom().

Request Connection Information

int HKEtn_GetInf(struct inf *lpinf,char *lpAddr)

- Parameters

*lpinf	All “0”
*lpAddr	IP address shown as a string of characters separated by dots Example: “192.168.XXX.XXX”

- Return values

Success	TRUE
Failure	FALSE
Error details	Get using HKEtn_GetLastError ().

Close processing

int HKEtn_Close()

Execute this function when ending HKEtn10.dll.

Get Source’s IP Address

int HKEtn_GetSinAddr(char *lpAddr)

Execute this function after the recvfrom() function or receiving the data.

Get Error Contents

int HKEtn_GetLastError()

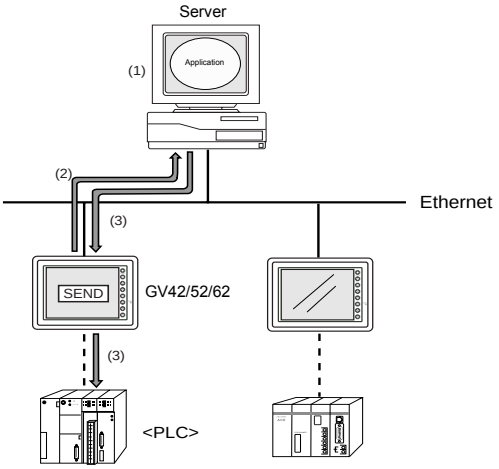
- Error codes and solutions

Code	Contents	Solution
−1	Undefined command (receive timeout)	Check the command.
−2	Undefined IP address	Check the IP address.
−3	Target station busy	Reduce the frequency of communications.
−4	Illegal packet bytes	Check response processing at the target station.
−5	Packet bytes exceed the maximum number.	Reduce the send packet size.
−6	Local mode error	Check that the target station is in the RUN mode.
−7	Preparing for communications	Start communications when the target station is ready.
−8	Communication failure – Cannot access	Check the target station.
−9	Cannot process due to short memory	Check the memory space at the target station.
−10	Illegal received data	Check the command.
−20	Socket initialization error	Check parameters for initialization.
−50	Requested packet byte exceeds the maximum number.	Reduce the requested size.
−51	Address error	Check the requested memory type.
−52	Communication failure – Cannot access	Check the target station.
−54	Write protected	Check write-protection of the card.
−55	Cannot process due to short memory	Check the memory space at the target station.
−56	Sampling buffer error	Check the command.
−100	Processing another command	Continue retrying.
−101	Command control – Buffer over	Reduce the frequency of communications.
−120	Communications aborted by the user	Communications are forcedly aborted.
−121	Received during command processing	Reduce the frequency of communications.

Server Communication Procedure

Data Request from GV42/52/62 to Server

(1) Execute the receive wait thread using "int HKEtn_RecvFrom()" on the application of the server.
(2) Send the command from the GV42/52/62 to the server using macro command SEND.
(3) The server analyzes the command and takes the appropriate action.

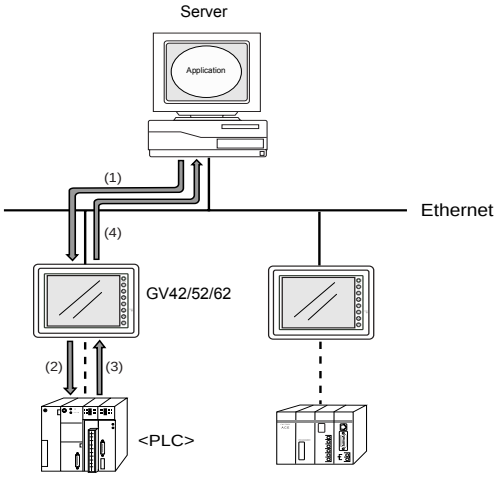


User data format
Transfer from the GV42/52/62

Item	Bytes
Packet bytes 2 + 2 + 1 + n bytes	2
Transaction No.	2
Command (0x33)	1
User data	n

PLC Data Request from Server to GV42/52/62

(1) A request is sent from the application of the server to the GV42/52/62. Use "int HKEtn_ReadPlcMemory()" for a memory request.
(2) (3) The GV42/52/62 reads the PLC memory.
(4) The GV42/52/62 returns data read from the PLC memory to the server.



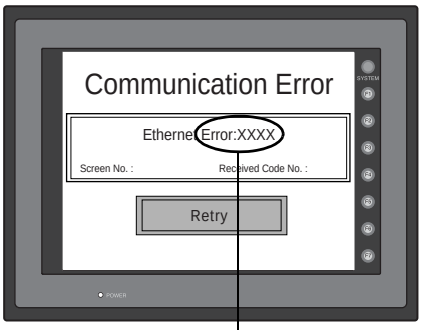
Error Display

Error messages displayed on the GV42/52/62 and those stored in the system memory are explained.

Communication Errors

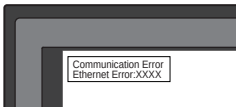
The Ethernet status is stored in system memory address $s518 of the GV42/52/62 during Ethernet communications. The communication error occurs when a code other than “0” (normal) is stored in system memory address $s518.

- In the RUN mode

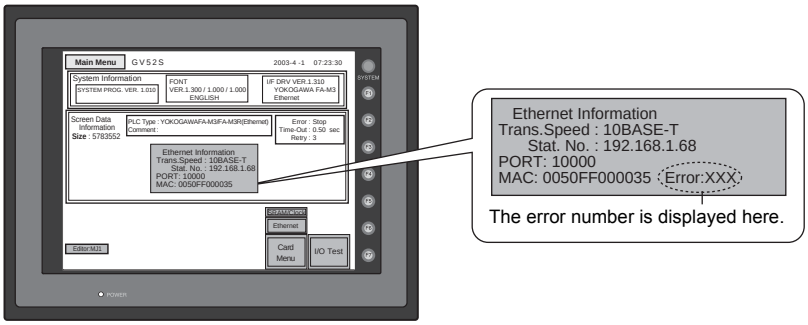


The error number is displayed here.

*** When [Continue] is selected for [Comm. Error Handling] in the [Detail] tab window of the [Comm. Parameter] dialog, a following screen is displayed.**



- To check the occurrence of an error on the Main Menu screen:



The error number is displayed here.

- System memory: $s518

No.	Contents	Solution
0	Normal	
200	Failed in send request	Check cable connection and network table setting of the target station.
201	Send error	Check that the setting on the target station is consistent with the network table setting.
202	Internal port error	The communication unit is in the older version or is faulty.
204	TCP connection over	The number of connections reaches the maximum, and no more connection is possible. Check the communication lines.
205	TCP connection error	Connection cannot be established. Check the communication lines, or turn the power off and on.
206	TCP connection end error	TCP communication disconnection has failed. Check that the communication partner with the GV42/52/62 is present on the line.
207	TCP send error	TCP sending has failed. Check the communication lines.
350	Send buffer full	The line is busy. Consult the network administrator of your company. The communication unit is in the older version or is faulty.
351	IC receive buffer overflow	
352	Driver receive buffer overflow	
801	Receive processing error, link down error	Check the HUB or the link confirmation LED on the communication unit. If the LED is not on, check cable connection and the port setting on the network table.
802	Transceiver error	Check the transceiver and cable connection.
900	No IP address at local port	Check that the IP address of the local port is set on the network table. Check if the same IP address is set on the network.
901	Duplicated IP address error	
902	Send socket ID error (error that may occur when GV52/62 LAN port is used)	Turn the power off and back it on. If the problem persists, contact your local distributor.
1000	Ethernet I/F unit not mounted	Check whether the Ethernet I/F unit is mounted correctly, and then turn the power off and on. If the problem persists, contact your local distributor.
1001	Ethernet I/F unit not ready	
1002	Ethernet I/F unit DPRAM error	
1003	No response from Ethernet I/F unit	
1004	Ethernet receive buffer over	
1005	Ethernet send registration error	
1006	I/F unit unregistered interrupt	
1100 - 1115	Initialization error (communication unit)	
1120	Dual port access error	
1200	Undefined register	
1201	Send/receive buffer area over	
1202	MAC address error	
1203	Port error	Check whether the Ethernet I/F unit is mounted correctly, and then turn the power off and on. If the problem persists, contact your local distributor.
1301	Watch dog overflow	
1302	JAVA error LANC error	

Errors during Macro Command Execution

The execution result of macro commands SEND/EREAD/EWRITE is stored in system memory address $s515.

- System memory address: $s515 (response to the request)

Code	Contents	Solution
0	Normal	
200 - 2000	Communication error	Refer to “Communication Errors.”
−30	Timeout	Check if an error is occurring to the target GV42/52/62.
−31	The number of words being sent exceeds the limit.	Check the number of words that can be sent in macro editing.
−32	Specified table not used	Check the setting on the network table.
−33	Cannot use the send command.	Check the macro command in macro editing.
−34	Specified table being used	Check that system memory address $s514 is set. If not, reduce the frequency of communications.
−35	Cannot process due to short memory	Check the memory space at the target station.
−36	Illegal receive packet bytes	Check the requested number of words.
−37	Memory access error	Check the setting of the requested memory.
−38	Macro setting error	Check the macro setting.

