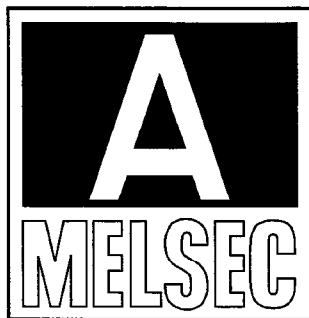
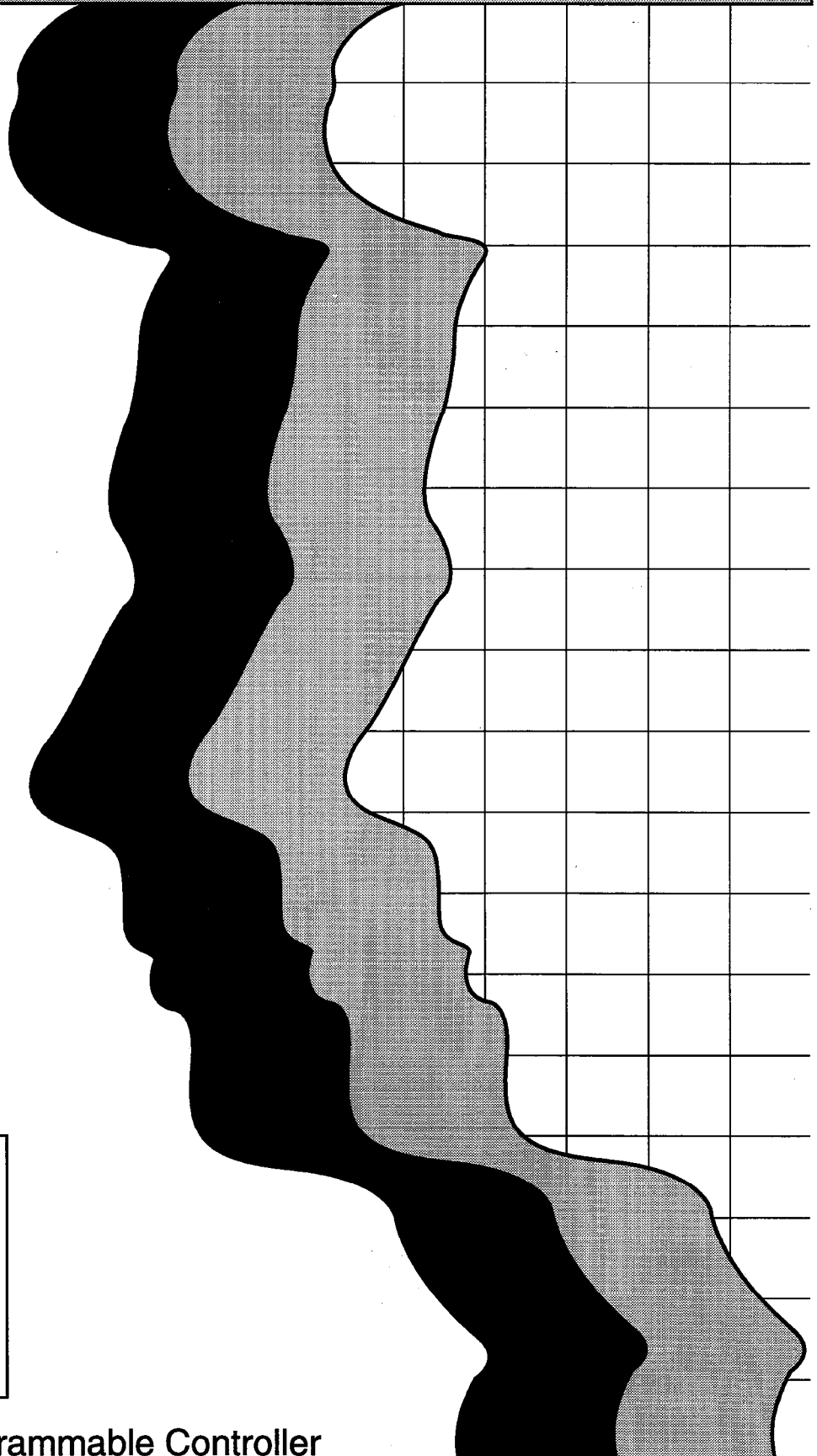


MITSUBISHI

Graphic operation terminal type A77GOT-S5 Reference Manual



Mitsubishi Programmable Controller

REVISIONS

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INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-A Series of General Purpose Programmable Controllers. Please read this manual carefully so that the equipment is used to its optimum. A copy of this manual should be forwarded to the end User.

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Related Manuals

- **A77GOT-S5 Graphic Operation Terminal User's Manual (IB-66548).**
This manual describes the specifications, nomenclature, settings, and system menu functions of the A77GOT-S5. (Packed together with the A77GOT-S5)
- **SW2IVD-AGOTP Graphic Operation Terminal Software Package Operating Manual (IB-66554)**
This manual describes the operations used to create monitoring screens with the SW2IVD-AGOTP, to set monitoring conditions, to transfer monitoring data, etc. (Packaged together with the SW2IVD-AGOTP)
- **A7GT-MCA 0/256/512/768 K-LD Built-in Ladder Monitor Function Memory Cassette User's Manual (IB-66557)**
This manual describes the specifications and functions of the memory cassette, and the procedure for using it. (Packaged together with each memory cassette)
- **A7GT-BUS Bus Connection Interface Unit User's Manual (Hardware) (IB-66556)**
This manual describes the nomenclature and settings for the bus connection module. (Packaged together with the A7GT-BUS)
- **A7GT-J71AP23/R23 Data Link Module User's Manual (Hardware) (IB-66438)**
This manual describes the specifications, nomenclature and settings of the MELSECNET (II) fiber-optic cable data link module/MELSECNET (II) coaxial cable data link module. (Packaged together with each data link module)
- **A7GT-J71AT23B Data Link Module User's Manual (Hardware) (IB-66439)**
This manual describes the specifications, nomenclature and settings of the MELSECNET/B data link module. (Packaged together with the A7GT-J71AT23B)
- **A7GT-J71LP23/BR13 Network Module User's Manual (Hardware) (IB-66558)**
This manual describes the specifications, nomenclature and settings of the MELSECNET/10 optical loop network modules and MELSECNET/10 coaxial bus network modules. (Packaged together with each data link module)
- **A7GT-TK Ten-Key Panel User's Manual (IB-66445)**
This manual describes the specifications, nomenclature and settings of the ten-key panel. (Packaged together with the A7GT-TK)
- **MELSECNET and MELSECNET/B Data Link Systems Reference Manual (IB-66350)**
This manual gives an overview of the MELSECNET, MELSECNET/B system and describes its specifications, nomenclature and settings. (Purchased separately)
- **MELSECNET/10 Network System Reference Manual (PC-to-PC network) (IB-66440)**
This manual gives an overview of the MELSECNET/10 network system and describes its nomenclature and settings. (Purchased separately)

- **Computer Link Module User's Manual (Com.link func./Print func.) (SH-3511)**

This manual describes the communication of a computer link module with external devices in the dedicated protocol/no-protocol modes and bidirectional mode, the printer function, module settings, wiring, programming, and troubleshooting.

It applies to all the following computer link modules.

A1SJ71C24-R2/R4/PRF, AJ71UC24, A2CCPUC24, A2CCPUC24-PRF
(Purchased separately)

- **AJ71UC24 Computer Link/Multidrop Link Module User's Manual (Hardware) (IB-66559)**

This manual describes the system configuration when the module is used, its specifications, nomenclature and settings, and external dimensions.
(Packaged together with the module)

- **A1SJ71C24-R4 Computer Link/Multidrop Link Module User's Manual (Hardware) (IB-66491)**

This manual describes the system configuration when the module is used, its specifications, nomenclature and settings, and external dimensions.
(Packaged together with the module)

1. GENERAL DESCRIPTION

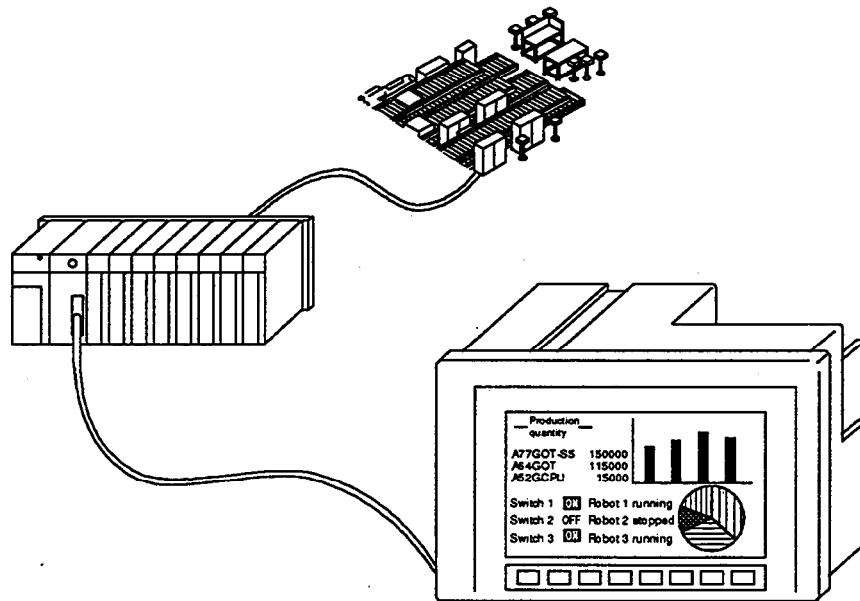
This reference manual describes the monitoring functions and specifications of the A77GOT-S5 graphic operation terminals (called "A77GOT" hereafter) that can be used with the SW2IVD-AGOTP graphic operation terminal software package.

For details on using the conventional AGOTP, see Section 1.3.

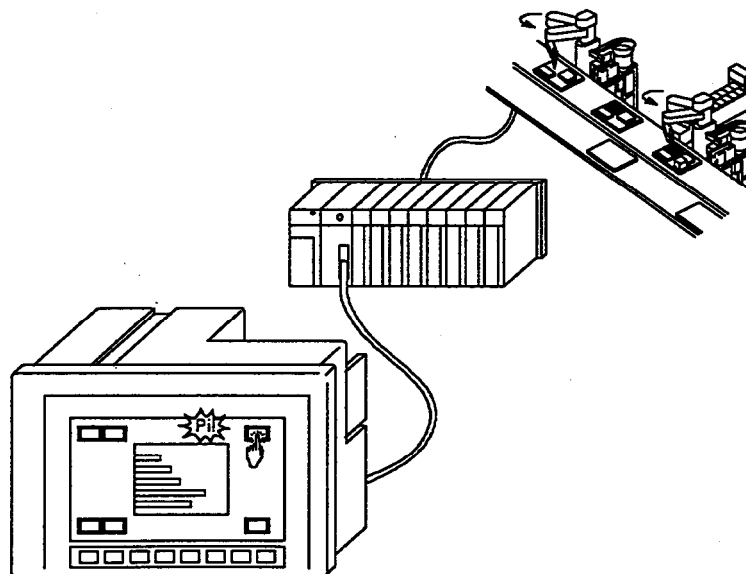
The A77GOT is used for programless monitoring of a programmable controller and for changing device data.

The ability to connect this unit to any MELSEC-A series system allows flexibility when building a monitoring system; the unit can be mounted to a control panel for use as an electronic operation panel, or incorporated into machinery.

(Monitoring the contents of the PC CPU)



(Changing the device data in the PC CPU)

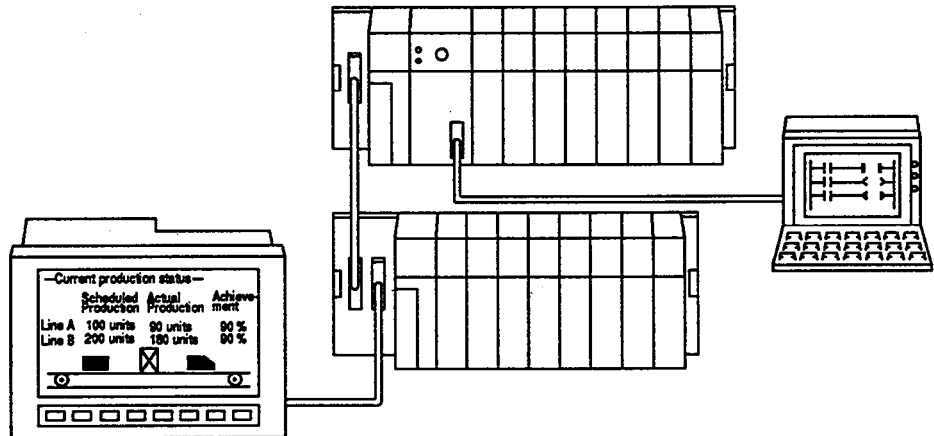


1.1 Characteristics

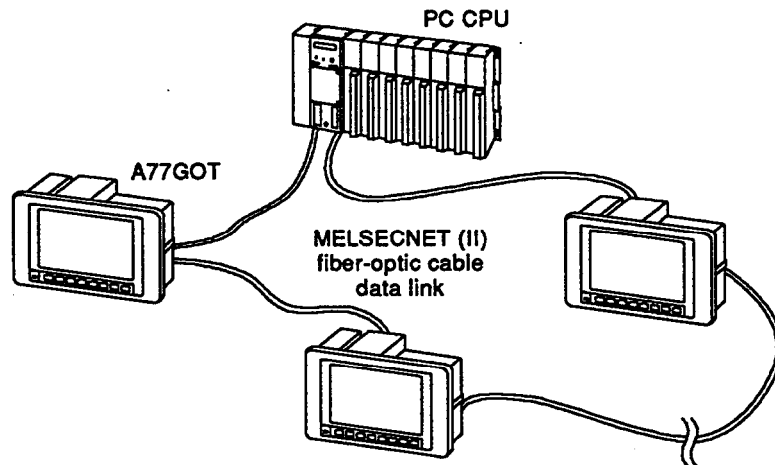
(1) The A77GOT can be connected to any MELSEC-A series system.

(a) Bus connection is possible by using the extension connector of a main base module or extension base module, enabling high-speed response.

It is also possible to debug the sequence program while monitoring the G controller unit, by connecting a GPP function peripheral device to the RS-422 connector of the PC CPU.



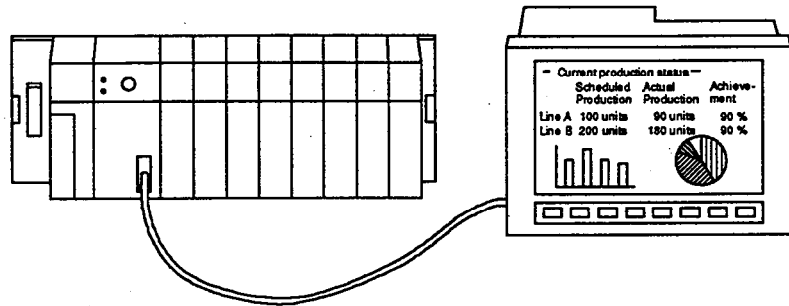
(b) The A77GOT can be connected to a MELSECNET/B, MELSECNET(II), or MELSECNET/10 system for use as a remote operation panel, for example for line control.



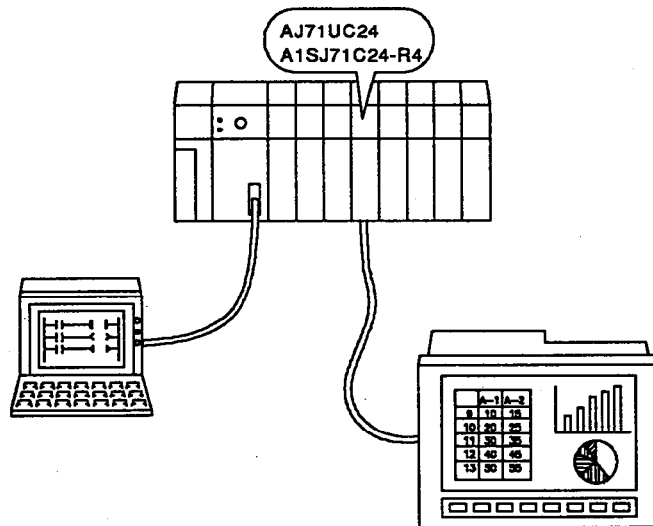
1. GENERAL DESCRIPTION

MELSEC-A

- (c) Using the RS-422 cable, the A77GOT can be directly connected to the PC CPU.



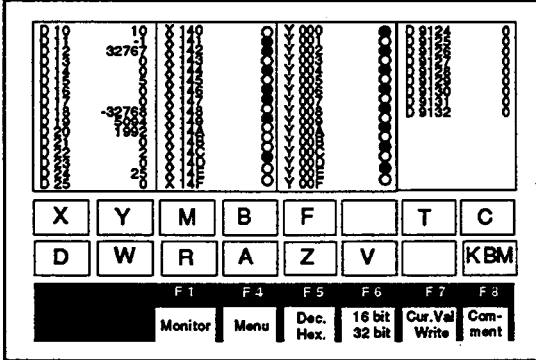
- (d) Connection of the A77GOT and computer link module on a 1:1 basis. It is also possible to debug the sequence program while monitoring with the G controller unit, by connecting a peripheral device capable of GPP functions using the RS-422 connector of the PC CPU.



1. GENERAL DESCRIPTION

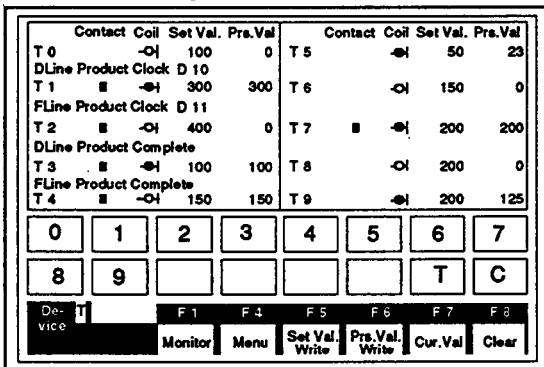
- (2) Monitoring and changing the contents of the PC CPU using dedicated screens.
The system monitor function enables monitoring and changing of the contents of the PC CPU, I/O modules, and special function modules.

CPU device monitoring and test



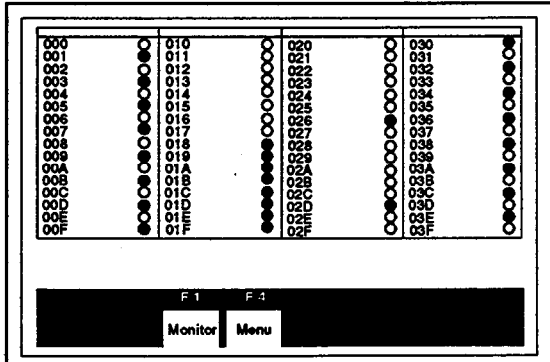
- ON/OFF state of a bit device and the current value of a word device can be displayed.
- A bit device can be set or reset, and the current value of a word device can be changed.
- CPU device monitoring comments, registered by the GPP function, can be displayed.

T/C monitoring and test



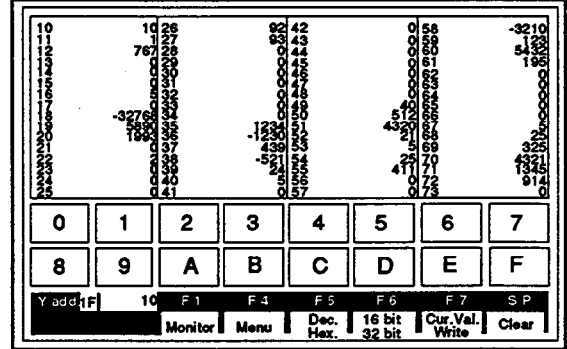
- The contact/coil/set value/current value of T and C can be displayed on the dedicated screen.
- The set value and the current value of T/C can be changed.
- T/C monitoring comments, registered by the GPP function, can be displayed.

I/O module device monitoring



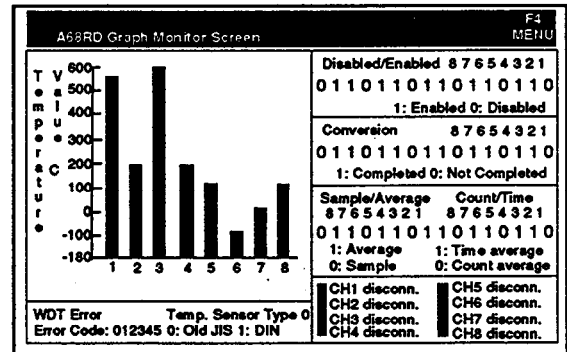
- The ON/OFF state of an I/O module can be displayed. (When this function is used, a system monitor software package and a memory card are required.)

Buffer memory monitoring and test



- Data in the buffer memory of a special function module can be displayed.
- Data in the buffer memory can be changed.

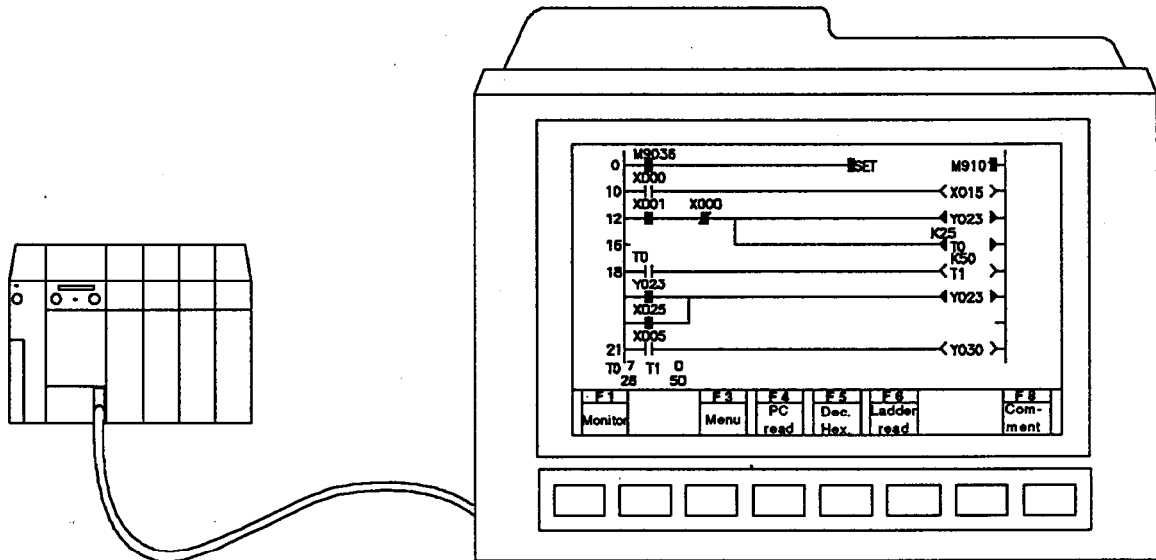
Special function module monitoring and test



- The buffer memory contents of a special function module and the ON/OFF state of an I/O signal with a CPU can be confirmed on the dedicated screen.
- Data in the monitoring buffer memory can be changed.
- The system monitoring enables special function module is an analog I/O module, a high-speed counter module, a positioning module, etc.. Monitoring display of about 140 screens is possible. (When this function is used, a system monitor software package and a memory card are required.)

- (3) Sequence programs can be monitored using the ladder monitor function.

