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## NOTE

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Trademark/Trade Name	Right Holder
Microsoft, Windows, Windows 2000, Windows XP, Windows Explorer, Microsoft Excel, Microsoft Access, Microsoft Internet Explorer	Microsoft, U.S.
Intel, Pentium	Intel, U.S.
Pro-face	Digital Electronics Corporation
Ethernet	Western Digital, U.S.







The following terms used in this manual differ from the above mentioned formal trade names and trademarks.

Term used in this manual	Formal Trade Name or Trademark
Windows 2000	Microsoft <sup>(R)</sup> Windows <sup>(R)</sup> 2000 Operating System
Windows XP	Microsoft <sup>(R)</sup> Windows <sup>(R)</sup> XP Operating System

# MANUAL SYMBOLS AND TERMINOLOGY




## ■ Safety Symbols and Terms

This manual uses the following symbols and terms for precautions to operate 'Pro-Server EX' correctly. The following precautions represent the important information related to safety. For those symbols and descriptions, see the table below.

Symbol	Description
	Incorrect operation resulting from negligence of this instruction will cause death or serious injury.
	Incorrect operation resulting from negligence of this instruction may cause death or serious injury.
	Incorrect operation resulting from negligence of this instruction may cause injury or property damage.
	Indicates Actions/Procedures that should NOT be performed.
	Indicates Instructions/Procedures that MUST be performed to ensure correct product use.
	Failure to follow the description of this symbol may cause malfunction of the equipment or disappearance of the data.

■ Symbols and Terms for General Information

This manual uses the following symbols and terms that represent general information.

Symbol	Description
	Provides hints for correct use, or supplementary information.
	Indicates terms explained in the footnote.
	Indicates (manual name, page number) related information.
1, 2	Indicates the steps of operational procedures. Operate this product step by step by following the description of each step.

■ Abbreviation

This manual uses the following abbreviation for the terms repeatedly used in this manual.

Abbreviation	Formal Name
GP	Digital Programmable Display (GP3000 Series, GP2000 Series)/Graphic Logic Controller (GLC)/Factory Gateway
GP Series	Digital Programmable Display (GP2000 Series)/Graphic Logic Controller (GLC)/Factory Gateway
GP3000 Series	Digital Programmable Display (GP3000 Series)
OS	Operation system
PLC	Programmable Logic Controller
PC	Personal Computer





■ Parentheses

This manual uses the following parentheses to show the names of menus and buttons.

Parentheses	Description
[ ]	Indicates the name of item, button, or tab on the screen and the name of key of the PC.
" "	Indicates the name of the screen (window, dialogue etc.), or the name of menu.
' '	Indicates the name of software or operation manual.

■ Input method of setting

This manual uses the following names for the input method on each setting screen or and dialogue.

Display Example	Name	Operation
	Text box	Enter characters
	Combo box	Clicking [V] (List button) provides a pop-up list of possible selections. Choose and click one of the selections.
	Check box	Click to turn the box on or off. When the box is selected, it is usually displayed with a check mark.
	Radio button	Click a small round indicator to select the option. The indicator is filled when the button is selected. Radio buttons are designed so that you can chose only one item.


## SAFETY PRECAUTIONS

This manual contains safety precautions to use 'Pro-Server EX' correctly and safely. Please read this manual and the reference manuals thoroughly to understand correct and safe operation of this product before use.

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### DANGER


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 Touch panel switches should NOT be used for making switches that may cause damage to person or properties. Breakage of the GP main body, unit, cable, etc may cause constant turning on or turning off of the output, resulting in serious accidents. A monitor circuit such as a limiter MUST be provided for monitoring output signals that may cause serious accidents. Switches for important operation MUST be designed so as to be activated from the equipment other than the GP main body. If not, there may be a danger of accidents due to malfunction or erroneous output.

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### WARNING

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 Touch panel switches should NOT be used for a device's Emergency Stop switch. Generally speaking, all industrial machinery/system must be equipped with a mechanical emergency stop switch that can only be operated by people. Also, for other kinds of systems, similar mechanical switches must be provided to ensure operation of that system.


 The application disk of 'Pro-Server EX' is a CD-ROM. Do NOT play it on an ordinary audio CD player. There may be a risk of hearing damage or breakage of the speaker due to unexpectedly large sound.

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### CAUTION

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 DO NOT turn off the main power of the PC during the program is running. There may be a risk of breakage of the project files.

 DO NOT use the text editor, etc to change the content of the project file. There may be a risk of breakage of the project files.

## Supported Models

### ■ GP3000 Series

Series Name	Product Name	Model No.
GP3300 Series	AGP-3300L	AGP3300-L1-D24
	AGP-3300S	AGP3300-S1-D24
	AGP-3300T	AGP3300-T1-D24
GP3400 Series	AGP-3400S	AGP3400-S1-D24
	AGP-3400T	AGP3400-T1-D24
	AGP-3450T	AGP3450-T1-D24
GP3500 Series	AGP-3500L	AGP3500-L1-D24
	AGP-3500S	AGP3500-S1-D24
		AGP3500-S1-AF
	AGP-3500T	AGP3500-T1-D24
		AGP3500-T1-AF
	AGP-3550T	AGP3550-T1-AF
GP3600 Series	AGP-3600T	AGP3600-T1-D24
		AGP3600-T1-AF
	AGP-3650T	AGP3650-T1-AF
GP3700 Series	AGP-3750T	AGP3750-T1-AF