Connection to PLCs

1. MATSUSHITA PLC
2. MITSUBISHI PLC
3. OMRON PLC
4. YOKOGAWA PLC
5. TOSHIBA MACHINE PLC
6. Allen-Bradley PLC
7. SIEMENS PLC
8. LG PLC
9. MODICON PLC

1. MATSUSHITA PLC

Available PLCs

Select PLC Type	PLC	Unit/Port	Connection
MEWNET	FP0	RS-232C tool port on the CPU unit	MATSUSHITA's RS-232C cable AFC8513
		RS-232C port on the CPU unit	RS-232C [Wiring Diagram 3]
	FP1	RS-232C port on the CPU unit	RS-232C [Wiring Diagram 1]
	FP2	RS-232C tool port on the CPU unit	MATSUSHITA's RS-232C cable AFC8513
		RS-232C port on the CPU unit	RS-232C [Wiring Diagram 2]
	FP10S	RS-232C port on the CPU unit	RS-232C [Wiring Diagram 1]
		AFP3462	RS-232C [Wiring Diagram 1]
		AFP3463	RS-422 [Wiring Diagram 4]

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		19200 bps	19200 bps
Port		[0] × 10, [1] × 1	1
Parity		Odd	Odd
Transmission code	Data bit	8 (ASCII)	8
	Stop bit	1	1
Transmission mode		Computer link function (fixed)	–
Control signal		Invalid (fixed)	–

*** If a tool port (the ladder port for RS-232C) is used, the range of PLC parameter setting is limited as below. Adjust the PLC parameter setting to communication parameter setting of the GV42/52/62.**

Baud rate: **9600, 19200bps (115 kbps available with FP2)**
Parity: **Odd (fixed)**
Data bit: **8 (or 7, select "8" normally)**
Stop bit: **1 (fixed)**

MEWNET: Link Unit Switch Setting

Switch	Setting	Contents
1	ON	Same as that set on GV42/52/62 (normally 19200 bps)
2	OFF	
3	OFF	

Switch	Setting	Contents
4	OFF	Data length: 8 bits
5	ON	With parity
6	ON	Odd
7	OFF	Stop bit 1
8	OFF	CS, CD invalid

Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

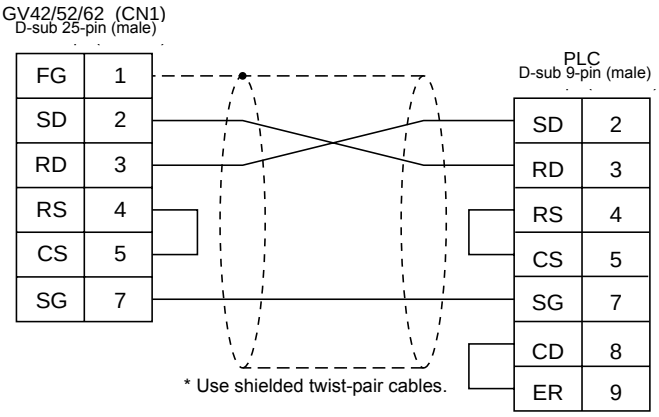
Memory		TYPE	Remarks
DT	(data register)	0	
X	(external input relay)	1	WX as word device, read only
Y	(external output relay)	2	WY as word device
R	(internal relay)	3	WR as word device, including special relays
L	(link relay)	4	WL as word device
LD	(link register)	5	
FL	(file register)	6	
SV	(timer/counter set value)	7	
EV	(timer/counter elapsed time)	8	
T	(timer/contact)	9	Read only
C	(counter/contact)	10	Read only

Wiring

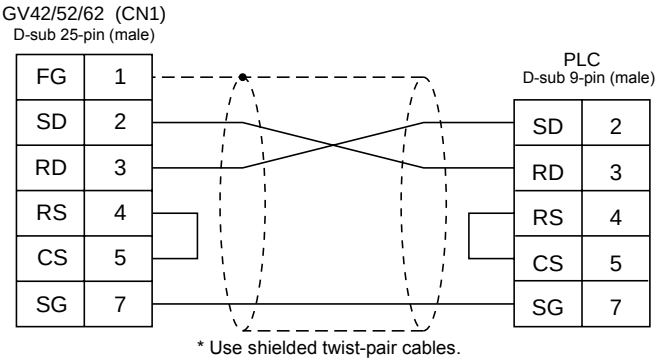
Wiring diagrams with the PLC are shown below.

RS-232C

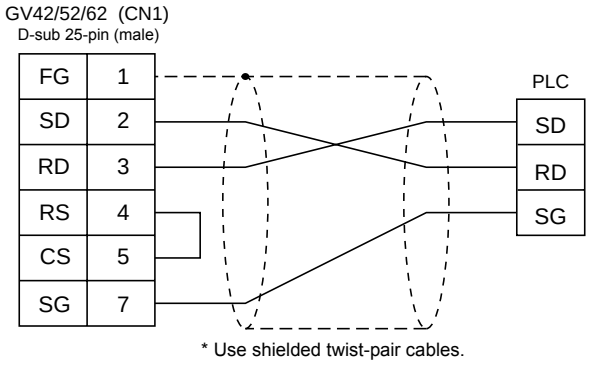
Wiring Diagram 1



Wiring Diagram 2

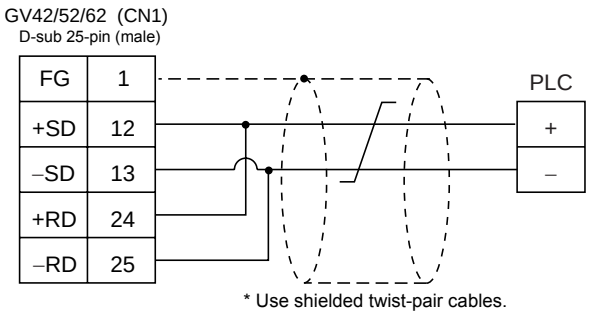


Wiring Diagram 3



RS-422

Wiring Diagram 4



2. MITSUBISHI PLC

Available PLCs

A Series Link, QnA Series Link, QnH (Q) Series Link

Select PLC Type	CPU	Unit/Port	Connection	PLC2Way
A series link	A2A, A3A	AJ71C24-S6 AJ71C24-S8 AJ71UC24	RS-232C [Wiring Diagram 2]	○
	A2U, A3U, A4U	AJ71UC24		
	A1, A2, A3 A1N, A2N, A3N A3H, A3M, A73	AJ71C24 AJ71C24-S3 AJ71C24-S6 AJ71C24-S8 AJ71UC24	RS-422 [Wiring Diagram 5]	○
	A0J2, A0J2H	A0J2C214-S1		
	A2US	A1SJ71UC24-R2	RS-232C [Wiring Diagram 1]	○
		A1SJ71UC24-R4	RS-422 [Wiring Diagram 5]	○
		A1SJ71UC24-PRF	RS-232C [Wiring Diagram 1]	○
	A1S, A1SJ, A2S	A1SJ71C24-R2	RS-232C [Wiring Diagram 1]	○
		A1SJ71C24-R4	RS-422 [Wiring Diagram 5]	○
		A1SJ71C24-PRF	RS-232C [Wiring Diagram 1]	○
	A2CCPUC24	CPU built-in link port	RS-232C [Wiring Diagram 1]	○
	QnH (A mode)	A1SJ71UC24-R2	RS-232C [Wiring Diagram 1]	○
		A1SJ71UC24-R4	RS-422 [Wiring Diagram 5]	○
QnA series link	Q2A, Q3A, Q4A Q2ASx	AJ71QC24N	RS-232C [Wiring Diagram 2]	○
			RS-422 [Wiring Diagram 5]	×
		AJ71QC24	RS-232C [Wiring Diagram 2]	○
			RS-422 [Wiring Diagram 5]	×
		A1SJ71QC24	RS-232C [Wiring Diagram 1]	○
			RS-422 [Wiring Diagram 5]	×
		AJ71QC24-R4(CH1)	RS-422 [Wiring Diagram 6]	×
		AJ71QC24-R4(CH2)	RS-422 [Wiring Diagram 5]	×
QnH (Q) series link	QnH (Q mode)	QJ71C24	RS-232C [Wiring Diagram 1]	○
			RS-422 [Wiring Diagram 5]	×

A Series CPU, QnA Series CPU, QnH Series CPU

Select PLC Type	CPU	Unit/Port	Connection	PLC2Way
A series CPU	A2A, A3A A2U, A3U, A4U A2US(H) A1N, A2N, A3N A3V, A73 A3H, A3M A0J2H A1S(H), A1SJ(H), A2S(H) A2CCPUC24 A1FX	Tool port*1	RS-422 [Wiring Diagram 7]	×
QnA series CPU	Q2A, Q3A, Q4A Q2AS(H)			

FX Series

Select PLC Type	CPU	Unit/Port	Connection	PLC2Way
FX series CPU	FX1/2	Tool port	RS-422 [Wiring Diagram 7]	×
FX series link (A Protocol)	FX2N	FX2N-232-BD	RS-232C [Wiring Diagram 3]	×
		FX2N-485-BD	RS-485 [Wiring Diagram 8]	×
	FX1N FX1S	FX1N-232-BD	RS-232C [Wiring Diagram 3]	×
		FX1N-485-BD	RS-485 [Wiring Diagram 8]	×
	FX0N	FX0N-232ADP	RS-232C [Wiring Diagram 4]	×
		FX0N-485ADP	RS-485 [Wiring Diagram 8]	×
	FX2NC	FX0N-232ADP	RS-232C [Wiring Diagram 4]	×
		FX0N-485ADP	RS-485 [Wiring Diagram 8]	×

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

A Series Link

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		19200 bps	19200 bps
Port		0 for both stations ×10, ×1	0
Parity		Even	Even
Transmission mode*1	RS-232C	MODE1	Trans. Mode 1
	RS-422	MODE5	Trans. Mode 1
Transmission code	Data length	7	7
	Stop bit	1	1
Sumcheck		Provided (fixed)	–
Write while running		Possible (fixed)	–
Terminating resistance at sender		Provided (fixed)	–
Terminating resistance at receiver		Provided (fixed)	–

*1 Trans. Mode 1: without CR/LF, Trans. Mode 4: with CR/LF
If [Trans. Mode 4] is selected for [Trans. Mode] in the [Comm. Parameter] dialog of the GV42/52/62, select [MODE4] in the case of RS-232C, or [MODE8] in the case of RS-422.

QnA Series Link, QnH (Q) Series Link

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate*		19200 bps	19200 bps
Port		0 for both stations ×10, ×1	0
Parity		Even	Even
Transmission mode	RS-232C	MODE5 (binary mode) (fixed)	–
	RS-422		
Transmission code	Data length	8 (fixed)	–
	Stop bit	1	1
Sumcheck		Provided (fixed)	–
Write while running		Possible (fixed)	–

* The maximum baud rate available with the GV42/52/62 is 115200 bps. Select the appropriate baud rate depending on the used PLC and environment.

A Series CPU, QnA Series CPU

Communication parameters for the GV42/52/62 are automatically set.

FX Series CPU

Communication parameters for the GV42/52/62 are automatically set.

FX Series Link (A Protocol)

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		19200 bps	19200 bps
Parity		Even	Even
Transmission code	Data length	7	7
	Stop bit	1	1
Protocol		Special protocol communication (fixed)	–
H/W type*1		Normal/RS-232C	RS-232C
Sumcheck		Added (fixed)	–
Transmission mode		Mode 1	Trans. Mode 1

*1 Select RS-485 when the link unit FX2N-485-BD, FX2N-422-BD, FX1N-485-BD, FX1N-422-BD or FX0N-485-ADP is used.

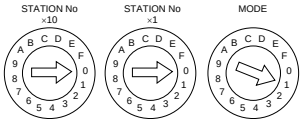
*** We recommend to set 2 ms or above for [Send Delay Time] in the [Detail] tab window of the [Comm. Parameter] dialog of the GV42/52/62.**

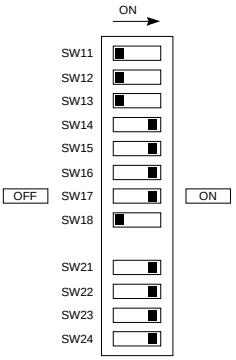
A Series Link, QnA Series Link: Switch Setting

The following is an example that shows the settings for both rotary DIP switches and DIP switches on the PLC.