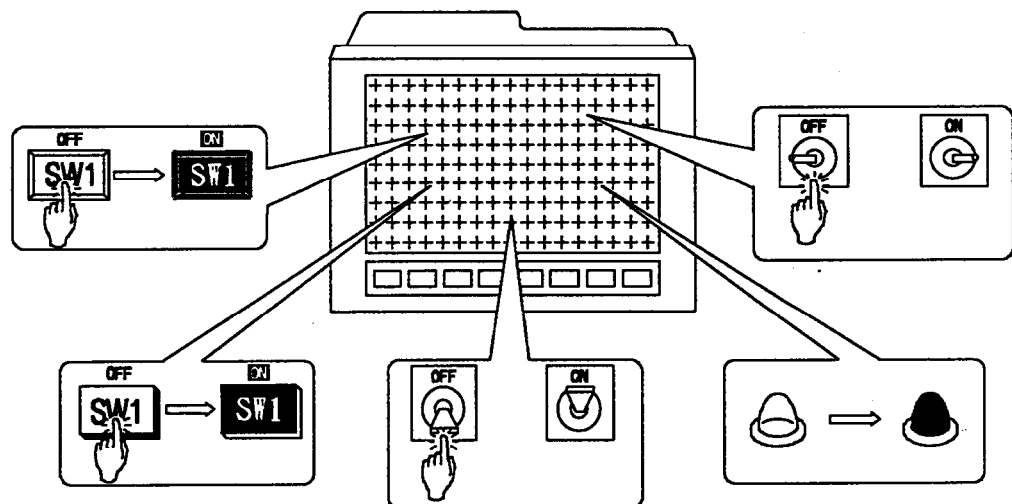
The sequence program can be monitored by using a built-in ladder monitor function memory cassette.



- (4) Maximum of 128 touch keys on the screen (touch key size: 40 x 48 dots (hor. x vert.)).

Using the touch keys (up to 128 touch keys per screen), the ON/OFF status of bit devices and the values of the word devices of the PC CPU can be changed.

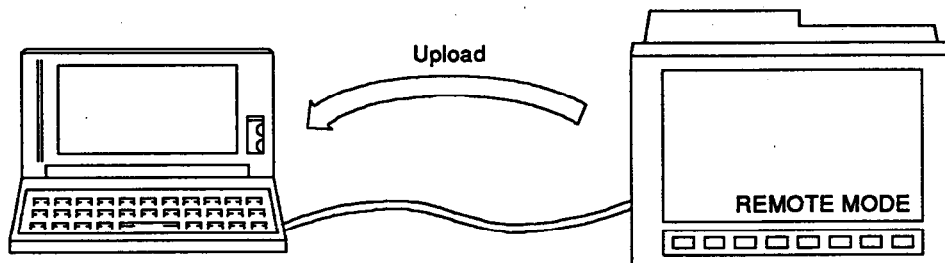
It is also possible to highlight or change the display pattern of the symbols which represent touch keys and lamps in response to the status of individual devices.



- (5) Uploading the monitoring data from the A77GOT to an AGOTP peripheral device.

The monitoring data stored in the memory or memory card of the A77GOT can be uploaded to a peripheral device.

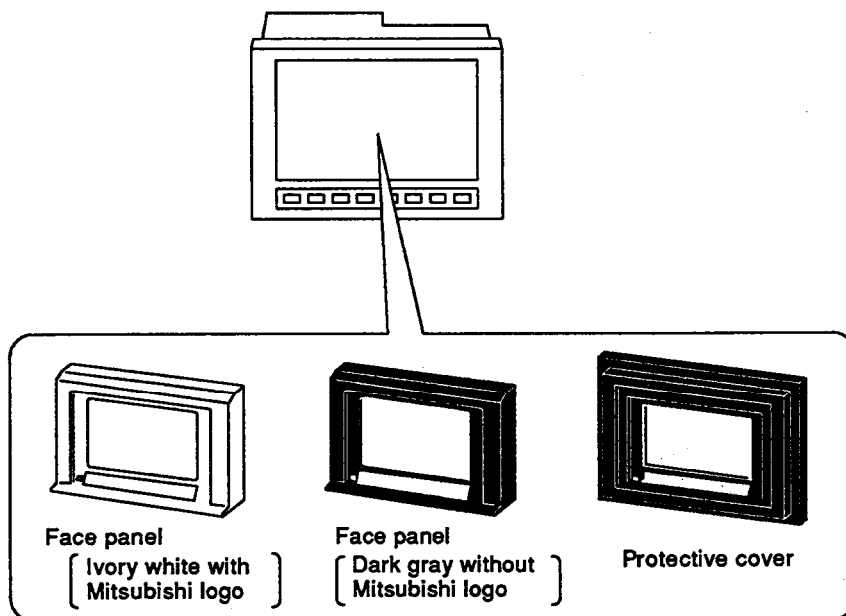
A password can be registered for the monitoring data, and the password must be input to upload the monitoring data if one is registered.



- (6) Face panel or protective cover selectable in accordance with environmental conditions.

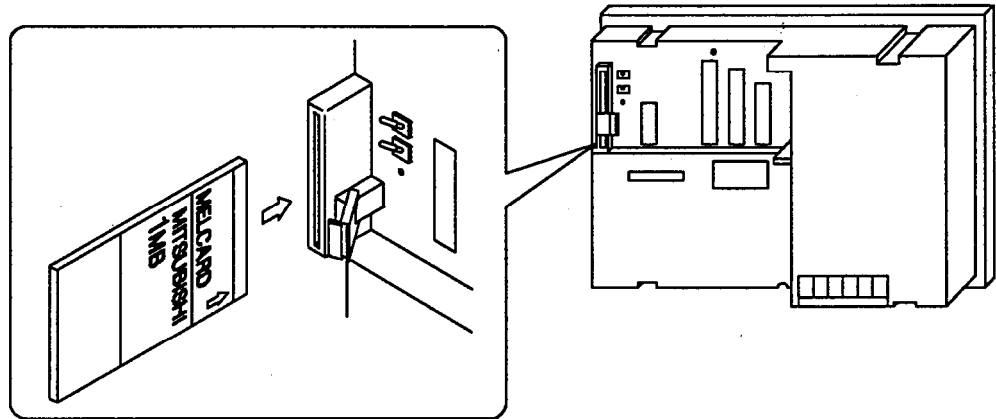
One of two types of face panel can be selected in accordance with the installation environment: (1) dark gray without Mitsubishi logo / (2) ivory white with Mitsubishi logo (these are purchased separately from the A77GOT).

By selecting a protective cover, dust-proof and water-proof performance equivalent to IP65 are secured.



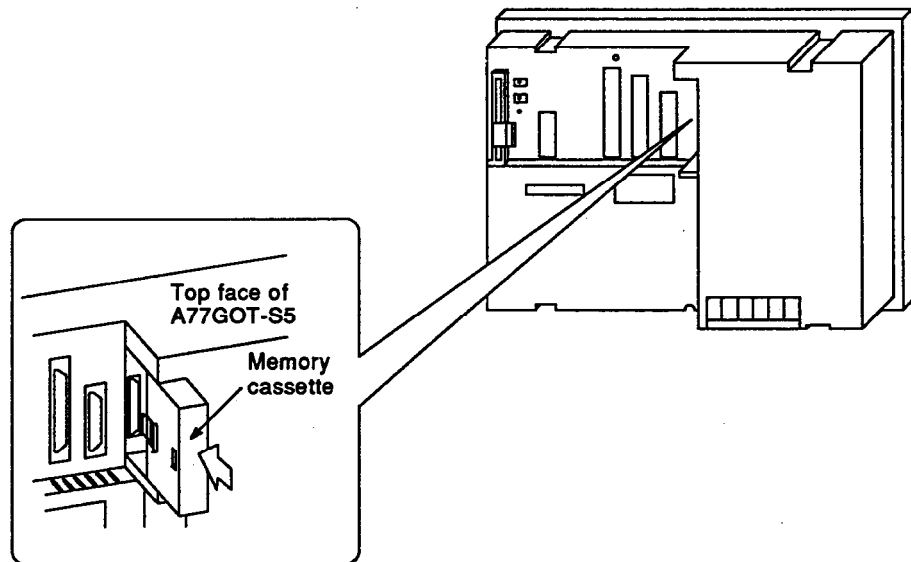
(7) Memory cards conforming to PCMCIA/JEIDA can be used

The A77GOT can use memory cards which conform to PCMCIA/JEIDA. The monitoring data can be stored in a memory card; the monitoring data can be copied between the internal memory and the memory card. This copy function facilitates such operations as storing the same monitoring data in the internal memories of several A77GOT units.



(8) The memory (internal memory) capacity for storing monitoring data can be expanded using a memory cassette

The memory capacity of the A77GOT available for storing the monitoring data can be expanded from 256 Kbytes to the maximum of 1024 Kbytes by using a memory cassette.



1. GENERAL DESCRIPTION

MELSEC-A

1.2 Differences in Comparison with Conventional G Controller Units

1.2.1 Differences in comparison with A77GOT

Item	A77GOT-S5	A77GOT (Conventional Model)
Number of touch keys	128 points	64 points
Key size	40 dots (hor.) x 48 dots (vert.)	80 dots (hor.) x 48 dots (vert.)
Addition of key codes for the system	00H to 08H: For system use	00H to 03H: For system use
Face panel	Purchased separately	Standard
Memory card	Memory card conforming to PCMCIA/JEIDA	A6MEM-[]KAW memory card
Connection of A7GT-MIF memory card interface	Impossible	Possible
Memory card protection using memory card protect switch	Impossible	Possible
Operation at G controller unit for downloading the monitoring data to the internal memory	To select the offline mode of the system menu function	To turn ON the monitoring data transfer switch after selecting the offline mode of the system menu function
System configuration for monitoring	<ul style="list-style-type: none"> • ACPU direct connection • Data link connection (MELSECNET(II), MELSECNET/B) • Network connection (MELSECNET/10) • Bus connection • Computer link connection 	<ul style="list-style-type: none"> • ACPU direct connection • Data link connection (MELSECNET(II), MELSECNET/B)
Monitoring functions	Possible	Impossible
Touch key graphic display function	Possible	Impossible
Input of decimal point, scale factor, and offset in numerical value input function	Possible	Impossible
XOR logical operation function of part display function	Possible	Impossible
Monitor station number switching function	Possible	Impossible
Function to switch the display screen from monitor screen to ladder monitor or system monitor screen by key operation	Possible	Impossible
Selection of cursor movement direction after the input of the write trigger for the numerical value/character-string input function	Possible	Impossible
Ladder monitoring function	Possible (built-in ladder monitor function memory cassette is necessary.)	Impossible
Function to upload monitoring data to an AGOTP peripheral device	Possible	Impossible
System monitoring function	<p>Since the CPU device monitoring function is not supported as a standard function, a memory card is not necessary.</p> <p>For other system monitoring function, a memory card is necessary.</p>	A memory card is necessary for all system monitoring functions.
	Special function modules for A1S are supported using dedicated monitor screen.	Special function modules for A1S are not supported.
G controller unit types	With touch panel Blue mode LCD type EL display type Color LCD type	With touch panel/Without touch panel Blue mode LCD type EL display type Color LCD type

1. GENERAL DESCRIPTION

MELSEC-A

1.2.2 Differences in comparison with A77GOT-S3

Item	A77GOT-S5	A77GOT (Conventional Model)
Number of touch keys	128 points	64 points
Key size	40 dots (hor.) x 48 dots (vert.)	80 dots (hor.) x 48 dots (vert.)
System configuration for monitoring	<ul style="list-style-type: none"> • ACPU direct connection • Data link connection (MELSECNET(II), MELSECNET/B) • Network connection (MELSECNET/10) • Bus connection • Computer link connection 	<ul style="list-style-type: none"> • ACPU direct connection • Data link connection (MELSECNET(II), MELSECNET/B) • Network connection (MELSECNET/10)
Selection of cursor movement direction after the input of write trigger of numerical value/character-string input function	Possible	Impossible
Function to upload monitoring data to an AGOTP peripheral device	Possible	Impossible
Operation at G controller unit for downloading the monitoring data to the internal memory	To select the offline mode of the system menu function	To turn ON the monitoring data transfer switch after selecting the offline mode of the system menu function
Use of A6MEM-[]KAW memory card	Impossible	Possible
Connection of A7GT-MIF memory card interface		
Memory card protection using memory card protect switch		
Touch key graphic display function	Possible	Impossible
G controller unit types	With touch panel Blue mode LCD type EL display type Color LCD type	With touch panel/Without touch panel Blue mode LCD type EL display type Color LCD type

1.3 Restrictions on Using Conventional Software Package

- (1) If the A77GOT-S5 monitoring function data is created using the conventional software package (SW2IVD-AGOTP), the following monitoring function settings are not possible.
 - Setting of the touch key panel and the touch key graphic display function in units of 40 (hor.) x 48 (vert.) dots.
(See Section 6.)
 - Function for uploading the monitoring data to an AGOTP peripheral device.
(Refer to A77GOT-S5 User's Manual.)
- (2) If the A77GOT-S5 monitoring function data is created using the existing monitoring data of a conventional G controller unit, back up the existing monitoring data.
Once the monitoring data has been converted into data to be used by the A77GOT-S5, it cannot be used by conventional G controller units. Note that canvas screen data for the A77GOT-S5 can be used by the conventional G controller unit.
- (3) If the monitoring data of the conventional G controller units is converted into A77GOT-S5 monitoring data using the SW2IVD-AGOTP software, the monitoring data size might be increased.
Before downloading the monitoring data created in this manner, always check the size of the monitoring data after conversion.

1.4 Abbreviations and Generic Terms that will be Encountered in this Manual

This section explains the abbreviations and generic terms listed below.

- (1) G controller unit Abbreviation used for the A77GOT-[]-S5 graphic operation terminals. However, if the model name has to be specified, the abbreviation used is "A77GOT".
- (2) G controller Abbreviation used for the system software (OS) of the G controller unit.
- (3) Memory cassette Generic term used for the A7GT-MCA[]KFW and A7GT-MCA[]K-LD series of memory cassettes.
- (4) Built-in ladder monitor function memory cassette Abbreviation used for the A7GT- MCA[]K-LD memory cassette.
- (5) Bus connection module Abbreviation used for the A7GT-BUS bus connection interface module.
- (6) Computer link module .. Abbreviation used for the AJ71UC24 computer link module and A1SJ71C24-R4 computer link module.
- (7) Data link module Abbreviation used for the A7GT-J71AP23, A7GT-J71AR23, and A7GT-J71AT23B data link modules.
- (8) Network module Abbreviation used for the A7GT-J71LP23 and A7GT-J71BR13 network modules.
- (9) Ten-key panel Abbreviation used for the A7GT-TK ten-key panel.
- (10) Operation panel Abbreviation used for the FP5-MD41-A/FP5-MD41-B operation panels.
- (11) Memory card Abbreviation used for the memory card which conforms to PCMCIA/JEIDA.
- (12) AGOTP Abbreviation used for the SW2IVD-AGOTP graphic operation terminal software package.
- (13) AGOTP peripheral device Generic term used for peripheral devices such as IBM PC/AT(*) that used to create monitor screens and set monitoring conditions for the A77GOT.
- (14) Peripheral device capable of GPP functions Generic term used for peripheral devices such as A6GPP, A6PHP, A6HGP, and IBM PC/AT(*), that can support GPP function.
- (15) ACPU Abbreviation used for a programmable controller CPU.

- (16)MNET(II) Abbreviation used for the MELSECNET(II) data link system.
- (17)MNET/B Abbreviation used for the MELSECNET/B data link system.
- (18)MNET/10 Abbreviation used for the MELSECNET/10 network system.
- (19) ACPU direct connection Abbreviation used for a system in which an A77GOT is connected to a PC CPU other than in a data link system or network system, by an RS-422 cable.
- (20)ACPU connection Abbreviation used for a system in which an A77GOT is connected to a programmable controller CPU using an RS-422 cable.
- (21)Bus connection Abbreviation used for a system in which an A77GOT is connected to a main base module or extension base module by an extension cable.
- (22)Computer link connection Abbreviation used for a system in which an A77GOT is connected to an AJ71UC24/A1SJ71C24-R4.
- (23)Data link connection Abbreviation used for a system in which an A77GOT is connected to a MELSECNET(II) or MELSECNET/B data link system.
- (24)Monitoring data Data such as canvas screen data and monitor condition setting data, that is converted by the AGOTP.

* : IBM is a registered trademark of the International Business Machines Corporation.

2. SPECIFICATIONS

2.1 Monitor Specifications

Table 2.1 Monitor Specifications

Item		Monitor Specifications	Remark	
Display specifications	Text screen	Size	25 lines x 80 columns	
		Display characters	222 kinds (when displaying numeric characters in ASCII) One character/one column (8 x 16 dots)	The following data drawn or set by the drawing S/W and AGOTP Expansion coefficient =1: Not blinking
		Display colors	15 colors Black, blue, red, violet, green, light blue, yellow, white, gray, dark blue, dark red, dark purple, dark green, dark light blue, and dark yellow	A77GOT-CL-S5: 15 colors as listed to the left A77GOT-L-S5, A77GOT-EL-S5: 2 grayscale levels
	Graphics screen	Size	X axis: 640 x Y axis: 400 (dots)	—————
		Display figures	Straight line systems: 4 kinds (straight line, rectangle, polygon, and filled rectangle) Curvilinear systems: 3 kinds (circle, circular-arc and elliptical) Other systems: 2 kinds (Point: 8 kinds, Paint)	————— Points are used in the scatter graph.
		Display characters	8-point character size: 222 kinds (when displaying numeric characters in ASCII) 1 character 8 x 8, 16 x 16, 32 x 32, or 64 x 64 (dots)	Expansion coefficients = 1, 2, 4, and 8
			16-point character size: 222 kinds (when displaying numeric characters in ASCII) 1 character 8 x 16, 16 x 32, 32 x 64, or 64 x 128 (dots)	All drawn by the drawing S/W and the following data set by AGOTP. Expansion coefficients = 1, 2, 4, and 8 (Expansion coefficient = 1: Blinking)
	Display colors	15 colors Black, blue, red, violet, green, light blue, yellow, white, gray, dark blue, dark red, dark purple, dark green, dark light blue, and dark yellow.	For the available display colors with individual A77GOT models, see Section 2.6.	
	VRAM	For the text screen	1	See Section 4.3.1.
		For the graphic screen	1	
Canvas memory	Number of monitoring screens	Max. 250 screens	—————	
	Number of part drawings	Max. 255 points		
	Memory capacity	Flash ROM: Internal memory: 256 Kbytes (expandable to 512/768/1024 Kbytes)	Memory capacity can be expanded by installing a memory cassette	
Canvas memory File memory	Memory capacity	Memory card: 256/768/1024/2048 Kbytes Conforming to PCMCIA/JEIDA	One card can be installed	

2.2 Devices and Special Function Modules that can be Monitored

The following explains the device and the station that can be set as data collection trigger and a monitored device when setting a monitoring function by AGOTP.

The points that require attention when setting the PC type are presented below.

2.2.1 Device name that can be monitored

The device name that can be monitored is shown in Table below. The device range that can be set is all device ranges of ACPU that G controller can be monitored.

For the ACPU models that can be monitored, refer to the A77GOT-S5 User's Manual.

Table 2.2.1 Device Name that can be Monitored

Type of a Device	Setting Range
Word device	D (data register), W (link register), R (file register)*, A (accumulator), Z and V (index register), TN (timer current value), CN (counter current value), BM (buffer memory)
Bit device	X (input), Y (output), B (link relay), M (internal relay), L (latch relay), F (annunciator) S (step relay), TT (timer contact), CT (counter contact), TC (timer coil), CC (counter coil)

*: If the file register (R) and/or comment capacity of the ACPU to be monitored has been changed, the G controller unit must be restarted.

If an extension file register (R) is accessed while changing blocks, R should not be set.

2.2.2 Special function modules that can be monitored

The model names of special function modules that can be monitored and the module head I/O numbers if these special function modules are installed at slot 0 of the main base module are shown in the table below.

Table 2.2.2 Model Names and Module Head I/O Numbers

Model Name	Module Head I/O Number	Model Name	Module Head I/O Number	Model Name	Module Head I/O Number
A68AD(S2)	00H	AD70	00H	A1S64AD	00H
A616AD	00H	AD70D	00H	A1S62DA	00H
A62DA(S1)	00H	A61LS	00H	A1S63ADA	00H
A616DAV/DAI	00H	A62LS	01H	A1S62RD	00H
A84AD	01H	AD61(S1)	00H	A1SD71-S2/S7	01H
A616TD	00H	AJ71PT32-S3(32)	00H	A1SD70	01H
A68ADN	00H	AJ71PT32-S3(48)	00H		
A68DAV/DAI	00H	A81CPU	00H		
A68RD	00H	AJ71UC24/C214	00H		
AD71(S1/S2/S7)	00H	AD51FD	01H		
AD72	01H	A1SD61	00H		

POINTS

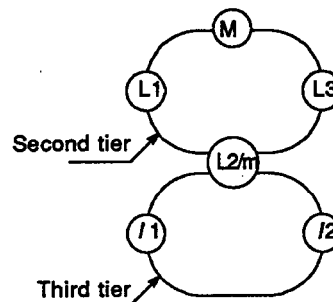
- (1) Monitoring of special function modules is possible only at the following stations.
 - In ACPU connection/bus connection/computer link connection
Special function module on the base unit of a connected station
 - In data link connection
Special function module on the base unit of a master station
(Set the PC type of the master station on the PC type selection screen of AGOTP.)
 - Network connection
Special function module on the base unit of a control station
(Set the PC type of the control station on the PC type selection screen of AGOTP.)
- (2) Monitoring is not possible for special function modules which are not indicated above. If it is necessary to monitor such modules, read the contents in the buffer memory using a sequence program and store them in devices which can be monitored (see Section 2.2.1).
- (3) In the case of the modules indicated above, although all of the buffer memory area is accessible, correct operation of the corresponding module cannot be guaranteed if data is written to the dedicated input area. Do not write data to the dedicated input area.

2.3 Access Ranges for Data Link Systems and Network Systems

2.3.1 MELSECNET/B, MELSECNET(II)

- (1) In an ACPU connection, bus connection, or computer link connection, if the connected station is a master station, local stations can be monitored.
- (2) In an ACPU connection, bus connection, or computer link connection, if the connected station is a local station, only the master station can be monitored. It is not possible to monitor local stations.
- (3) In an ACPU connection, bus connection, or computer link connection, if the connected station is a master station in the third tier, only the second tier master station and the third tier local stations can be monitored. Local stations in the second tier cannot be monitored.
In a data link connection, since the G controller unit is treated as a local station, only the master station can be monitored. Local stations cannot be monitored.

An example of station number settings is shown below.



- Other station monitoring range with an ACPU connection/bus connection/computer link connection
- Other station access range with a data link connection

Accessed Station Station to which A77GOT Connected	M	L1	L2/m	L3	/1	/2
M	FF	1	2	3	x	x
L1	0	FF	x	x	x	x
L2/m	0	x	FF	x	1	2
L3	0	x	x	FF	x	x
/1	x	x	0	x	FF	x
/2	x	x	0	x	x	FF

Accessed Station Station to which A77GOT Connected	M	L1	L2/m	L3	/1	/2
L1	0	—	x	x	x	x
L3	0	x	x	—	x	x
/1	x	x	0	x	—	x
/2	x	x	0	x	x	—

Accessible station numbers : 0 to 64, FF (self station)
Access not possible: x

POINT

There is a considerable delay when monitoring the devices of other stations in the MELSECNET/B and MELSECNET (II) network. Monitor the link relays (B) and link resistors (W) allocated in the network parameters.

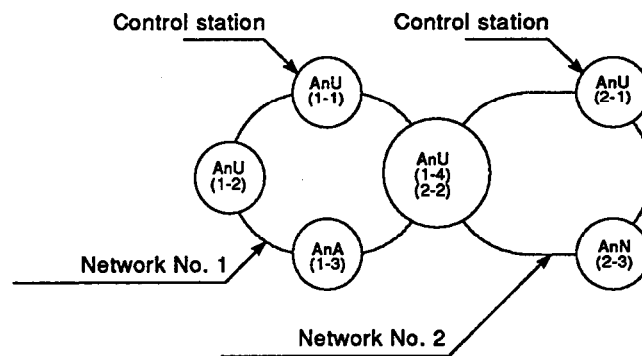
2. SPECIFICATIONS

MELSEC-A

2.3.2 MELSECNET/10

- (1) In an ACPU connection/ bus connection/computer link connection, if the connected station is an AnUCPU, the control station and all normal stations in the network connected to the AnUCPU can be monitored. (Other networks cannot be monitored.)
- (2) In an ACPU connection/ bus connection/computer link connection, if the connected station is an AnUCPU, only the control station in the network connected to the ACPU can be monitored.
- (3) In a network connection, since the G controller unit becomes a normal station, the control station and all the normal stations in the connected network can be monitored. (Other networks cannot be monitored.)

