

Pro-face®

Maintenance/Troubleshooting

Preface

Thank you for purchasing Pro-face's GP3000 Series Programmable Operator Interface (Hereafter referred to as the "GP unit") and the GP Screen Editor Software, "GP-Pro EX". Please read this manual carefully in order to use these products properly, and be sure to keep this manual handy for future reference.

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Intel, Pentium	Intel Corporation, USA
Pro-face	Digital Electronics Corporation (in Japan and other countries)
Ethernet	Western Digital Electric Corporation, USA

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Term used in this manual	Formal Trade Name or Trademark
Windows 98	Microsoft® Windows® 98 Operating System
Windows Me	Microsoft® Windows® Me Operating System
Windows 2000	Microsoft® Windows® 2000 Operating System
Windows XP	Microsoft® Windows® XP Operating System

Manual Symbols and Terminology

■ Safety Symbols and Terms

This manual uses the following symbols and terms to identify important information related to the correct and safe operation of GP and GP-Pro EX.

The symbols and the descriptions are as follows.

Symbol	Description
 DANGER	Indicates a hazardous situation that could result in serious injury or death.
 WARNING	Indicates a potentially hazardous situation that could result in serious injury or death.
 CAUTION	Indicates a potentially hazardous situation that could result in minor injury or equipment damage.
	Indicates instructions or procedures that must NOT be performed to ensure correct product use.
	Indicates instructions or procedures that MUST be performed to ensure correct product use.
	Indicates a potentially damaging action or dangerous situation that could result in abnormal equipment operation or data loss.

■ General Information Symbols and Terms

This manual uses the following symbols and terms for general information.

Symbol	Description
	Provides hints on correct product use, or supplementary information.
*	Indicates an item with an explanatory footnote.
	Indicates an item's related information.
1, 2 (1),(2)	Indicates an operation procedure. Operate according to the numbers.

Precautions

This manual describes safety symbols and terms for the correct and safe operation of GP-Pro EX. Read carefully this manual and the related manual to understand the correct operation and features of GP and GP-Pro EX.

DANGER

-  Touch panel switches should NOT be used to make a switch that could result in human injury or equipment damage. Trouble with the GP main unit, units, and cables which keeps the output ON or OFF could result in a serious accident. An output signal that could result in a serious accident must be equipped with a monitoring circuit such as a limiter. Also, the system must be designed for important actions to be conducted from a device other than the GP main unit, to prevent an accident due to false output or malfunction.

WARNING

System Design

-  Touch panel switches should NOT be used for a device's Emergency Stop Switch. Minister of Health, Labor and Welfare speaking, all industrial machinery/systems must be equipped with a mechanical, manually operated emergency stop switch. Also, for other kinds of systems, similar mechanical switches must be provided to ensure safe operation of those systems.
-  Be sure to design your GP control system so that, in the event of a main power supply failure or a GP accident, the user system's overall safety integrity will be maintained. If this is not done, incorrect output signals or a GP malfunction may cause an accident.
 - 1) Interlock and other circuits designed to interrupt or oppose normal machine movement (such as Emergency Stop, General Protection, and forward and reverse rotation), as well as those designed to prevent machine damage (such as upper, lower, and traverse movement limit positioning) should all be designed to be located outside of the GP.
 - 2) When the GP generates a "Watchdog Timer Error," GP operation will halt. Also, when Errors occur in Input/Output control areas that the GP cannot detect, unexpected movement may occur in those areas. Therefore, and to prevent unsafe machine movement, a "Failsafe Circuit" should be created which is completely external to the GP.
For a failsafe circuit, refer to "Installation Precautions" in the hardware manual.
 - 3) If a problem arises with an external unit's relay or transistor, causing an output (coil) to remain either ON or OFF, a major accident can occur. To prevent this, be sure to set up external watchdog circuits that will monitor vital output signals.
-  Design a circuit that will supply power to the GP unit's I/O before starting up the GP. If the GP unit's internal program enters RUN mode prior to the I/O unit's load control power turning ON, an incorrect output (signal) or malfunction could cause an accident.