AJ71UC24

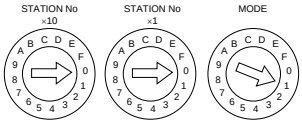
Example 1 Signal level: RS-232C, baud rate: 19200 bps, transmission mode 1

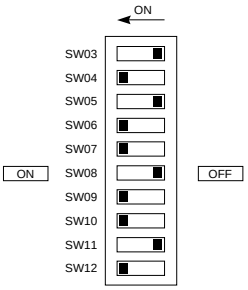




A1SJ71C24-R2, A1SJ71UC24-R2

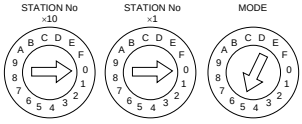
Example 2 Signal level: RS-232C, baud rate: 19200 bps, transmission mode 1

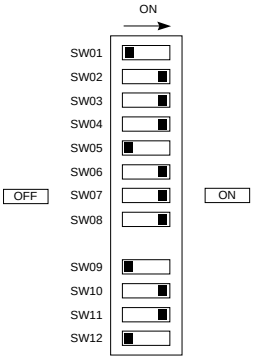




AJ71QC24, A1SJ71QC24, AJ71QC24N

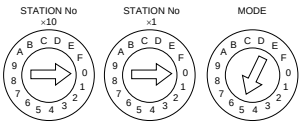
Example 3 Baud rate: 19200 bps

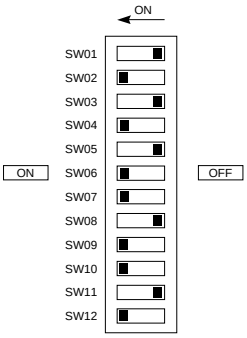




A1SJ71UC24-R4, A1SJ71C24-R4

Example 4 Signal level: RS-422, baud rate: 19200 bps, transmission mode 1





Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

A Series Link, QnA Series Link, QnH (Q) Series Link, A Series CPU, QnA Series CPU, QnH (A) Series CPU, QnH (Q) Series CPU,

Memory		TYPE	Remarks
D	(data register)	0	
W	(link register)	1	
R	(file register)	2	*1
TN	(timer/current value)	3	
CN	(counter/current value)	4	
SPU	(special unit)	5	*2
M	(internal relay)	6	
L	(latch relay)	7	
B	(link relay)	8	
X	(input relay)	9	
Y	(output relay)	10	
TS	(timer/contact)	11	
TC	(timer/coil)	12	
CS	(counter/contact)	13	
CC	(counter/coil)	14	
H	(link unit buffer memory)	15	
SD	(special register)	16	QnA, QnH (Q) series only (both link unit and CPU)
SM	(special relay)	17	QnA, QnH (Q) series only (both link unit and CPU)
SB	(special link relay)	18	QnA, QnH (Q) series only (both link unit and CPU)
SW	(special link register)	19	QnA, QnH (Q) series only (both link unit and CPU)
ZR	(file register (continuous access))	20	QnA, QnH (Q) series only (both link unit and CPU)

*1 When the A series CPU is in ROM operation, R register cannot be used.
*2 The unit number is required in addition to the memory type and address. Convert byte address into word address when entering the data on the GVWIN editor if the memory device of link unit is given byte address.

FX Series, FX1S Series

Memory		TYPE	Remarks
D	(data register)	0	
TN	(timer/current value)	1	
CN	(counter/current value)	2	
32CN	(counter 32 bits)	3	*1
M	(internal relay)	4	
S	(state)	5	
X	(input relay)	6	Read only
Y	(output relay)	7	
TS	(timer/contact)	8	
CS	(counter/contact)	9	
DX	(data register)	10	*2

*1 For numerical data format where double-words can be used (Num. Data Display, Graph, Sampling), data is processed as double-words. For those where bits or words can be used, data is processed as words consisting of lower 16 bits.
For input Upper 16 bits are ignored.
For output "0" is written for upper 16 bits.
*2 Use DX for D1000 to 2999.

FX2N Series

Memory		TYPE	Remarks
D	(data register)	0	
TN	(timer/current value)	1	
CN	(counter/current value)	2	
32CN	(counter 32 bits)	3	*1
M	(internal relay)	4	
S	(state)	5	
X	(input relay)	6	Read only
Y	(output relay)	7	
TS	(timer/contact)	8	
CS	(counter/contact)	9	

*1 For numerical data format where double-words can be used (Num. Data Display, Graph, Sampling), data is processed as double-words. For those where bits or words can be used, data is processed as words consisting of lower 16 bits.
For input Upper 16 bits are ignored.
For output "0" is written for upper 16 bits.

FX Series (A Protocol)

Memory		TYPE	Remarks
D	(data register)	0	
TN	(timer/current value)	1	
CN	(counter/current value)	2	*1
32CN	(counter 32 bits)	3	*2
M	(internal relay)	4	
S	(state)	5	
X	(input relay)	6	Read only
Y	(output relay)	7	
TS	(timer/contact)	8	
CS	(counter/contact)	9	

*1 CN200 to CN255 equals 32CN (32-bit counter).

*2 For numerical data format where double-words can be used (Num. Data Display, Graph, Sampling), data is processed as double-words. For those where bits or words can be used, data is processed as words consisting of lower 16 bits.

For input Upper 16 bits are ignored.

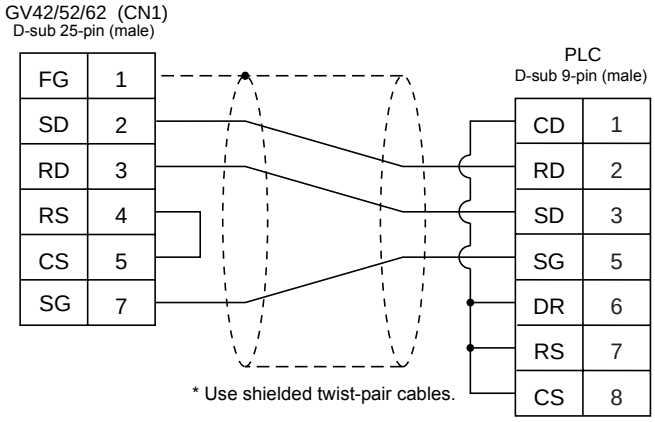
For output "0" is written for upper 16 bits.

Wiring

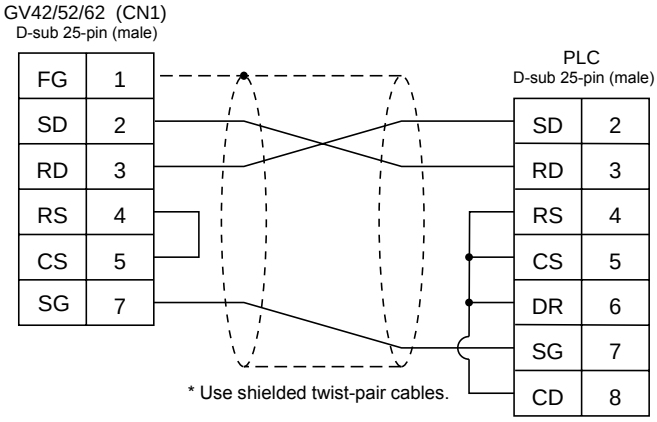
Wiring diagrams with the PLC are shown below.

