

Pro-face

GP-37W3 Series

User Manual

(Pro-Designer Compatible)

Preface

Thank you for purchasing Pro-face's GP-37W3 Series Graphic Control Panel (hereafter referred to as either the "GP" or the "GP unit").

Please read this manual carefully as it explains, step by step, how to use the GP correctly and safely.

Also, in this manual's examples, the Mitsubishi MELSEC-AnA Series PLC is used whenever possible, connected in a one-to-one relationship with a GP.

<Note>

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- 2) The information provided in this manual is subject to change without notice.
- 3) This manual has been written with care and attention to detail; however, should you find any errors or omissions, please contact the Digital Electronics Corporation and inform us of your findings.
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Essential Safety Precautions

This manual includes procedures that must be followed to operate the GP correctly and safely. Be sure to read this manual and any related materials thoroughly to understand the correct operation and functions of this unit.

Safety Icons

Throughout this manual the following icons are provided next to GP operation procedures requiring special attention, and provide essential safety information. The following is an example of these icons and their meanings:



Indicates situations where severe bodily injury, death or major equipment damage can occur.



Indicates situations where slight bodily injury or machine damage can occur.

WARNINGS

System Design

- **Do not create switches used to control machine safety operations, such as an emergency stop switch, as a GP touch screen icon. Be sure to install these switches as separate hardware switches, otherwise severe bodily injury or equipment damage can occur.**
- **Please design your system so that equipment will not malfunction due to a communication fault between the GP and its host controller. This is to prevent any possibility of bodily injury or material damage.**
- **The GP is not appropriate for use with aircraft control devices, aerospace equipment, central trunk data transmission (communication) devices, nuclear power control devices, or medical life support equipment, due to these devices' inherent requirements of extremely high levels of safety and reliability.**
- **When using the GP with transportation vehicles (trains, cars and ships), disaster and crime prevention devices, various types of safety equipment, non-life support related medical devices, etc. redundant and/or failsafe system designs should be used to ensure the proper degree of reliability and safety.**



WARNINGS

- After the GP's backlight burns out, the touch panel is still active. If the operator fails to notice that the backlight is burned out and touches the panel, a potentially dangerous malfunction can occur. Therefore, do not use GP touch switches for the control of any equipment safety mechanisms, such as Emergency Stop switches, etc. that protect humans and equipment from injury and damage. If your GP's backlight suddenly turns OFF, use the following steps to determine if the backlight is actually burned out.
 - 1) When the backlight burnout feature is not set, and the screen has gone blank, your backlight is burned out.
 - 2) When the backlight burnout feature is set, and the screen has gone blank, if touching the screen does not cause the backlight to turn ON, your backlight is burned out.

GP Wiring

- To prevent an electric shock, be sure to confirm that the GP's power cord is not connected to the main power when connecting any cords, cables or lines to the GP.
- Do not use power beyond the GP's specified voltage range. Doing so may cause a fire or an electric shock.

GP Start-up and Maintenance

- The GP uses a lithium battery for backing up its internal clock data. If the battery is incorrectly replaced, the battery may explode. To prevent this, please do not replace the battery yourself. When the battery needs to be replaced, please contact your local GP distributor.



WARNINGS

GP Installation

- High voltage runs through the GP. Never disassemble the GP, otherwise an electric shock can occur.
- Do not modify the GP unit. Doing so may cause a fire or an electric shock.
- Do not use the GP in an environment where flammable gasses are present, since operating the GP may cause an explosion.



CAUTIONS

GP Installation

- Be sure to securely connect all cable connectors to the GP. A loose connection may cause incorrect input or output.

GP Wiring

- Ground the GP's FG line separately from other units' FG lines. Putting these FG lines too close may cause an electric shock or unit malfunction. Be sure to use a grounding resistance of 100Ω or less and a 2mm² or thicker wire, or your country's applicable standard.
- When wiring the GP, be sure that the rated voltage and terminal layout are within the designated range. If the voltage supplied differs from the rated voltage, or incorrect wiring or grounding is performed, it may cause a fire or unit malfunction.
- Use only the designated torque to tighten the GP's terminal block screws. If these screws are not tightened firmly, it may cause a short-circuit, fire, or GP unit malfunction.
- Be careful that metal filings and wiring debris do not fall inside the GP, since they can cause a fire, GP unit malfunction, or operation error.



CAUTIONS

GP Start-up and Maintenance

- The liquid crystal panel contains a powerful irritant and if for any reason the panel is damaged and this liquid contacts any part of your body, be sure to wash that area with running water for 15 minutes. If any of this liquid enters your eye, flush your eye for 15 minutes with running water and contact a physician.

GP Disposal

- When this unit is disposed of, it should be done so according to your country's regulations for similar types of industrial waste.

General Safety Precautions



<Usage Environment>

- *Never strike the touch panel with a hard, heavy or pointed object, or press on the touch panel too strongly, since it may damage the unit.*
- *If the GP is used in an environment with temperatures and humidity in excess of the allowed range, the GP may malfunction and/or its operation life may be shortened.*
- *Avoid restricting the GP's naturally occurring ventilation, or storing or using the GP in an environment that is too hot.*
- *Do not use this unit in areas where large, sudden temperature changes can occur. These changes can cause condensation to form inside the unit., possibly causing the unit to malfunction.*
- *Do not allow water, liquids, metal or charged particles to enter inside the GP's case, since they can cause either a GP malfunction or an electrical shock.*
- *Avoid using or storing the GP in direct sunlight, or in excessively dusty or dirty environments.*
- *Because the GP is a precision instrument, do not store or use the unit where large shocks or excessive vibration can occur.*
- *Do not store or use the GP where chemicals (such as organic solvents, etc.) and acids can evaporate, or where chemicals and acids are present in the air.*
- *Do not use paint thinner or organic solvents to clean the GP.*



- **Do not store or operate the LCD display in areas receiving direct sunlight, since the sun's UV rays may cause the LCD display's quality to deteriorate.**
- **Storing this unit in areas at a temperature lower than is recommended in this manual's specifications may cause the LCD display's liquid to congeal, which may damage the panel. Conversely, if the storage area's temperature becomes higher than the allowed level, the LCD's liquid will become isotropic, causing irreversible damage to the LCD. Therefore, be sure to store the panel only in areas where temperatures are within those specified in this manual.**
- **Do not connect or disconnect the communication cable to the host machine while the power is ON.**

<Screen Data>

- **Due to the possibility of unforeseen accidents, be sure to back up the GP's screen data regularly.**

■ About the GP's Display Panel

- The GP's currently displayed data, its voltage*¹ and brightness setting each affect the intensity of *Contouring*. (i.e, when some parts of the screen are brighter than others, creating a wavelike pattern)
- There are minute grid-points (dark and light) on the Display Panel's surface. This is part of the GP's design and not a defect.
- Shadows may appear at the top of the LCD. This is normal for an LCD display.
- Sometimes the display area may look as if the display colors have changed. This is a common attribute of LCD's and is not a defect.
- Displaying a single image for long periods can cause an afterimage to remain when the display is changed to another screen.

To prevent this effect:

- Do not display any single screen for a long period of time. Try to periodically change the screen display.

**1 If the GP's voltage is at the very low end of its allowable range, it may effect the intensity of contouring.*

GP-37W3 Series Models

The GP-37W3 Series refers to the following GP model number:

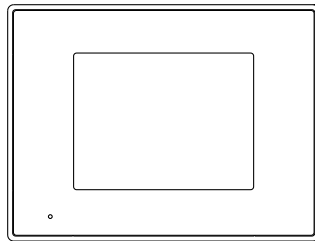
Series	Model Name	Model Type	Comments
GP-37W3 Series	GP-37W3B	GP37W3-BG41-24V	CE Marked, UL/c-UL (CSA), CNS Approved unit

Package Contents

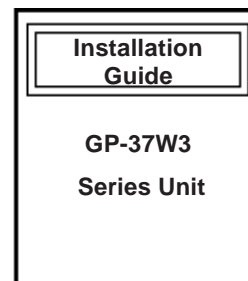
The GP's packing box contains the items listed below. Please check to confirm that all items shown below have been included.