## ■ GP2000 Series/GLC Series/Factory Gateway

Series Name	Product Name	Model No.	Built-in Ethernet	External Ethernet	Remarks	
GP2300 Series	GP-2300L	GP2300-LG41-24V	Available	Not Available	-	
	GP-2300T	GP2300-TC41-24V				
GP2400 Series	GP-2400T	GP2400-TC41-24V		Available	Available	*1
GP2500 Series	GP-2500T	GP2500-TC11				
		GP2500-TC41-24V				
GP2501 Series	GP-2501S	GP2501-SC11	Not Available	Available	*2	
	GP-2501T	GP2501-TC11				
GP2600 Series	GP-2600T	GP2600-TC11	Available	Available	*1	
		GP2600-TC41-24V				
GP2601 Series	GP-2601	GP2601-TC11	Not Available	Available	*2	
GLC2300 Series	GLC2300L	GLC2300-LG41-24V	Available	Not Available	-	
	GLC2300T	GLC2300-TC41-24V				
GLC2400 Series	GLC2400T	GLC2400-TC41-24V		Available	Available	*1
GLC2500 Series	GLC2500T	GLC2500-TC41-24V				
		GLC2500-TC41-200V				
GLC2600 Series	GLC2600T	GLC2600-TC41-24V	Available	Available	*1	
		GLC2600-TC41-200V				
IT2400 Series	IT2400 TypeA	IT2400-TC41-GP	Available	Not Available	-	
		IT2400-TC41-GP200V				
	IT2400 TypeB	IT2400-TC41-GLC				
		IT2400-TC41-GLC200V				
Factory Gateway	Factory Gateway	FGW-SE41-24V	Available	-	-	

\*1 GP Ethernet I/F Unit or Multi Unit E is also applicable.

\*2 GP Ethernet I/F Unit or Multi Unit E is necessary.

### NOTE

- Using 'Pro-Server EX' with GP-2501 Series or GP-2601 Series requires an expansion Ethernet unit. Therefore, protocols that need expansion units cannot be used in this case.
- For GP-2501 Series and GP-2601 Series, 'Pro-Server EX' and Ethernet protocols cannot be used simultaneously.
- The IP addresses, port Nos., etc. are different when with only built-in Ethernet and when with an expansion Ethernet unit mounted.

## OPERATING ENVIRONMENT

Confirm that the PC in which you will install this software meets the following operating requirements.

Item	Requirements	Remarks
PC	Windows <sup>(R)</sup> must operate normally	Pentium <sup>(R)</sup> III 500MHz or faster processor PC/AT compatible
Resolution	SVGA 800x600 or more is recommended 256 colors or more is required	Only 96dpi font is supported.
Hard Disk Space Requirements	Pro-Server EX Developer Operating Environment 1G byte (2G bytes recommended) Pro-Server EX Runtime Operating Environment 512M bytes (1G byte recommended)	
Memory Requirements	128 MB or more	256 MB or more is recommended
OS	Windows(R) 2000 (Service Pack3 or later)/ XP(Home Edition/Professional Edition) /2003 Server (Standard/Enterprise)	
Others	Microsoft <sup>(R)</sup> Excel 2000 or later Microsoft <sup>(R)</sup> Access 2000 or later Microsoft <sup>(R)</sup> Internet Explorer Ver. 5.0 or later* Microsoft <sup>(R)</sup> Visual Basic Ver.6.0 Microsoft <sup>(R)</sup> Visual C++ Ver.6.0 or Ver.7.0 .NET Framework Ver.1.1(Service Pack1 or later) Acrobat <sup>(R)</sup> Reader <sup>(R)</sup> Ver.6.0.3 or later	Automatically installed in the PC without .NET Framework Ver.1.1 (Service Pack1 or later)
Supported Language	Japanese, English	
LAN Port	Commercially available LAN cable HUB	10BASE-T 100BASE-T
Disk Drive	CD-ROM drive compatible with Windows <sup>(R)</sup> 2000 (Service Pack3 or later)/ XP (Home Edition/Professional Edition) / 2003 Server (Standard/Enterprise) indispensable	
Mouse	Windows(R) 2000 (Service Pack3 or later)/ XP (Home Edition/Professional Edition) /2003 Server (Standard/Enterprise)	
Printer	Windows(R) 2000 (Service Pack3 or later)/ XP(Home Edition/Professional Edition) /2003 Server (Standard/Enterprise)	