RS-232C

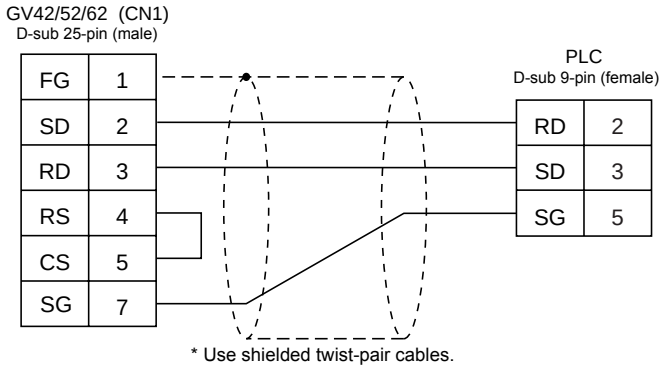
Wiring Diagram 1



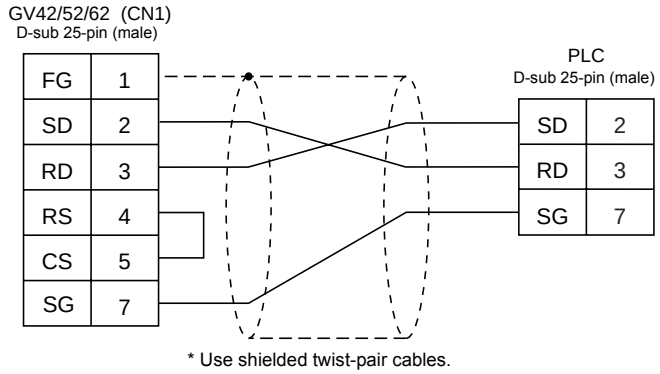
Wiring Diagram 2



Wiring Diagram 3

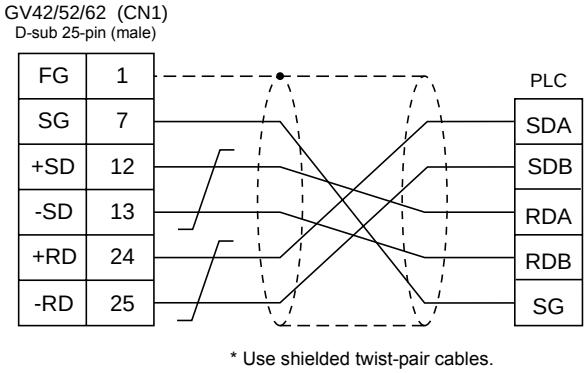


Wiring Diagram 4

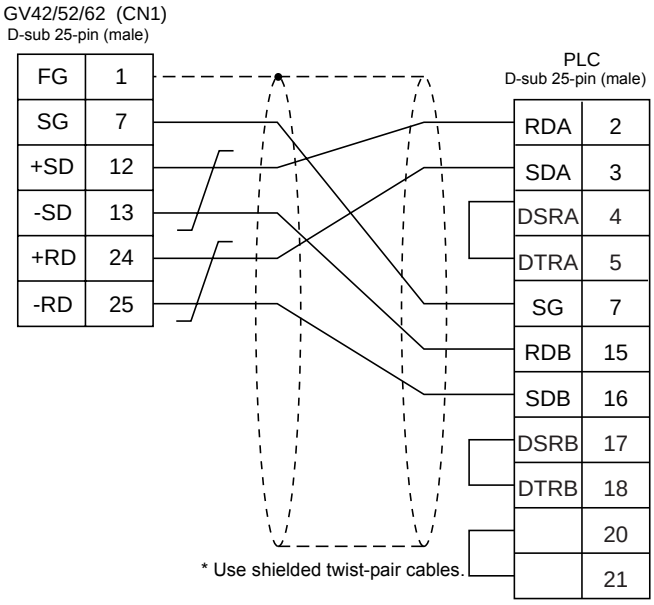


RS-422

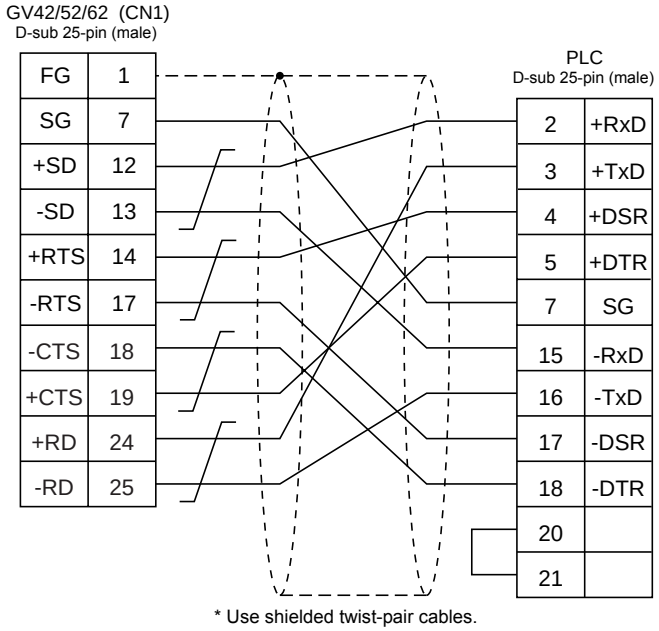
Wiring Diagram 5



Wiring Diagram 6

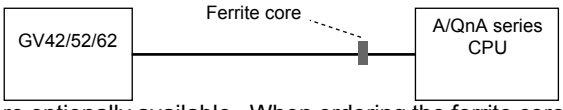


Wiring Diagram 7



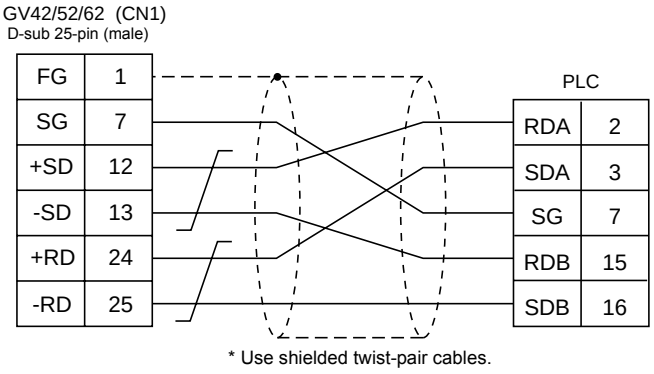
According to our noise tests, the attachment of a ferrite core improves noise voltage by 650 to 900 V and aids in preventing communication errors.

- When connecting to the A/QnA series CPU directly, attach a ferrite core to the communication cable between the GV42/52/62 and A/QnA series CPU to avoid noise problems.



- Ferrite cores are optionally available. When ordering the ferrite core, state “ID: 8 mm, OD: 20 mm.”
- In consideration of such noise problems, it is recommended that the standard type link unit be used when the cable length of 15 m or longer is required.

Wiring Diagram 8



3. OMRON PLC

Available PLCs

Select PLC Type	PLC	Unit/Port	Connection	PLC2Way
SYSMAC C	C20H,C28H,C40H	CPU unit with built-in port (host link port)	RS-232C [Wiring Diagram 1]	○
	C120, C120F C200H C500, C500F C1000H C2000, C2000H	C120-LK201-V1 C120-LK202-V1	RS-232C [Wiring Diagram 3]	○
			RS-422 [Wiring Diagram 4]	×
	C200H C200HS-CPU01, 03 C200HS-CPU21, 23 C200HS-CPU31, 33	C200H-LK201 C200H-LK201-V1 C200H-LK202 C200H-LK202-V1	RS-232C [Wiring Diagram 3]	○
			RS-422 [Wiring Diagram 4]	×
	C200HS-CPU21, 23 C200HS-CPU31, 33 CQM1-CPU21 CQM1-CPU41, 42, 43, 44	CPU unit with built-in port (host link port)	RS-232C [Wiring Diagram 2]	○
	C500, C500F C1000H C2000, C2000H	C500-LK203	RS-232C [Wiring Diagram 3]	○
			RS-422 [Wiring Diagram 4]	×
	C200HX C200HG C200HE	CPU unit with built-in port (host link port)	RS-232C [Wiring Diagram 2]	○
		Mounted on the CPU slot (C200HW-COM02 to 06)	RS-232C [Wiring Diagram 2]	○
			RS-422 [Wiring Diagram 5]	×
	SRM1-C02	RS-232C interface	RS-232C [Wiring Diagram 2]	○
	CPM1A	CPU unit (peripheral port)	OMRON's cable [CQM1-CIF01]*1	×
	CPM2A	RS-232C interface	RS-232C [Wiring Diagram 2]	○
		CPU unit (peripheral port)	OMRON's cable [CQM1-CIF01]*1	×
	CPM2C	CPU unit (peripheral port)	OMRON's adaptor unit [CPM2C-CIF01] + RS-232C [Wiring Diagram 2]	○
			OMRON's cable [CS1W-CN118] + RS-232C [Wiring Diagram 2]	○

(To be continued)

Select PLC Type	PLC	Unit/Port	Connection	PLC2Way
SYSMAC CV	CV500, CV1000 CV2000 CVM1	CPU unit with built-in port (host link port)	RS-232C [Wiring Diagram 2]	○
			RS-422 [Wiring Diagram 6]	×
		CV500-LK201	RS-232C PORT1 [Wiring Diagram 3]	○
			PORT2 [Wiring Diagram 2]	○
			RS-422 PORT2 [Wiring Diagram 5]	×
SYSMAC CS1	CS1	CPU unit (RS-232C port)	RS-232C [Wiring Diagram 2]	○
		CS1W-SCU21		
		Mounted on the CPU slot (CS1W-SCB21)		
		Mounted on the CPU slot (CS1W-SCB41)	RS-422 [Wiring Diagram 7]	×

*1 Replace the shell on the D-sub 25-pin side before use. (Recommended part: DDK's 17J-25)

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate*		19200 bps	19200 bps
Port		0	0
Parity		Even	Even
Transmission code	Data length	7 (ASCII)	7
	Stop bit	2	2
Command level		3 (fixed)	–
Protocol		1 : n protocol (fixed)	–
Synchronizing switch		Internal synchronization (fixed)	–
CTS switch		0 V (always ON) (fixed)	–
5 V supply switch		OFF (fixed)	–
Terminating resistance		ON for RS-422	–

* The maximum baud rate available with the GV42/52/62 is 115200 bps.
Select the appropriate baud rate depending on the used PLC and environment.

GVWIN Setting

Set [Trans. Mode] in the [Detail] tab window of the [Comm. Parameter] dialog of the GVWIN editor.

Transmission Mode	Contents
Trans. Mode 1	BCD w/o sign
Trans. Mode 2	BCD w/ signs*1

*1 BCD w/ signs
Data in the PLC memory can be shown as data with signs.

When higher 4 bits in the memory indicates [F] or [A], it is treated as negative.
[F]: Regards higher 4 bits as [–0].
[A]: Regards higher 4 bits as [–1].

- Displayable range 1 word: –1999 to +9999
  2 words: –19999999 to +99999999

Example:

PLC Memory	Indication on GV42/52/62
0000 to 9999	0 to 9999
F001 to F999	–1 to –999
A000 to A999	–1000 to –1999
00000000 to 99999999	0 to 99999999
F0000001 to F9999999	–1 to –9999999
A0000000 to A9999999	–10000000 to –19999999

- Setting procedure: Num. Data Display [Input Type] BCD
  [Display Type] DEC(w/ –sign, w/ +–signs)

Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

SYSMAC C

Memory		TYPE	Remarks
DM	(data memory)	0	
CH	(input/output relay)	1	
HR	(holding relay)	2	
LR	(latch relay)	3	
AR	(alarm relay)	4	
T	(timer/current value)	5	
C	(counter/current value)	6	
EMn	(extensional data memory)	7	*1
TU	(timer/contact)	9	Read only
CU	(counter/contact)	10	Read only

SYSMAC CV

Memory		TYPE	Remarks
DM	(data memory)	0	
CH	(input/output relay)	1	
AR	(alarm relay)	4	
T	(timer/current value)	5	
C	(counter/current value)	6	*1
EMn	(extensional data memory)	7	Read only
TU	(timer/contact)	9	Read only
CU	(counter/contact)	10	

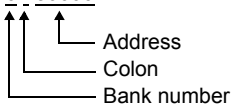
SYSMAC CS1, SYSMAC CS1 DNA

Memory		TYPE	Remarks
DM	(data memory)	0	
CH	(input/output relay)	1	
H	(holding relay)	2	
A	(alarm relay)	4	
T	(timer/current value)	5	
C	(counter/current value)	6	
EMn	(extensional data memory)	7	*1

Memory		TYPE	Remarks
W	(internal relay)	8	
TU	(timer/contact)	9	Read only
CU	(counter/contact)	10	Read only

*1 When using EMn (extended data memory), specify the bank number (CV: 0 to 7, CS1: 0 to C). The assigned memory is indicated when editing the screen as shown on the right.

Example: EM0 : 30000

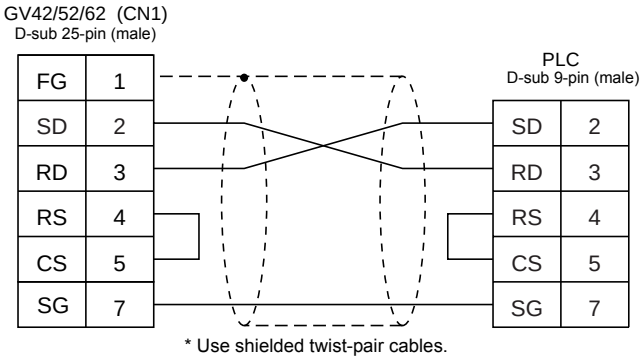


Wiring

Wiring diagrams with the PLC are shown below.