■ **GP Unit (1)**

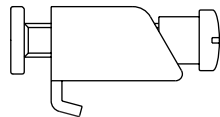
GP37W3-BG41-24V



■ **Installation Guide (1)**



■ **Installation Fasteners (4/set)**



■ **Installation Gasket (1)**



This unit has been carefully packed, with special attention to quality. However, should you find anything damaged or missing, please contact your local GP distributor immediately for prompt service.

UL/c-UL(CSA) Approval

The GP37W3-BG41-24V is a UL/c-UL (CSA) listed product. (UL file No.E231702)

This unit conforms to the following standards:

- **UL60950, Third Edition**

Standard for Safety of Information Technology Equipment, including Electrical Business Equipment.

- **UL1604**

Electrical Equipment for use in Class I and II, Division 2, or Class III Hazardous (locations).

- **CAN/CSA-C22.2, No. 60950-00 and No. 213-M1987**

Standard for Safety of Information Technology Equipment, including Electrical Business Equipment.

GP37W3-BG41-24V (UL Registration Model: 3180038-01)

<Cautions>

- The GP must be used as a built-in component of an end-use product.
- Machinery which has a GP installed in it requires UL/c-UL (CSA) inspection for the combination of this unit and the machinery.
- If the GP is installed so as to cool itself naturally, be sure to install it in a vertical panel. Also, be sure that the GP is mounted at least 100 mm away from any adjacent structures or equipment. If these requirements are not met, the heat generated by the GP's internal components may cause the unit to fail to meet UL/cUL (CSA) standard requirements.

UL 1604 — Compliance and Handling Cautions

1. Power and input/output wiring must be in accordance with Class I, Division 2 wiring methods – Article 501 – 4(b) of the National Electrical Code, NFPA 70 within the United States, and in accordance with Section 18-152 of the Canadian Electrical Code for units installed within Canada.
2. Suitable for use in Class I, Division 2, Groups A, B, C, and D, Hazardous Locations.
3. **WARNING:** Explosion hazard- substitution of components may impair compliance to Class I, Division 2.
4. **WARNING:** Explosion hazard – when in hazardous locations, turn the power OFF before replacing or wiring modules.
5. **WARNING:** Explosion hazard – confirm that the power supply has been turned OFF before disconnecting equipment, or confirm that the location is not subject to the risk of explosion.




CE Marking

The GP37W3-BG41-24V is a CE marked product that conforms to EMC directives 61000-6-4 and EN61000-6-2.

For detailed CE marking information, please contact your local GP distributor.

Documentation Conventions

The list below describes the documentation conventions used in this manual.

Symbol	Meaning
	Indicates important information or procedures that must be followed for correct and risk-free software/device operation.
*1	Indicates useful or important supplemental information.
1), 2)	Indicates steps in a procedure. Be sure to perform these steps in the order given.
	Refers to useful or important supplemental information.
	Provides useful or important supplemental information.
Screen Editor	Indicates the Pro-Designer Ver. 4.0 screen editor software.
PLC	Abbreviation for Programmable Logic Controller.

Memo

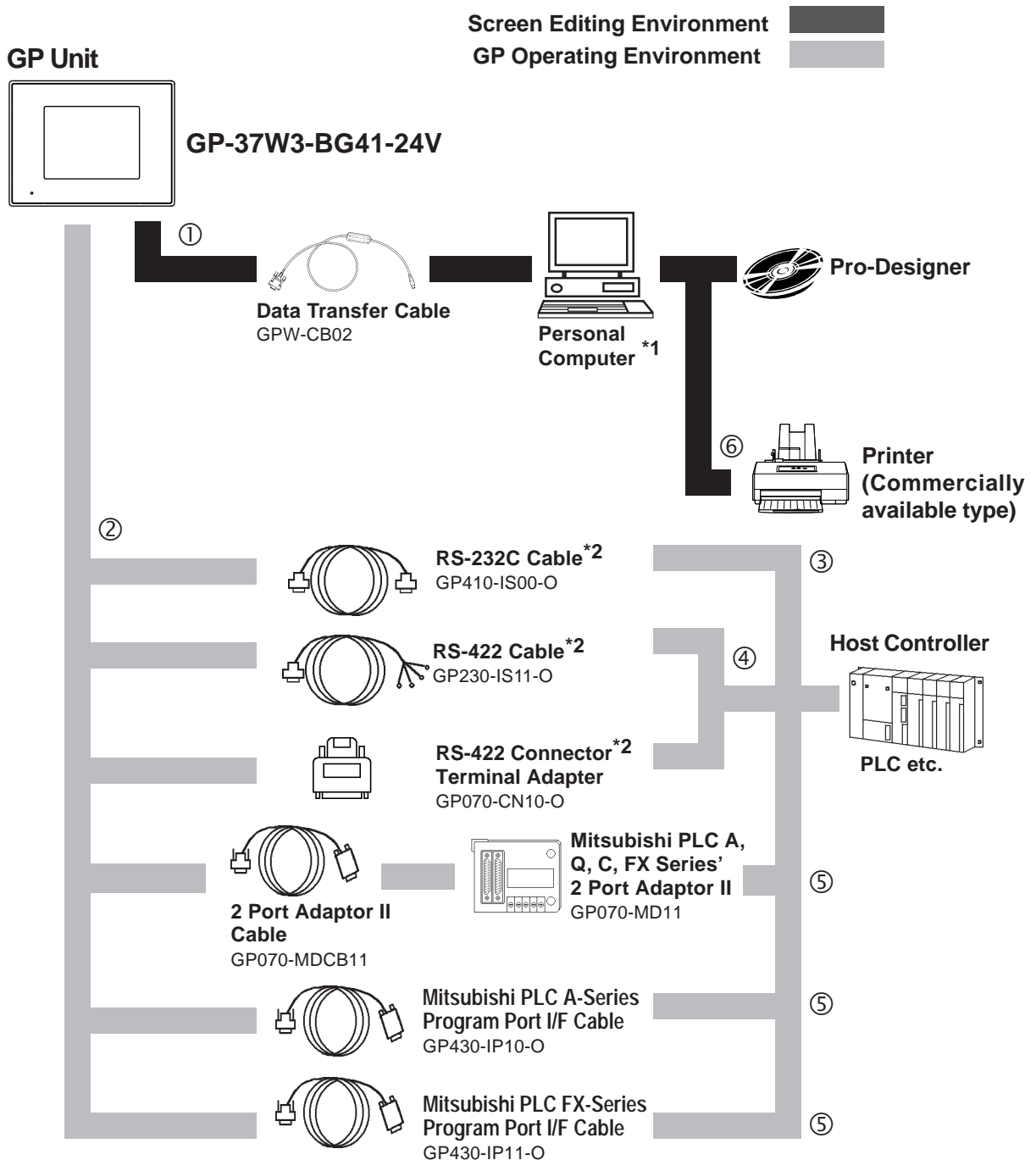
Chapter

1 Introduction

- 1. System Design
- 2. Accessories

1.1 System Design

The diagrams on the following pages illustrate the peripheral equipment available for the GP unit.



Chapter 1 - Introduction

GP Interfaces

- ① Tool Connector
- ② Serial Interface

Personal Computer Interfaces

- ⑥ Printer Interface

PLC Interfaces

- ③ RS-232C Port
- ④ RS-422 Port
- ⑤ Programming Port

**1 For range of compatible PCs refer to the following manual.*

▼Reference▲ *Pro-Designer On-line Help*

**2 For information about compatible PLC types and software, please refer to*

▼Reference▲ *Pro-Designer On-line Help*

1.2 Accessories

All optional equipment listed below is produced by Digital.Electronics Corporation.

■ Available Software

Product Name	Model No.	Description
Pro-Designer Ver. 4.0 or later	PS-DWE01-V40 <CD-ROM>	Software to be used to create screen data using a personal computer.

■ Tool Connector

Product Name	Model No.	Description
Screen Data Transfer Cable	GPW-CB02	Connects the GP to a personal computer. Transfers screen data and user program(s).
Memory Loader II	GP070-LD01-O	Copies data (system and screen data) from one GP to another GP. Rev. H or later

■ Serial Interface


Product Name	Model No.	Description
RS-232C cable *1	GP410-IS00-O	Interface cable between the host (PLC) and GP.
RS-422 cable *1	GP230-IS11-O	
RS-422 cable Connector terminal block converter	GP070-CN10-O	Adapter to convert serial data to RS-422 format.
2 Port Adapter II	GP070-MD11	Interface unit that allows use of both GP and Mitsubishi A, Q, C and FX series equipment in the same location.
2 Port Adapter II Cable	GP070-MDCB11	Connects the GP to 2 Port Adapter II.
Mitsubishi A Series Programming Port I/F cable	GP430-IP10-O	Connects directly to Mitsubishi's PLC I/F Programming Console. Simultaneous use of program console, however, is not possible.
Mitsubishi FX Series Programming Port I/F cable	GP430-IP11-O	

*1 For detailed information about range of connectable PLCs.