Some station number setting examples are presented below:

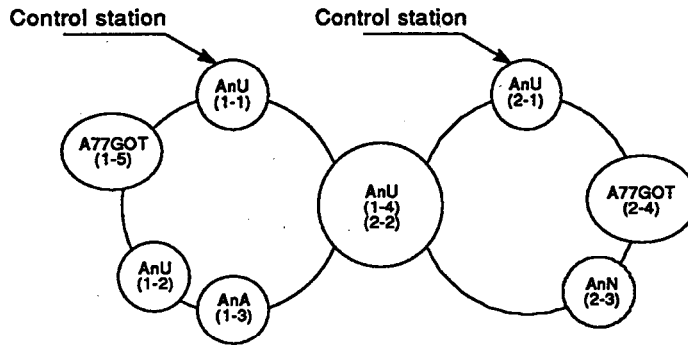


- Other station monitoring range with an ACPU connection/bus connection/computer link connection

Station to which A77GOT Connected \ Accessed Station	AnU (1-1)	AnU (1-2)	AnA (1-3)	AnU (1-4)	AnU (2-1)	AnU (2-2)	AnN (2-3)
AnU (1-1)	FF	2	3	4	x	x	x
AnU (1-2)	1	FF	3	4	x	x	x
AnU (1-3)	1	x	FF	x	x	x	x
AnU (1-4)	1	2	3	FF	x	x	x
AnU (2-1)	x	x	x	x	FF	2	3
AnU (2-2)	x	x	x	x	1	FF	3
AnN (2-3)	x	x	x	x	1	x	FF

Accessible station numbers : 1 to 64, FF (self station)
Access not possible : x

- *1 Set the module number of the module connected to network No.1 in the "valid module number when accessing other stations" parameter of the AnUCPU data link parameters.
- *2 Set the module number of the module connected to network No.2 in the "valid module number when accessing other stations" parameter of the AnUCPU data link parameters.



- Other station monitoring range with a network connection

Accessed Station / Station to which A77GOT Connected	AnU (1-1)	AnU (1-2)	AnA (1-3)	AnU (1-4)	A77GOT (1-5)	AnU (2-1)	AnN (2-2)	AnU (2-3)	A77GOT (2-4)
A77GOT (1-5)	1	2	3	4	—	x	x	x	x
A77GOT (2-4)	x	x	x	x	x	1	2	3	—

Accessible station numbers : 0 to 64, FF (self station)
 Access not possible : x

POINTS

- (1) A G controller unit can only monitor one network.
 In an ACPU connection/ bus connection/computer link connection, if the ACPU to which the connection is made is an AnUCPU to which more than one network is connected, set the module number to which the network to be monitored is connected in the "valid module number when accessing other stations" parameter of the AnUCPU data link parameters.
- (2) There is a considerable delay when monitoring the devices of other stations in the MELSECNET/10 network. Monitor the link relays (B) and link registers (W) allocated in the network parameters.

2.4 Restrictions on the Monitor Function in a Computer Link Connection

In a computer link connection, the following functions cannot be used:

- Device write function for devices V and Z (device SET)
- Numeric value and character input function for devices V and Z
- V and Z data change in CPU device test of system monitor function, set value monitoring/data change for T/C monitor, I/O module monitor, special function monitor/data change using dedicated screen
- Ladder monitoring function

2. SPECIFICATIONS

MELSEC-A

2.5 Display Color

The display color that can be displayed on a monitor screen is 15 colors. However, there is limitation of a display color according to an indicator to be used.

- (1) The display color that can be designated by monitoring condition setting is shown in Table 2.5.1.

Table 2.5.1 Range of the Display Color that can be Set (monitoring condition)

Display Data	Range of a Display Color								
Display by monitoring condition data	No.	0	1	2	3	4	5	6	7
	Color	Black	Blue	Red	Purple	Green	Light blue	Yellow	White
	No.	8	9	10	11	12	13	14	—
	Color	Gray	Dark blue	Dark red	Dark purple	Dark green	Dark light blue	Dark yellow	—

- (2) The limitation of a display color by an indicator is shown in Table 2.5.2.

Table 2.5.2 Range of a Display Color for Each Indicator

Display Data	Range of a Display Color								
A77GOT-CL-S5	15 colors								
	No.	0	1	2	3	4	5	6	7
	Designated color	Black	Blue	Red	Purple	Green	Light blue	Yellow	White
	No.	8	9	10	11	12	13	14	—
Designated color	Gray	Dark blue	Dark red	Dark purple	Dark green	Dark light blue	Dark yellow	—	
A77GOT-L-S5 A77GOT-EL-S5	2 gradations								
	Gradation	0	1						
	Designated color	Black	Blue	Red	Purple	Green	Light blue	Yellow	White
		Gray	Dark blue	Dark red	Dark purple	Dark green	Dark light blue	Dark yellow	—
Light and darkness	Dark	Light							

2. SPECIFICATIONS

2.6 I/O Signals and Buffer Memory of G Controller Unit Seen from an ACPU (in Bus Connection)

A G controller unit connected in a bus connection is treated as a special function module by an ACPU.

The I/O signals and buffer memory of the G controller unit, as seen from an ACPU, are stated below.

On the monitor screen, it is possible to check information such as the operating status of the G controller unit using the monitoring function by setting the I/O signals and buffer memory as the monitor device.

For details, see Section 5.

2.6.1 I/O signals

X devices are input signals to the ACPU and Y devices are output signals from the ACPU.

The I/O signals are allocated on the assumption that the G controller unit is installed at slot 0 of the main base module.

Table 2.6.1 I/O Signals

Signal Direction ACPU ← A77GOT		Signal Direction ACPU → A77GOT		
Signal	Signal Name	Signal	Signal Name	
X0	Watch dog timer error detection signal	Y0	Operation panel LED ON/OFF signal	
X1	G controller ready signal	Y1		
X2	(must not be used)	Y2		
X3	Memory card 1 battery error detection signal	Y3		
X4	Vacant	Y4		
X5	Screen switching signal	Y5		
X6	Trigger cycle signal	Y6		
X7	(must not be used)	Y7		
X8		Y8		
X9		Y9		
XA		YA		
XB		YB		
XC	YC			
XD	G controller error detection signal	YD		
XE	(must not be used)	YE		
XF		YF		
X10	Key input signal	Y10	Key input reading completed signal	
X11	(must not be used)	Y11	Back light check disable signal	
X12		Y12	Back light forced OFF signal	
X13		Y13	Cursor movement direction signal	
X14		Y14	(must not be used)	
X15		Y15		
X16		Y16		
X17		Y17		
X18		Y18		
X19		Y19		
X1A		Y1A		
X1B		Y1B		
X1C		Y1C		
X1D		Y1D	G controller reset signal	
X1E		Y1E	(must not be used)	
X1F	Y1F			

IMPORTANT

The areas marked "must not be used" are used by the system and cannot be used by the user.
If such an area is used by the user, correct operation cannot be guaranteed.

(1) Watch dog timer error detection signal (X0)

- (a) This signal is turned ON if the self-diagnosis function of the G controller unit detects a watch dog timer (WDT) error. It is normally OFF.
- (b) If X0 is turned ON, "WDT ERROR" is displayed highlighted. If this message is displayed, reset the G controller unit by pressing the reset switch.
- (c) If X0 is turned ON again after resetting, it indicates a G controller unit hardware error. In this case, the G controller unit must be replaced.

(2) G controller ready signal (X1)

- (a) This signal is turned ON when the G controller starts up and is operating normally.
- (b) The signal is turned OFF if a status which disables continuous operation of the G controller unit occurs. If such a status occurs, reset the G controller unit by pressing the reset switch.
- (c) If X1 is turned OFF again after resetting, it indicates a G controller unit hardware or software error. In this case, the G controller unit must be replaced.

(3) Memory card 1 battery error detection signal (X2)

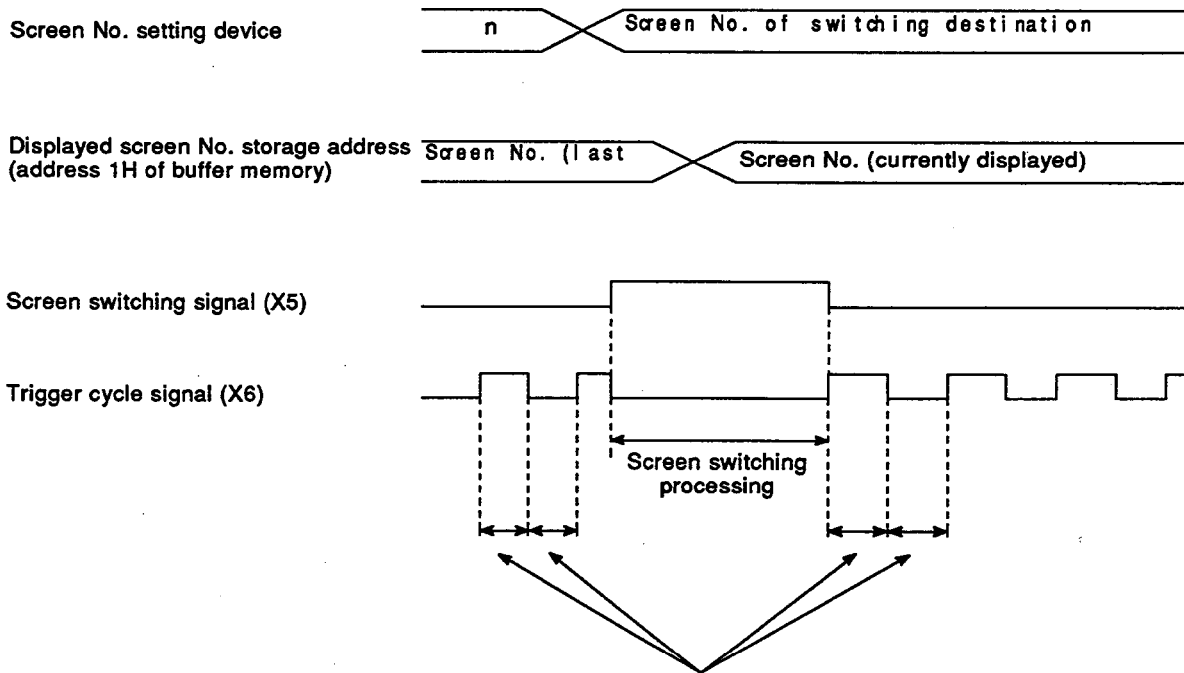
- (a) This signal is turned ON if a battery error of the memory card installed in the G controller unit is detected. It is normally OFF.
- (b) If the memory card 1 battery error detection signal is turned ON, do one of the following (refer to the A77GOT-S5 User's Manual):
 - Change the battery
 - Install the battery correctly

(4) Screen switching signal (X5)

- (a) This signal is turned ON when the G controller unit starts changing the monitoring screen in response to the designation of the monitoring screen number assigned to the screen switching device. It is turned OFF after the completion of screen switching processing.
- (b) The switching destination monitor screen number is stored in address 1H of the G controller unit buffer memory. It is possible to read it using a sequence program. (See Section 2.6.2.)

(5) Trigger cycle signal (X6)

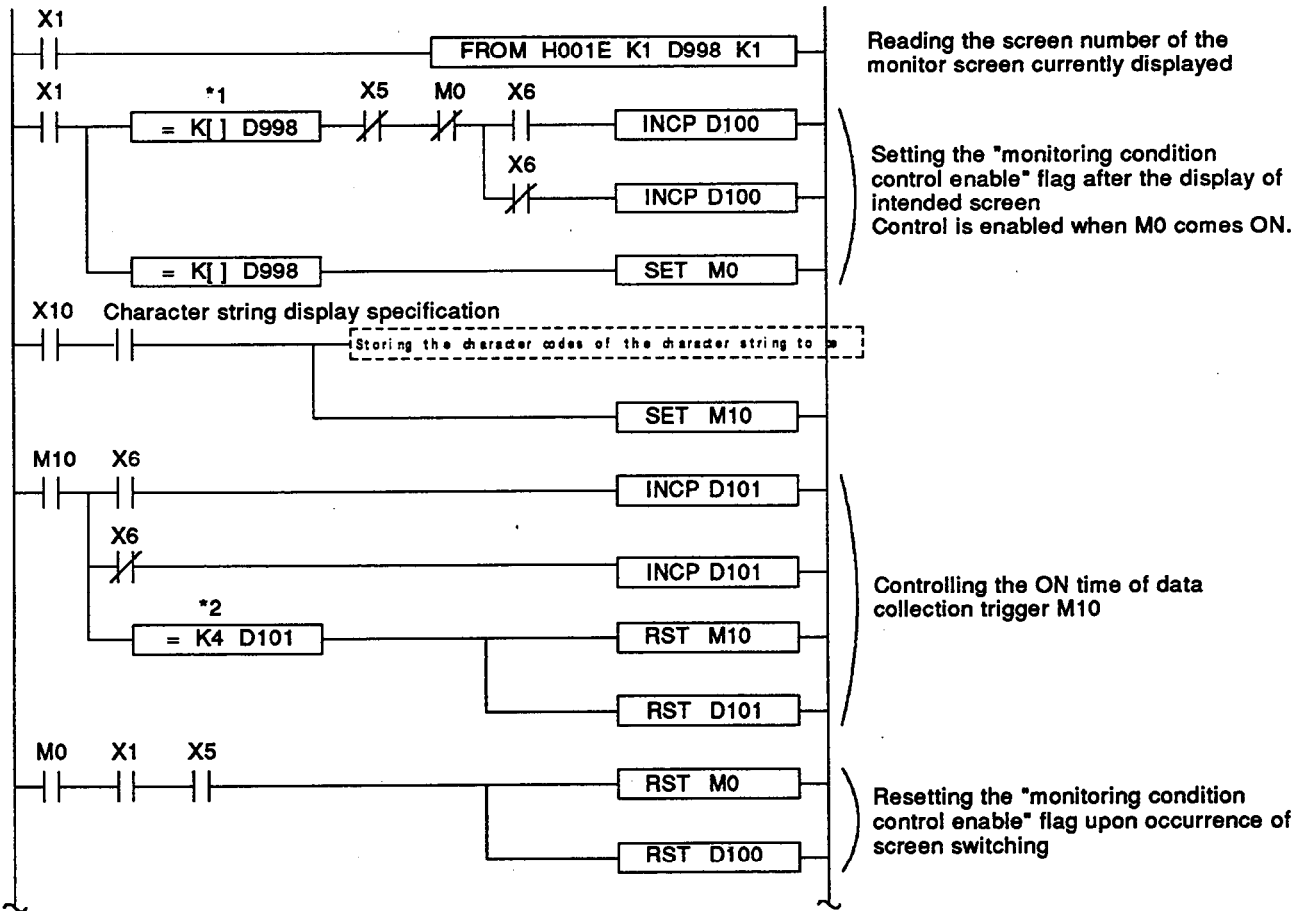
- (a) This signal comes ON and goes OFF each time all the data is displayed by the data collection trigger of the bit device leading/falling edge which is set for the currently displayed monitor screen.
- (b) The trigger cycle signal is turned OFF when the screen switching signal (X5) is ON.
- (c) To display the monitoring function by satisfying monitoring conditions such as the data collection trigger and monitoring device, see the [Example] of the data should be displayed after switching the screen.



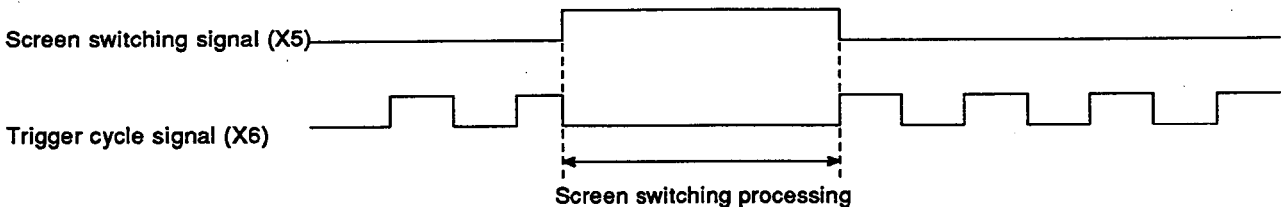
These are the processing time for displaying the data once in accordance with all the data collection triggers which are set for the currently displayed monitoring screen. The processing time varies according to the set constants in the monitoring conditions and the individual settings.

[Example]

- M0 The flag device which indicates that the monitoring condition can be controlled after the display of the intended monitoring screen.
- M10 Data collection trigger device for displaying character strings ("leading edge" is set)
- X1 Ready signal of A77GOT-S5
- X5 Screen switching signal of A77GOT-S5 (ON only during switching)
- X6 Trigger cycle signal of A77GOT-S5 (ON/OFF on each operating cycle)
- D100 ... Device which controls whether or not the designation of monitoring conditions is possible after the display of the intended screen.
- D101 ... Device which controls the ON time of M10 in response to turning ON/OFF of X6
- D998 ... Device in which the screen number of the monitor screen which is currently displayed is stored.



*1 Specify the screen number of the monitor screen on which the character string is displayed.
 *2 Adjust according to the sequence program scan time.



(6) G controller error detection signal (X0D)

- (a) This signal is turned ON if an error which does not prevent the G controller unit from continuing operation is detected. It is normally OFF.
- (b) If the G controller error detection signal is turned ON, read the error code from the buffer memory error code storage area (address 0) of the G controller unit and eliminate the cause of the error. After that, turn ON the G controller error reset signal (Y1D). X0D goes OFF when Y1D is turned ON.
- (c) If the cause of the error is not eliminated after it goes OFF once in response to the turning ON of Y1D, X0D will come ON again.

(7) Key input signal (X10)

- (a) The signal is turned ON in response to a key input from the touch panel or operation panel/ten-key panel.
- (b) The key code of the operated key is stored in the G controller unit buffer memory's input key code storage area (address 12).
- (c) The key input information (ON/OFF information) of the pressed key is stored in the G controller unit buffer memory's touch panel information storage area (addresses 2 to 9).
- (d) When the key input read completed signal (Y10) is turned ON after reading the key input, the key input signal (X10) is turned OFF.
- (e) While the key input signal stays ON, other key inputs are ignored.

(8) Operation panel LED ON/OFF signal (Y0 to YF)

- (a) This signal serves to turn the LEDs of the keys in the operation panel which is connected to the G controller unit ON and OFF.

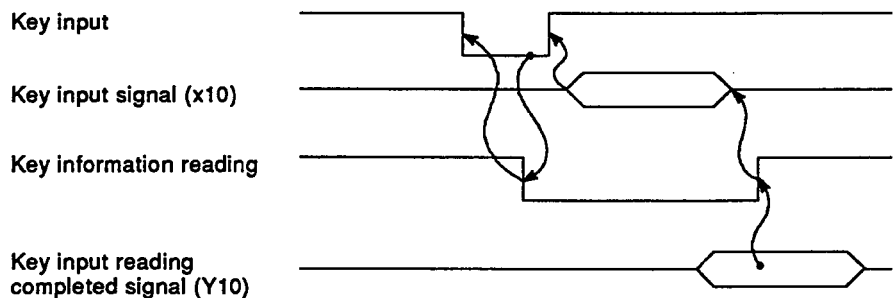
ON: LED lit

OFF: LED not lit

- (b) For the control of Y0 to YF, see Section 15.1.

(9) Key input reading completed signal (Y10)

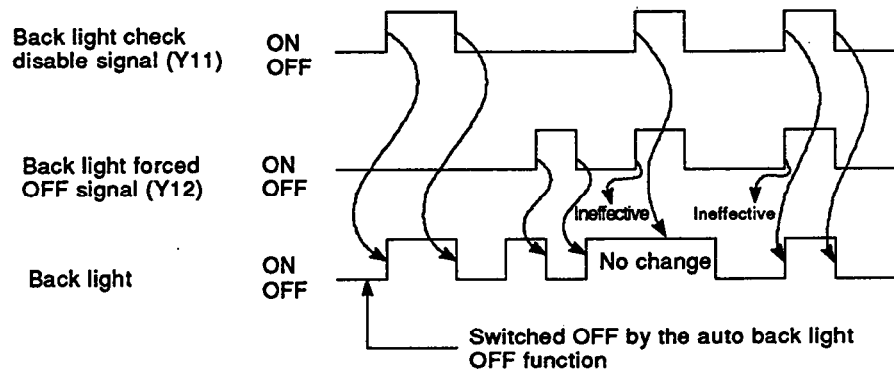
- (a) This signal serves to set the key input signal (X10) to "OFF".
- (b) The key input reading completed signal should be ON/OFF according to the timing shown below.



(10) Back light check disable signal (Y11)

This signal serves to make the auto back light OFF function set using the AGOTP effective or ineffective.

- (a) The auto back light OFF function is ineffective when the auto back light check disable signal is set to "ON" and effective when it is set to "OFF".
- (b) While the back light check disable signal is ON, all processing related to the back light is disabled. Consequently, even if the back light forced OFF signal comes ON it will be ineffective and the back light will remain ON.

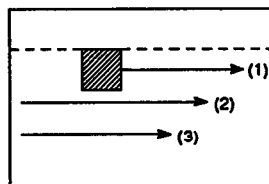


(11) Back light forced OFF signal (Y12)

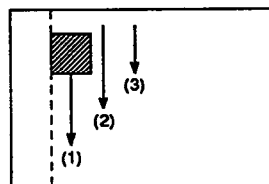
- (a) This signal forces the display's back light OFF.
- (b) The back light is forced OFF when the back light forced OFF signal is set to "ON".

(12) Cursor movement direction signal (Y13)

- (a) This signal specifies the cursor movement direction if more than one numerical value/character input function is set on one screen.
- (b) When the cursor movement direction signal (Y13) is turned OFF, the cursor moves as shown in the figure below after the input of the write trigger (similar movement is controlled by pressing an arrow symbol key [→]).

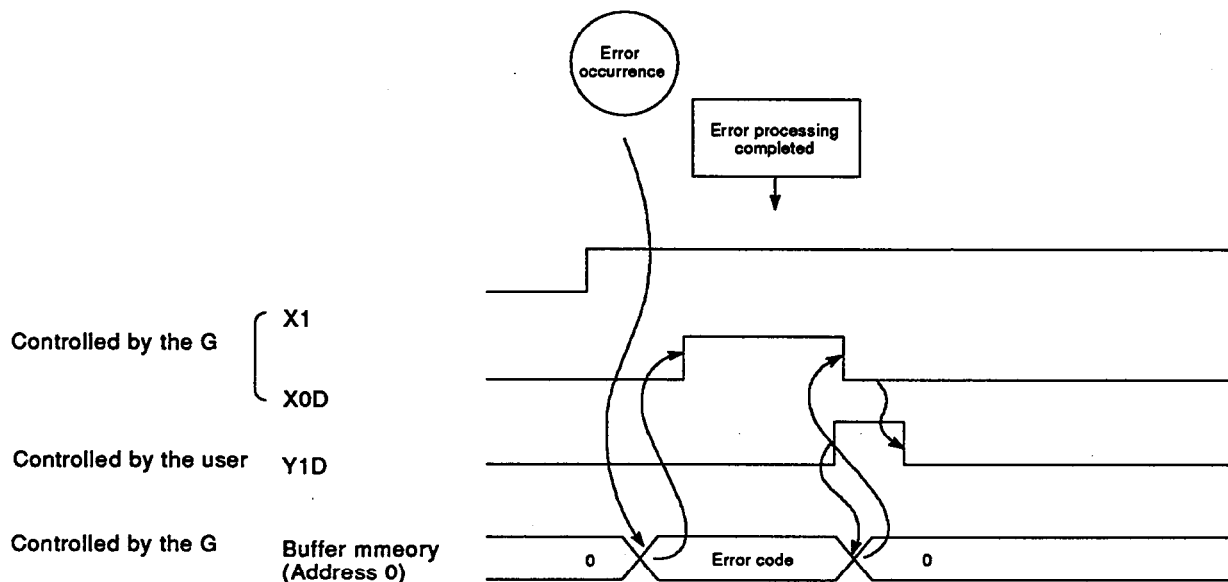


- (c) When the cursor movement direction signal (Y13) is turned ON, the cursor moves as shown in the figure below after the input of the write trigger (similar movement to that caused by pressing the [↓] arrow key).