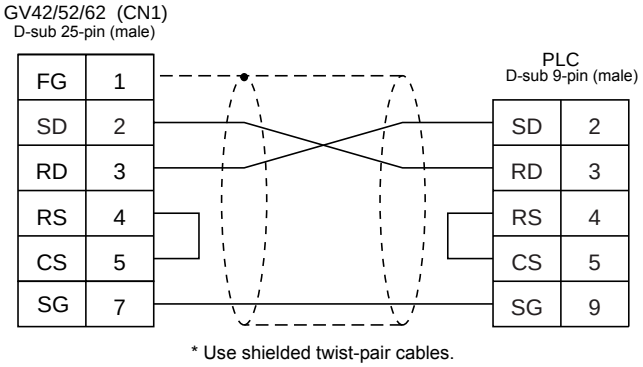
RS-232C

Wiring Diagram 1



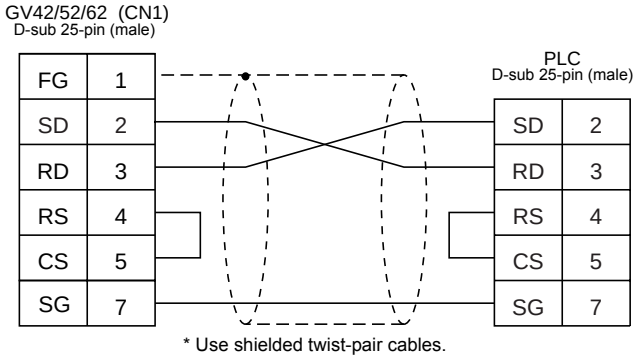
* Use shielded twist-pair cables.

Wiring Diagram 2



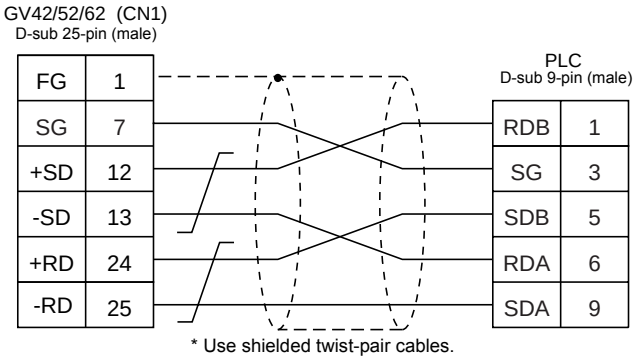
* Use shielded twist-pair cables.

Wiring Diagram 3

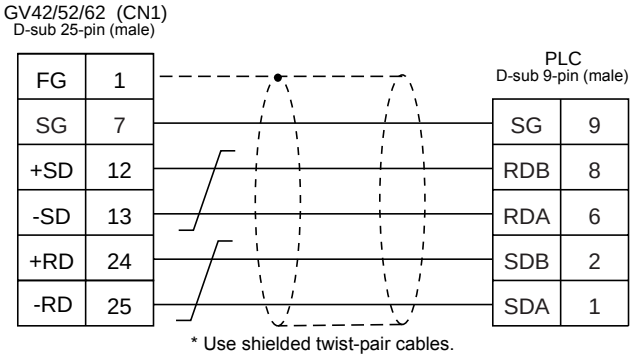


RS-422

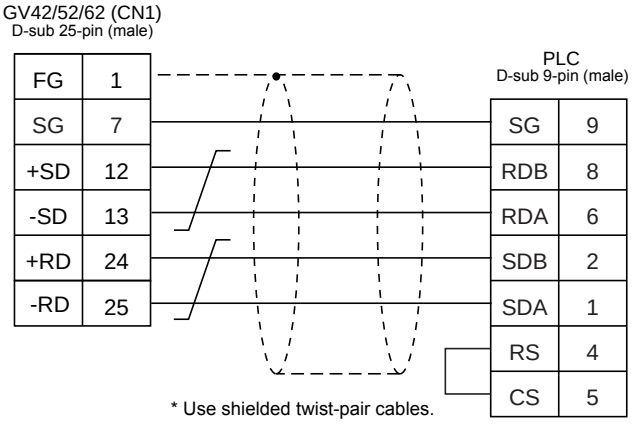
Wiring Diagram 4



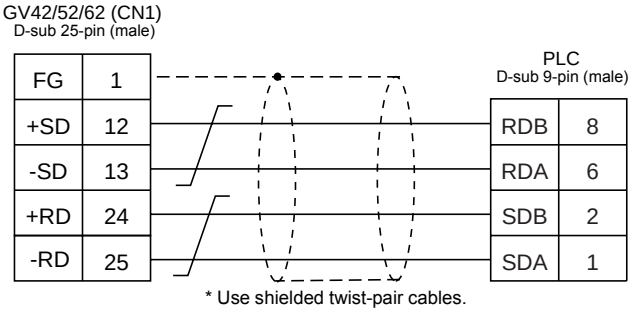
Wiring Diagram 5



Wiring Diagram 6



Wiring Diagram 7



4. YOKOGAWA PLC

Available PLCs

Select PLC Type	CPU	Unit/Port	Connection	PLC2Way
FA-M3	FA-M3	Programming tool port on the CPU module*1	YOKOGAWA's ladder transfer cable "KM11-2N"	○
		F3LC01-1N*2	RS-232C [Wiring Diagram 1]	○
		F3LC11-1N		○
		F3LC11-2N	RS-422 [Wiring Diagram 2]	○
FA-M3R	FA-M3 R	Programming tool port on the CPU module*1	YOKOGAWA's ladder transfer cable "KM11-2N"	○
		F3LC12-1F	RS-232C [Wiring Diagram 1]	○

*1 The CPUs that can be connected directly to the programming tool port on the CPU module are "F3SP21-0N," "F3SP25-2N," "F3SP35-5N," "F3SP28-3N," "F3SP38-6N," "F3SP53-4H" and "F3SP58-6H."

*2 When the link unit "F3LC01-1N" is used, the communication setting and available memory are the same as those for "FA-500." However, B (common register) cannot be used.

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

FA-M3/FA-M3R

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate*1		19200 bps	19200 bps
Port		1	1
Parity		Even	Even
Transmission code	Data length*2	7	7
	Stop bit	1	1
Sumcheck		Provided	Provided
Terminal character		None (fixed)	–
Protection function		None (fixed)	–

*1 The maximum baud rate available with the GV42/52/62 is 115200 bps.
Select the appropriate baud rate depending on the used PLC and environment.

*2 When directing connecting to the programming tool port on the CPU module, the data length is fixed to “8.” Select [8-bit] for [Data Length] in the [comm. Parameter] dialog of the GV42/52/62.
Also, set “CPU Communication Port” of “Configuration” in the ladder creation tool as below.
Personal computer link function: Use

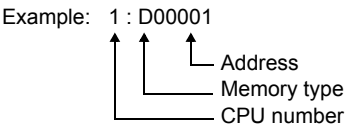
Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

FA-M3/FA-M3R

Memory		TYPE	Remarks
D	(data register)	0	
R	(common register)	1	
V	(index register)	2	
W	(link register)	3	
Z	(special register)	4	
TP	(down timer current value)	5	
TS	(timer set value)	6	Read only
CP	(down counter current value)	7	
CS	(down counter set value)	8	
X	(input relay)	9	
Y	(output relay)	10	
I	(internal relay)	11	
E	(common relay)	12	
L	(link relay)	13	
M	(special relay)	14	
B	(file register)	15	

* The CPU number is required in addition to the memory type and address. The assigned memory is indicated when editing the screen as shown on the right.

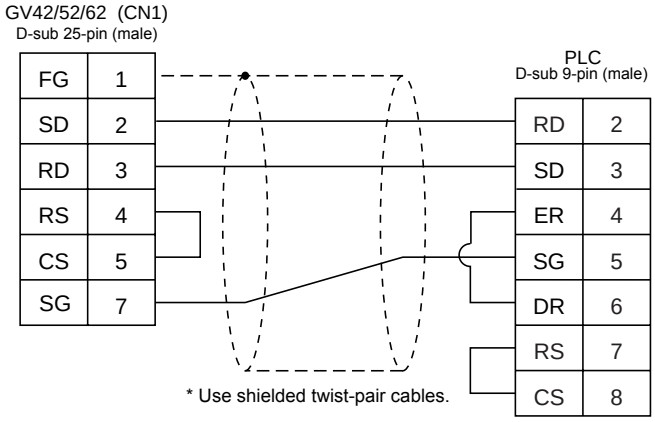


Wiring

Wiring diagrams with the PLC are shown below.

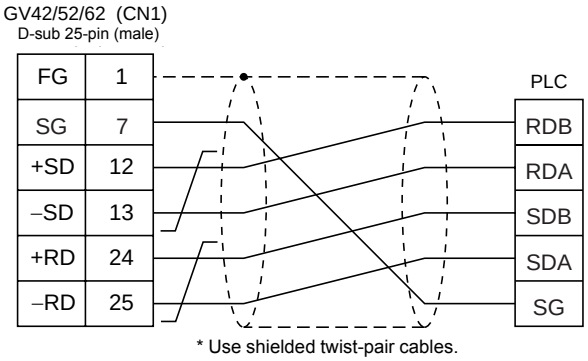
RS-232C

Wiring Diagram 1



RS-422

Wiring Diagram 2



5. TOSHIBA MACHINE PLC

Available PLCs

Select PLC Type	PLC	Unit/Port	Connection
TC200	TC200	Port on the CPU unit	RS-232C [Wiring Diagram 1]
		TCCMW TCCMO	
	TCmini	–	

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

Item	Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate	9600 bps	9600 bps
Port	1	1

Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

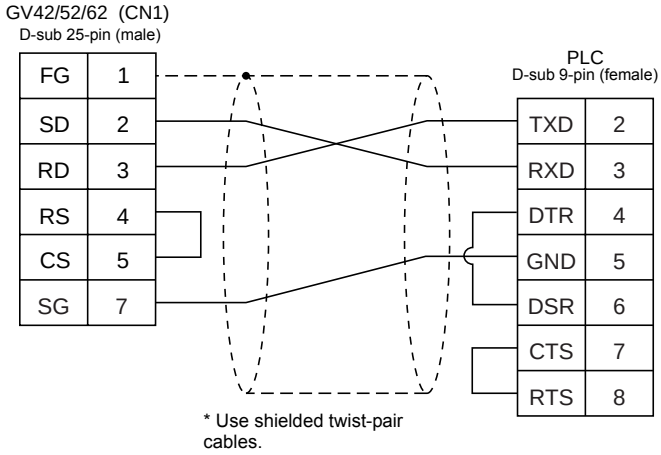
Memory		TYPE	Remarks
D	(register 1)	0	
B	(register 2)	1	
X	(input relay)	2	XW as word device
Y	(output relay)	5	YW as word device
R	(temporary storage)	6	RW as word device
G	(extension temporary storage 1)	7	GW as word device
H	(extension temporary storage 2)	8	HW as word device
L	(latch relay)	9	LW as word device
S	(shift register)	10	SW as word device
E	(edge relay)	11	EW as word device
P	(timer counter current value)	12	
V	(timer counter set value)	13	
T	(timer)	14	TW as word device
C	(counter)	15	CW as word device
A	(special auxiliary relay)	16	AW as word device

Wiring

Wiring diagrams with the PLC are shown below.