▼ **Reference** ▼ [Pro-Designer On-line Help](#)

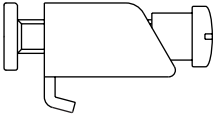

Chapter 1 - Introduction

■ Option

Product Name	Model No.	Description
Screen Protection Sheet 	GP37W2-DF00	Disposable protective and dirt-resistant sheet for the GP's screen. The GP's touch panel can be used with this cover sheet attached.

■ Maintenance Items

These items are sold separately as optional maintenance items.

Product Name	Model No.	Description
Installation fastener 	GP070-AT01	Fasteners to attach the GP to a panel.
Installation gasket 	GP37W2-WP00-MS	Provides a moisture resistant seal when installing the GP. Same as the seal included in the GP's original equipment package.

Chapter

2 Specifications

1. General Specifications
2. Functional Specifications
3. Interface Specifications
4. Part Names and Functions
5. Dimensions

2.1 General Specifications

2.1.1 Electrical

Input Voltage	DC24V
Rated Voltage	DC20.4 to DC27.6V
Power Consumption	20W or less
Allowable Voltage Drop	2ms or less
In-Rush Current	30A or less
Voltage Endurance	AC1000V 10mA for 1 minute (between charging and FG terminals)
Insulation Resistance	20M Ω or higher at DC500V (between charging and FG terminals)

2.1.2 Environmental

Ambient Operating Temperature	0°C to +50°C
Storage Temperature	-20°C to +60°C
Ambient Humidity	20%RH to 85%RH (No condensation)
Air Purity Level	Less than 0.1mg/m ³ of conductive dust
Pollution Degree	Level 2
Atmosphere	Free of corrosive gasses
Atmospheric Pressure	800 to 1114hPa (2000meters or lower)
Vibration Resistance	IEC61131-2 compliant <u>When vibration is NOT continuous</u> 10Hz to 57Hz 0.075mm, 57Hz to 150Hz 9.8m/s ² <u>When vibration is continuous</u> 10Hz to 57Hz 0.035mm, 57Hz to 150Hz 4.9m/s ² X, Y, Z directions for 10 times (80min.)
Noise Immunity (via noise simulator)	Noise Voltage: 1000Vp-p
	Pulse Duration: 1x10 ⁻⁶ sec.
	Arise Time: 1ns
Electrostatic Discharge Immunity	6kV (complies with IEC 61000-4-2 Level 3)

Chapter 2 - Specifications

2.1.3 Structural

Grounding	100Ω or less, or your country's applicable standard ^{*1}
Ratings (Front face of installed unit)	Equivalent to IP65f (JEM 1030) ^{*2} NEMA#250 TYPE4X/12
Weight	1.1kg [2.4lb] or less (main unit only)
Cooling Method	Natural air circulation
External Dimensions	W207[8.17] x H157 [6.18] x D58 [2.28] mm[in.] (main unit only)

**1 Grounding requirements differ from country to country. Be sure to confirm your work environment requirements prior to installation. For further information, please contact your Pro-face distributor.*

**2 The front face of the GP unit, installed in a solid panel, has been tested using conditions equivalent to the standard shown in the specification. Even though the GP unit's level of resistance is equivalent to the standard, oils that should have no effect on the GP can possibly harm the unit. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the unit for long periods of time. If the GP's front face protection sheet becomes peeled off, these conditions can lead to the ingress of oil into the GP and separate protection measures are suggested. Also, if non-approved oils are present, it may cause deformation or corrosion of the front panel's plastic cover. Therefore, prior to installing the GP be sure to confirm the type of conditions that will be present in the GP's operating environment.*

If the installation gasket is used for a long period of time, or if the unit and its gasket are removed from the panel, the original level of the protection cannot be guaranteed. To maintain the original protection level, you need to replace the installation gasket regularly.

2.2 Functional Specifications

2.2.1 Display

Type	Monochrome LCD	
Colors	Blue Mode (Monochrome)	
Backlight	CCFL (Service life: 25,000hrs. at 25°C and 24hr. operation)	
Resolution	320 x 240pixels	
Nominal Display Area	W115.2[4.54] x H86.4(3.40) mm[in.]	
Contrast Control	8 levels of adjustment available via touch panel.	
Language Fonts	ANK : 158 types, Kanji : 6962 types (including 607 non-kanji characters) ASCII, Chinese, Korean, and Taiwanese fonts are available	
Text	8x8 dot font	40 Char. per row, 30 rows
	8x16 dot font	40 Char. per row, 15 rows
	16x16 dot font	20 Char. per row, 15 rows
	32x32 dot font	10 Char. per row, 7 rows
Font Sizes	Both height and width can be expanded 1, 2, 4, or 8 times.	
Text Sizes	8X8, 8X16, 16X16 and 32X32 dot fonts	
Touch Panel	Resistive Film - 16X12 Keys/Screen (1 or 2 point touch)	

Chapter 2 - Specifications

2.2.2 Memory and Clock

Application	4MB FEEPROM
Internal Clock Accuracy	± 65 seconds/month (at 25°C) ^{*1 *2}



***1** A Lithium battery's lifetime is:

10 years when the battery's ambient temperature is under 40 °C

4.1 years when the battery's ambient temperature is under 50 °C

1.5 years when the battery's ambient temperature is under 60 °C

When used for backup:

Approximately 60 days, with a fully charged battery

Approximately 6 days, with a half-charged battery

***2** The GP's internal clock has a slight error. At normal operating temperatures and with the GP's power turned OFF, i.e. in "backup mode", the degree of error is 65 seconds per month. Variations in operating conditions and battery life can cause this error to vary from -380 to +90 seconds per month. For systems where this degree of error will be a problem, the user should be sure to monitor this error and make adjustments when required.

2.2.3 Interfaces

Serial Interface	Asynchronous Transmission Method: RS232C/RS422 Data Length: 7 or 8 bits Stop Bit: 1 or 2 bits Parity: None, Odd or Even Data Transmission Speed: 2400 to 115.2kbps
Tool Connector	Asynchronous TTL level nonprocedure command I/F For connecting the Data Transfer cable when creating data from the Pro-Designer screen editor software.

2.3 Interface Specifications

2.3.1 Serial Interface

Pin Arrangement	Pin #	Signal Name	Condition
	1	FG	Frame ground
	2	SD	Send data (RS-232C)
	3	RD	Receive data (RS-232C)
	4	RS	Request send (RS-232C)
	5	CS	Clear send (RS-232C)
	6	NC	No connection
	7	SG	Signal ground
	8	CD	Carrier detect (RS-232C)
	9	T RMX	Termination (RS-422)
	10	RDA	Receive data A (RS-422)
	11	SDA	Send data A (RS-422)
	12 ^{*1}	RESERVE	Reserved
	13 ^{*1}	RESERVE	Reserved
	14	VCC	5V±5% output 0.25A
	15	SDB	Send data B (RS-422)
	16	RDB	Receive data B (RS-422)
	17	NC	No connection
	18	CSB	Clear send B (RS-422)
	19	ERB	Enable receive B (RS-422)
	20	ER	Enable receive (RS-232C)
	21	CSA	Clear send A (RS-422)
	22	ERA	Enable receive A (RS-422)
	23	BUZZ GND	External buzzer ground
	24	NC	No connection
	25	BUZZ OUT	External buzzer output

*1 #12 and #13 are RESERVED; do not connect to these pins.

Recommended Connector: Dsub25pin plug XM2A-2501<made by OMRON>

Recommended Cover: Dsub25pin cover XM2S-2511<made by OMRON>

Dsub25pin cover XM2S-2521<made by OMRON>

Jack Screws:

XM2Z-0071<made by OMRON>



Use rough metric type M2.6x0.45 p threads used to secure the cable's set screws.