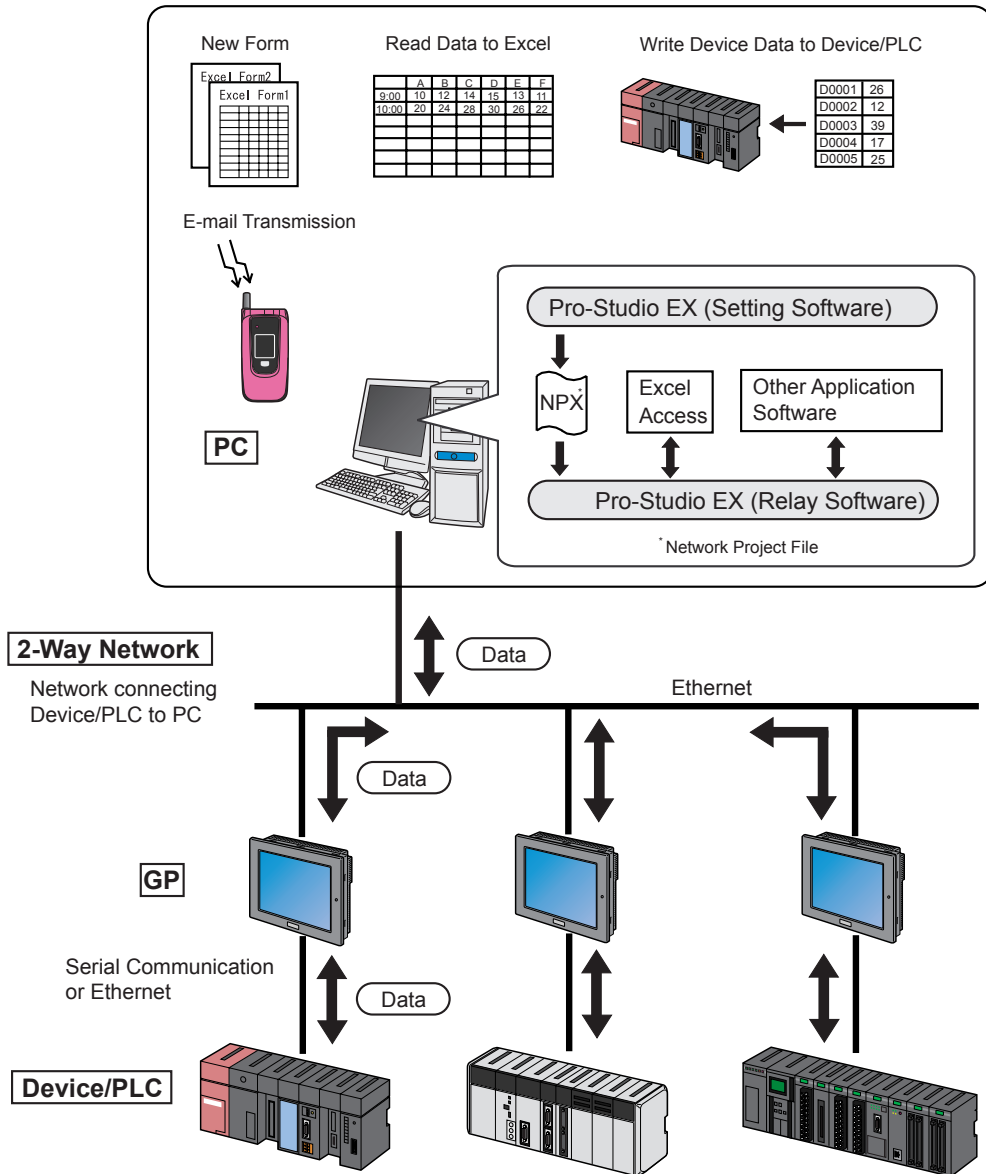
\*Keep updating to the latest version.

**NOTE**

- This manual does not describe how to use Microsoft<sup>(R)</sup> Visual Basic.NET, however, refer to the sample programs included in \Pro\_face\Pro-Server EX\PRO-SDK before using.

## 1.1 What is 'Pro-Server EX'?

'Pro-Server EX' is PC software to collect displayed data from the GPs and measured data from the devices connected to the PC via a network (Ethernet) in the PC and execute various processing of the collected data. 'Pro-Server EX' is linked with various application software such as 'Microsoft Excel' (referred to as 'Excel'), and 'Microsoft Access' (referred to as 'Access'). This allows you to use the data as you desire utilizing various features of application software such as form creation and write of device data to the Device/PLC.

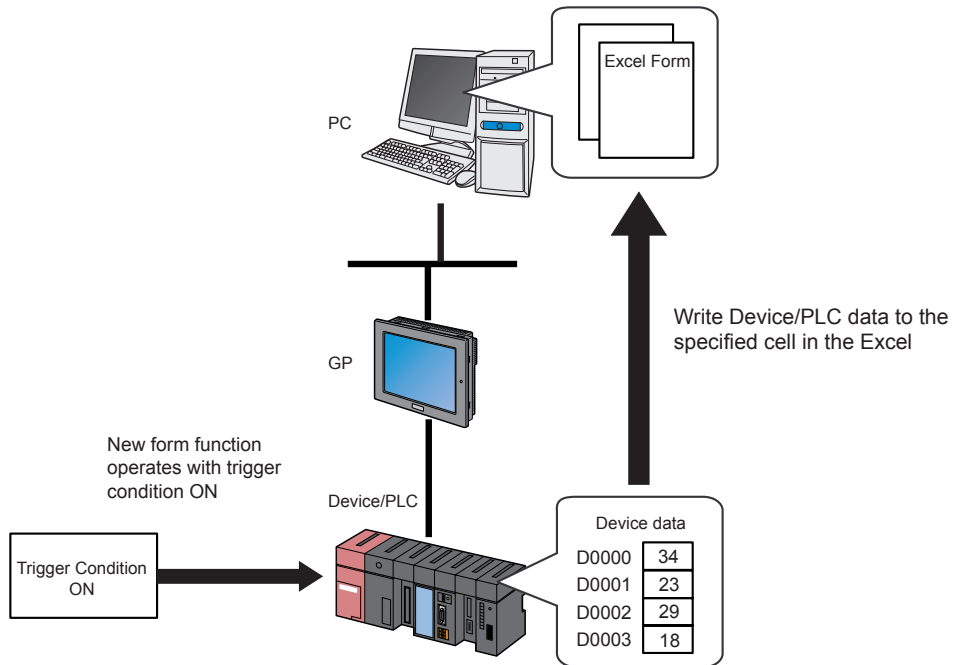


## 1.2 What You can Do with 'Pro-Server EX'

### ■ Form Creation

'Pro-Server EX' allows you to automatically create various forms such as control sheets and reports based on the data read from the GPs or Device/PLCs. 'Pro-Server EX' prepares a wide variety of templates that are applicable to the formats frequently used in production sites.