(13)G controller reset signal (Y1D)

- (a) This signal serves to set the G controller error detection signal (X0D) to "OFF".
- (b) After an error generating factor has been eliminated by setting the error detection signal (X0D) to "ON", set the Y1D to "ON". Set the error reset signal (X0D) to "OFF" after the Y1D has changed to "OFF".



2.6.2 Contents of buffer memory

The monitoring information of the G controller unit and the key input information of the touch panel/operation panel are stored in the buffer memory. An address in the buffer memory consists of 16 bits and the data in an address can be read by executing a FROM instruction in a sequence program.

In a bus connection, if the power supply to the G controller unit only is switched OFF, do not execute a FROM instruction.

If one is executed, the special function module down error (SP. UNIT DOWN) may occur, causing the PC CPU to stop.

Table 2.6.2 Contents of Buffer Memory

Address	Name	Read/Write	Initial Value
0	G controller error code storage area	Read only	0
1	Currently displayed screen No. storage area		0
2 to 9	Touch panel input information storage area		0
10	Current cursor position storage area		0
11	Previous cursor position storage area		0
12	Key code storage area		0
13 to 16	Operation panel/ten-key panel input information storage area		0
17 to 59	(not used)		0

When reading the buffer memory of the G controller unit using a FROM instruction in a sequence program, specify the I/O number of the G controller unit in the FROM instruction in the manner indicated below.

- Head I/O number of the G controller unit (higher 2 digits when expressed in 3 digits)

(Example)

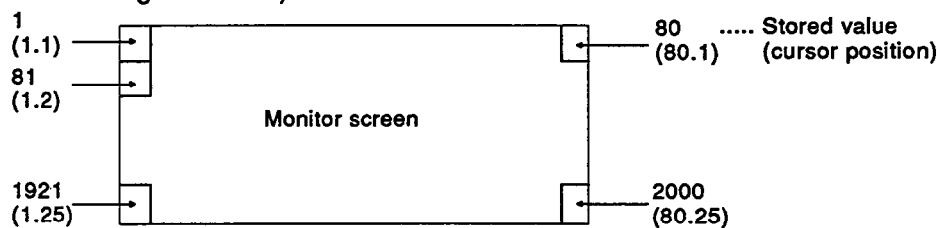
If the head I/O number of the G controller unit is "X/Y20":

Read condition [FROM H K K] Reading the error code
 0002 0 D0 1

POINT

The buffer memory of the G controller unit is a read only memory. If an attempt is made to write data to this area, a G controller unit system error occurs. (Monitoring continues.)

- (1) G controller error code storage area (Address 0)
 - (a) When an error that does not prevent continued operation of the G controller occurs, the error code is stored in this area.
When two or more error codes occur simultaneously the error code is stored in this area.
 - (b) When the error code is stored in this area, the G controller error detection signal (X0D) of the system information is changed to "ON".
Read the error code and eliminate the error generating factor by referring to the error code list.
 - (c) When the G controller reset signal (Y1D) is set to "ON", "0" is stored in this area.
If the error generating factor has not been eliminated, the error code is stored in this area again.
- (2) Currently displayed screen No. storage area (Address 1)
 - (a) The screen number of the currently displayed screen is stored in this area.
 - (b) The screen number data that can be stored is indicated below:
 - 1 to 250: Indicates that a monitor screen created by the user is currently being displayed.
 - 1: Indicates that nothing is currently displayed.
 - 2: Indicates that each screen of the system menu is currently displayed.
- (3) Touch panel input information storage area (Addresses 2 to 9)
 - (a) The information of key operations at the touch panel of the G controller unit is stored in these areas.
 - (b) The bit number of the buffer memory that corresponds to the operated touch panel is turned ON.
 - (c) For the correspondence between the touch panel input numbers and the bits in the buffer memory, refer to Section 15.2.
- (4) Current cursor position storage area (Address 10)
 - (a) If the numerical value input function or character string input function is registered for the currently displayed monitor screen, the current cursor position (position of the right edge column of the relevant input area) is stored in this area as a value in the range 1 to 2000 (see figure below).



- (b) If the numerical value input function or character string input function is not registered for the currently displayed monitor screen, the value "0" is stored in this area.

(5) Previous cursor position storage area (Address 11)

- (a) If the numerical value input function or character string input function is registered for the currently displayed monitor screen, a value within the range indicated in (4) on the previous page is stored in this area in accordance with the number of input areas (registered number) and the execution/non-execution of data input (device writing).
 - 1) Input areas: 1, Data input: not executed
....."0" stored
 - 2) Input areas: 1, Data input: executed
.....The same value as was stored in the current cursor position storage area described is also stored in this area.
 - 3) Input areas: 2 or more, data input: not executed
....."0" stored.
 - 4) Input areas: 2 or more, data input: executed
.....The value stored in the current cursor position storage area in the immediately preceding data input operation is stored in this area.
- (b) If the numerical value input function or character string input function is not registered for the currently displayed monitor screen, the value "0" is stored in this area.

POINTS

- | |
|--|
| <ul style="list-style-type: none">(1) The purpose of the previous cursor position storage area (Address 11) is to enable identification of the input area for the last completed device writing operation.(2) Data should be read from the buffer memory only when necessary. Frequent data reading will influence monitoring processing, causing delays. |
|--|

(6) Key code storage area (Address 12)

- (a) When there is key input from the touch panel, the ten-key panel, or the operation panel, the corresponding key code is stored in this area.
- (b) If a key for which no key code is set is pressed a "0" is stored in this area.
- (c) The key input signal (X10) is turned ON when the key code is stored. Although it goes OFF when the key input reading completed signal (Y10) is turned ON, the data in this area remains unchanged until the next key input.

- (7) Operation panel/ten-key panel input information storage area (Addresses 13 to 16)
 - (a) The information of key input at the operation panel/ten-key panel which is connected to the G controller unit is stored here.
 - (b) The buffer memory bit number which corresponds to the operated key is turned ON.
 - (c) For the correspondence between the input numbers of the individual keys and the bits in the buffer memory, refer to Section 15.2.

3. BASIC INFORMATION THAT SHOULD BE UNDERSTANDDED WHEN DRAWING PARTS ON CANVAS SCREENS

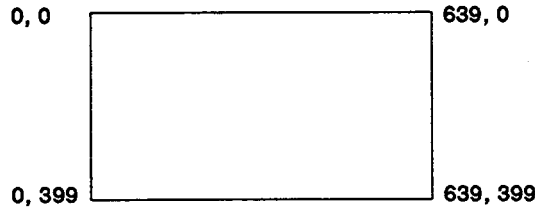
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3. BASIC INFORMATION THAT SHOULD BE UNDERSTANDDED WHEN DRAWING PARTS ON CANVAS SCREENS

3.1 Drawing Range and Usable Graphics and Character-strings

(1) Drawing range

Parts should be drawn in the range defined by coordinate values (0, 0) to (639, 399)



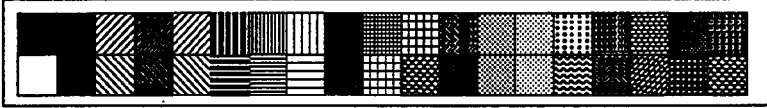
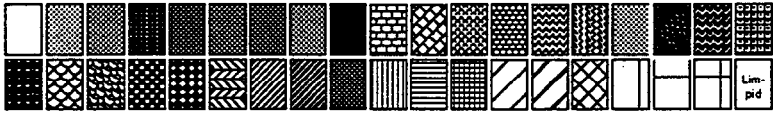
(2) Usable graphics

Graphics	Attributes	Display Example	Comment
Straight line	Line type, line size, display color		—
Continuous straight lines	Line type, line size, display color		—
Rectangle	Line type, line size, display color		Filling to be drawn after drawing the frame
Filled rectangle	Display color, filling pattern		Graphics without rectangular frame
Polygon	Line type, line size, display color		Filling to be drawn after drawing the frame
Circle	Line type (solid line), line size, display color		
Arc	Line type (solid line), line size, display color		—
Oval	Line type (solid line), line size, display color		
Filling	Display color, filling pattern		Only for polygon, rectangle, circle, and oval

3. BASIC INFORMATION THAT SHOULD BE UNDERSTANDDED WHEN DRAWING PARTS ON CANVAS SCREENS

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(3) Attribute types

Attribute	Type	
Line type	5 types	[Solid line _____ , broken line - - - - , dotted line , long and short dash line - . - . - . , long and two short dashes line - . - . - .]
Line size	4 types	[1 dot _____ , 2 dots _____ , 3 dots _____ , 4 dots _____]
Display color	15 colors	[Black, blue, red, purple, green, cyan, yellow, white, gray, dark blue, dark red, dark purple, dark green, dark cyan, dark yellow]
Filling pattern	2 patterns	<p>Pattern 1</p>  <p>Pattern 2</p> 

(4) Usable character-strings

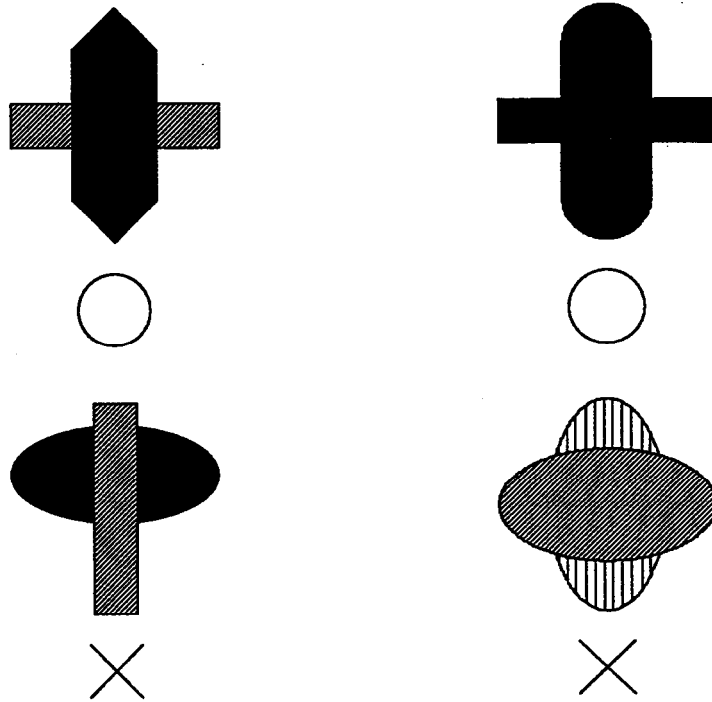
Character-String	Attribute	Character kinds (O: Usable X: Not usable)			Comment
		Normal size	1/4 size	Double size	
Text characters	Display color Display mode (normal/reverse)	O Fixed at normal size (8 x 16 dots)		X	To specify the input start position in units of lines and columns
Graphic characters	Display color (normal display only; for graphic characters, highlighted display is not possible)	O (8 x 16 dots)	X	O (16 x 32 dots)	To specify the input start position in units of dots

3. BASIC INFORMATION YOU SHOULD UNDERSTAND WHEN DRAWING PARTS ON CANVAS SCREENS

3.2 Overlapping Filled Graphics

When overlapping filled graphics, the overlapping graphic must have the same filling pattern as the graphic to be overlapped. The overlapping graphic must also have a solid filling.

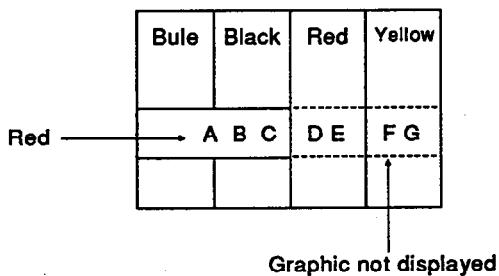
(Examples)



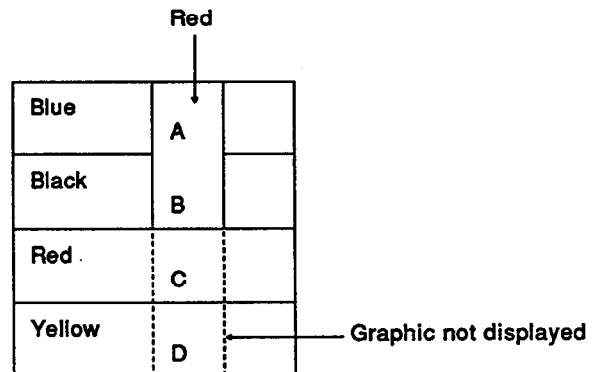
Remark

When a filled polygon intersects with another filled polygon of the same color, the graphic is not displayed from the point of intersection onward.

Example 1: Background colors in vertical stripes;



Example 2: Background colors in horizontal stripes;



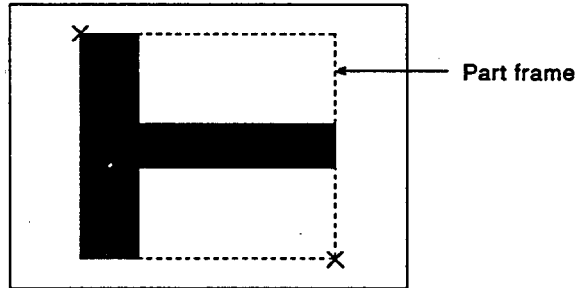
3. BASIC INFORMATION YOU SHOULD UNDERSTAND WHEN DRAWING PARTS ON CANVAS SCREENS

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3.3 Items to be Taken into Consideration when Drawing a Part

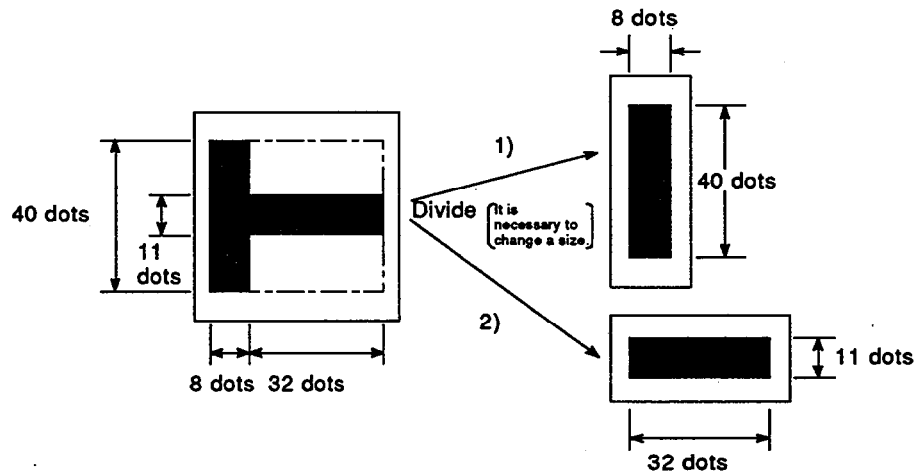
- (1) Draw and register a part drawing so that required memory capacity will be small.

The required memory size varies in proportion to the size (area) of the part frame. The size of the part frame is the size of the rectangle whose sides are the maximum lengths in the X- and Y-axis directions of the part frame.



The "x" symbols are only for reference purposes, to show the size of the part frame.

When the parts above are necessary, it is recommended to divide to several parts to decrease a memory capacity.



Formula to calculate memory capacity for registering parts:

$$\left(\text{Memory capacity of 1 part} \right) = \frac{(\text{Number of the X axis dots of a part frame})}{4} \times 2 \times (\text{Number of the Y axis dots of a part frame})$$

3. BASIC INFORMATION YOU SHOULD UNDERSTAND WHEN DRAWING PARTS ON CANVAS SCREENS

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464 bytes can be economized by dividing parts.

Before dividing

$$800 = \frac{40}{4} \times 2 \times 40$$

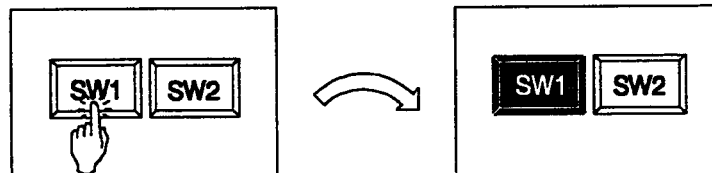
After dividing

$$336 = \underbrace{\left(\frac{8}{4} \times 2 \times 40 \right)}_{\text{Parts of 1)}} + \underbrace{\left(\frac{32}{4} \times 2 \times 11 \right)}_{\text{Parts of 2)}}}$$

- (2) Delete the unnecessary parts which is not used for monitoring.
All parts created by the AGOTP are registered as monitoring data and are written in a built-in memory/memory card regardless of use by monitoring display.
A memory can be economized by deleting parts which is not used for monitoring display.

POINT

A switch or pushbutton switch whose display changes in accordance with the ON/OFF status of a bit device can be displayed by using the touch key graphic display function. (See Section 6.)
This function does not require the switches and pushbutton switches to be registered, which means that the memory area can be used efficiently.



3. BASIC INFORMATION YOU SHOULD UNDERSTAND WHEN DRAWING PARTS ON CANVAS SCREENS

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3.4 Display Color when Display of Text Screen and Graphic Screen is Overlapped

When the display of a text screen and a graphic screen overlap, the display color is as indicated below.

Table 3.4 Display Color after Overlapping Text Screen and Graphic Screen

Color of overlapped part	Black	Blue	Red	Purple	Green	Light blue	Yellow	White	Gray	Dark blue	Dark red	Dark purple	Dark green	Dark light blue	Dark yellow
Black	Black	Blue	Red	Purple	Green	Light blue	Yellow	White	Black	Dark blue	Red	Dark purple	Dark green	Dark light blue	Dark yellow
Blue	Blue	Blue	Purple	Purple	Light blue	Light blue	White	White	Dark blue	Dark blue	Dark purple	Dark purple	Dark light blue	Dark light blue	White
Red	Red	Purple	Red	Purple	Yellow	White	Yellow	White	Dark red	Dark purple	Red	Dark purple	Dark yellow	White	Dark yellow
Purple	Purple	Purple	Purple	Purple	White	White	White	White	Dark purple	Dark purple	Dark purple	Dark purple	White	White	White
Green	Green	Light blue	Yellow	White	Green	Light blue	Yellow	White	Dark green	Dark light blue	Dark yellow	White	Dark green	Dark light blue	Dark yellow
Light blue	Light blue	Light blue	White	White	Light blue	Light blue	White	White	Dark light blue	Dark light blue	White	White	Dark light blue	Dark light blue	White
Yellow	Yellow	White	Yellow	White	Yellow	White	Yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow
White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Gray	White	White	White	White	White	White	White	White	Gray	Gray	Gray	Gray	Gray	Gray	Gray
Dark blue	Dark blue	Dark blue	Dark purple	Dark purple	Dark light blue	Dark light blue	White	White	Dark blue	Dark blue	Dark purple	Dark purple	Dark light blue	Dark light blue	White
Dark red	Dark red	Dark purple	Dark red	Dark purple	Dark yellow	White	Dark yellow	White	Dark red	Dark purple	Dark red	Dark purple	Dark green	White	Dark yellow
Dark purple	Dark purple	Dark purple	Dark purple	Dark purple	White	White	White	White	Dark purple	Dark purple	Dark purple	Dark purple	White	White	White
Dark green	Dark green	Dark light blue	Yellow	White	Green	Light blue	Dark yellow	White	Dark green	Dark light blue	Dark yellow	White	Dark green	Dark light blue	Dark yellow
Dark light blue	Dark light blue	Dark light blue	White	White	Light blue	Light blue	White	White	Dark light blue	Dark light blue	White	White	Dark light blue	Dark light blue	White
Dark yellow	Dark yellow	White	Dark yellow	White	Yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow

4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

4.1 Monitoring Function Setting Capacity on One Screen

The maximum number of monitoring function settings allowed on one screen is indicated below.

Note that the maximum number of settings given below is the allowable setting capacity if no other monitoring function is set.

If other monitoring functions are set on the same screen, calculate the maximum number of monitoring function settings by referring to the formula given in APPENDIX 4.

Table 4.1 Maximum Number of Monitoring Function Settings per Screen

Monitoring Function Name		Maximum Settings/Screen (Bytes)	Comment
Switch function		128	_____
Device write function		3158	
Numeric value and character input function	Numeric value input	182	
	Character input	294	
Numeric value display function	Decimal/Hexadecimal display	958	Display: 2 digits
	ASCII display	450	
Block data display function	Decimal/Hexadecimal display	40	Display: 10 digits Block display type: Vertical Number of blocks: 5 blocks
	ASCII display	27	
Clock display function		1	_____
Character string display function	Bit device	1102	Number of characters: 1 character
	Word device	881	
Alarm list display function		1	_____
Error warning display function		1	
Part display function		800	
Level display function		881	Graph sprite frame 16 x 16 (dots)
Trend graph display function		16	_____
Bar graph display function		54	Number of points: 20 Requested: 5 Data type: 32 bits
Polygonal line graph display function		6	Number of points: 100 Number of graphs: 8 Data type: 32 bits
Spline graph display function		2	Number of points: 100 Number of graphs: 8 Data type: 32 bits
Scatter graph display function	Sampling type	1699	Number of X-axis elements: 1 Number of Y-axis elements: 1 Data type: 32 bits
	Batch display type	27	Number of X-axis elements: 100 Number of Y-axis elements: 100 Data type: 32 bits
Circle graph display		302	Number of elements: 16 Data type: 32 bits
Station number switching function		1	_____

4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4.2 Setting the Character Size and Character Display Position

Setting of the character size and character display position for the display of numeric values, characters, and the alarm list display function, etc., is explained below.

For the character types that can be displayed on the monitor screen, see Section 2.1.

(1) Display size of a character


(X-axis direction x Y-axis direction)

Magnification at the Time of Setting	Input Size/Setting Character Size		Highlighted display
	16 Points	8 Points	
1 time magnification	8 x 16	8 x 8	Normal/reverse can be set.
2 times magnification	16 x 32	16 x 16	
4 times magnification	32 x 64	32 x 32	
8 times magnification	64 x 128	64 x 64	

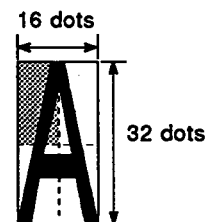
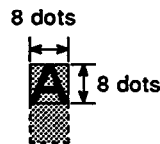
(2) Display position setting and range of reversed display

(a) Setting the display position of characters

For the position that a character is displayed, designate the position of the upper left regardless of the display size of a character.

(Example) Designate the position of  when 8 points and 2 times magnification are set.

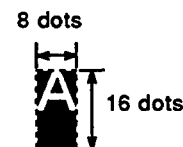
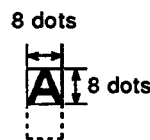
- 1) In case of 8 points 2) In case of 2 times magnification



(b) Reverse range

Reverse display is done in 1 column unit (8 x 16 dots).

When 8-point character (the 8 x 8 dots) is reversed, 1 column (the 8 x 16 dots) range is reversed.