RS-232C

Wiring Diagram 1



6. Allen-Bradley PLC

Available PLCs

Select PLC Type	PLC	Unit/Port	Connection
PLC-5	PLC-5	1785-KE	RS-232C [Wiring Diagram 1]
		1770-KF2	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 6]
SLC500	SLC 5/03 and later	CPU (processor module) RS-232C channel	RS-232C [Wiring Diagram 3]
		1747-KE	RS-232C [Wiring Diagram 4] RS-422 [Wiring Diagram 7]
Micro Logix 1000	Micro Logix 1000	Port on CPU	A•B's RS-232C Ladder transfer cable*1 + RS-232 [Wiring Diagram 5]

*1 When using RS-232C ladder transfer cable made by Allen-Bradley, connect the cable shown in [Wiring Diagram 3] to the D-sub 9-pin side of the ladder transfer cable for communications with the GV42/52/62.

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

PLC-5 series

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		19200 bps	19200 bps
Port		0	0
Parity		Even	Even
Transmission mode	RS-232C	–	–
	RS-422	1785-KE not supported	–
Transmission code	Data length	8	8
	Stop bit	1	1
Protocol		Full duplex (fixed)	–
Error check		BCC (fixed)	–
Response		NO (fixed)	–

SLC500 series

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		19200 bps	19200 bps
Port		0	0
Parity		Even	Even
Transmission mode	RS-232C	–	–
	RS-422	Channel 0 not supported	–
Transmission code	Data length	8	8
	Stop bit	1	1
Protocol		Full duplex (fixed)	–
Error check		BCC (fixed)	–
Response		NO (fixed)	–

Micro Logix 1000

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		9600 bps	9600 bps
Port		0	0
Parity		None (fixed)	Not provided
Transmission code	Data length	8 (fixed)	8
	Stop bit	1 (fixed)	1

Item	Setting on PLC	GV42/52/62 Comm. Parameter Setting
Error check	CRC (fixed)	–

Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

PLC-5 Series

Memory		TYPE	Remarks
N	(integer)	0	
B	(bit)	1	
T.ACC	(timer/current value)	2	
T.PRE	(timer/set value)	3	
C.ACC	(counter/current value)	4	
C.PRE	(counter/set value)	5	
I	(input)	6	
O	(output)	7	
S	(status)	8	
T	(timer/control)	9	
C	(counter/control)	10	
R	(control)	11	
R.LEN	(control/data length)	12	
R.POS	(control/data position)	13	
D	(BCD)	14	
A	(ASCII)	15	

SLC500 Series, Micro Logix 1000

Memory		TYPE	Remarks
N	(integer)	0	
B	(bit)	1	
T.ACC	(timer/current value)	2	
T.PRE	(timer/set value)	3	
C.ACC	(counter/current value)	4	
C.PRE	(counter/set value)	5	
I	(input)	6	
O	(output)	7	
S	(status)	8	
T	(timer/control)	9	
C	(counter/control)	10	
R	(control)	11	
R.LEN	(control/data length)	12	
R.POS	(control/data position)	13	
D	(BCD)	14	
A	(ASCII)	15	
F	(FLOAT)	16	
ST	(STRING)	17	

PLC-5 Series: Switch Setting

1785-KE

SW1 (Protocol)

No	Setting	Contents
1	ON	BCC, even, no
2	OFF	
3	OFF	
4	ON	Duplicated message unacceptable
5	OFF	Handshaking signal ignored
6	ON	Execution of diagnosis command

SW2 (Port)

Set the port number of 1785-KE. (This port should not be duplicated in the network.)

No	Setting	Contents
1	ON	1st digit (octal)
2	ON	
3	ON/OFF	2nd digit (octal)
4	ON/OFF	
5	ON/OFF	
6	ON/OFF	3rd digit (octal)
7	ON/OFF	
8	ON/OFF	

SW3 (Network link communication speed)

Adjust to the settings of the network you are using.

No	Setting	Contents
1	ON	Data highway (57.6 kbps)
2	ON	
3	ON	Link communication speed (19.2 kbps)
4	ON	
5	ON	
6	ON	Local/remote selection

SW4 (Spare)

No	Setting	Contents
1	OFF	For extension, always OFF
2	OFF	
3	OFF	
4	OFF	

1770-KF2

SW1 (Protocol)

No	Setting	Contents
1	ON	Protocol
2	OFF	Protocol
3	ON	Duplicated message unacceptable
4	OFF	Handshaking signal ignored
5	OFF	Protocol

SW2, SW3, SW4 (Port)

Set the port number of 1770-KF2. (This port should not be duplicated in the network.)
SW5 (Network link communication speed)
Adjust to the settings of the network you are using.

Switch Setting		Contents
1	2	
ON	ON	57.6 kbps

SW6 (asynchronous link communication speed)

Adjust to the settings of the GV42/52/62.

No	Setting	Contents
1	OFF	9600 bps
2	ON	
3	ON	
4	ON	Execution of diagnosis command

SW7 (Network link selection)

Switch Setting		Contents
1	2	
ON	OFF	Peer transmission link

SW8 (RS-232C/RS-422 selection)

Switch Setting		Contents
1	2	
OFF	ON	RS232C
ON	OFF	RS422

SLC500 Series, Micro Logix 100: Transmission Parameter Setting

CPU Port Channel 0

Set up the parameters for CPU port channel 0 using the software specifically designed for this purpose.

Baud Rate	: 19200
Duplicate Detect	: ON
ACK Timeout (x 20 ms)	: 20
Control Line	: No Handshaking
Parity	: EVEN
Error Detection	: BCC
NAK Retries	: 3
ENQ Retries	: 3
Embedded Responses	: AUTO-DETECT

1747-KE

Set up the parameters for 1747-KE using the software specifically designed for this purpose.

DF1 Port Setup Menu

Baudrate	: 19200
Bits Per Character	: 8
Parity	: Even
Stop Bits	: 1

DF1 Full-Duplex Setup Parameters

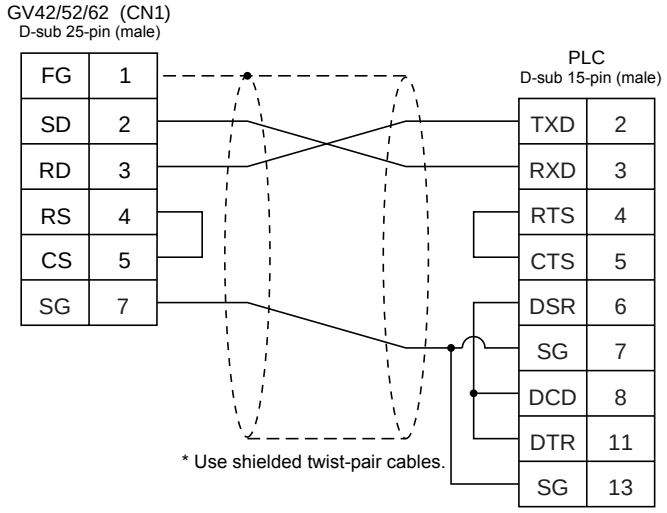
Duplicate Packet Detection	: Enabled
Checksum	: BCC
Constant Carrier Detect	: Disabled
Message Timeout	: 400
Hardware Handshaking	: Disabled
Embedded Response Detect	: Auto Detect
ACK Timeout (× 5 ms)	: 90
ENQuiry Retries	: 3
NAK Received Retries	: 3

Wiring

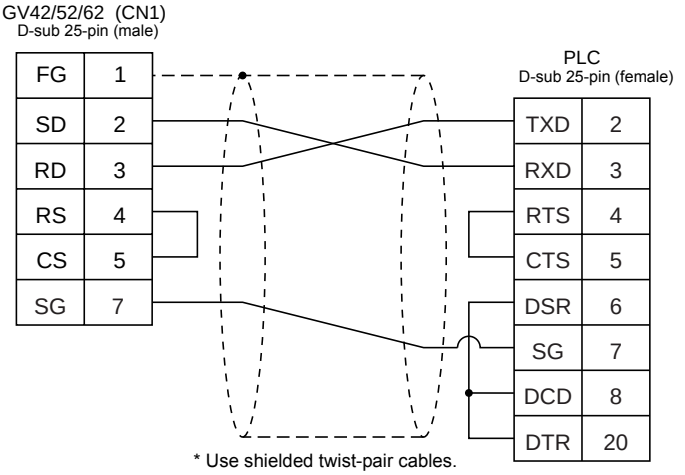
Wiring diagrams with the PLC are shown below.