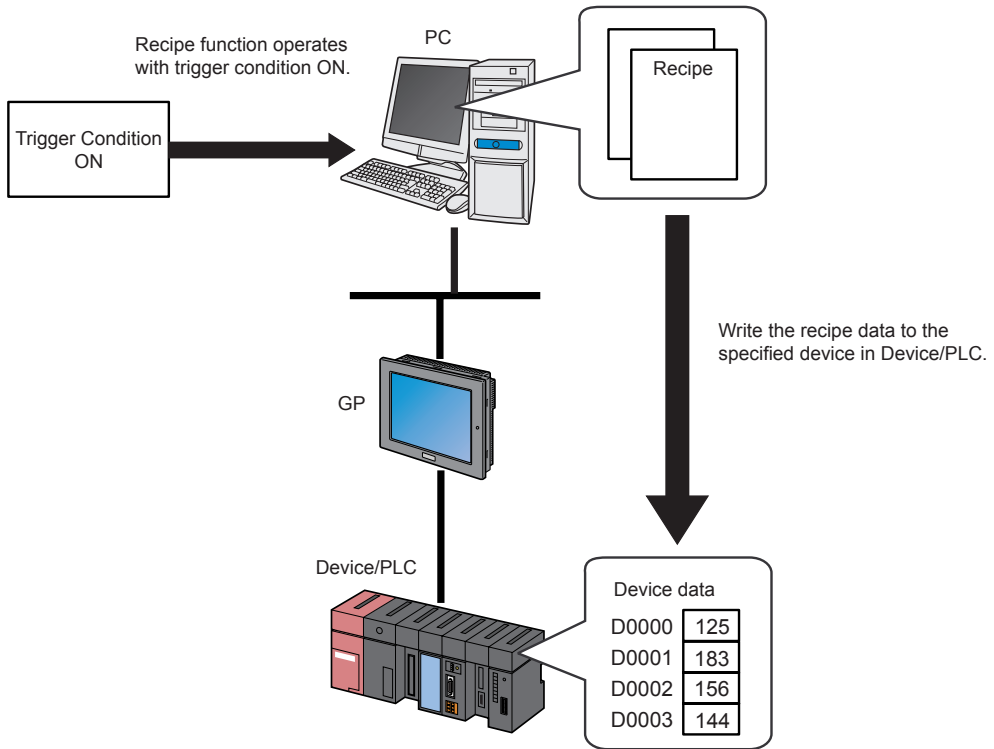
☞ "5 Creating a Form Using Excel"



### ■ Data Input to Device/PLC

'Pro-Server EX' allows you to write plural data to the Device/PLCs at an arbitrary timing. This enables you to input working instructions, various parameters, etc. in the office without going out to the production site.

- ☞ "11 Writing Excel Data in Device/PLC"
- ☞ "12 Writing CSV File Data in Device/PLC"
- ☞ "13 Writing Database Data in Database"