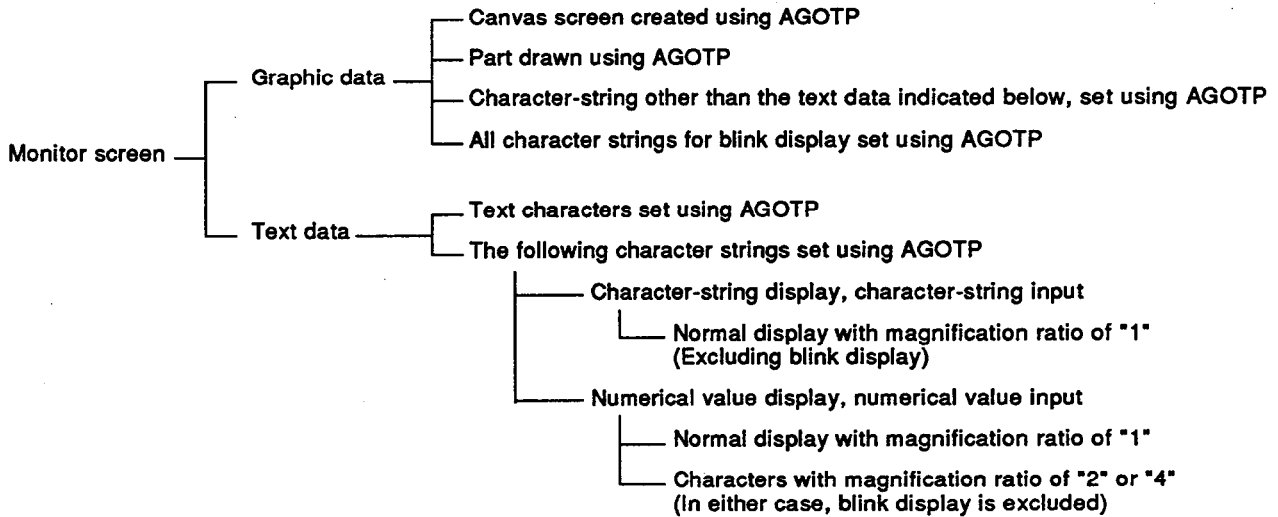


4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

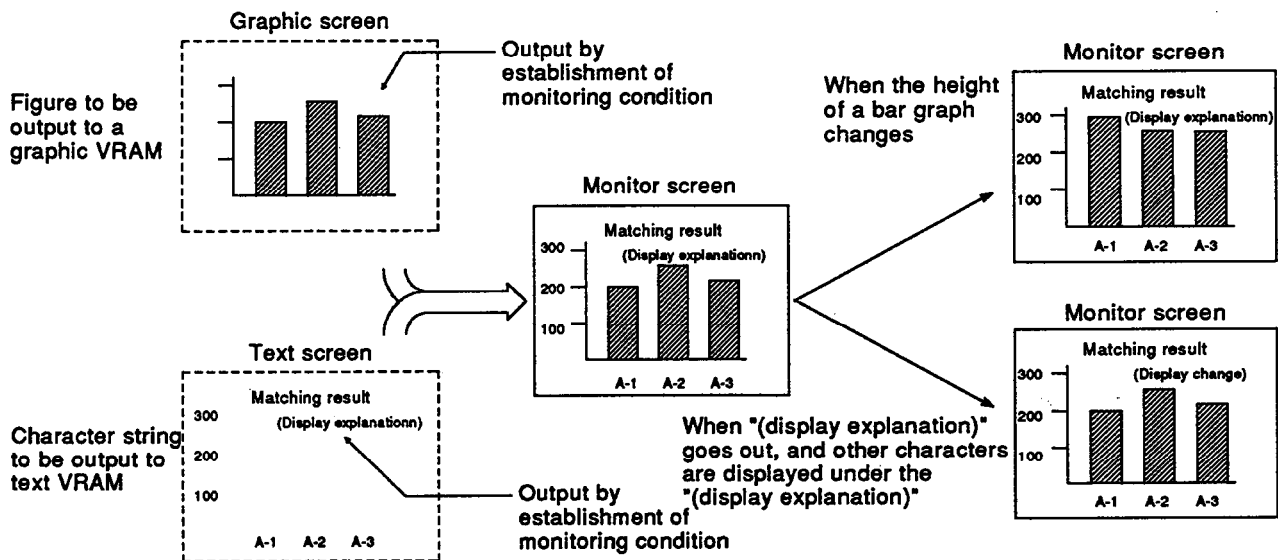
4.3 Overlapping the Setting Positions for Monitoring Functions

4.3.1 Points to be taken into consideration when overlapping setting positions

Display data for the display on the monitor screen are managed as graphic data and text data, and these two different types of data are overlapped on the screen.



(Example)



4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

4.3.2 Display if set positions are overlapped

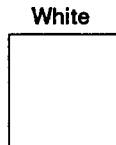
(1) When monitoring functions using graphic data are overlapped

The following applies if graphic data is overlapped with either graphics or graphic text on the canvas screen.

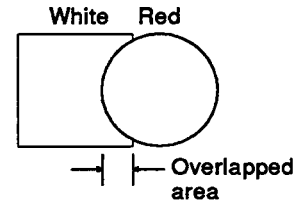
Where the display data overlap, the display color is the color of the data which is displayed last.

In the area where display is not overlapped, the image is displayed in the colors of the individual data.

(Before display)



(After display)



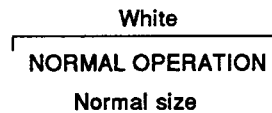
(2) When monitoring functions using text data are overlapped

The following applies if the text data is overlapped with text characters on the canvas screen.

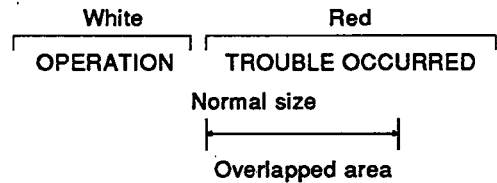
Where the display data overlap, the display color is the color of the character-string which is displayed last.

In the area where display is not overlapped, the text is displayed in the colors of the individual character-strings.

(Before display)



(After display)



4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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- (3) When monitoring functions using graphic data and text data are overlapped

The following applies if a display is overlapped with graphics or graphic characters on the canvas screen or text characters on the canvas screen.

Where the display is overlapped, it is displayed in the colors indicated below.

In the area where display is not overlapped, the image is displayed in the colors of the individual data.

(Before display)

Yellow



(After display)

Yellow (White) Blue



Characters in the overlapped area are displayed in white.

Color of overlapped part	Black	Blue	Red	Purple	Green	Light blue	Yellow	White	Gray	Dark blue	Dark red	Dark purple	Dark green	Dark light blue	Dark yellow
Black	Black	Blue	Red	Purple	Green	Light blue	Yellow	White	Black	Dark blue	Red	Dark purple	Dark green	Dark light blue	Dark yellow
Blue	Blue	Blue	Purple	Purple	Light blue	Light blue	White	White	Dark blue	Dark blue	Dark purple	Dark purple	Dark light blue	Dark light blue	White
Red	Red	Purple	Red	Purple	Yellow	White	Yellow	White	Dark red	Dark purple	Red	Dark purple	Dark yellow	White	Dark yellow
Purple	Purple	Purple	Purple	Purple	White	White	White	White	Dark purple	Dark purple	Dark purple	Dark purple	White	White	White
Green	Green	Light blue	Yellow	White	Green	Light blue	Yellow	White	Dark green	Dark light blue	Dark yellow	White	Dark green	Dark light blue	Dark yellow
Light blue	Light blue	Light blue	White	White	Light blue	Light blue	White	White	Dark light blue	Dark light blue	White	White	Dark light blue	Dark light blue	White
Yellow	Yellow	White	Yellow	White	Yellow	White	Yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow
White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Gray	White	White	White	White	White	White	White	White	Gray	Gray	Gray	Gray	Gray	Gray	Gray
Dark blue	Dark blue	Dark blue	Dark purple	Dark purple	Dark blue	Dark blue	White	White	Dark blue	Dark blue	Dark purple	Dark purple	Dark light blue	Dark light blue	White
Dark red	Dark red	Dark purple	Dark red	Dark purple	Dark yellow	White	Dark yellow	White	Dark red	Dark purple	Dark red	Dark purple	Dark green	White	Dark yellow
Dark purple	Dark purple	Dark purple	Dark purple	Dark purple	White	White	White	White	Dark purple	Dark purple	Dark purple	Dark purple	White	White	White
Dark green	Dark green	Dark blue	Yellow	White	Green	Light blue	Dark yellow	White	Dark green	Dark light blue	Dark yellow	White	Dark green	Dark light blue	Dark yellow
Dark light blue	Dark light blue	Dark light blue	White	White	Light blue	Light blue	White	White	Dark light blue	Dark light blue	White	White	Dark light blue	Dark light blue	White
Dark yellow	Dark yellow	White	Dark yellow	White	Yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow	White	Dark yellow

4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4.4 Data Collection and Display Timing

The following explains the timing in which the G controller unit reads the monitor information in accordance with a data collection trigger condition.

4.4.1 Precautions on setting the data collection trigger

- (1) When setting the monitoring function, the monitoring condition for the data collection trigger should preferably be set as "Ordinary".
- (2) The operation time (processing time) of the following monitoring functions is considerably longer than the processing time required for other monitoring functions. Therefore, it is necessary to adjust the operation timing for these functions.

Monitoring Function		Processing Time (Unit : sec)	Comment
Snapshot	File storage	21.3	For a monitor screen whose screen data capacity is 136 Kbytes
	Redisplay	23	
Spline graph display		0.8 to 11.7	Data collection time and output time for display
Scatter graph (Batch display)		0.6 to 1.5	

- (3) In an ACPU connection, the devices that should be monitored as monitoring condition data collection triggers are devices of the ACPU (host station) of the connected ACPU.
In the data link connection/network connection, monitor link relays (B) and link registers (W) of the host station.
Although it is possible to monitor the devices of other stations, the data transfer time in the data link/network is included in the device monitoring time, and, depending on the conditions, this may cause significant delay.
For example, the data transfer time when reading a device memory in a local station from the G controller unit that is connected to a master station in the MELSECNET mode is longer than 1 sec.
When a G controller unit connected to a control station in the MELSECNET/10 mode reads a device memory in a normal station, the data transfer time is also approximately 1 second.
The following is an example of the calculation of the transfer delay time when monitoring a device in another station. The calculation uses the formula given in the MELSECNET, MELSECNET/B data link system reference manual.

$$\text{Transfer time} = \frac{\text{Transfer delay time A}}{*1} + 1\text{-scan time of connected station (master station)} \times \frac{2}{*2}$$

Condition < LS < M,

M (Scan time of master station) : 100 msec,

a1 (Link refresh time of master station) : 10msec

$$\text{Transfer time} = (M \times 4 + a1 \times 4 + M) \times 2 = (100 \times 4 + 10 \times 4 + 100) \times 2 = 1080 \text{ msec}$$

*1 Refer to the explanation on the data link system transfer delay time given in the corresponding manual.

Transfer delay time A . . . Refer to the explanation of LRDP instruction processing time

*2 *3 for the first communication to the corresponding station after the power is turned ON or after the CPU is reset. When the total number of communication stations is 10 or less, this value is *2 for the second and later communications.

For the transfer delay time when monitoring a device of another station in the MELSECNET/10 mode, refer to the explanation of transfer delay time given in the MELSECNET/10 Network system Reference Manual (PC to PC network).

4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4.4.2 Ordinary monitoring for trigger condition

If the setting is made for ordinary monitoring, data is collected in every sequence program scan (END processing).

Data of up to 40 bytes can be collected in each scan (for details, see POINT below). However, if more than one monitoring function is registered for "Ordinary" collection, the data collection time will be extended.

To allow the monitor data to be read accurately, adjust the ON/OFF time (or data value) using a sequence program, taking into consideration the number of registered monitoring functions and the scan time, so that it lasts for at least 100 msec or for the scan time for cycle transfer in a bus connection/data link connection or network connection.

In other connection modes, there may be cases where one data transmit/receive event requires approximately 300 msec. Therefore, the device status holding time must be adjusted while executing monitoring.

POINT

When some monitoring functions of data collection trigger "Ordinary" are used together, the trigger occurrence timing of those monitoring functions is delayed the used number.

However, if data collection trigger is "Ordinary" when the following monitoring function is used in combination, the G controller collects data together for every group from an applicable device at the time of data collection of 1 time. (Max. 40 bytes/time)

Therefore, the monitoring operation timing is decreased the number of data collection.

Type of a Monitoring Function *1		Explanation Section	Number of Data Collection Bytes per Monitor Device Setting of an Applicable Monitoring Function		
			Bit Device	Word Device (1 word)	Word Device (2 words)
Group 1	Part display	10.3 to 10.5	1	2	—
	Part locus display	10.6	5	6	—
	Part movement display	10.7			
Group 2	Numerical value display	8.1	—	2	4
	Character-string display	9.1	1	—	—
		9.2	—	2	—
	Level display	11.2	—	2	4

*1 When several kinds of above monitoring functions are set on the same monitor screen, the above monitoring function is divided into a group. And then, data are collected together for every group from an applicable monitored device, and each is displayed by monitoring.

- Part display, part locus display and part movement display are is processed as 1 group.
- Numerical value display, character-string display and level display are processed as 1 group.

4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4.4.3 Collection at the leading edge/falling edge of a bit device

- (1) A monitoring function for which leading edge/falling edge is set as the data collection trigger condition reads the device to be monitored and displays the read data on the screen only when the data collection condition is satisfied.

Usually, the function reads the maximum of 40 points of data collection trigger condition devices at one time to check if the data collection condition is satisfied.

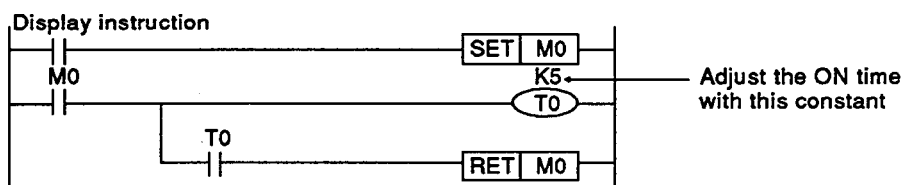
For example, if 10 points of data collection triggers are generated, the function checks whether or not the data collection condition is satisfied in units of 10 points, and executes communications with the ACPU 10 times.

- (2) Adjust the ON/OFF time (or data value) of the bit device or monitor device used as the data collection trigger using a sequence program, taking into consideration the number of registered monitoring functions and scan time, so that it will last at least 100 msec or the scan time for cycle transfer in a bus connection/data link connection or network connection.

In other connection modes, there may be cases where one data transmit/receive event requires approximately 300 msec. Therefore, the device status holding time must be adjusted while executing monitoring.

(Example)

The sequence program when the data collection trigger is set as the leading edge of M0, and the ON time for M0 is set at 500 msec in the program.



POINT

If the bit device for which "Leading edge/Falling edge" is set as the monitoring condition of the data collection trigger is turned ON/OFF by a pulse instruction in a sequence program, the G controller may overlook the coming ON/going OFF of the bit device, depending on the scan time length. Therefore, the bit device must not be turned ON/OFF by a pulse instruction.

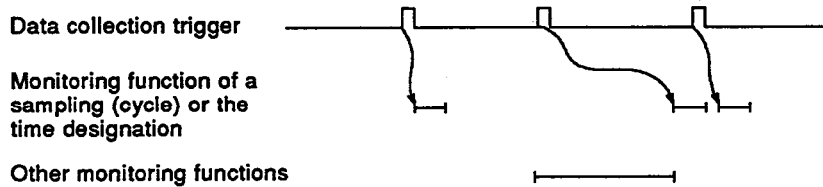
4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4.4.4 Data collection by sampling (cycle) or time designation

Until its processing is completed, when processing other monitoring functions, it waits for data collection:

For example, when data collection condition is established during snapshot printing, data collection is waited until printing is completed.



POINT

If "Sampling" is set as the monitoring condition for the data collection trigger, make the sampling cycle as long as possible. If it is too short, monitoring processing may be delayed and monitoring may be suspended. Check the monitoring operation during debugging.

4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4.5 Accelerating Monitoring Function Display by Reducing Access to the ACPU

- (1) Data collection time of a monitoring device can be shortened by decreasing the number of points to be monitored to be registered in one screen.
(When ACPU executes the "END,FEND,COM" instruction, G controller can communicate with ACPU only one time. The read/write number of points from the device by communicating one time changes according to a function registered in monitoring.)
- (2) Data of 128 bytes can be read by communicating with ACPU one time by setting a monitor device to continuous.
When it is set to random, data of 40 bytes is read by communicating with ACPU one time.
And, monitoring data (data which is stored in an internal memory/memory card) can be reduced by setting continuous.
A graph display function and block data display function can be set to continuous.

4.6 Influence of Monitoring on PC CPU Scan Time

The influence is on one access time, which is determined by the number and types of monitoring functions registered for the currently displayed monitor screen.

Access is made within the END processing time of the ACPU.
The ACPU scan time is influenced in the range 0.6 to 2.6 msec.

4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

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4.7 Blinking Display

- (1) Monitoring functions which permit a blinking display
 - Character-string display function (word device)
 - Alarm list display function
 - Part display function
 - Error alert display function (always blinking during display)
- (2) Number of blink points that can be set per screen

Only one point can be set for blinking display on one screen.

- (3) Blink intervals

The blink intervals can be set to the following values:

- Low speed: 500 msec
- Medium speed: 280 msec
- High speed: 140 msec

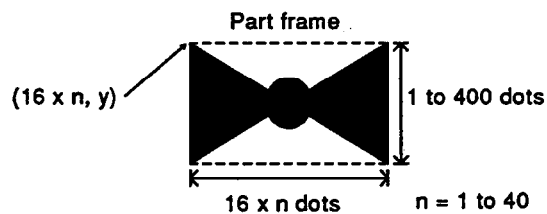
- (4) Range of the blink display

- The range of the blink display for parts and character-strings is defined in 16-dot units in the X-axis direction and in 1-dot units in the Y-axis direction.

- (a) For part display

- 1) The X coordinate of the display position must be set as $16 \times n$ dots.
- 2) The length of a part in the X-axis direction must be equal to $16 \times n$ dots.

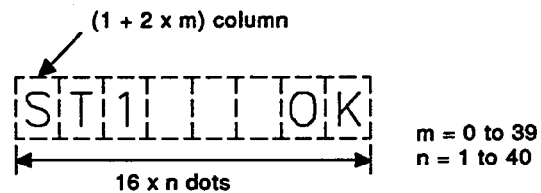
(Example)



- (b) For character-string display

- 1) Column position of the display position must be set to an odd number.
- 2) A character string length must be equal to $16 \times n$ dots.

(Example)



4. POINTS THAT MUST BE TAKEN INTO CONSIDERATION WHEN SETTING MONITORING FUNCTIONS

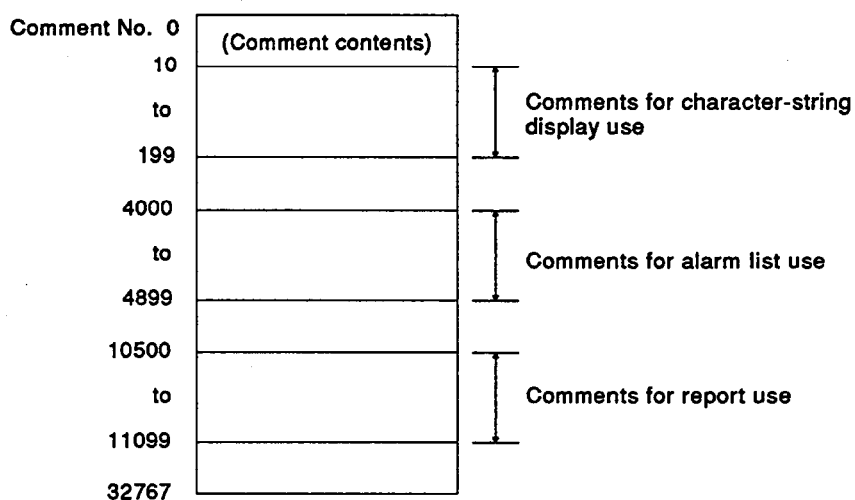
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4.8 Monitoring Functions that can Use Comments Created in the Comment Creation Window

The comments created in the comment creation window can be used for the following monitoring functions.

- (1) Character-string display
- (2) Alarm list function
- (3) Report function

If using all the monitoring functions, it is best to create the comments for each of them at the same time in order to avoid possible confusion. Shown below is an example of the comment range when setting comments in the comment creation window.



5. MONITORING FUNCTION LIST

The list of monitoring functions is presented below.

Table 5 List of G Controller Unit Monitoring Functions

Function		General Description	Reference Section
Switch function		Function that turns ON the specified bit device only while a key on the touch panel/ten-key panel/operation panel is being operated.	6.4 and 6.5
Device writing function	Bit device SET/RST/alternate	Function to turn a specified bit device ON/OFF in response to the operation of a key on the touch panel/ten-key panel/operation panel.	6.6 and 6.7
	Word device SET	Function to write a set value to a storage word device in response to the operation of a key on the touch panel/ten-key panel/operation panel.	6.8 and 6.9
Touch key graphic display function		When touch key graphics are set on the touch panel, this function switches the touch key graphic display in response to the ON/OFF status of a bit device or the specified value of a word device.	6.2
Numerical value and character input function	Numerical value input	Function to write an arbitrary numerical value to a word device or buffer memory in a special function module in response to the operation of a key on the touch panel/ten-key panel/operation panel.	6.10
	Character-string input	Function to write character-string data (ASCII code) to a word device or buffer memory in a special function module in response to the operation of a key on the touch panel/ten-key panel/operation panel.	6.11
Screen switching function		Function to switch the monitor screen from the currently displayed one to another.	7.1
Special key function		Function that switches the screen directly from the currently displayed monitor screen to a system monitor screen or ladder monitor screen.	7.2
Numerical value display function	Numerical value display	Function to display the numerical value in a word device or the buffer memory of a special function module in response to the operation of a key on the touch panel/ten-key panel/operation panel.	8.1
	Character-string display	If the numerical data stored consecutively in the word devices or the buffer memory of a special function module are character codes, the function displays a character-string.	8.2
Block data display function	Numerical value display	Function that displays, in a batch, the numerical values which are stored in consecutive word devices or the buffer memory of a special function module.	8.3
	Character-string display	If the numerical data stored consecutively in the word devices or the buffer memory of a special function module are character codes, the function displays multiple character-strings.	8.4
Clock display function		Function to display the clock of the ACPU. In a data link connection, the clock of the master station is displayed, and in a network connection, the clock of the control station is displayed.	8.5
Character-string display function	Bit device	Function to display the message (comment) that corresponds to the ON/OFF status of a bit device.	9.1
	Word device	Function to display the message (comment) that corresponds to the numerical data in the word device or the buffer memory in a special function module.	9.2

5. MONITORING FUNCTION LIST

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Function		General Description	Reference Section	
Alarm list display function	Multiple comment setting	With messages (comments) corresponding to consecutive multiple bit devices, the function displays the messages corresponding to the devices which are ON in the order of priority.	9.3	
	Single comment setting	With messages (comments) corresponding to consecutive multiple bit devices, the function displays the message given the highest priority among the devices which are ON.	9.4	
Error alert display function		Function that displays the error alert message (blink) if an error occurs.	9.5	
Part display function	Bit device	Function that displays the graphic (part) corresponding to the ON/OFF status of the bit device.	10.3	
	Word device	Indirect	Function that displays the graphic (part) corresponding to the numerical data of the specified word device or the specified buffer memory of a special function module.	10.4
		Direct	Function that displays the graphic (part) assuming the numerical data of the specified word device or the specified buffer memory of special function module to be the part number.	10.5
	Move	Function that displays physical flow using a graphic (part).	10.6	
	Locus	Function that displays physical flow using a graphic (part) with the flow locus remaining on the screen.	10.7	
Level display function		Function that displays the numerical value of a word device or buffer memory of a special function module in the level which represents the ratio of the numerical value to the upper and lower limits.	11.2	
Trend graph display function	Scrolling	Function that collects the numerical data of a word device or buffer memory of a special function module in accordance with a designated timing to display them in trend graph form. If the graph reaches the end of the display area, the function scrolls the screen to display the continuing data.	11.3	
	Overlapping	Function that collects the numerical data of a word device or buffer memory of a special function module in accordance with a designated timing to display them in trend graph form. If the graph reaches the end of the display area, the function displays the next trend graph from the start point, overlapping the previous graph.	11.4	
	Batch display	Function that collects the numerical data of multiple word devices or buffer memory areas of special function modules to display them in a single trend graph.	11.5	
Bar graph display function	Normal	Function that displays the numerical data of multiple word devices or buffer memory areas of special function modules in bar graph form.	11.6	
	Accumulation	Function that accumulates the numerical data of multiple word devices or buffer memory areas of special function modules to display them in bar graph form. It also connect the same elements in the bar graph with dotted lines.	11.7	
Polygonal line graph display		Function that collects the numerical data of multiple word devices or buffer memory areas of special function modules in a batch and displays them in polygonal line graph form.	11.8	
Spline graph display		Function that collects the numerical data of multiple word devices or buffer memory areas of special function modules in a batch and displays them in spline graph form.	11.9	
Scatter graph display function	Sampling	Function that collects the numerical data, corresponded to X-/Y-axis, of a multiple word device or buffer memory area of a special function module in accordance with a designated timing and displays them in scatter graph form.	11.10	
	Batch display	Function that collects the numerical data, corresponding to the X-/Y-axes, of multiple word devices or buffer memory areas of special function modules in accordance with a designated timing and displays them in scatter graph form.	11.11	