RS-232C

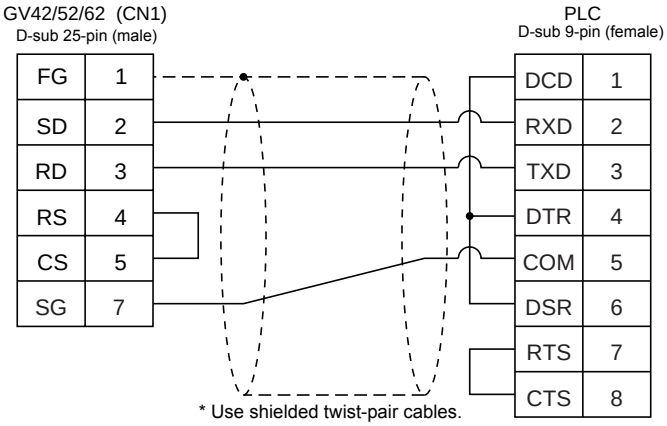
Wiring Diagram 1



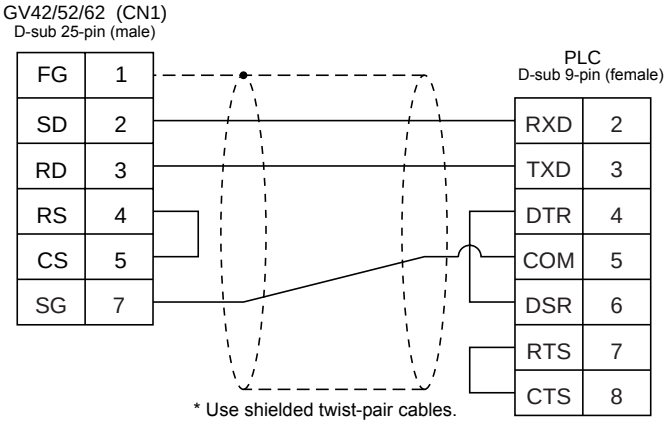
Wiring Diagram 2



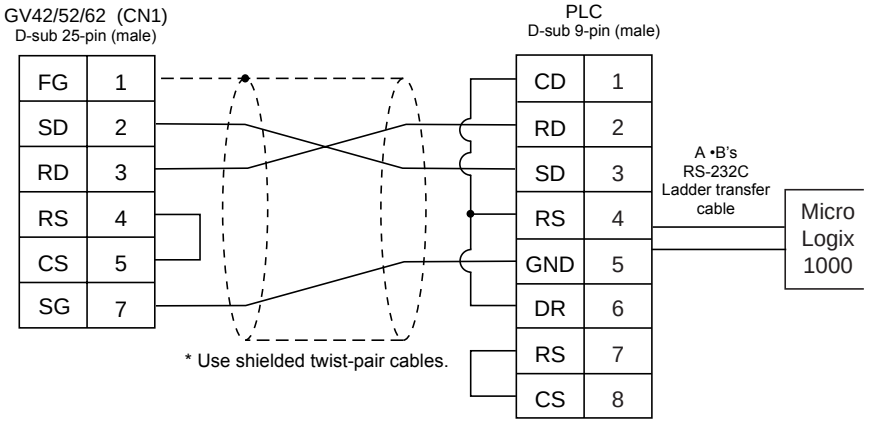
Wiring Diagram 3



Wiring Diagram 4

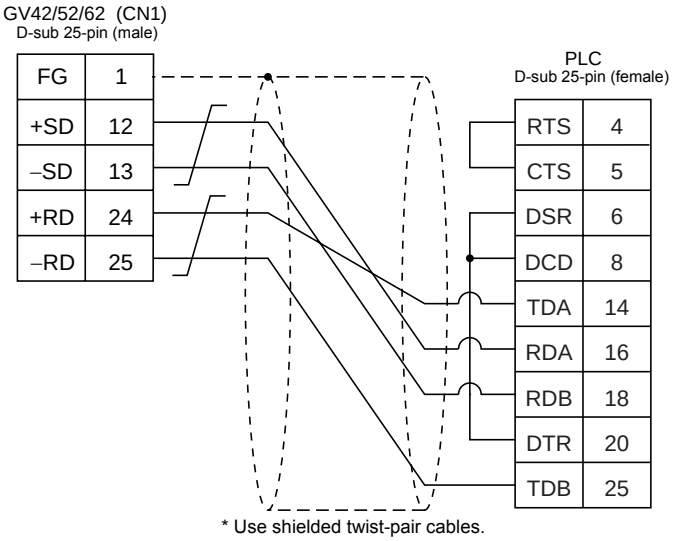


Wiring Diagram 5

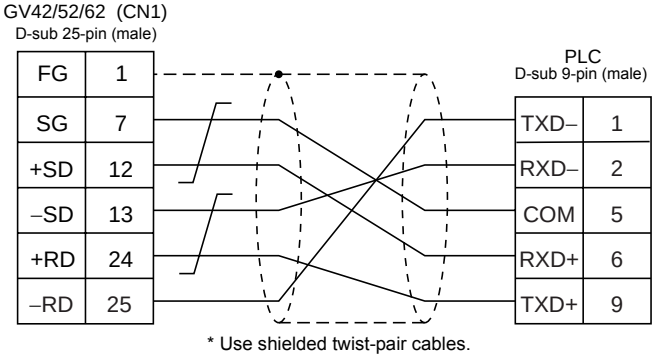


RS-422

Wiring Diagram 6



Wiring Diagram 7



7. SIEMENS PLC

Available PLCs

Select PLC Type	PLC	Unit/Port	Connection
S5	S5-90U S5-95U S5-100U	CP-521SI (3964R Transmission Protocol)	RS-232C [Wiring Diagram 1]
	S5-115U S5-135U S5-155U	CP-524 (3964R/RK512) CP-544 (3964R/RK512)	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 6]
	S5-95U	Second serial interface (3964R Transmission Protocol)	SIEMENS's 6ES5 734-1BD20 cable* + RS-232C [Wiring Diagram 3]
S5 PG port	S5 series	Programming port on the CPU unit	
S7	S7-300	CP-341 (3964R/RK512)	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 6]
	S7-400	CP-441 (3964R/RK512)	
S7-200 PPI	S7-200 series	PPI	RS-422 [Wiring Diagram 7]
S7-300MPI (HMI ADP)	S7-300/400 series (MPI port)	SIEMENS's HMI Adapter 6ES7 972 0CA11-0XA0	RS-232C [Wiring Diagram 5]
S7-300MPI (PC ADP)		SIEMENS's PC Adapter 6ES7 9720CA23-0XA0	
TI500/505	TI545/555	CPU port (bulit-in)	RS-232C [Wiring Diagram 4] RS-422 [Wiring Diagram 8]

* When using the 6ES5 734-1BD20 cable made by SIEMENS, connect the cable shown in [Wiring Diagram 3] to the D-sub 25-pin side of the 6ES5 734-1BD20 cable for communications with the GV42/52/62.

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

S5

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		9600 bps	9600 bps
Parity		Even parity	Even
Transmission code	Data length	8	8
	Stop bit	1	1
Busy signal		NO (fixed)	–
Hand shake		OFF (fixed)	–

S5

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		9600 bps	9600 bps
Parity		–	Even (fixed)
Transmission code	Data length	–	8 (fixed)
	Stop bit	–	1 (fixed)

S5 PG port

Communication parameters are automatically set.

S7-200PPI

Item	Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate	9600 bps	9600 bps
Port	2	2
Parity	Even (fixed)	–

S7-300MPI (HMI ADP), S7-300MPI (PC ADP)

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		38400 bps	HMI ADP 38400 bps (fixed)
			PC ADP 38400 bps
Parity		–	Odd (fixed)
Transmission code	Data length	–	8 (fixed)
	Stop bit	–	1 (fixed)
Local No. (PLC port number)		2	2

- Set [MPI SETTING] in the [Comm. Parameter] dialog of the GVWIN editor.

Item	MPI SETTING
Node Cnt	15/31/63/126
Source No. (GV42/52/62 port number)	0

Set different numbers for [Source No.] and [Local No.], and make sure that [Source No] ≤ [Node Cnt].
[Node Cnt] is equivalent to [Local No.] of the PLC. (For example, if [Local No.] is “13,” [Node Cnt] is “15.”)

TI500/505

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		19200 bps	19200 bps
Parity		–	None (fixed)
Transmission code	Data length	–	8 (fixed)
	Stop bit	–	1 (fixed)

Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

S5, S7

Memory		TYPE	Remarks
DB	(data register)	0	Use memory address DB1 and later for S7, or DB3 or later for S5.
I	(input relay)	1	IW as word device, read only
Q	(output relay)	2	QW as word device, read only
F	(flag/internal relay)*1	3	FW as word device, read only, only in S5 series
M	(flag/internal relay)*1	3	MW as word device, read only, only in S7 series
T	(timer/current value)	4	Read only
C	(counter/current value)	5	Read only
AS	(absolute address)	6	Unavailable with the S7 series

*1 The assigned memory is indicated when editing the screen as shown on the right.

Example: DB003 000

Address

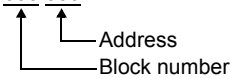
Block number

S5 PG port

Memory		TYPE	Remarks
DB	(data register)	0	Use memory address DB3 and later.
I	(input relay)	1	IW as word device
Q	(output relay)	2	QW as word device
F	(flag/internal relay)	3	FW as word device
T	(timer/current value)	4	
C	(counter/current value)	5	
AS	(absolute address)	6	

The assigned memory is indicated when editing the screen as shown on the right.

Example: DB003 000



S7-200PPI

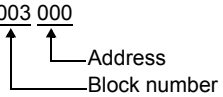
Memory		TYPE	Remarks
V	(data memory)	0	VW as word device
I	(input)	1	IW as word device Possible to write to the unused area
Q	(output)	2	QW as word device
M	(bit memory)	3	MW as word device
T	(timer/current value)	4	
C	(counter/current value)	5	
TB	(timer/contact)	6	Read only
CB	(counter/contact)	7	Read only
HC	(high-speed counter/contact)	8	Double-word usable
AIW	(analog input)	9	
AQW	(analog output)	10	
SM	(special memory/special relay)	11	SMW as word device
S	(stage)	12	SW as word device

S7-300/400MPI

Memory		TYPE	Remarks
DB	(Data Word)	0	Use memory address DB1 and later.
I	(input)	1	IW as word device
Q	(output)	2	QW as word device
M	(Marker Word)	3	MW as word device
T	(timer/current value)	4	
C	(counter/current value)	5	

The assigned memory is indicated when editing the screen as shown on the right.

Example: DB003 000

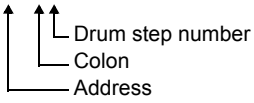


TI500/505

Memory		TYPE	Remarks
V	(variable memory)	0	
WX	(word input)	1	
WY	(word output)	2	
X	(discrete input)	3	
Y	(discrete output)	4	
CR	(control relay)	5	
TCP	(timer, counter/set value)	6	
TCC	(timer, counter/current time)	7	
DCP	(drum count/set value)	8	*1
DCC	(drum count/current value)	9	Read only
DSP	(drum step/set value)	10	
DSC	(drum step/current value)	11	
K	(fixed memory)	12	
STW	(system state)	13	

*1 In case of using DCP (drum count/setting value), set drum step No.1 to 16.
The assigned memory is indicated when editing the screen as shown on the right.