Recommended Cable: CO-MA-VV-SB5P x 28AWG <made by HITACHI Cable Ltd.>

To confirm your PLC's connection specifications

Reference Pro-Designer On-line Help

Chapter 2 - Specifications



Note:

When creating your own cable, follow the instructions listed below:

<With RS-422>

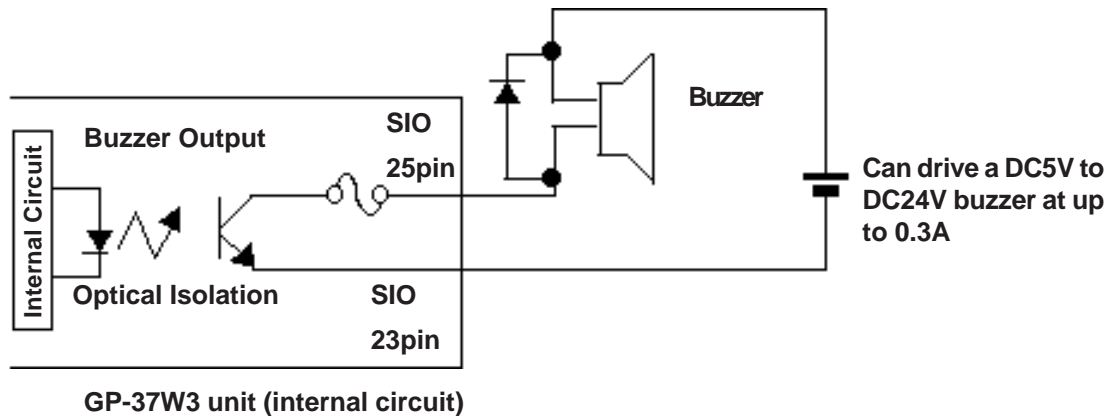
- The following pairs of pin #'s must be connected to each other.
 - #18 (CSB) <—> #19 (ERB)
 - #21 (CSA) <—> #22 (ERA)
- When connecting the RS-422 cable and the #9 (TRMX) and #10 (RDA) points, a termination resistance of 100Ω is added between RDA and RDB.
- When making a cable for a Memory Link system, be sure to use a 4-wire type.

<With RS-232C>

- Do not use the following pins: 9 (TRMX), 10 (RDA), 11 (SDA), 15 (SDB), 16 (RDB), 18 (CSB), 19 (ERB), 21 (CSA), 22 (ERA).
- The #1 (FG) terminal should only be connected if it is required by the device being connected to.

<Buzzer Output>

- #23 (BUZZ GND) and #25 (BUZZ OUT) are used for Buzzer Output.

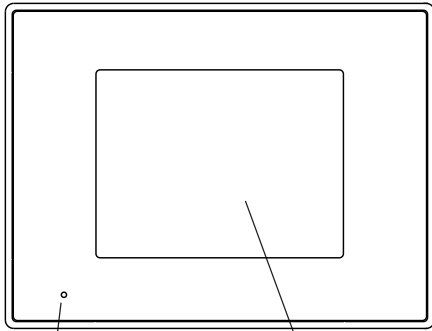


Connect the #1 (FG) terminal only if it is required by a connected device.



- *This unit's RS485(RS422) port is not isolated, therefore, it is important that you connect the SG/GND (Signal Ground) terminals. If this is not done, the RS485(RS422) circuit may be damaged.*
- *Pin 14 (VCC) DC5V output is not protected. To prevent damage or unit malfunction, be sure to use only the designated level of current.*

2.4 Part Names and Functions



C

A, B

A: Display Panel

The GP monitor screen displays the screen setup and corresponding PLC host data.

B: Touch Panel

Performs any screen change operations and sends data to the PLC.

C: Status LED

Lights green while the power is ON.

D: Power Input Terminal Block

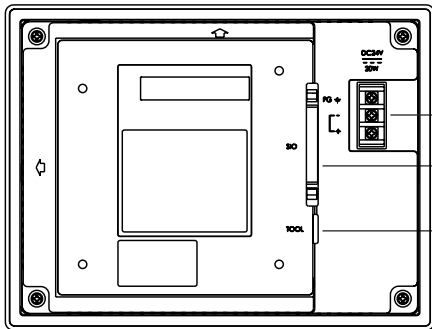
The input and ground terminals for the power cable.

E: Serial Interface

Used for the RS-232C and RS-422 (Serial) cables. Is connected to the Host (PLC).

F: Tool Connector

The Data Transfer cable can be connected here.



D

E

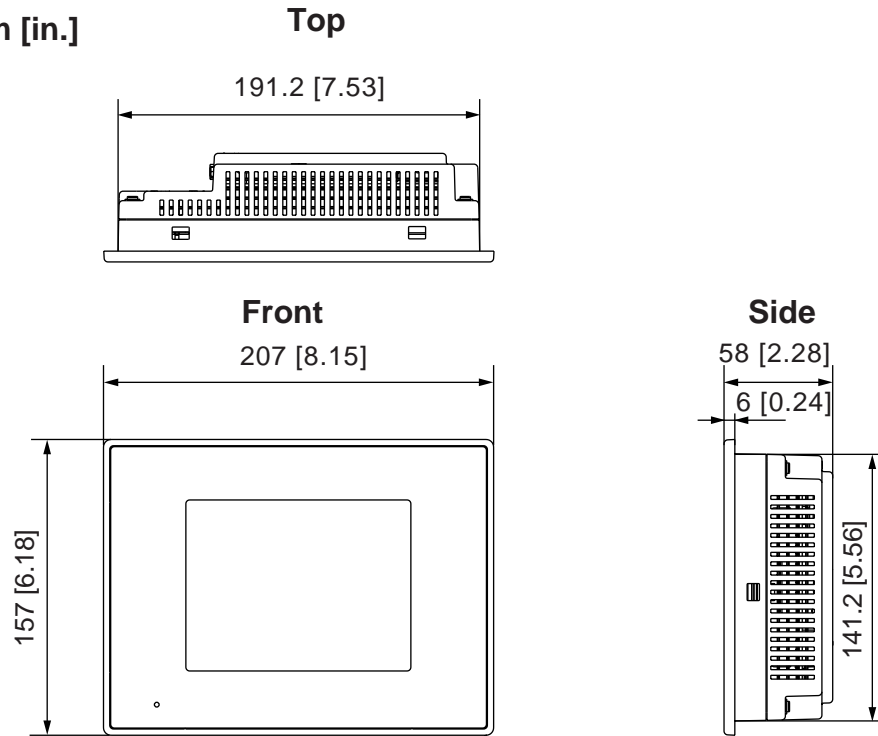
F

2.5 Dimensions

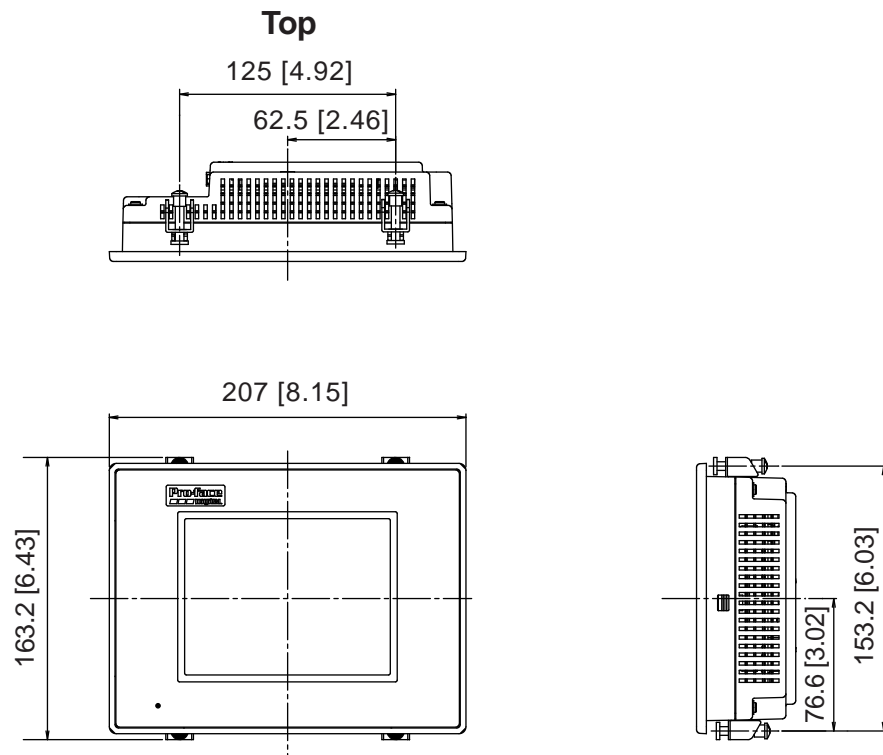
2.5.1 External Dimensions

 **Note:** For detailed dimension information, please contact your local GP distributor.

Unit: mm [in.]