5. MONITORING FUNCTION LIST

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Function			General Description	Reference Section
Pie graph display function			Regarding the sum of numerical data of multiple word devices or buffer memory areas of special function modules as 100 %, the function displays the collected numerical data in pie graph form.	11.12
Report function	Real time	Continuous	Function that collects and prints data in response to a data collection trigger.	12.3
		Page	Function that collects and prints data in response to a data collection trigger.	12.4
	Logging	Page	Function that collects data in response to the a collection trigger and stores the collected data in the memory card. When the print trigger is generated, the data stored in the memory card is printed.	12.5
Announcement function			Function that prints the user-defined comment corresponded to the bit device.	12.6
Snapshot function			Function that saves the contents of the monitoring screen when a snapshot trigger is generated and prints them.	12.7
Monitor station switching function			If more than one ACPU uses the same device for the same purpose in a single data link/network system, this function allows the monitoring of the status of multiple ACPU's on the same screen by switching the monitoring PC station number.	13.1
System information function			This function is used to communicate the system information of a G controller unit between the G controller unit and an ACPU using word devices in the ACPU.	14.1
Back light OFF function			Function to turn OFF the back light automatically after the elapse of a set period.	14.2
Time action function			Function to turn ON a bit device at a designated time and to keep it ON until a designated time; the time is referenced to the day and time managed by the ACPU.	14.3

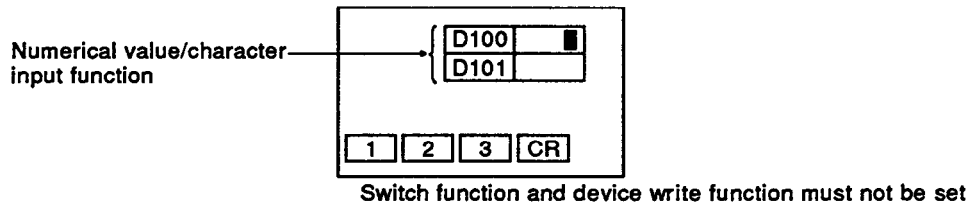
6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

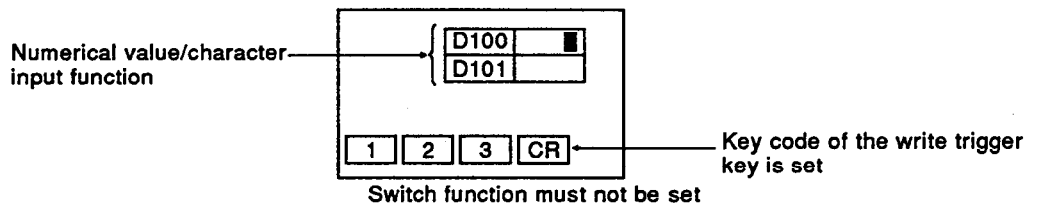
6.1 Basics for Device Write by Touch Panel Input

This section covers the points an operator should be aware of when executing the switch function, device write function, or numerical value/character input function by using a touch panel input operation.

- (1) Do not set the switch function or device write function for a touch panel for which the input key code for a numerical value/character input function is set. If the switch function or device write function is set, it will not be executed.



- (2) Do not set the switch function for a touch panel for which the key code for the write trigger of a numerical value/character input function is also set (the switch function will not be executed if set). Note that the device write function can be set.



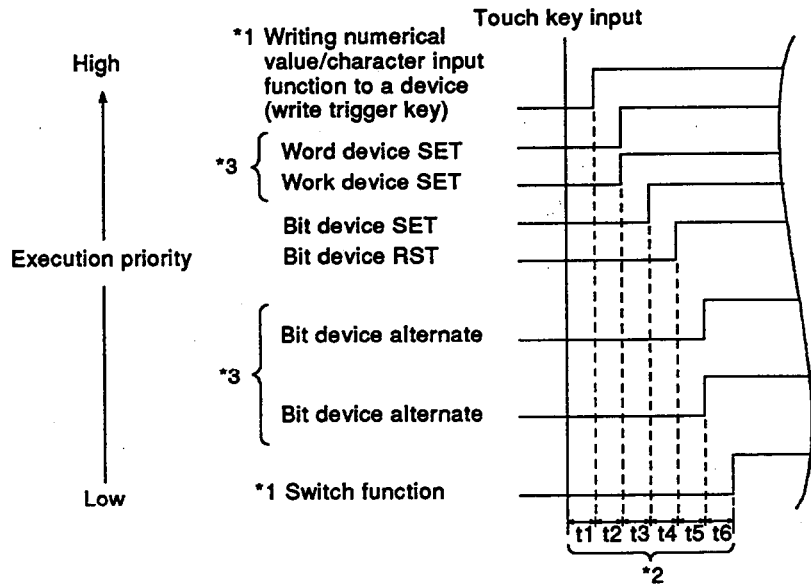
- (3) The allowable number of points that can be set for a touch panel is indicated below.

Write trigger key of numerical value/character input function/switch function	1 point
Device write function (word device SET)	10 points
Device write function (bit device SET)	20 points
Device write function (bit device RST)	20 points
Device write function (bit device alternate)	20 points
Total	71 points

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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- (4) The execution sequence for the device write operation if more than one device write function is set for one touch panel is given below.



*1. Either the write trigger key for a switch function or that for a numerical value/character input function can be set for one touch panel.

*2. The length of each "t_n" is different: it depends on the ACPU scan time and the G controller operation timing.

*3. If more than one write function is set for the same device, the functions are executed in a batch for the same function.

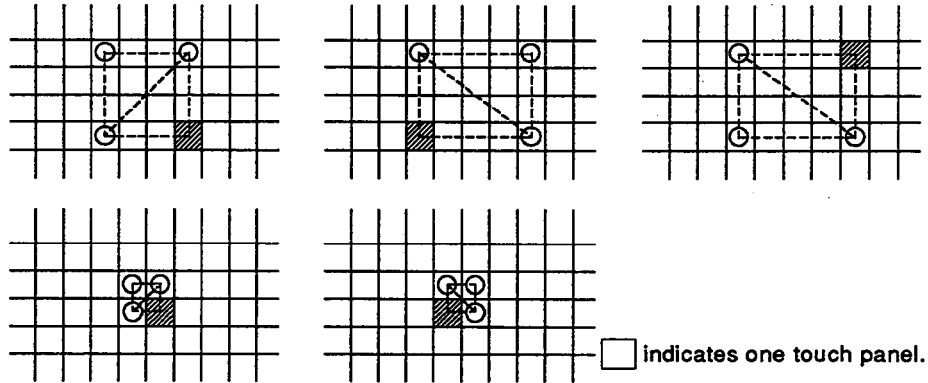
- (5) When executing the switch function or device write (SET/RST) function by touch panel input, it is not necessary to set a key code for the touch key.

When using existing monitor data created with the conventional type of AGOTP, all touch key codes should be "FFH" (no key code).

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

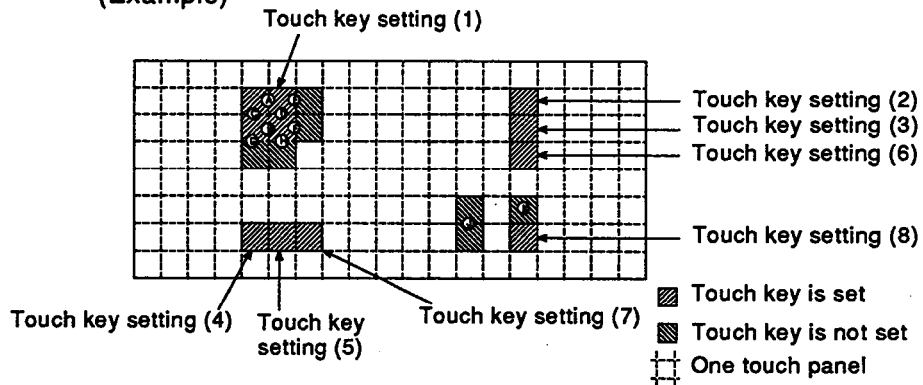
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- (6) If simultaneous inputs are made at the touch panels indicated by "O" below, the key code for inputting the switch function, device write function, or the numerical value/character input function that is set at "■" operates. Therefore, these functions should not be set at touch panel "■". Even if no touch key setting is made at "O", the function set at "■" operates in response to simultaneous input at these touch panels.



Regardless of whether or not the touch panels indicated by "O" are located adjacent to each other, if they are located at the apexes of a right angled triangle, the function set at the touch panel that is located at the fourth apex that would be required to form a rectangle (or square) operates.

(Example)



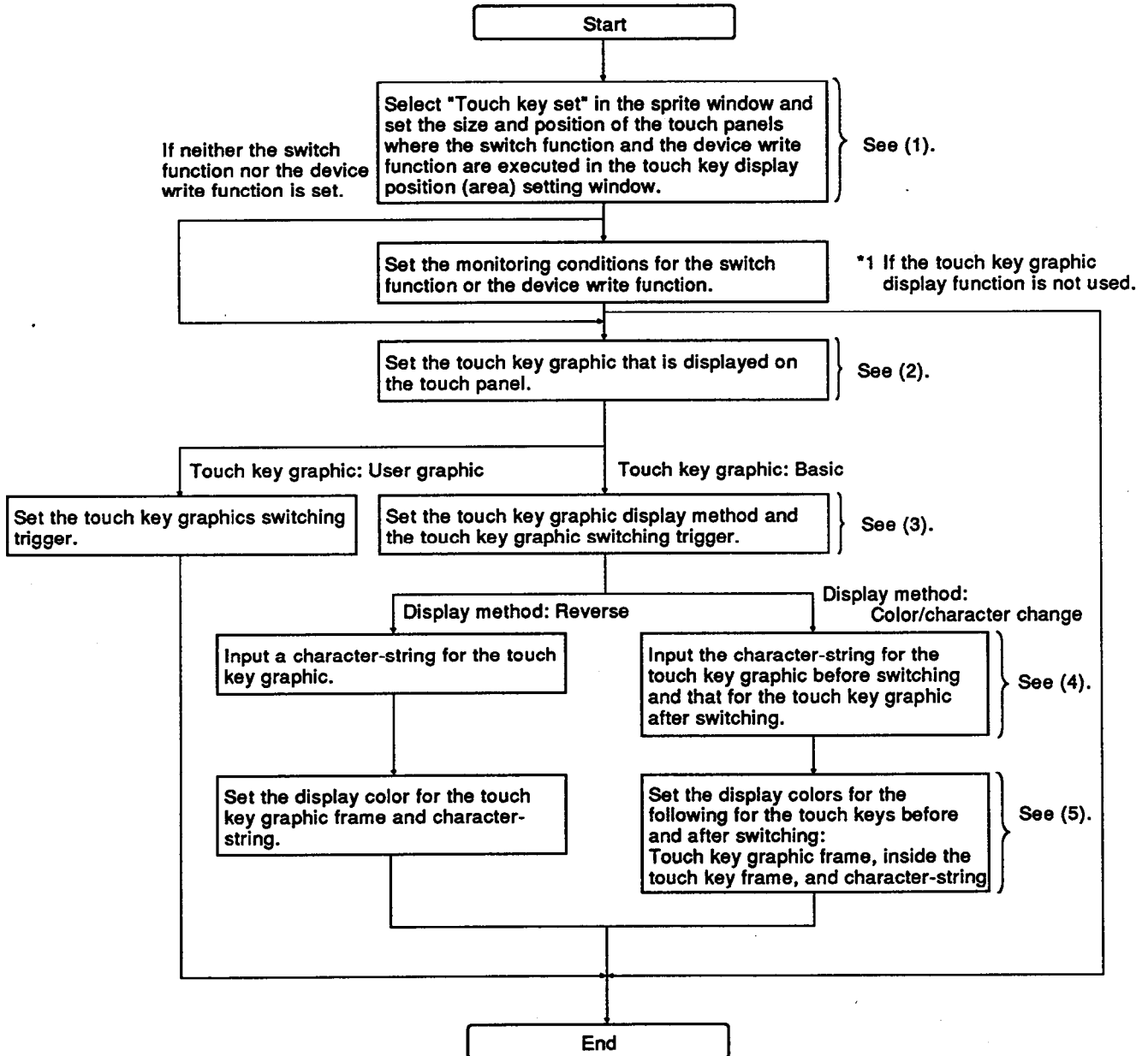
The location where key input is recognized:

- (a) Simultaneous input of A, B, or center + touch key setting (4) → The function set for touch key setting (5) operates.
- (b) Simultaneous input of A, B, or center + touch key setting (5) → The function set for touch key setting (4) operates.
- (c) Simultaneous input of C, D, or center + touch key setting (2) → The function set for touch key setting (3) operates.
- (d) Simultaneous input of C, D, or center + touch key setting (3) → The function set for touch key setting (2) operates.
- (e) Simultaneous input of E or F + touch key setting (5) → The function set for touch key setting (7) operates.
- (f) Simultaneous input of G or H + touch key setting (3) → The function set for touch key setting (6) operates.
- (g) Area J where no touch key is set + Area K where no touch key is set → The function set for touch key setting (8) operates.

6.2 Touch Key Graphic Display Function

The touch key graphic display function registers the touch key graphic and sets the touch key graphic display conditions for a touch panel that is set by the switch function or the device write function. With this setting, the function allows the touch key graphic to be switched according to the specified value of the word device or the ON/OFF status of the bit device. The touch key graphic display function can be set without setting the switch function or the device write function.

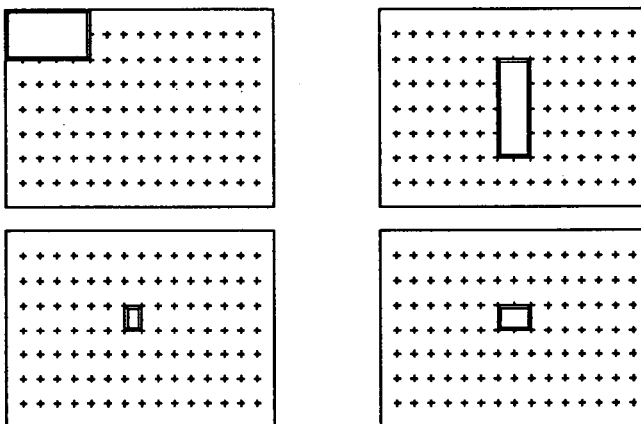
Touch key graphic display function setting procedure



6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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- (1) Display the touch key display position (area) window and set the size and position of the touch panels.
Touch panels can be set to the required size in units of 48 (vertical) dots x 40 (horizontal) dots.



- (2) Set the touch key graphic to be set for the set touch panel. Either of the following two methods can be selected for setting the touch key graphic.

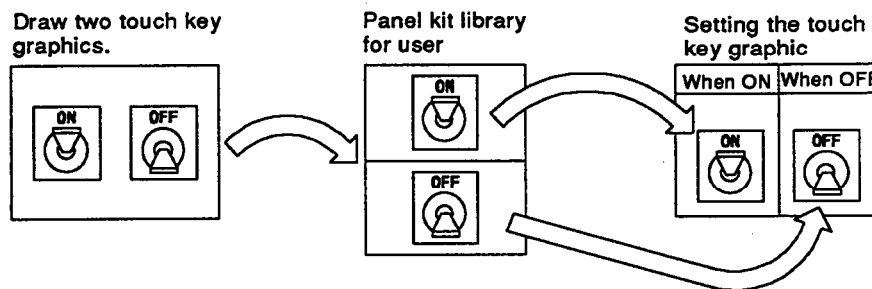
- (a) Selecting the basic graphic 1, 2, or 3 supported by the AGOTP.
(Touch key graphic: Basic)

Basic Graphic 1	Basic Graphic 2	Basic Graphic 3

The basic graphics are displayed to fit the size of the set touch panel.

- (b) Setting a touch key graphic created by the user
(Touch key graphic: User graphic)

When this method is used to set the touch key graphic, the user-defined touch key graphic should first be written to the user library for the panel kit and then read from the user library when the touch key graphic is set.



It is also possible to write the user-defined graphic by editing a graphic in the standard library.

For details of the procedure for drawing the touch key graphic, see the AGOTP Operating Manual.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

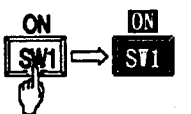
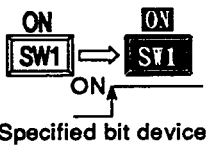
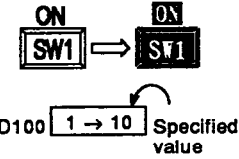
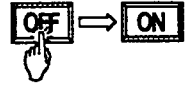
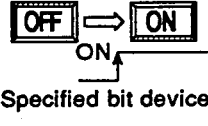
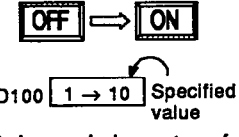
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- (3) Set the touch key graphic display conditions (display method and switching trigger).

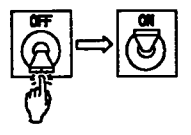
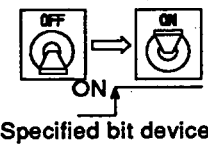
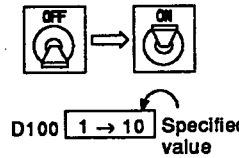
In accordance with the combination of the touch key graphic display method and the switching trigger, the touch key graphic display is switched in the manner indicated below.

Set the display conditions in accordance with the switch function to be set and the objective device of the device write function.

Touch key graphic: Basic

Switching Trigger / Display Method	Touch Key	Bit Device	Word Device
Reverse	 <p>The touch key display is highlighted when the touch key position is pressed.</p>	 <p>The touch key display is highlighted when the specified bit device comes ON.</p>	 <p>The touch key display is highlighted when the value of the specified word device reaches the specified value.</p>
Color/character change	 <p>Color and character of the touch key changes when the touch key position is pressed.</p>	 <p>Color and character of the touch key changes when the specified bit device comes ON.</p>	 <p>Color and character of the touch key change when the value of the specified word device reaches the specified value.</p>

Touch key graphic: User graphic

Switching Trigger / Display Method	Touch Key	Bit Device	Word Device
	 <p>The touch key graphic is switched when the touch key position is pressed.</p>	 <p>The touch key graphic is switched when the specified bit device comes ON.</p>	 <p>The touch key graphic is switched when the value of the specified word device reaches the specified value.</p>

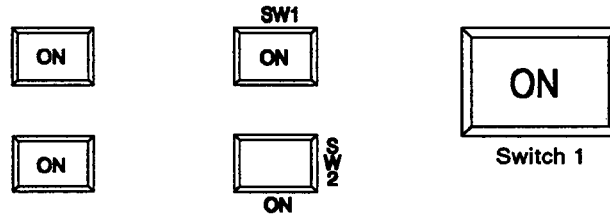
- (4) Input the character-string for the touch key graphic.
 (Input is possible only when "Touch key graphic: Basic" is set.)

The character size of the character-string to be input is selectable from standard size, 1/4 size, and double size.

The character-string can be input at any required position.

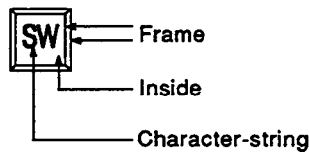
The display color for the input character-string is set using the procedure explained in (5).

[Character-string input example]



- (5) Set the display color for the touch key graphic and character-string.
 (Setting is possible only when "Touch key graphic: Basic" is set.)

Set the colors used to display the touch key graphic frame, character-string, and inside the touch key graphic. If "Display method: Reverse" is selected, the frame and the character-string are displayed in the same color. In this case, the area inside the touch key graphic is always displayed in black.



POINT

Do not overlap canvas screen graphics or character-strings, or other monitoring function displays, with the display position of the touch key graphic and character-string of the touch key. If there is such overlap, the canvas screen graphics/character-strings or other monitoring function displays are not displayed.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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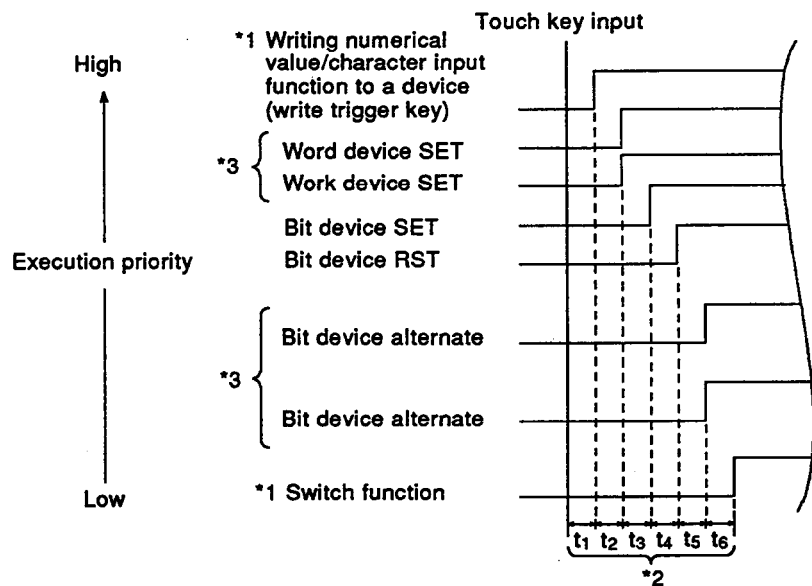
6.3 Basics for Device Write Using Keys of Ten-key Panel/Operation Panel

This section covers the points an operator should be aware of when executing the switch function, device write function, or numerical value/character input function by using ten-key panel/operation panel input operation.

- (1) Do not set the switch function for a key already used for input in a numerical value/character input function, or set it as the write trigger key for a device write function.
- (2) Do not set the switch function for a key already set as the write trigger key of a numerical value/character input function. Note that the device write function can be set.
- (3) The allowable maximum number of points that can be set for a single key is indicated below.

Write trigger key of numerical value/ character input function/switch function	1 point	} Total 71 points
Device write function (word device SET)	10 points	
Device write function (bit device SET)	20 points	
Device write function (bit device RST)	20 points	
Device write function (bit device alternate)	20 points	

- (4) The execution sequence for the device write operation if more than one device write function is set for one key is given below.