- ❗ Design a user program that ensures the safety of the user's system, in the event of a GP display or control error, or either a data transmission error or power failure between the GP and a connected unit. These types of problems can lead to an incorrect output (signal) or malfunction, resulting in an accident.
- ⊘ Do not create GP touch panel switches to control machine safety operations, such as an emergency stop switch. Install these switches as separate hardware switches, otherwise severe bodily injury or equipment damage can occur.
- ❗ Be sure to design your system so that a communication fault between the GP and its host controller will not cause equipment to malfunction. This is to prevent any possibility of bodily injury or equipment damage.
- ⊘ Do not use the GP as a warning device for critical alarms that can cause serious operator injury, machine damage or can halt system operation. Critical alarm indicators and their control/activator units must be designed using stand-alone hardware and/or mechanical interlocks.
- ⊘ Do not use the GP 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.
- ❗ Be sure to design your system so that a communication fault between the GP and its host controller will not cause equipment to malfunction. This is to prevent any possibility of bodily injury or equipment damage.
- ⊘ After the GP unit's backlight burns out the touch panel is still active, unlike the GP unit's "Standby Mode". If the operator fails to notice that the backlight is burned out and touches the panel, a potentially dangerous machine operation error can occur. Therefore, do not create GP unit touch panel switches that may cause injury and/or equipment damage. If your GP unit's backlight suddenly turns OFF, use the following steps to determine if the backlight is actually burned out.
 - 1) If the GP unit's "Backlight Control" is not set and the screen has gone blank, your backlight is burned out.
 - 2) If the GP unit's "Backlight Control" is set to Standby Mode and the screen has gone blank, and touching the screen or performing another input operation does not cause the display to reappear, your backlight is burned out.

Handling

- ⊘ The GP-Pro EX install disk is a CD-ROM. Never play the CD-ROM on an audio CD player. Unexpected volume can cause hearing problems or speaker damage.
- ⊘ Do not disassemble or modify the GP unit. Doing so may cause a fire or an electric shock.
- ⊘ Do not operate the GP in an environment where flammable gases are present, since it may cause an explosion.

Wiring

- ❗ To prevent electrical shock or equipment damage, unplug the GP unit's power cord from the power supply prior to installing or wiring the GP.
- ❗ After completing any GP wiring work, be sure the terminal block's protective plastic cover is reattached. If this cover is not reattached, an electrical shock could easily occur.
- ❗ To prevent an electric shock be sure to disconnect your GP unit's power cord from the power supply before wiring the GP.
- ⊘ Do not use voltage beyond the GP unit's specified range. Doing so may cause a fire or an electric shock.
- ❗ The cables connected to the GP should be secured by cable clamps to prevent weight or tension of the cables added to the connectors or terminals.
- ❗ The GP unit's wiring should be checked to confirm that both the operating voltage and wiring terminal locations are correct. If either the voltage or the wiring terminal location is incorrect, it can cause a fire or accident.

Maintenance

- ⊘ NEVER touch a live power terminal. Doing so could cause an electrical shock or a machine malfunction.
- ⊘ To prevent an electrical shock, unplug the GP unit's power cord before either cleaning the GP or attaching/detaching the power terminal attachment screws.
- ⊘ When replacing the GP unit's backlight, be sure to unplug the unit's power cord to prevent an electrical shock, and wear safety gloves to prevent burns.
- ⊘ Do not connect or disconnect Host and GP unit communication cables while the GP is turned ON.
- ⊘ Do not replace the GP unit's battery yourself. The GP uses a lithium battery for backing up its internal clock data and the battery may explode if it is replaced incorrectly. When replacement is required, please contact your local GP distributor.

⚠ CAUTION

Wiring Layout Precautions

- ⊘ Do not turn off your personal computer's power switch during the execution of a program. It might destroy the project files.
- ⊘ Do not change the contents of GP-Pro EX's project files using the Text Editor software. It might destroy the project files.
- ❗ To prevent a GP unit malfunction due to excessive noise, isolate all GP input/output signal lines from all power wiring or power cables via a separate wiring duct.

Installation

- ❗ Be sure all cable connectors are securely attached to the GP unit. A loose connection may cause incorrect input or output signals.

Wiring

- ❗ Be sure to ground the GP unit's FG wire separately from other equipment FG lines. Also, be sure to use a grounding resistance of 100. or less and a 2mm² [0.0062inch²] or thicker wire, or your country's applicable standard. Otherwise, electric shock or malfunctions may result.
- ❗ Be sure to use only the designated torque to tighten the GP unit's terminal block screws. If these screws are not tightened firmly, it may cause a short-circuit, fire or incorrect unit operation.
- ❗ Be sure that metal particles and wiring debris do not fall inside the GP unit. They can cause a fire, malfunction or incorrect unit operation.