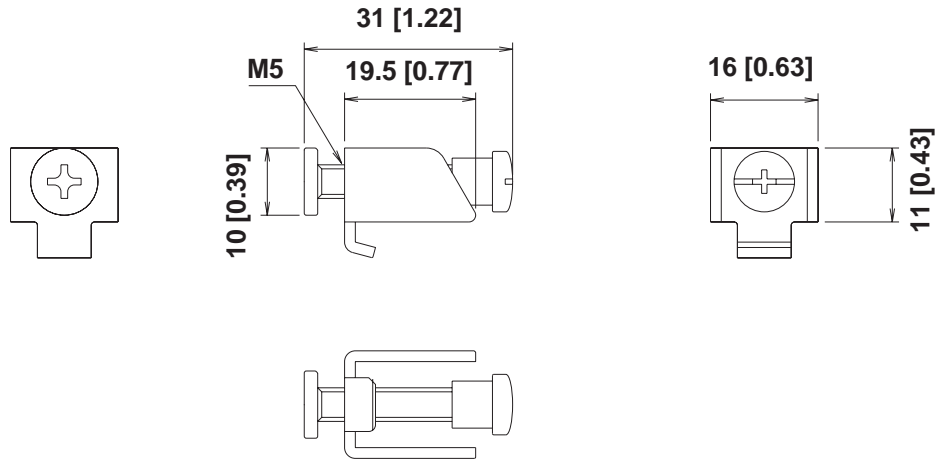


The following drawing shows the GP-37W3 Series unit with installation fasteners.



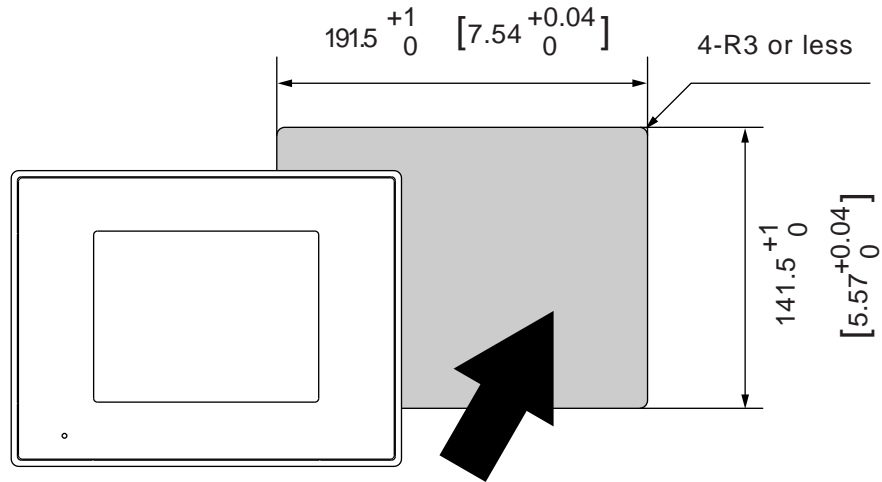
2.5.2 Installation Fasteners

Unit: mm [in.]



2.5.3 GP Panel-Cut Dimensions

Unit: mm [in.]



Memo

Chapter

3 Installation and Wiring

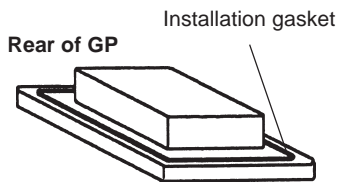
1. Installation
2. Wiring Cautions
3. Tool Connector

3.1 Installation

3.1.1 Installation Procedure



Before installing the GP into a cabinet or panel, check that the installation gasket is securely attached to the unit.



It is strongly recommended that you use the gasket since it absorbs vibration in addition to repelling water.

Place the GP on a level surface with the display panel facing downward. Check that the GP's installation gasket is seated securely into the gasket's groove, which runs around the perimeter of the panel's frame. For details about installing the gasket, refer to

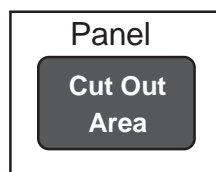
Reference 7.1.2 *Installation Gasket Replacement*

■ Creating a Panel Cut

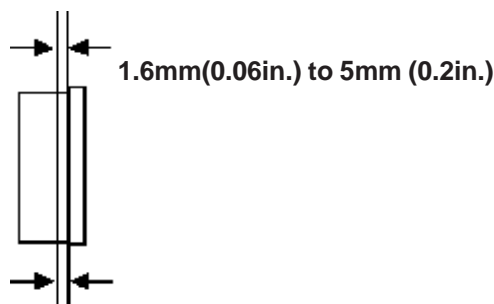
Create the correct sized opening required to install the GP, using the installation dimensions given.

Reference 2.5.3 *“GP Panel Cut Dimensions”*

The installation gasket, installation brackets and attachment screws are all required when installing the GP.



- Check that the installation panel or cabinet's surface is flat, in good condition and has no jagged edges.
- Panel thickness should be from 1.6mm (0.06in.) to 5mm (0.2in.).



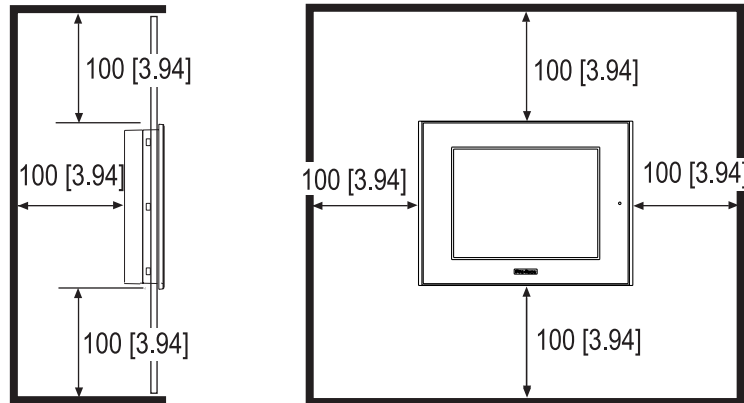
Decide the panel's thickness based on the level of panel strength required.

Chapter 3 - Installation and Wiring

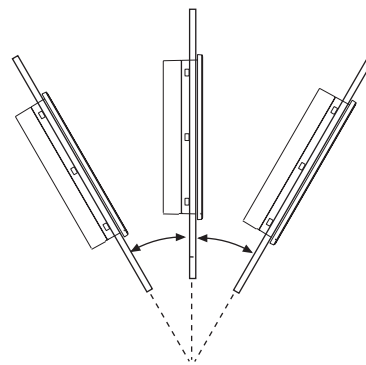


- **For easier maintenance, operation, and better ventilation, be sure to install the GP at least 100mm [3.94in] away from adjacent structures and other equipment.**

Unit: mm[in.]