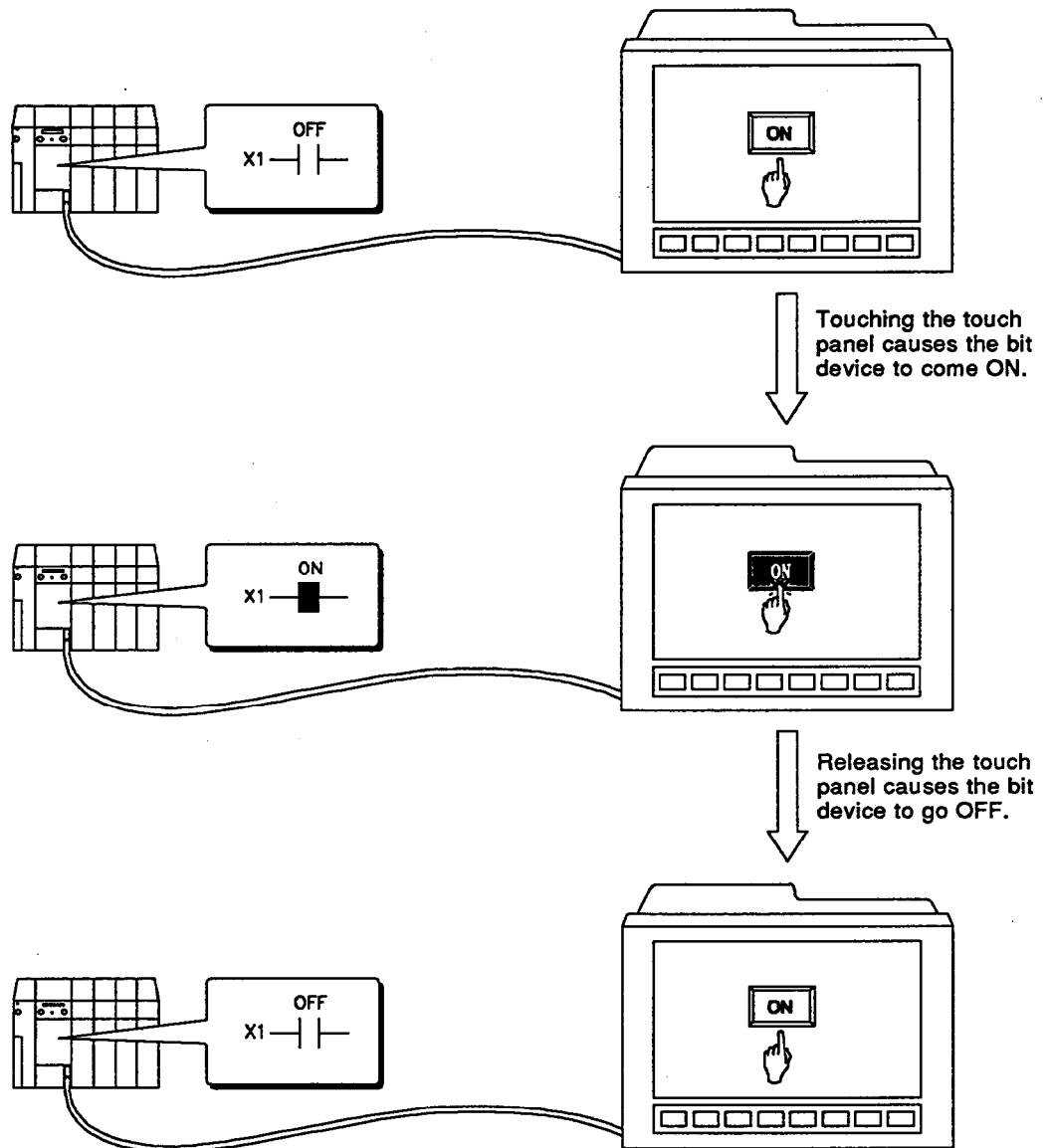
- *1. Either the write trigger key for a switch function or that for a numerical value/character input function can be set for one touch panel.
- *2. The length of each "t_n" is different: it depends on the ACPU scan time and the G controller operation timing.
- *3. If more than one write function is set for the same device, the functions are executed in a batch for the same function.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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6.4 Turning ON a Bit Device only during Touch Panel Input (Switch Function)

[Monitoring example]



[Function]

The switch function turns ON the designated bit device during touch panel input only.

- The touch key graphic can be switched by turning ON/OFF the designated bit device.
- It is also possible to turn ON the designated bit of a word device and buffer memory.
- It is possible to ignore other touch panel inputs during a touch panel input.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Settings by using the AGOTP]

Set the size and position of the touch panel by displaying the touch key display position (area) window and set the monitoring conditions by displaying the touch key setting window.

To display the touch key graphics, set the touch key graphic and display conditions.

(1) Touch key display position (area) setting window

Setting Item	Setting Range/Selection	Comment
Size and position of touch panel	Line: 1 to 8 Column: 1 to 16	See Section 6.2 (1).

(2) Touch key setting window

Setting Item	Setting Range/Selection	Comment																																														
Switch	Designated bit of bit device/word device Setting is possible for up to 128 keys	Designate the bit device for each key.																																														
Simultaneous press prohibition	Yes/No	_____																																														
Touch key graphic	Basic (1/2/3)/user graphic ("None" cancels the setting.)	See Section 6.2 (2).																																														
Touch key graphic display conditions	Touch key graphic: Basic																																															
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6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Complementary explanation of setting items]

(1) Simultaneous press prohibition

For this item, set whether or not touch panel key input is valid during another touch panel key input.

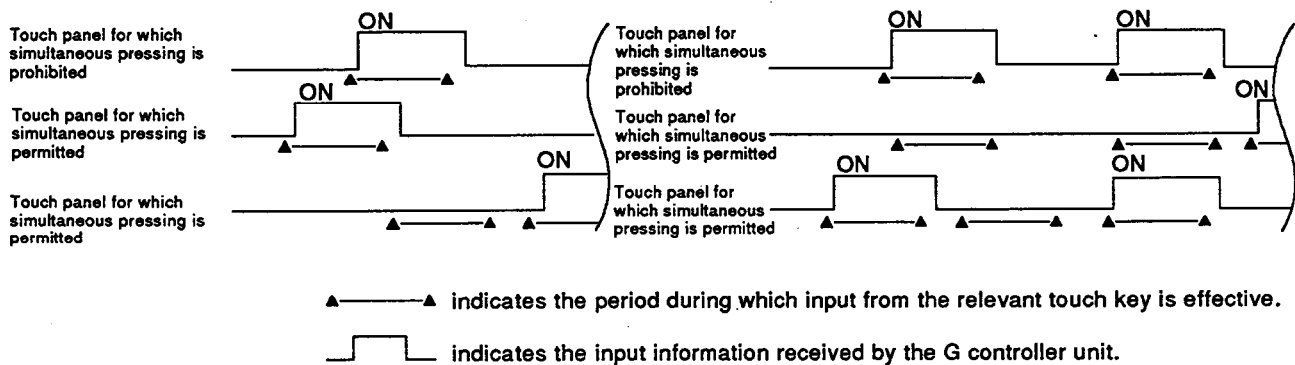
No: Later touch panel key input is invalid.

Yes: Later touch panel key input is valid.

[Notes on using the function]

(1) G controller operation according to the simultaneous press prohibition setting

The example below shows a case where simultaneous pressing is prohibited for some touch panels ("Yes" selected) and permitted for others ("No" selected), and shows the input status at the G controller unit when these touch panels are touched.

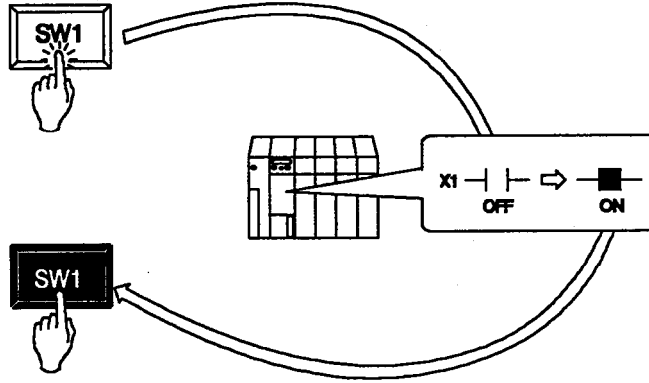


(2) Simultaneous pressing of a touch panel and function key

If a touch panel and a function key below the display unit (or ten-key panel/operation panel) are pressed approximately simultaneously, the input from first key pressed is valid and the other input is ignored. If the inputs are exactly simultaneous, the key input may not function correctly.

(3) Checking the status of the objective device of a switch function

By setting the switching trigger as a bit device (the same device as the objective device of the switch function) after setting the touch key graphic, the status of the objective device of the switch function can be checked.

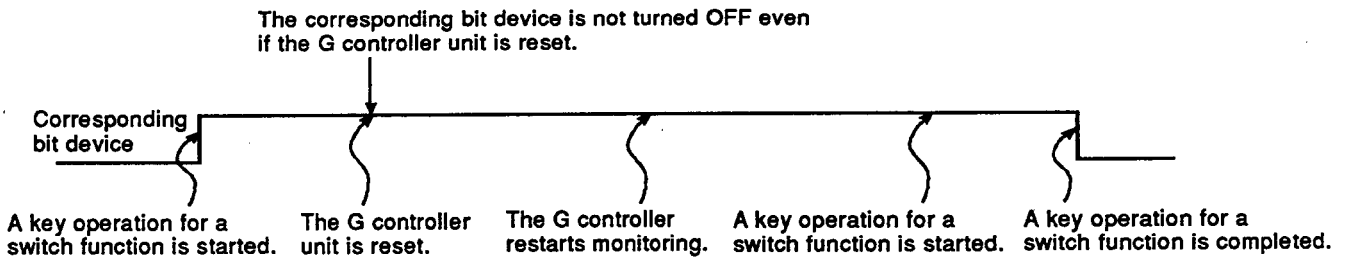


(4) Switching power OFF during switch input

If the power is switched OFF during switch input, the bit device comes ON.

When the bit device is turned ON in the switch function, do not reset the G controller unit.

(Example)



(5) Monitor screen switching request during the execution of switch function

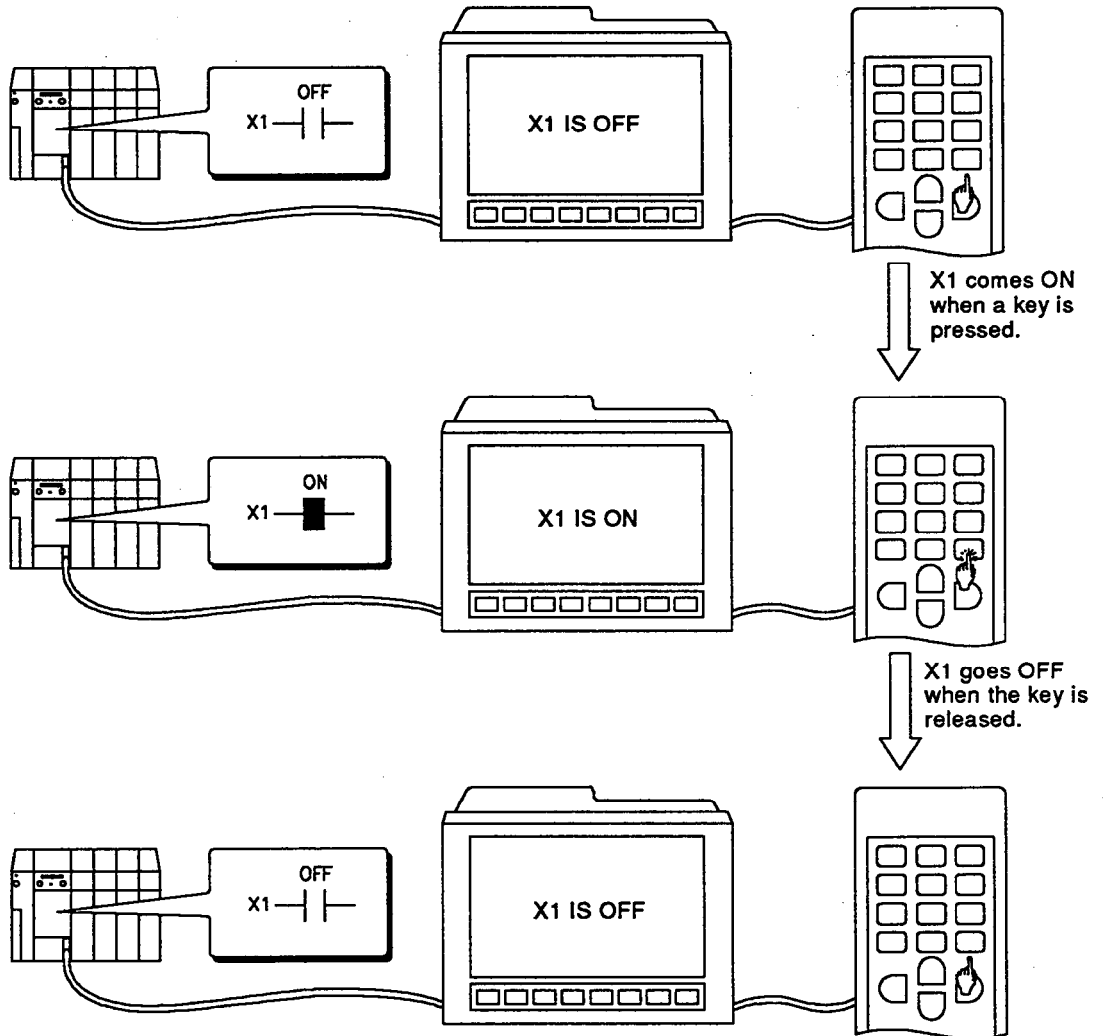
If a request for switching to the monitor screen is made while the switch function is being executed, the screen is switched after the completion of touch panel input.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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6.5 Turning ON a Bit Device only during Key Input at the Ten-key Panel/Operation Panel (Switch Function)

[Monitoring example]



[Function]

The switch function turns ON the designated bit device during key input at the key on the ten-key panel/operation panel only.

- It is possible to turn ON the designated bit of a word device or buffer memory.
- It is possible to turn ON all the set devices by pressing several keys.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Setting by using the AGOTP]

Set the monitoring conditions by displaying the ten key panel (TK) setting window/operation panel (KP) setting window.

Setting Item	Setting Range/Selection	Comment
Switch setting	Designated bit of bit device/word device	Designate the bit device for each key.

[Complementary explanation of setting items]

(1) Switch setting

When setting the numerical value/character input function, execute switch setting for a key which is not used for an input function.

[Notes on using the function]

(1) Simultaneous input from several keys on the ten-key panel/operation panel on which the switch function has been set

The bit devices that are set by the switch function are all turned ON.

(2) Switching the power OFF during key input at the ten-key panel/operation panel

See item (4) in Section 6.3.

(3) Monitor screen switching request during execution of the switch function

If the request for switching to the monitor screen is made while the switch function is being executed, the screen is switched after the completion of key input at the ten-key panel/operation panel.

(4) Checking the status of the objective device of the switch function

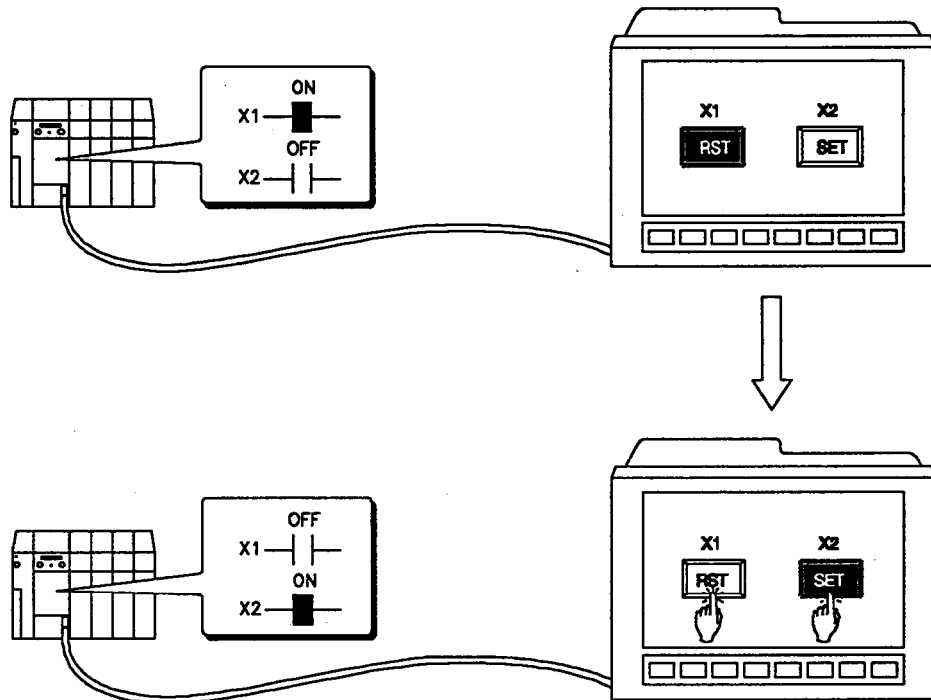
The status of the objective device can be checked by, for example, setting the character-string display function explained in Section 9.1.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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6.6 Turning ON/OFF a Bit Device by Touch Panel Input (Device write function Bit device SET/RST/alternate)

[Monitoring example]



[Function]

This function turns ON/OFF the designated bit device in response to touch panel input.

- The touch key graphic can be switched by turning ON/OFF the designated bit device.
- It is possible to change the current status of the designated device (ON ↔ OFF).
- It is possible to turn ON the designated bit of a word device or buffer memory.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Settings by using the AGOTP]

Set the size and position of the touch panel by displaying the touch key display position (area) setting window and set the monitoring conditions by displaying the device write (SET/RST input) setting window.
To display the touch key graphics, set the touch key graphic and display conditions on the touch key setting window.

(1) Touch key display position (area) setting window

Setting Item	Setting Range/Selection	Comment
Size and position of touch panel	Line: 1 to 8 Column: 1 to 16	See Section 6.2 (1).

(2) Device write (SET/RST input) setting window

Setting Item	Setting Range/Selection	Comment
Operation setting	Bit SET / Bit RST / Alternate (OFF → ON) (ON → OFF) (ON ↔ OFF)	_____
Bit device	Designated bit of bit device/word device	_____

To display the touch key graphic.

(3) Touch key setting window

Setting Item	Setting Range/Selection	Comment																																															
Touch key graphic	Basic (1/2/3)/user graphic ("None" cancels the setting.)	See Section 6.2 (2).																																															
Touch key graphic display conditions	Touch key graphic: Basic																																																
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Character																																																	
Touch key graphic: User graphic																																																	
Display mode	Switching trigger	Touch key/bit device/word device	See Section 6.2 (3).																																														
	Bit device/word device	_____																																															
	Fixed value	-32768 to 32767																																															

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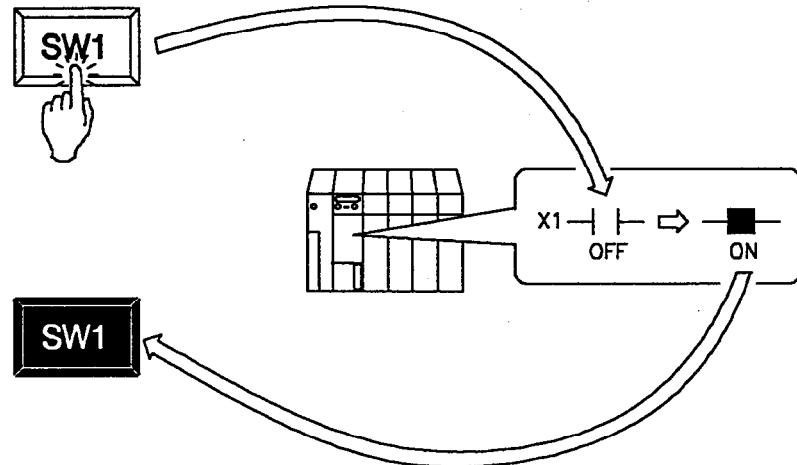
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[Notes on using the function]

(1) Checking the status of the objective device of the device write function

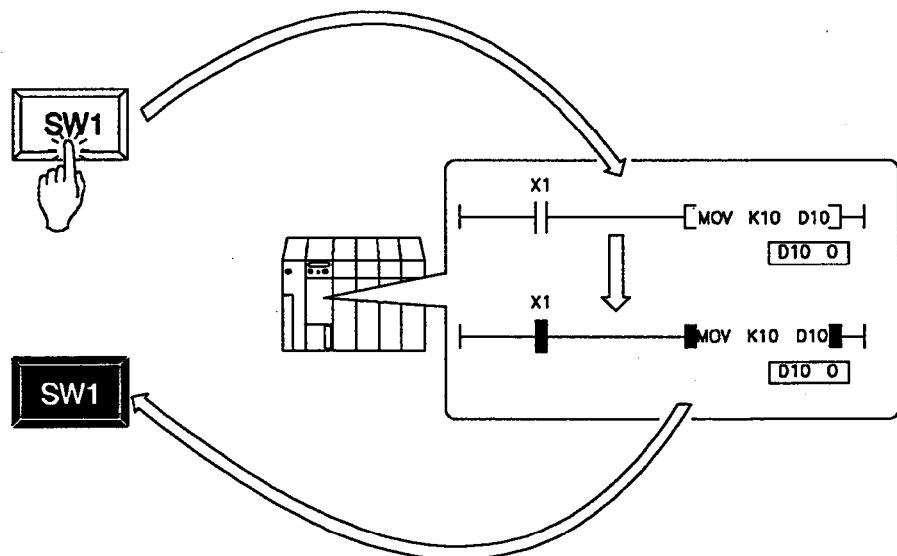
- (a) Check the ON/OFF status of the bit device set for the device write function.

By setting the switching trigger as a bit device (the bit device set by the device write function) after setting the touch key graphic, the ON/OFF status of the objective device can be checked.



- (b) If a fixed value should be written to a word device or buffer memory in response to the OFF to ON status change of the bit device that is set by the device write function, check whether the fixed value has been written.

After setting the touch key graphic, set the switching trigger as a word device (the word device/buffer memory where a fixed value is written in response to the coming ON of the bit device) and set the fixed value to the value that is to be written. This setting makes it possible to check whether or not the fixed value has been written.



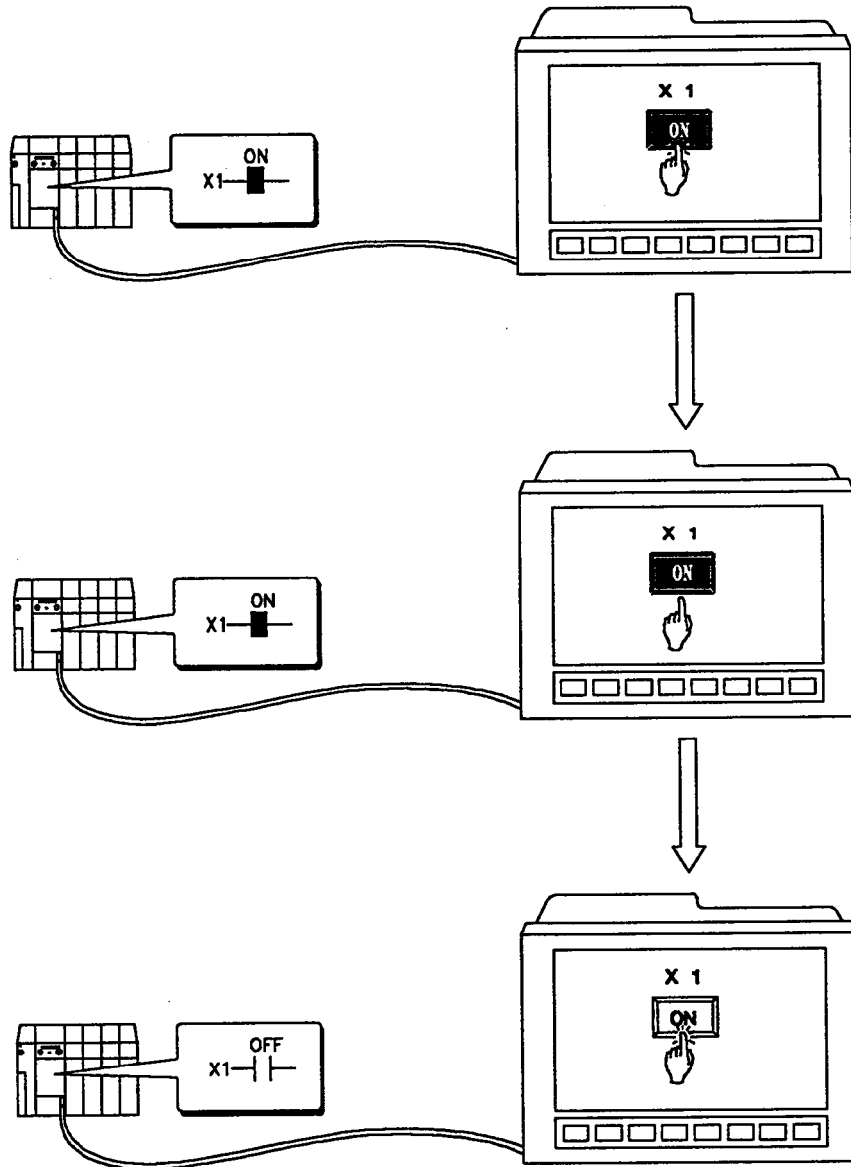
6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Further available operations]

- (1) Changing the current status (ON ↔ OFF) of the designated bit device by touch panel input

In the device write (SET/RST input) setting window, set "Alternate" for "Operation set". This setting enables the current status of the designated bit device to be changed (ON ↔ OFF).