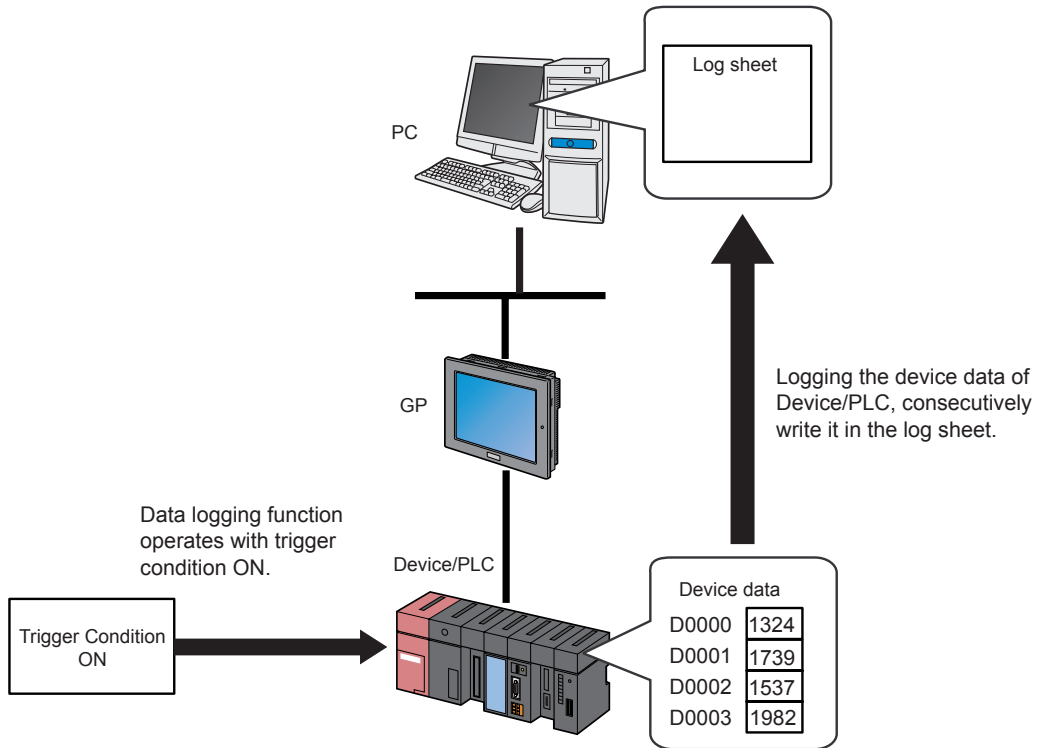


### ■ Logging of Device/PLC Data

'Pro-Server EX' allows periodic logging (continuous read) of plural data at an arbitrary interval. The logged data is written in application software such as 'Excel'. This feature enables you to easily edit or process the data.

☞ "6 Writing Device/PLC Data in Excel File"

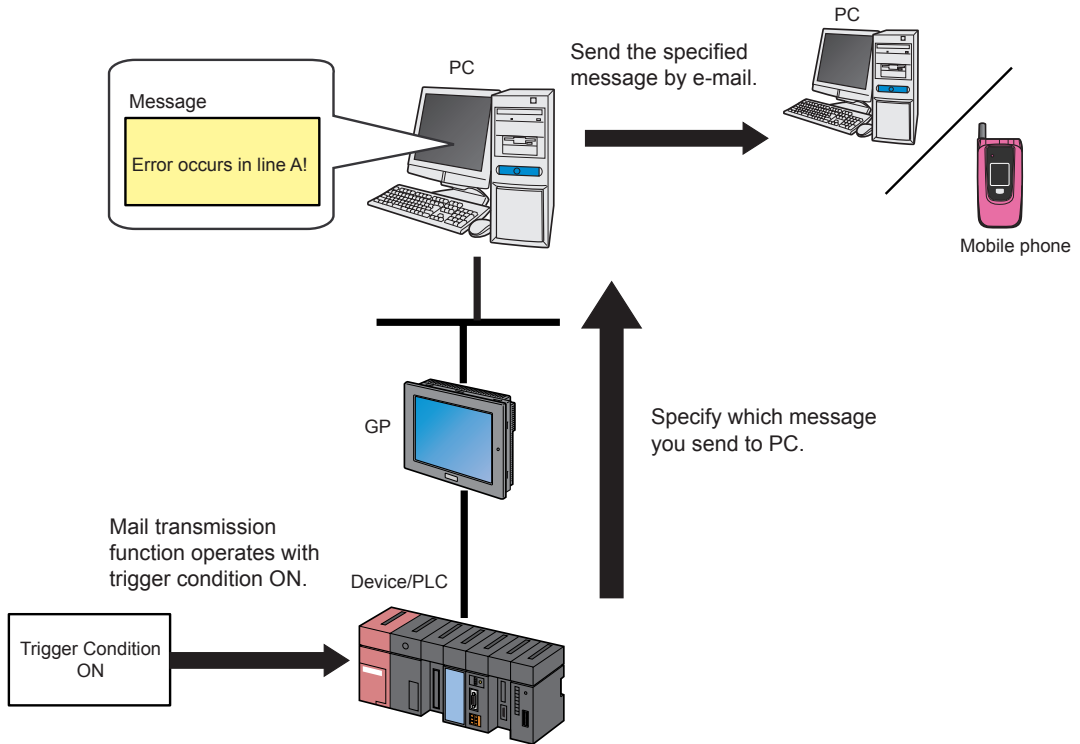
☞ "7 Writing Device/PLC Data in CSV File"



### ■ Sending Message via E-Mail

'Pro-Server EX' allows e-mailing preset messages when a preset event has occurred such as change in data or occurrence of trouble. This feature enables you to report to the manager immediately after a trouble occurred.

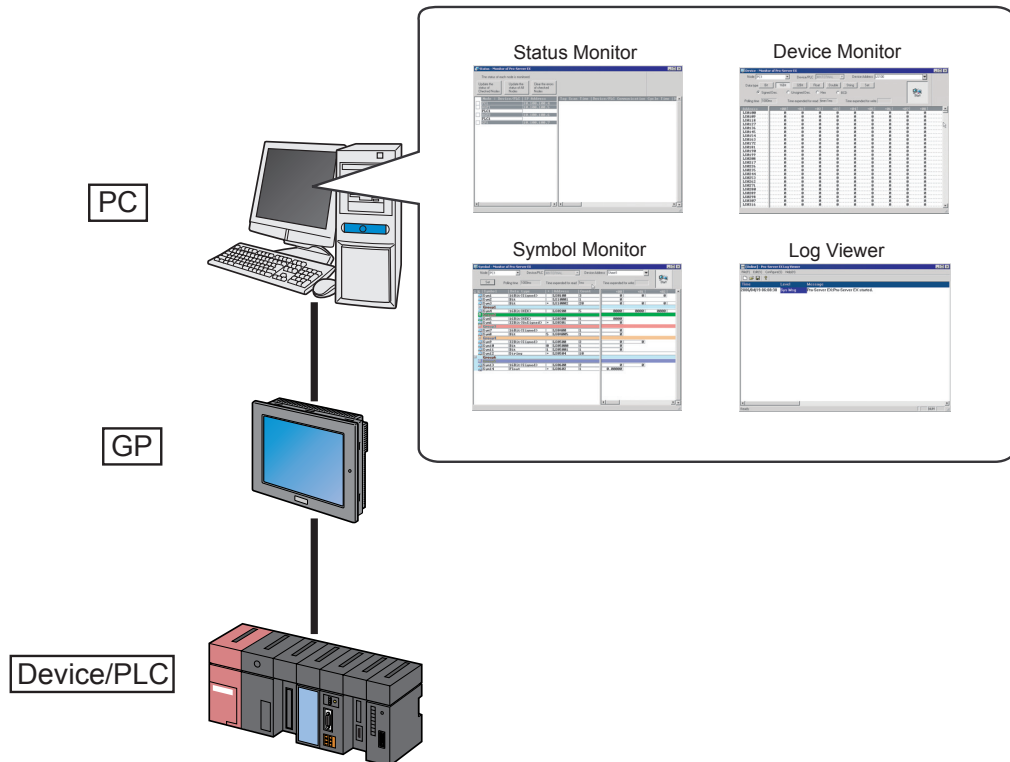
☞ "14 Reporting Alarm by E-mail"