Example: DCP3000 : 1

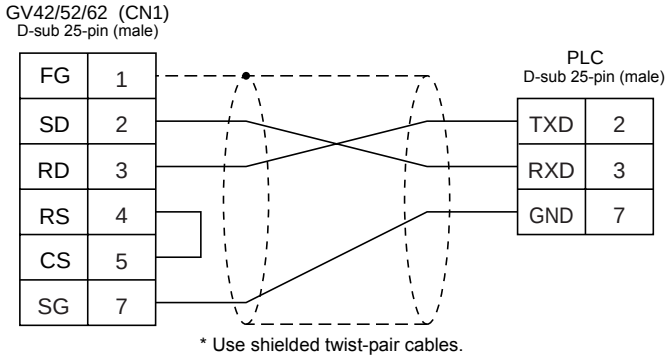


Wiring

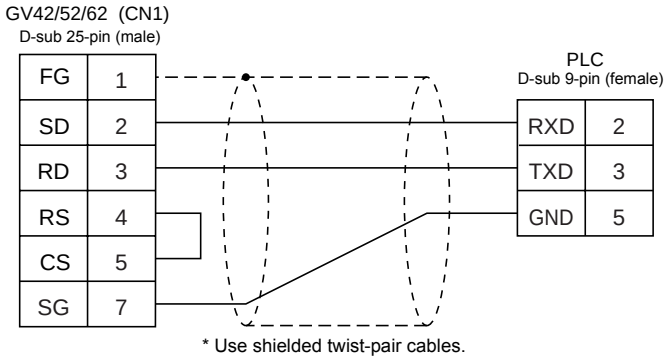
Wiring diagrams with the PLC are shown below.

RS-232C

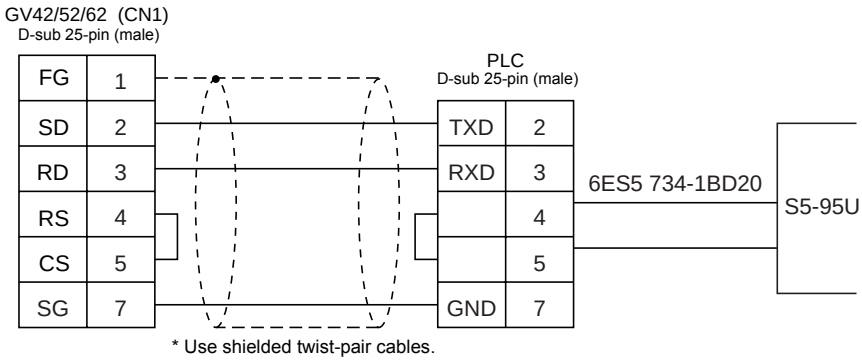
Wiring Diagram 1



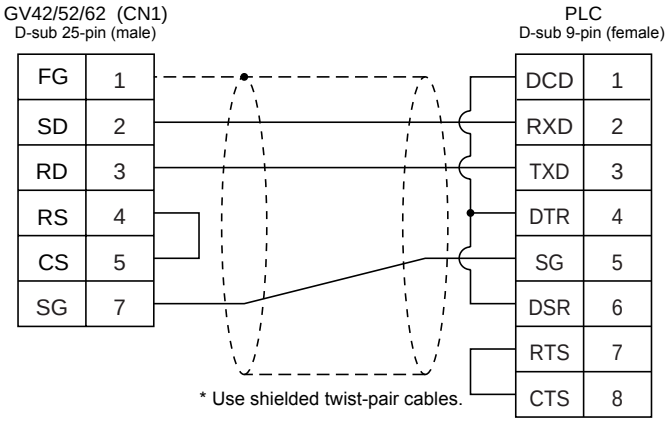
Wiring Diagram 2



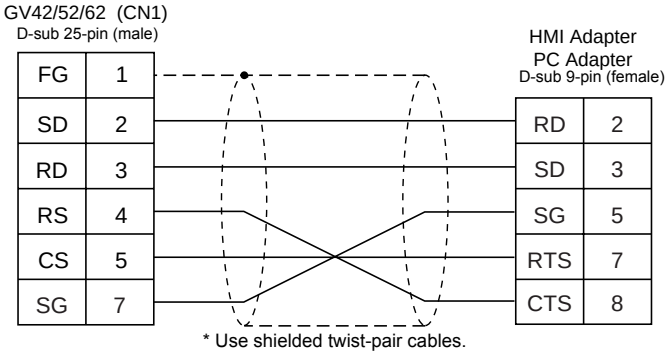
Wiring Diagram 3



Wiring Diagram 4

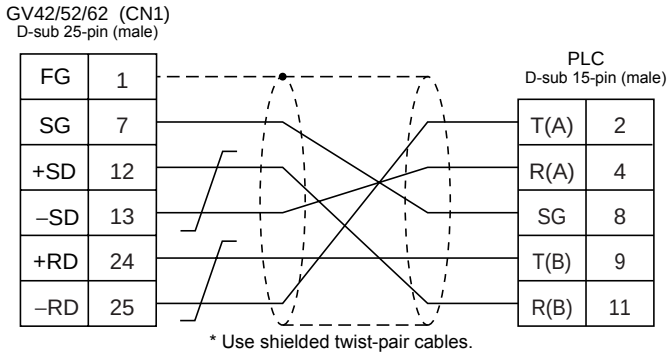


Wiring Diagram 5

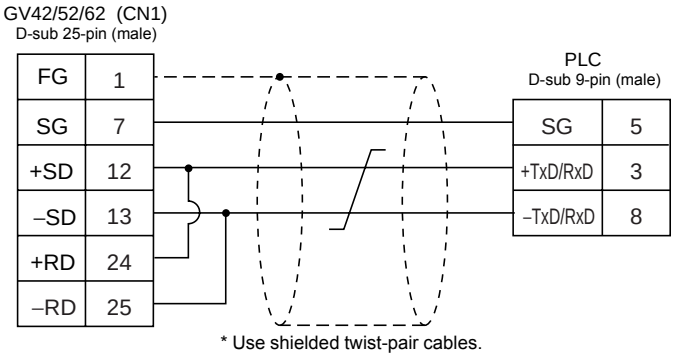


RS-422

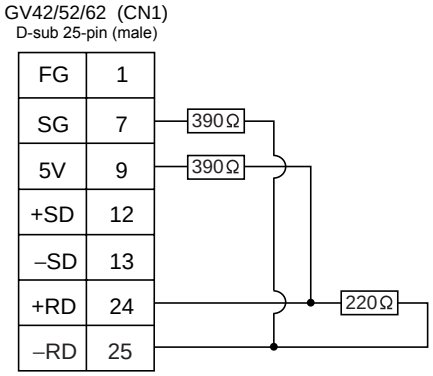
Wiring Diagram 6



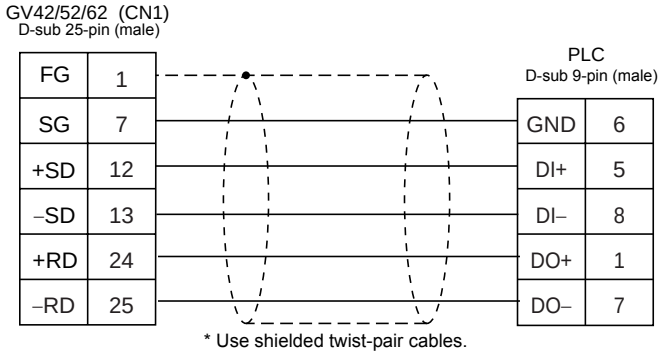
Wiring Diagram 7



- Terminating Resistance Setting
  Set the DIP switch 7 and 8 of the GV42/52/62 to the OFF position. Connect terminating resistance to the serial connector (CN1) of the GV42/52/62 as shown below. If the terminating resistance is not connected, a communication error may occur.



Wiring Diagram 8



8. LG PLC

Available PLCs

Select PLC Type	PLC	Connection
MASTER-KxxxS CNET	K4F-CUEA	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

MASTER-KxxxS CNET

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		38400 bps	38400 bps
Parity		Not provided	Not provided
Transmission code	Data length	8	8
	Stop bit	1	1

Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

MASTER-KxxxS CNET

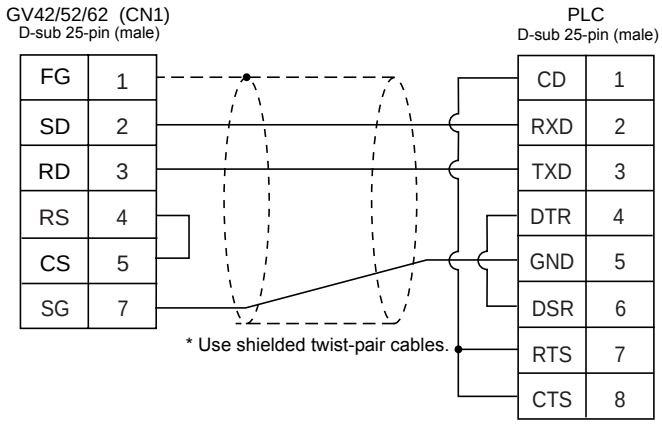
Memory		TYPE	Remarks
P	(input/output relay)	0	PW as word device, input: read only
M	(auxiliary relay)	1	MW as word device
L	(link relay)	2	LW as word device
K	(keep relay)	3	KW as word device
F	(special relay)	4	FW as word device, read only
T	(timer/current value)	5	
C	(counter/setting value)	6	
D	(data register)	7	
TC	(timer/contact)	9	
CC	(counter/contact)	10	

Wiring

Wiring diagrams with the PLC are shown below.

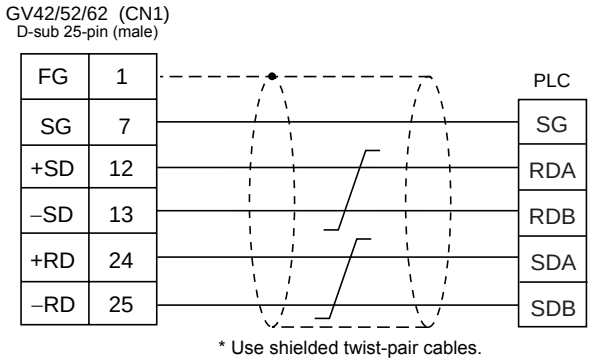
RS-232C

Wiring Diagram 1



RS-422

Wiring Diagram 2



9. MODICON PLC

Available PLCs

Select PLC Type	PLC	Unit/Port	Connection
Modbus RTU	Modbus RTU	Modbus	RS-232C [Wiring Diagram 1]

Communication Setting

The recommended communication parameter settings of the PLC and the GV42/52/62 is as follows:

Item		Setting on PLC	GV42/52/62 Comm. Parameter Setting
Baud rate		9600 bps	9600 bps
Port		1	1
Parity		Even	Even
Transmission code	Data length	8	8
	Stop bit	1	1

Available Memory

The available memory setting range varies depending on the PLC model. Be sure to set within the range available with the PLC to be used. Use [TYPE] when assigning the indirect memory for macro programs.

Memory		TYPE	Remarks
4	(holding register)	0	
3	(input register)	1	
0	(output coil)	4	
1	(input relay)	6	Read only

Wiring

Wiring diagrams with the PLC are shown below.

RS-232C

Wiring Diagram 1