- **Be sure that the ambient operation temperature and the ambient humidity are within their designated ranges.**
- **Be sure that heat from surrounding equipment does not cause the GP to exceed its standard operating temperature.**
- **When installing the GP in a slanted panel, the panel face should not incline more than 30°.**



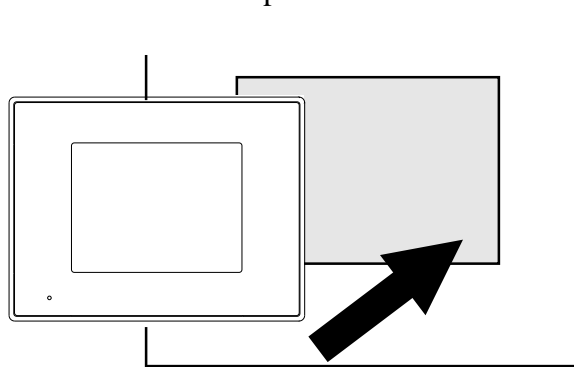
less than 30° from vertical



- **When installing the GP in a slanted panel, and the panel face inclines more than 30°, the ambient temperature must not exceed 40°C. You may need to use forced air cooling (fan, A/C) to ensure the ambient operating temperature is 40°C or below.**
- **When installing the GP vertically, orient the unit so that the Power Terminal Block is vertical, not horizontal.**

■ Installing the GP

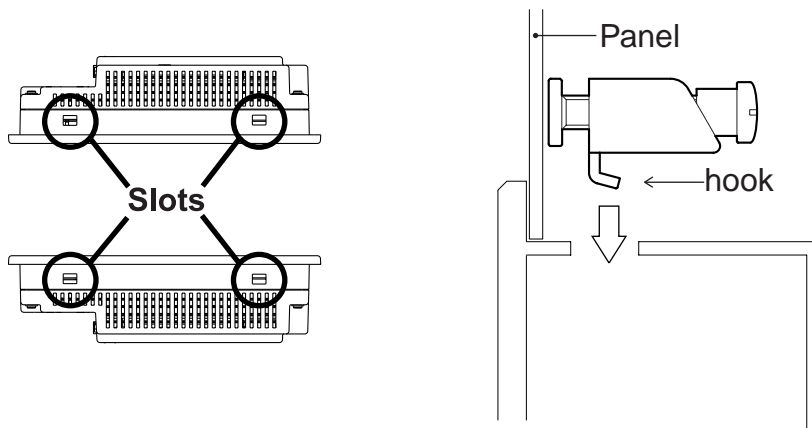
1. Insert the GP into the installation panel from the front.



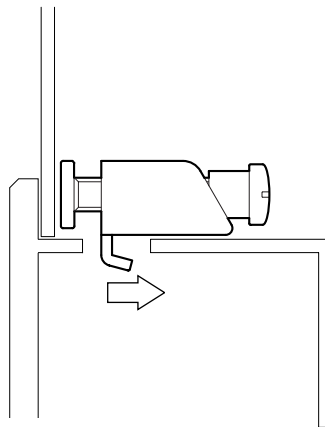
2. Hook the mounting bracket through each of the four bracket insertion slots on the top and bottom of the GP.



Note: Two (2) additional slots on both sides of the GP unit can be used, if greater strength is needed. If these are used, additional (optional) fasteners will be required.

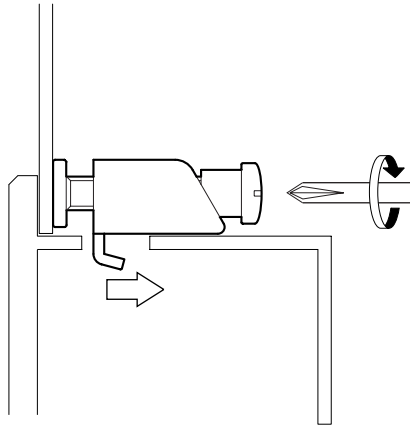


3. Slide the mounting bracket back.



Chapter 3 - Installation and Wiring

4. Tighten the 4 mounting bracket screws by turning the screws, little by little, in a crisscross pattern.



Excessive tightening may damage the GP or the panel. A torque of only 0.5 to 0.6 N•m is required to ensure a waterproof seal.



Depending on the condition of the panel, increasing the number of the mounting brackets may increase the level of water resistance.

3.2 Wiring Cautions

3.2.1 Connecting the Power Cord

WARNINGS

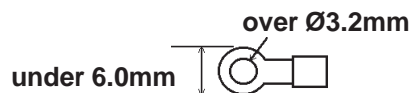
- To avoid electric shocks, be sure the GP unit's power cord is unplugged from the power outlet when connecting the cord's power terminals to the GP.
- The GP-37W3 accepts DC24V power input only. Using an incorrect power supply will result in damage to both the power supply and the GP.
- Be sure to re-attach the GP Terminal Strip's clear plastic cover after completing wiring. If the cover is not installed, it may lead to an electric shock.



- *When the FG terminal is connected, be sure the wire is grounded. Not grounding the GP unit will result in excessive noise.*
- *To prevent the Ring Terminals from causing a short when the terminal block attachment screws are loosened, be sure to use sleeve-type Ring Terminals.*

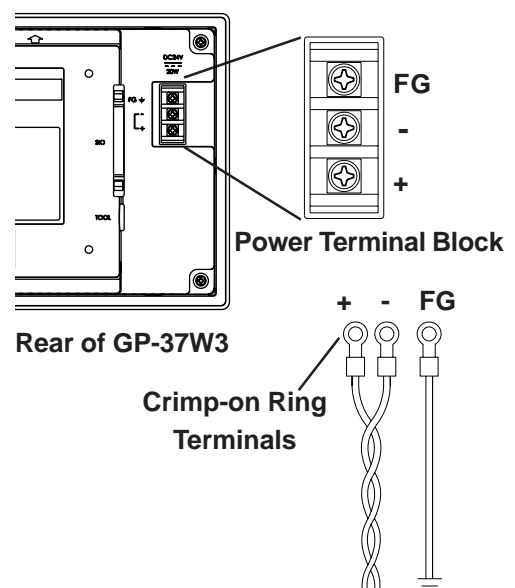


- Wherever possible, use thick wires (max. 2mm²) for power terminals, and twist the exposed wire ends when connecting the Ring Terminals.
- Please use the following size crimp-on type Ring Terminals.



Connect the GP Power Supply Terminals as follows:

1. Be sure that the GP's Power Cord is not plugged in to the power supply.
2. Remove the Terminal Strip's clear plastic cover.
3. Remove the screws from the three (3) middle terminals, position the Ring Terminals as shown above and re-attach the screws. (Check each wire to make sure the connections are correct and only 0.5 to 0.6 N•m of force.)
4. Re-attach the Terminal Strip's clear plastic cover.



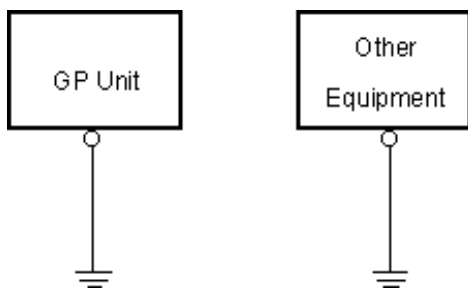
3.2.2 Grounding



CAUTIONS

Do not use common grounding, since it can lead to an accident or machine malfunction.

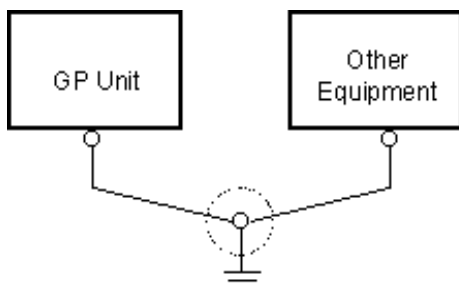
(a) Exclusive Grounding (BEST) *1



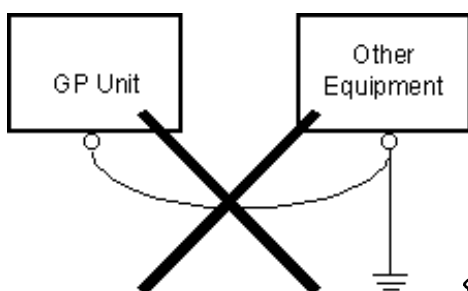
Connect the FG terminal found at the back of the unit to an exclusive ground. [diagram (a)].

- **Check that the grounding resistance is less than 100Ω.**
- **The FG and SG terminals are connected internally in the GP.**
- **When connecting the SG line to another device, be sure that the design of the system/connection does not produce a shorting loop.**
- **The grounding wire should have a cross sectional area greater than 2mm². Set the connection point as close to the GP unit, and make the wire as short, as possible. When using a long grounding wire, replace the thin wire with a thicker wire, placed in a duct.**

(b) Common Grounding (OK) *1



(c) Common Grounding (Not OK)



If exclusive grounding is not possible, use a common connection point. [diagram (b)]



Note: If the equipment does not function properly when grounded, disconnect the ground wire from the FG terminal.

3.2.3 Placement of I/O Signal Lines

- Input and output signal lines must be separated from the power control cables for operating circuits.
- If this is not possible, use a shielded cable and connect the shield to the GP's frame.

*1 Use a grounding resistance of less than 100Ω and a 2mm² or greater thickness wire, or your country's applicable standard. For details, contact your local GP distributor.