## ■ Monitoring of Device/PLC Data

'Pro-Server EX' allows you to monitor device data of the GPs and Device/PLCs with simple operation. It also allows you to write the data to an arbitrary device address from the PC.

☞ "27 Simply Confirming On-site Status"



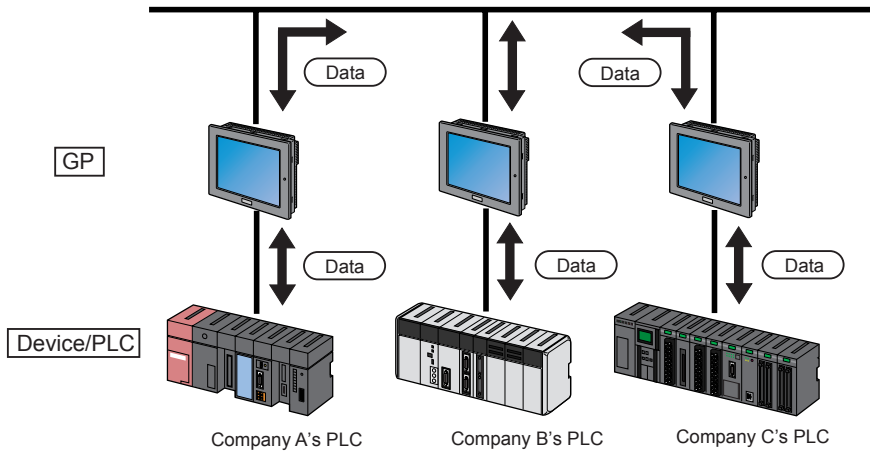
The 'Pro-Server EX' has other features as follows:



## ■ Data Transfer between Device/PLCs

'Pro-Server EX' allows data transfer among the GPs and Device/PLCs without a PC. This feature enables data sharing even when the Device/PLCs are of different manufacturer.

☞ "18 Sending Data between Devices"



## ■ Data Processing using VB/VC Program

'Pro-Server EX' allows access to the data of Device/PLCs using a user application program created in VB ('Visual Basic') or VC ('Visual C++') format. This feature enables a variety of data processing depending on the contents of the program.

☞ "26 Designing Your Own Program"

The above features are only a part of the various features of 'Pro-Server EX'. Refer to each chapter of this manual for the other features of 'Pro-Server EX'.

## 1.3 How the Data Management System Operates

This section describes how the data management system using 'Pro-Server EX' operates.