Maintenance

- ❗ Be sure to read the GP unit's manual carefully before performing program changes, entering forced output, or using the RUN, STOP, or PAUSE commands while the GP is operating. Mistakes made when using these items can cause machine accidents or damage.
- ❗ Be sure the electricity is turned OFF before attaching or detaching an I/O unit. If the electricity is ON when an I/O unit is attached or detached, damage or malfunction to the I/O unit may occur.
- ⊘ Be sure to turn the GP unit's CF Card ACCESS switch OFF and confirm that the ACCESS lamp is not lit prior to inserting or removing a CF Card. Otherwise, CF Card internal data may be damaged or lost.
- ⊘ Do not reset or turn the GP OFF, or insert or remove the CF Card while the GP unit's CF Card is being accessed. Create special application screens to perform operations like turning power OFF, resetting the GP or inserting or removing the CF Card.

Unit Disposal

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

General Safety Precautions

- ⊘ Do not press on the GP unit's display with excessive force or with a hard object, since it can damage the display. Also, do not press on the touch panel with a pointed object, such as the tip of a mechanical pencil or a screwdriver, since doing so can damage the touch panel.
- ⊘ Do not install the GP where the ambient temperature exceeds the specified range. Doing so may cause a unit malfunction.
- ⊘ To prevent abnormally high temperatures from occurring inside the GP, do not restrict or block the GP unit's rear-face ventilation slots.

Precautions

-  Do not operate the GP in areas where large, sudden temperature changes can occur. These changes can cause condensation to form inside the GP, possibly causing it to malfunction.
-  Do not allow water, liquids or metal fragments to enter inside the GP unit's case, since they can cause either a malfunction or an electric shock. The allowable pollution degree is 2.
-  Do not operate or store the GP in locations where it can be exposed to direct sunlight, high temperatures, excessive dust, moisture or vibration.
-  Do not operate or store the GP where chemicals evaporate, or where chemicals are present in the air.
Corrosive chemicals: Acids, alkalines, liquids containing salt
Flammable chemicals: Organic Solvents
-  Do not use paint thinner or organic solvents to remove dirt or oil from the GP unit's surface. Instead, use a soft cloth moistened with a diluted neutral detergent.
-  Do not use or store the GP in areas with direct sunlight, since the sun's ultraviolet rays may cause the LCD's quality to deteriorate.
-  Do not store the GP in an area where the temperature is lower than that recommended in the GP unit's specifications. Doing so may cause the LCD display's liquid to congeal, which can damage the LCD. Also, if the storage area's temperature becomes higher than the specified level, the LCD's liquid may become isotropic, causing irreversible damage to the LCD. Therefore, only store the GP in areas where temperatures are within the GP unit's specifications.
-  After turning OFF the GP, be sure to wait a few seconds before turning it ON again. The GP may not operate correctly if it is restarted too quickly.
-  Be sure to back up the GP screen data and logic programs in case they are lost accidentally.

LCD Panel Usage Precautions

- The LCD panel's liquid contains an irritant. If the panel is damaged and any of this liquid contacts your skin, immediately rinse the area with running water for at least 15 minutes. If the liquid gets in your eyes, immediately rinse your eyes with running water for at least 15 minutes and consult a doctor.
- The GP unit's LCD screen may show unevenness in the brightness of certain images or at some contrast settings. This is an LCD characteristic and not a product defect.
- The GP unit's LCD screen pixels may contain minute black and white-colored spots. This is an LCD characteristic and not a product defect.
- The color displayed on the GP unit's LCD screen may appear different when seen from outside the specified viewing angle. This is an LCD characteristic and not a product defect.
- When the same image is displayed on the GP unit's screen for a long period, an afterimage may appear when the image is changed. If this happens, turn off the GP, wait 10 seconds and then restart the unit. This is an LCD characteristic and not a product defect.
- To prevent an afterimage:
 - * Set the GP unit's display OFF feature when you plan to display the same screen image for a long period of time.
 - * Change the screen image periodically and try to not display the same image for a long period of time.