3.3 Tool Connector

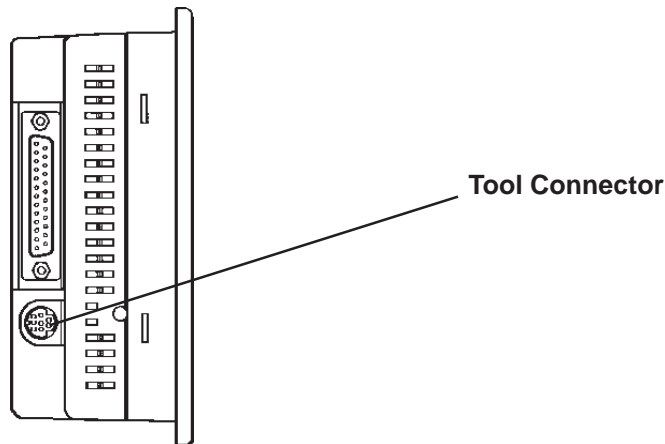
The GP's Data Transfer Cable can be attached to the GP's side face Tool Connector.



WARNINGS

Before unplugging any connector(s) from the GP, be sure the GP's power cord is unplugged from the main power supply.

GP Side view



Memo

Chapter

4 Settings

4.1 Types of Settings

The settings required for the GP unit, when starting Runtime or when in RUN mode, are found in the Settings Menu.

To call up this menu:

1. Connect the GP unit's power supply.



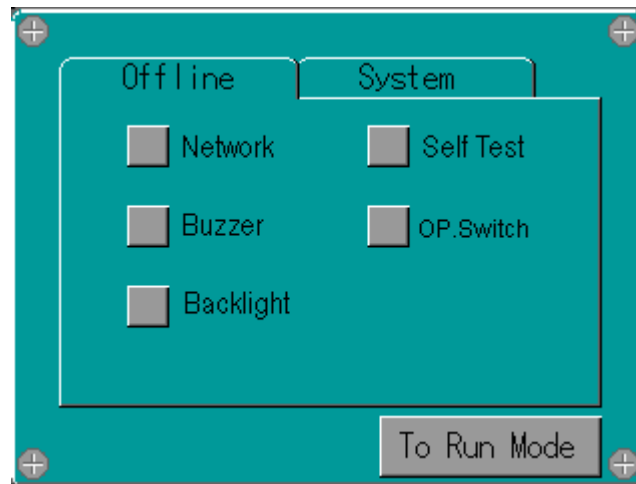
Note: Pro-Designer Runtime must be installed. For installation instructions, refer to Pro-Designer Ver. 4.0 or later software's On-line Help.

2. After the GP starts up, touch the upper left corner of the screen within 10 seconds to call up the menu. You can also enter Setting mode at any time by simultaneously touching the upper right corner, bottom right corner, and bottom left corner of the screen. Pro-Designer Runtime will restart and the [Settings Menu] will appear.
3. In this mode, the two tabs, [Offline] and [System] are available. Simply touch the desired tab to bring up those settings.

The following screen shows the [Offline] area's selections.

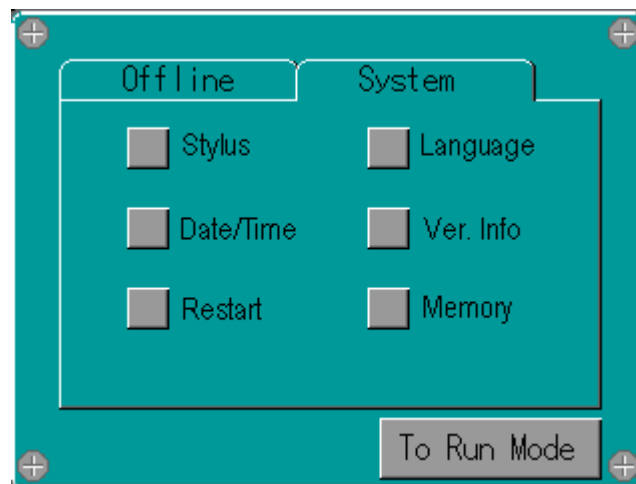
Chapter 4 - Settings

■ Offline



- Network
- Buzzer
- Backlight
- Self Test
- OP. Switch

■ System



- Stylus
- Date/Time
- Restart
- Language
- Ver. Info.
- Memory

■ Backlight Control

Here, three selections (modes) are available.

- Wait
To preserve the GP unit's screen display elements and extend the life of the backlight, the backlight can be set to automatically turn off after a designated period of inactivity (idle time) elapses. The factory setting for this item is [OFF].
- Enable Touch if Backlight is OFF
This setting designates if the touch panel is enabled or disabled when a backlight burnout is detected. When this feature is set to OFF, touch panel touch input is ignored, thereby preventing touch panel operation errors. The factory setting is [OFF]. (Checkbox is not set.)



Backlight burnout detection is performed via monitoring of the backlight's current consumption. Therefore, certain types of backlight failures cannot be detected.

- Brightness
Four levels of brightness are available.

◆ Setting Procedure

1. In the [Settings] menu, touch the [Offline] tab.
2. Touch the [Backlight] icon.
3. Touch/select the desired backlight brightness.
4. To automatically turn the backlight off after a specified period of time, touch the [Wait] selection and set the "idle time" period.

■ Self Test

Performs the GP unit's self test. For details, see 5.2 Self Test.

■ OP. Switch

This setting item is for GP2000H Series units only.

4.1.2 System

■ Stylus

This setting is not required for GP series units.

■ Date/Time

Sets the GP unit's date and time.

◆ Setting Procedure

1. In the [Settings] menu, touch the [System] tab.
2. Touch the [Date/time] icon.
3. Touch/select the Date or Time field to call up a data entry keypad. Use this keypad to enter all time settings.

■ Restart System

Restarts the GP.

◆ Setting Procedure

1. In the [Settings] menu, touch the [System] tab.
2. Touch the [Restart] icon.
3. Touch/select the [Restart] button to restart the GP unit.

■ Version Information

Calls up the Pro-Designer runtime version, and the version and build numbers for the current project.

◆ Setting Procedure

1. In the [Settings] menu, touch the [System] tab.
2. Touch the [Ver. Info] icon.

■ Language Selection

Designates the language used with System screens and User Applications.

◆ Setting Procedure

1. In the [Settings] menu, touch the [System] tab.
2. Touch the [Language] icon.
3. Touch/select the desired language for the [System] and [User Application] items.

Chapter 4 - Settings

■ Memory

Displays the total amount of memory, and the amount of memory currently being used.

◆ Setting Procedure

1. In the [Settings] menu, touch the [System] tab.
2. Touch the [Memory] icon.

Chapter

5 Troubleshooting

1. Troubleshooting Checklists

2. SELF TEST

This section explains how to find and resolve GP unit problems.

The GP unit can be connected to a wide range of devices, including a host (PLC), however, this manual will not discuss every possible device, or problem. For problems not directly related to the GP unit, refer to that device's manual.

The main problems that occur during use of the GP unit are:

- 1) The panel display is blank.
- 2) Connected devices cannot be used.

5.1 Troubleshooting Checklists

When a problem occurs, be sure to first read each checklist item and follow the instructions given.

If this does not solve the problem, please contact your local GP distributor.

■ When a problem cannot be solved

For hardware and software problems, contact the distributor where you bought the GP unit.