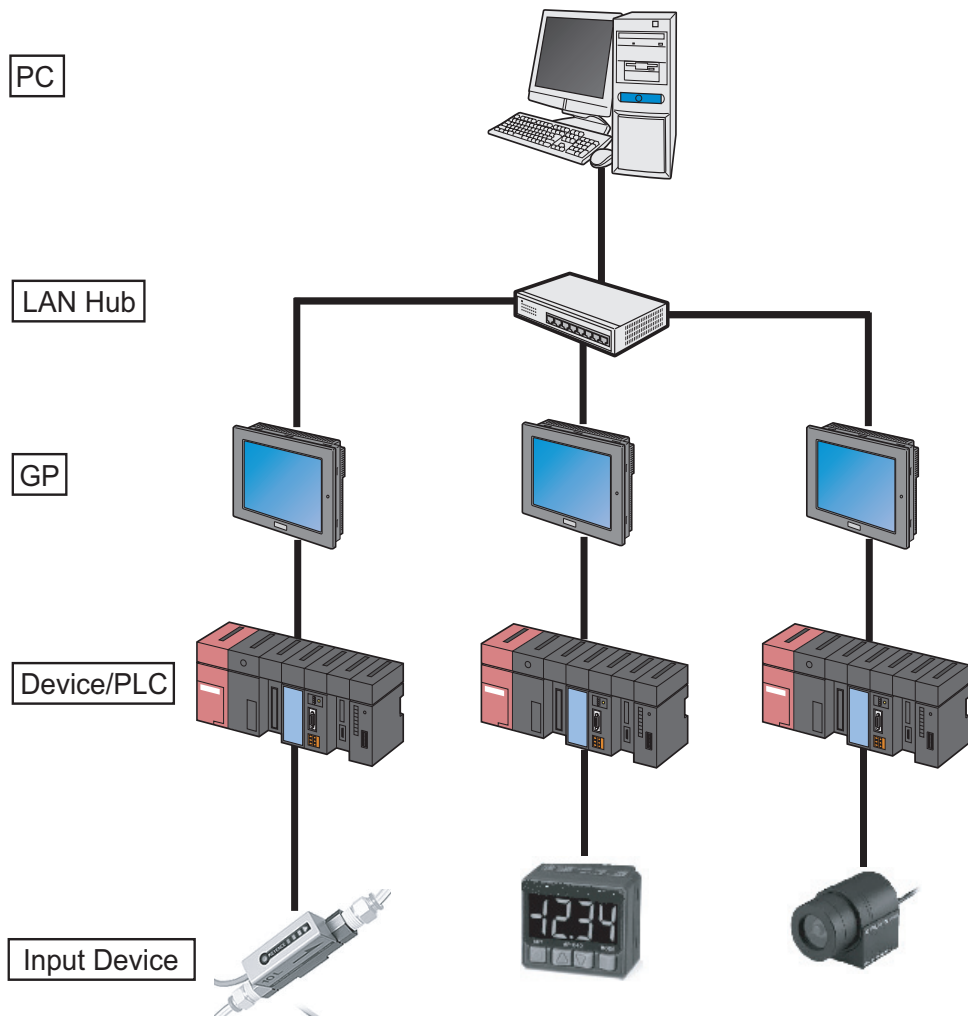
### 1.3.1 Devices to be Used

The data management system using Pro-Server EX needs the following devices.

You must prepare an appropriate system configuration as follows before actual use.

☞ "2 Preparation"

\*The following shows an example of the system. You can use other devices depending on the working environments.



### ■ PC

Used to read/write the data of GPs and Device/PLCs via a network (Ethernet) after 'Pro-Server EX' and 'Pro-Studio EX' are installed therein.

### ■ LAN Hub

Used to connect all the devices together via Ethernet.

### ■ GP

A combination of operation panels and display units that have been provided separately for machines and equipment.

The GP has features of displaying characters information, graphics information, etc. and entering data from touch keys.

### ■ Device/PLC

Used to capture data and perform control. The Device/PLC includes a PLC, thermostat, inverter, etc. The Device/PLC performs control based on the data from the input devices and outputs the result to the GPs.

### ■ Input Device

An externally connected device such as a sensor and a switch that performs measurement, counting, etc. The data is captured via the Device/PLC.

### 1.3.2 Software to be Used

The data management system using 'Pro-Server EX' includes following software. This section describes the overview and features of the software.

#### ■ 'Pro-Studio EX'

System designing software to be used when developing a data management system.

'Pro-Studio EX' allows various settings such as those of information about the devices being connected to the network and conditions for receiving/sending data and then creating a network project file containing those settings.

After the created network project file is transferred to the GPs, the data management system can operate effectively according to the settings in the network project file.

#### ■ 'Pro-Server EX'

A data relay driver for operating data management system.

'Pro-Server EX' allows data communication between the PC and the GPs in accordance with the content of the network project file created using Pro-Studio EX, and to read/write of the collected data to the application software of the PC and the devices.

#### Network Project File

The data management system using 'Pro-Server EX' creates a file in the GP screen data (project file), which contains information about the devices being connected and features to be used. This file is called "Network project file", and is affixed with an extension of ".npx". The same network project file is basically used for all the devices being connected via a network, and the data is processed based on the settings.

#### ■ '2-Way Driver'

Built-in software in a GP, which serves as an interactive communication driver to translate communication protocols of various Device/PLCs and to perform communication between the PC and the Device/PLCs via the GPs.

The 2-way driver acts according to the content of the network project file transferred from the PC.

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**IMPORTANT**

- Some GP models other than GP3000 Series have no built-in '2-way driver'. If not built-in, the '2-way driver' must be downloaded from 'GP-Pro PB III' to the GP. Refer to the 'GP-Pro Ex Reference Manual' for the models without 2-way driver and for the download method.
-

### 1.3.3 How to Transfer the Data

The data management system using 'Pro-Server EX' uses the following features to read/write data from/to application software such as 'Excel'.

Depending on the ACTION to be executed, an appropriate feature is used.

#### ■ DDE(Dynamic Data Exchange)

A system to support exchange of data between two applications running simultaneously on Windows.

For example, in the case when reading the data of the Device/PLCs using 'Excel', 'Excel' requests data and 'Pro-Server EX' sends the data. That is how the data is automatically exchanged.

Application software such as 'Pro-Server EX', 'Excel' and 'Access' has this DDE function preinstalled, making it possible to read/write data without any special settings.

#### ■ API(Application Programming Interface)

A series of functions used for relaying 'Pro-Server EX' and application programs. Using API can exchange data via user application programs created in VB ('Visual Basic') or VC ('Visual C') format.

Access of an application program to the 'Pro-Server EX' API used for exchanging data enables read/write of the data of the Device/PLCs.

#### ■ ACTION

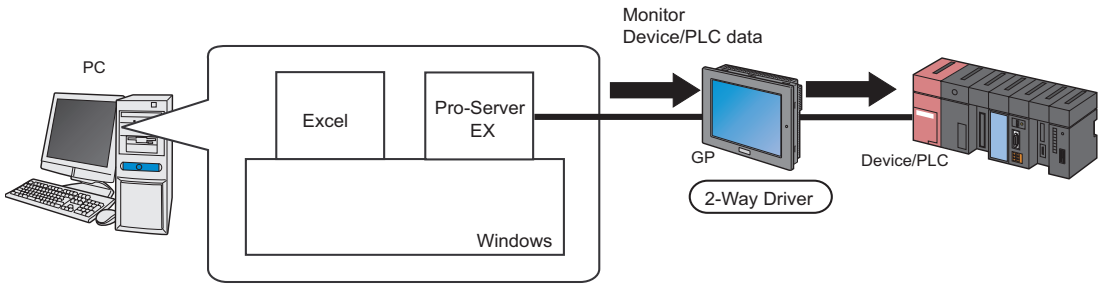
A system preinstalled in 'Pro-Server EX' to exchange data.

The ACTION includes data exchange with an application program, access to a transmission server when sending e-mails.

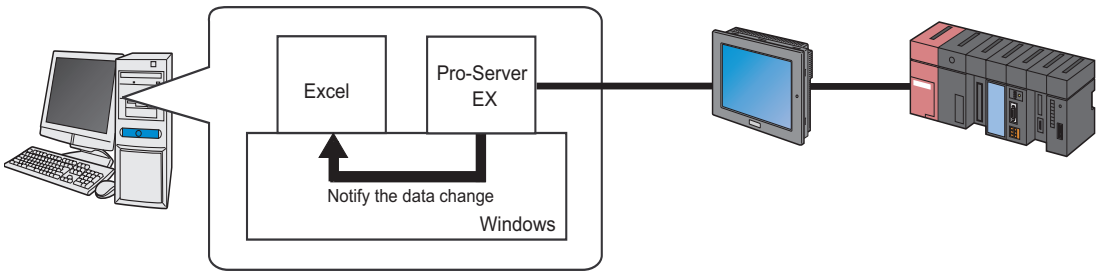
The following shows how the DDE function runs.

[Data Exchange by DDE]

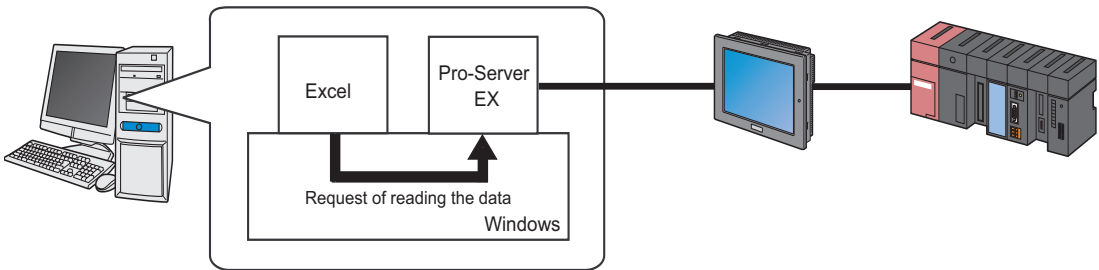
(1) 'Pro-Server EX' on Windows always monitors the measurement data in the Device/PLC via the 2-way driver in the GP.



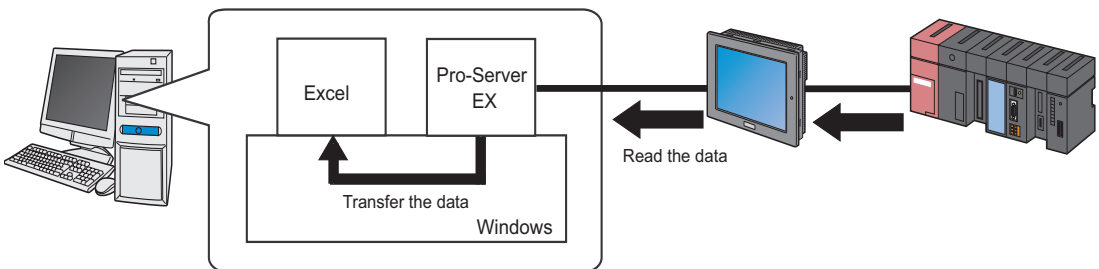
(2) The 'Pro-Server EX' notifies 'Excel' of a change in the data in the Device/PLC, if any.



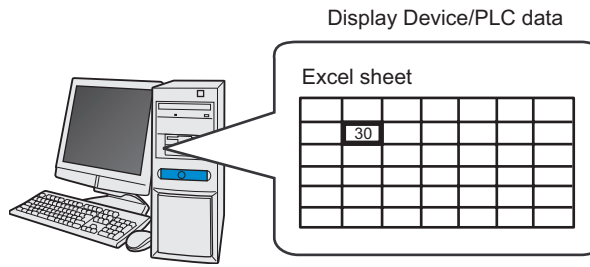
(3) 'Excel' requests read of the data to 'Pro-Server EX'.



(4) 'Pro-Server EX' reads the Device/PLC data and transfers the read data to 'Excel'.



(5) 'Excel' displays the transferred data on the specified cell.



## 1.4 Necessary Operation

This chapter describes necessary operation for executing data management using 'Pro-Server EX' and the flow of the procedures.

Refer to each chapter in this manual for more details.

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**NOTE**

- The following flow of the procedures assumes that the connection between the GP and Device/PLC and the setting of the GP are completed. Incomplete connection and setting may result in failure to read/write of data using the PC. Be sure to complete correct connection and setting referring to the related operation manual of the GP and the 'GP-Pro EX'.
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