Chapter 5 - Troubleshooting

5.1.1 No display

No.	Check Item/Operation	Y/N	Countermeasure
1	Are all Pro-Designer screens sent to the GP unit?		If not, send to the GP.
2	Is the [Initial Panel ID] set up correctly in Pro-Designer?		If not, enter the [Initial Panel ID] and re-send the screen data.
3	Is the GP unit's status LED lit?		If the LED is orange, the backlight is burned out. Please contact your local GP distributor.
4	Is the voltage level within the designated range?		See 2.1.1 Electrical
5	Turn the power supply OFF.		
6	Are the power cable terminals correctly connected?		If not, connect the terminals correctly. See 3.2 Wiring Cautions
7	Turn the power supply ON.		
8	Is the power lamp lit?		If not lit -> Hardware problem
9	Is the backlight lit?		If the backlight is burned out, please contact your local GP distributor.
	Did the above procedure correct the problem?		If not, -> Hardware problem

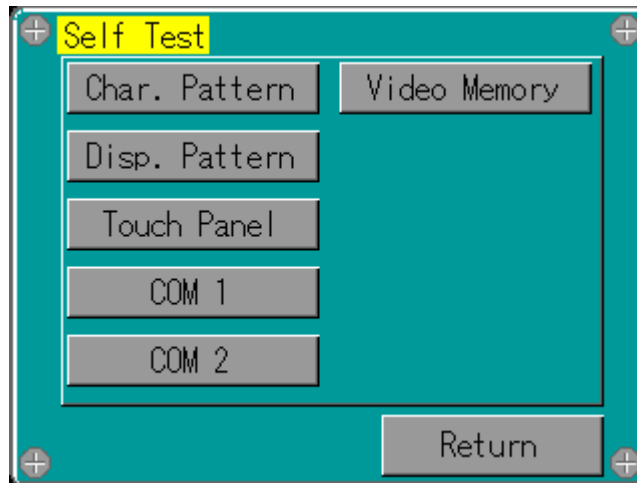
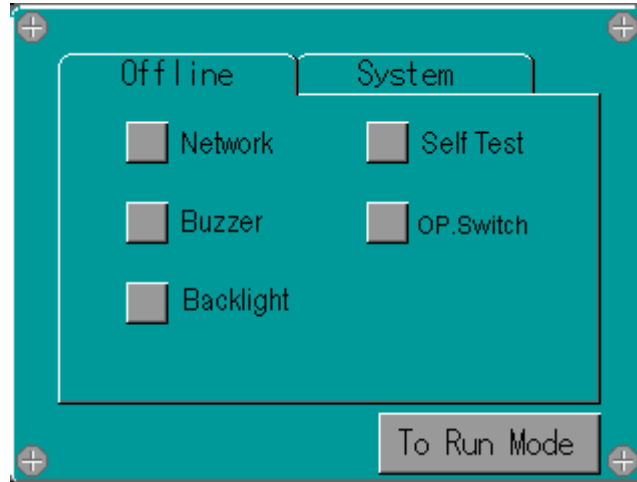
5.1.2 Connected devices cannot be used

No.	Check Item/Operation	Y/N	Countermeasure
1	Turn the power supply OFF.		
2	Are the power cable terminals correctly connected?		If not, connect the terminals correctly. See 3.2 Wiring Cautions
3	Is the correct Device/PLC protocol and driver information set up in Pro-Designer?		If not, enter the correct protocol and driver information.
4	Is the Device/PLC connection cable correctly connected?		Refer to the Device/PLC's manual and correctly connect the cable. See 3.2 Wiring Cautions
	Did the above procedure correct the problem?		If not, -> Hardware problem

5.2 SELF TEST

The GP unit is equipped with a number of self diagnosis features used to check its System and Interfaces for any problems.

5.2.1 SELF TEST item list



- Char. Pattern
- Disp Pattern
- Touch Panel
- COM 1*¹
- COM 2*^{1*2}
- Video Memory

*1 This item must be prepared by the user (cable, connector, etc.).

*2 Cannot be used with GP-37W3 Series units.

Chapter 5 - Troubleshooting

5.2.2 SELF TEST - details

This section explains the contents of SELF TEST.

■ Char.Pattern

Checks each font's pattern and kanji-characters'ROM. Used when kanji-characters do not display. If there is no error, the message [OK] will appear, if there is an error, the message [NG] will appear.

■ Disp Pattern

Used when the device contents will not display correctly to check the drawing function.

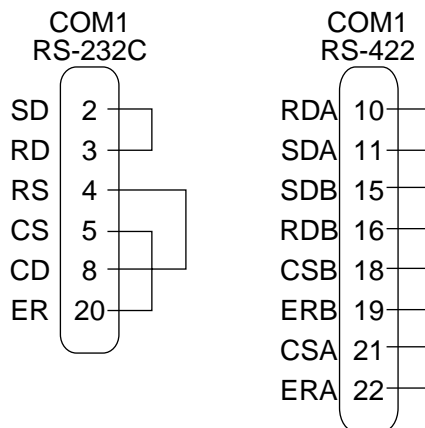
■ Touch Panel

Touch Panel check. Checks if each touch cell highlights when pressed.

■ COM 1, COM 2*1

Checks the RS-232C and RS-422 SIO lines for areas where communication problems develop. To run the check, connecting the SIO cable is necessary. If all is normal, OK displays; if there is a problem, an error message appears.

The SIO cable wiring is as shown below.



■ Video Memory

This item is used to check video memory (memory used for screen display). Use this feature when your screen display is not correct. This result of this test will be either [OK] (no problem) or [NG](problem).

*1 Cannot be used with GP-37W3 Series units.

Chapter

6 Maintenance

1. Regular Cleaning
2. Periodic Check Points
3. Changing the Backlight

6.1 Regular Cleaning

6.1.1 Cleaning the Display

When the surface or the frame of the display gets dirty, soak a soft cloth in water with a neutral detergent, wring the cloth tightly, and wipe the display.



- **Do not use paint thinner, organic solvents, or a strong acid compound to clean the unit.**
- **Do not use hard or pointed objects to operate the touch-screen panel, since it can damage the panel surface.**

6.1.2 Installation Gasket Check/Replacement

The installation gasket protects the GP and improves its water resistance. For instructions on installing the GP's gasket, refer to

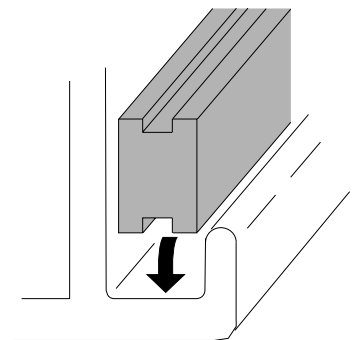
Reference Chapter 3 "Installation and Wiring"



A gasket which has been used for a long period of time may have scratches or dirt on it, and could have lost much of its water resistance. Be sure to change the gasket periodically (or when scratches or dirt become visible).

■ Attaching the Installation Gasket

1. Place the GP on a level surface with its display facing down.
2. Remove the gasket.
3. Insert the new water-resistant gasket. Make sure that the grooved sides face the top and bottom.

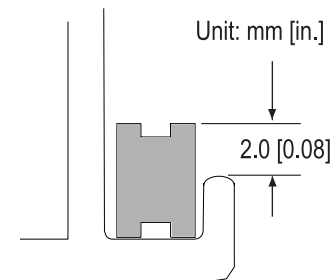
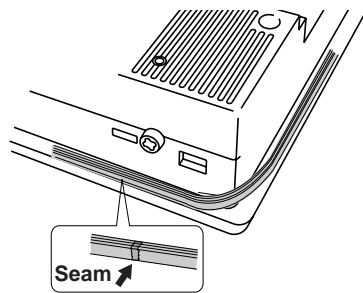


Chapter 6 - Maintenance

4. Confirm that the water-resistant gasket is correctly installed.



- **The gasket must be inserted correctly into the groove for the GP's moisture resistance to be equivalent to IP65f.**
- **Be sure the gasket's seam is not inserted into any of the unit's corners, only in the straight sections of the groove. Inserting it into a corner may lead to its eventually tearing.**
- **The upper surface of the gasket should protrude approximately 2mm out from the groove. Be sure to check that the gasket is correctly inserted before installing the GP into a panel.**



6.2 Periodic Check Points

To keep your GP unit in its best condition, please inspect the following points periodically.

GP Operation Environment

- Is the operating temperature within the allowable range (0 °C to 50 °C)?
- Is the operating humidity within the specified range (20% to 85% RH)?
- Is the operating atmosphere free of any corrosive gasses?

Electrical Specifications

- Is the input voltage appropriate (DC20.4V to DC27.6V) ?

Related Items

- Are all power cords and cables connected properly? Have any become loose?
- Are all mounting brackets holding the unit securely?
- Are there many scratches or traces of dirt on the installation gasket?

6.3 Changing the Backlight

The GP-37W3's backlight should not be replaced by a user.

Although a long-life cold-cathode tube is used for the backlight, it may need to be replaced at some time, depending on the operating environment.

The service life of the backlight is as follows (The period when the brightness decreases to about half the brightness of a new product after continuous illumination at normal temperature):

30,000 hours (Approx. 2.8 years)

For backlight replacement, contact your local GP distributor.

Memo