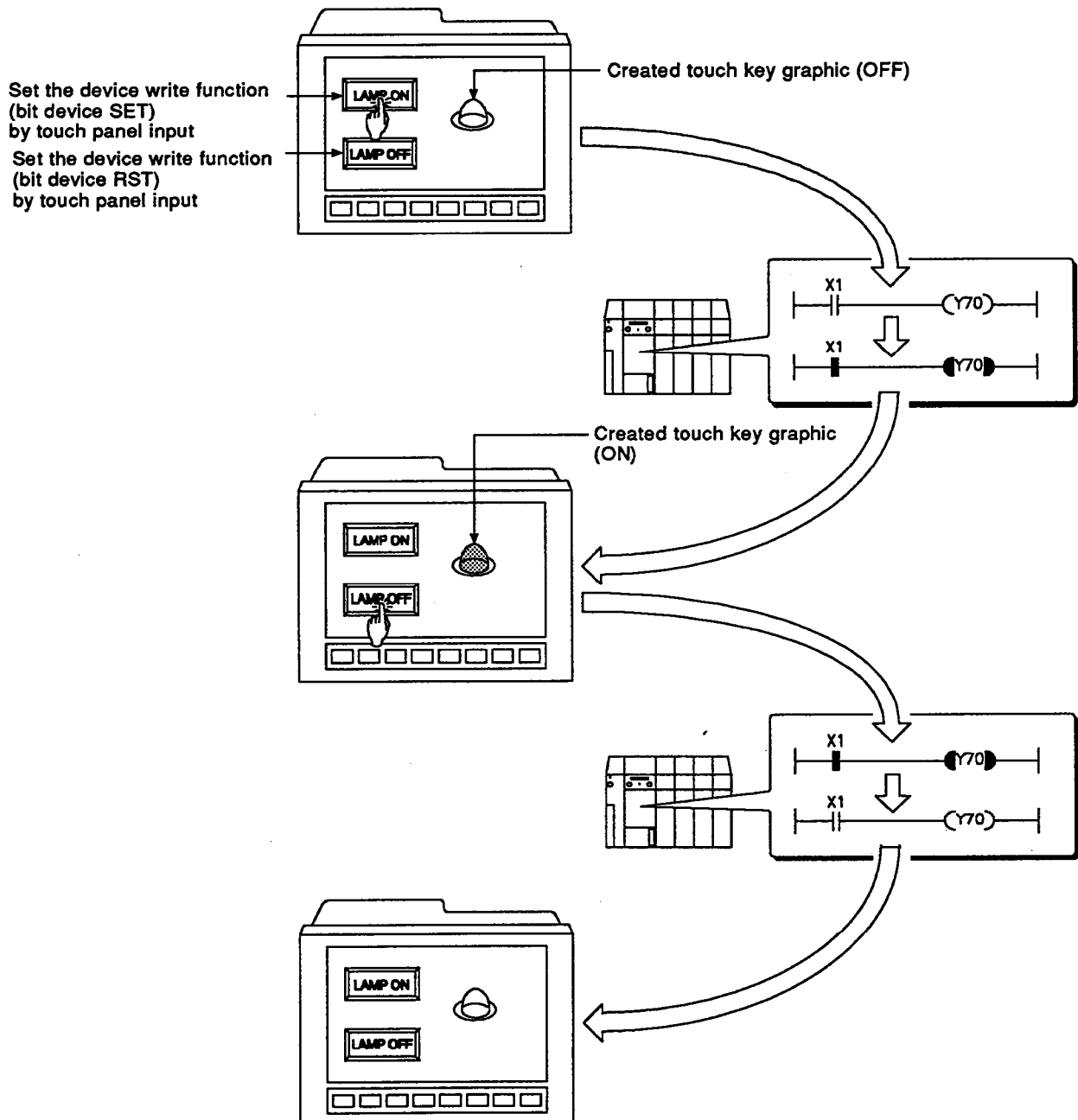


6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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(2) To turn ON/OFF a lamp by turning ON/OFF a bit device

Display the touch key display position (area) window and set the size and position of the lamp to be displayed. Then, after selecting "User graphic" for "Touch key graphic", set the graphics of the lamp (graphic for ON and graphic for OFF), then set "Bit device" for "Switching trigger". This enables display of a lamp which is turned ON and OFF. It is advisable to use this setting in combination with the device write function (bit device SET/RST/alternate).

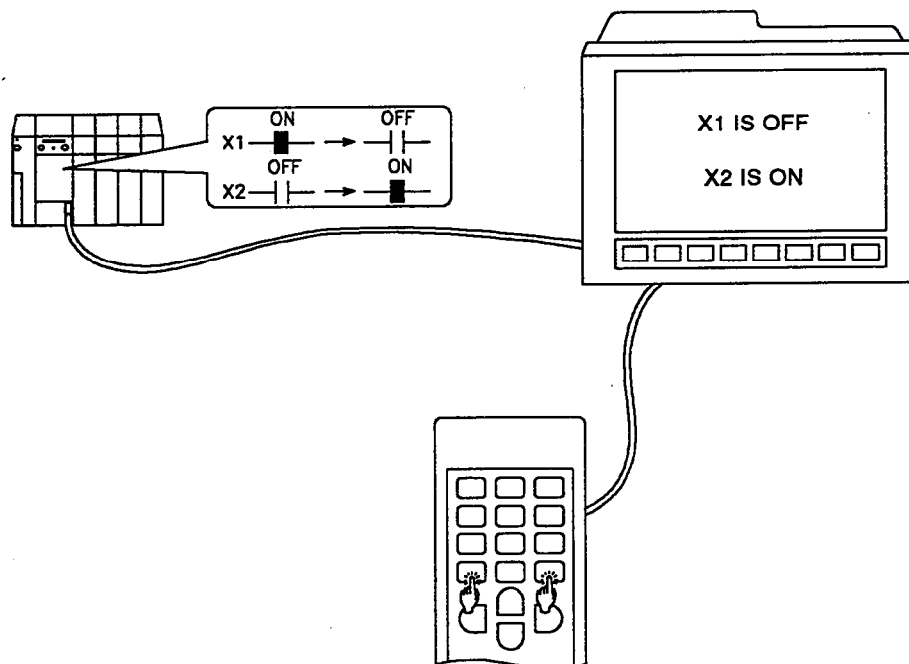


6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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6.7 Turning ON/OFF a Bit Device by Ten-key Panel/Operation Panel Key Input (Device Write Function Bit Device SET/RST/Alternate)

[Monitoring example]



[Function]

This function turns ON/OFF the designated bit device in response to key input at a ten-key panel/operation panel.

- It is possible to change the current status of the designated device (ON ↔ OFF).
- It is possible to turn ON the designated bit of a word device or buffer memory.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Settings by using the AGOTP]

Display the device write (SET/RST input) list window and set the trigger for writing. Set the monitoring conditions in the device write (SET/RST input) setting window.

(1) Device write (SET/RST input) list window

Setting Item	Setting Range/Selection	Comment
Write trigger key	Keys that correspond to 09H to FEH. Set the key code of a key that is not used by the system (see APPENDIX 6). When setting the numerical value/character input function, set the key code of a key that is not used for an input function.	_____

(2) Device write (SET/RST input) setting window

Setting Item	Setting Range/Selection	Comment
Operation setting	Bit SET / Bit RST / Alternate (OFF → ON) (ON → OFF) (ON ↔ OFF)	_____
Bit device	Designated bit of bit device/word device	_____

[Notes on using the function]

(1) Setting the key code

If the device write function is executed using a key in a ten-key panel or operation panel, it is possible to set the key code of the key to be used in the ten-key panel (TK) setting window or the operation panel (KP) setting window of the AGOTP.

The key codes of the keys in the ten-key panel/operation panel are set as the initial key codes. These key codes can be changed.

(2) Checking the status of the objective device of the device write function

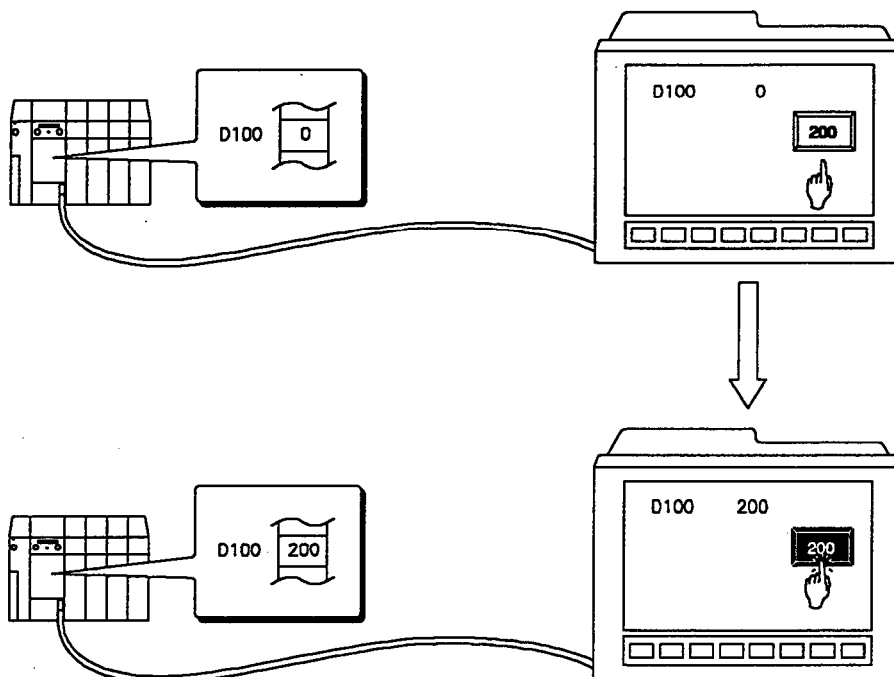
The status of the objective device can be checked by, for example, setting the character-string display function explained in Section 9.1.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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6.8 Writing the Designated Value to a Storage Word Device by Touch Panel Input (Device Write Function Word Device SET)

[Monitoring example]



[Function]

This function writes the designated value to the storage word device in response to touch panel input.

- The touch key graphic can be switched by storing a designated value in the storage word device.
- It is possible to write the current value of the designated word device to the storage word device.
- It is possible to add or subtract the value of the designated word device to or from the current value of the storage word device.

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[Settings by using the AGOTP]

Set the size and position of the touch panel by displaying the touch key display position (area) setting window and set the monitoring conditions by displaying the device write (SET/RST input) setting window. To display the touch key graphics, set the touch key graphic and display conditions in the touch key setting window.

(1) Touch key display position (area) setting window

Setting Item	Setting Range/Selection	Comment
Size and position of touch panel	Line: 1 to 8 Column: 1 to 16	See Section 6.2 (1).

(2) Device write (SET/RST input) setting window

Setting Item	Setting Range/Selection	Comment				
Operation setting	Data SET	_____				
Word device	_____	Storage destination				
Write data	Fixed value / word device / word + fixed value	_____				
Write format	16 bits / 32 bits					
Fixed value	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>16 bits</th> <th>32 bits</th> </tr> </thead> <tbody> <tr> <td>+32767 to -32768</td> <td>+2147483647 to -2147483648</td> </tr> </tbody> </table>	16 bits	32 bits	+32767 to -32768	+2147483647 to -2147483648	Within the range of allowable integers
16 bits	32 bits					
+32767 to -32768	+2147483647 to -2147483648					
Word device	_____	Storage source				

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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To display the touch key graphic.

(3) Touch key setting window

Setting Item	Setting Range/Selection		Comment			
Touch key graphic	Basic (1/2/3)/user graphic ("None" cancels the setting.)		See Section 6.2 (2).			
Touch key graphic display conditions	Touch key graphic: Basic					
		Setting Item	Setting Range/Selection	Comment		
	Display mode	Display method	Reverse/color/character change	See Section 6.2 (3).		
		Switching trigger	Touch key/bit device/word device			
		Bit device/word device	_____			
		Fixed value	-32768 to 32767			
	Switch character	Display method: Reverse	Character type Standard / 1/4 / double size	See Section 6.2 (4).		
		Display method: Color/character change	OFF ON		Character type Standard / 1/4 / double size	
	Display color	Display method: Reverse	OFF	Frame, character Setting display color Inside	See Section 6.2 (5).	
			OFF	Frame Inside Character		
		Display method: Color/character change	ON	Frame Inside Character		Setting display color
			ON	Frame Inside Character		Setting display color
			ON	Frame Inside Character		Setting display color
			ON	Frame Inside Character		Setting display color
	Touch key graphic: User graphic					
		Setting Item	Setting Range/Selection	Comment		
	Display mode	Switching trigger	Touch key/bit device/word device	See Section 6.2 (3).		
		Bit device/word device	_____			
		Fixed value	-32768 to 32767			

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Complementary explanation of setting items]

(1) Write data

Set the data writing format.

- Fixed value : The fixed value is written to the storage word device.
Word device : The current value of the designated word device is written to the storage word device.
Word + Fixed value : The sum of the fixed value and the current value in the storage word device is written to the storage word device.

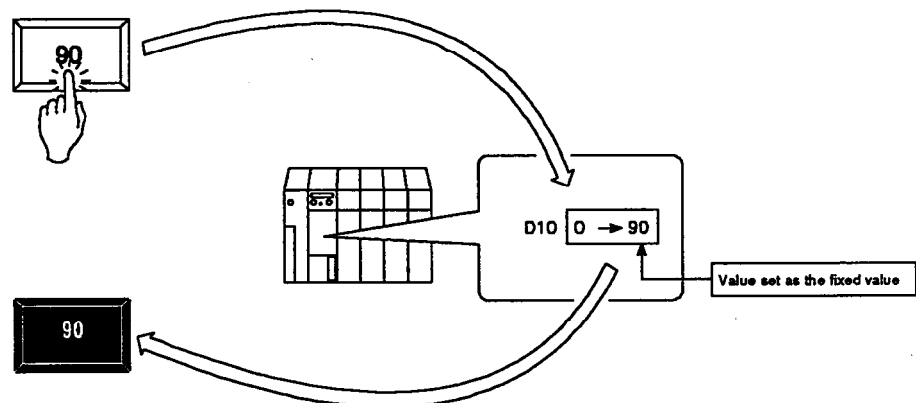
[Notes on using the function]

(1) Checking the status of the objective device of the device write function

- (a) The status of the objective device can be checked by, for example, setting the numerical value display function explained in Section 8.1.
- (b) After setting the touch key graphic, set the switching trigger as a word device (the same word device as the storage device that is set by the device write function) and set the fixed value to the value that is to be written. This setting makes it possible to check whether or not the fixed value has been written.

(Example)

Writing the fixed value of 90 to D10 by touch panel input



6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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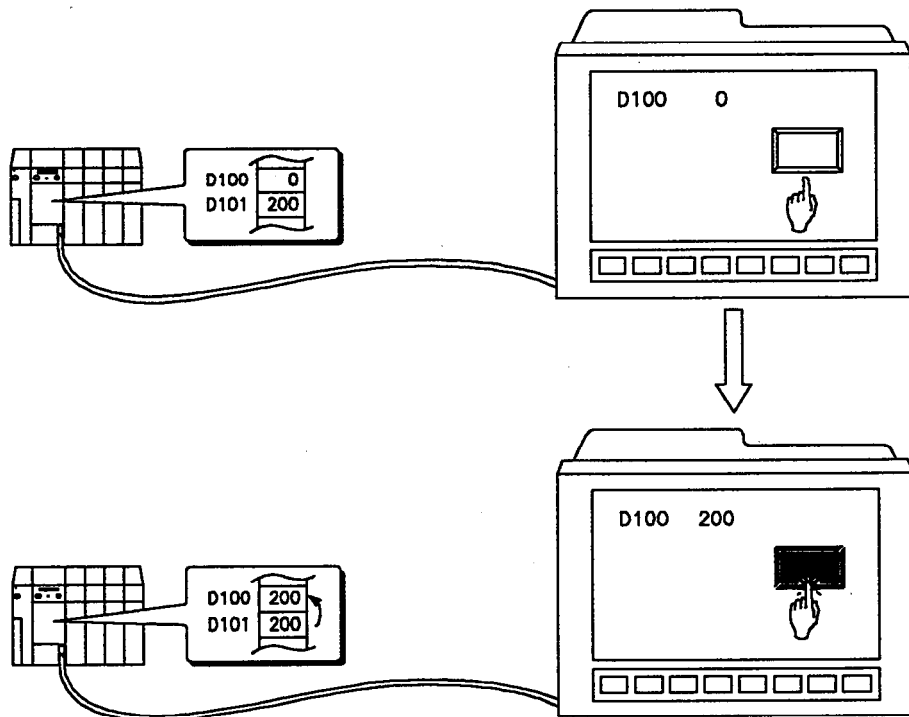
[Further available operations]

- (1) Writing the current value in a designated word device to a storage word device by touch panel input

In the device write (SET/RST input) setting window, set "Write data" for "Word device", and then setting the "Storage source word device" (the word device that contains the present value to be written), the present value of a designated word device can be written to a storage word device.

(Example)

Writing the current value of D101 to D100 by touch panel input.



6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

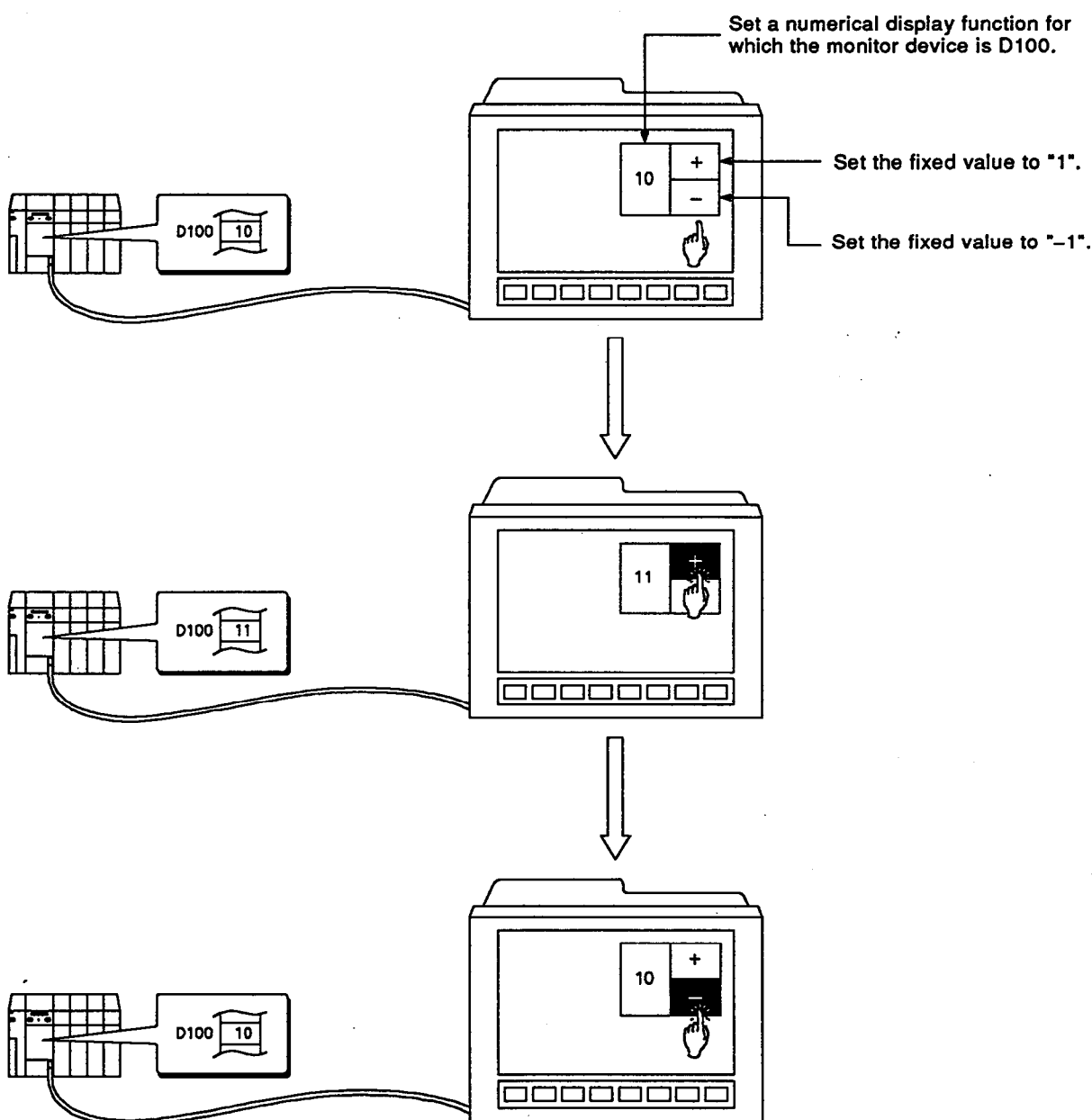
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- (2) Increasing/decreasing the value currently stored in a word device by touch panel input

In the device write (SET/RST input) setting window, set "Write data" for "Word + Fixed value", and then setting the value to be added to or subtracted from the value currently stored in the word device for "Fixed value", the value in the word device can be incremented or decremented.

(Example)

Incrementing the value in D100 by one each time the [+] touch panel is pressed and decrementing it by one each time the [-] touch panel is pressed.

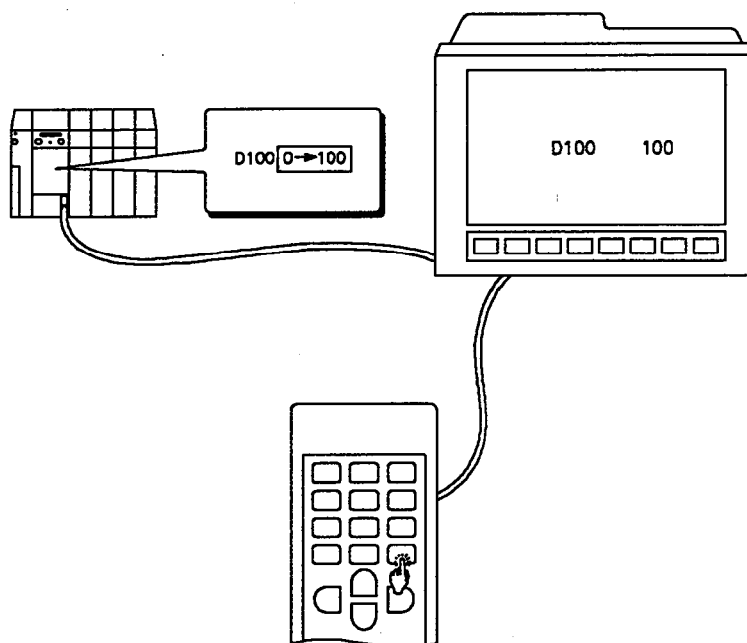


6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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6.9 Writing to Devices by Key Input from Ten Key Panels/Operation Panels (Device Write Function Word Device SET)

[Mounting example]



[Function]

This function writes a designated value to a storage word device in response to key input from a touch key panel or operation panel.

- The function can also be used to write the current value of a designated word device to a storage word device.
- It can also be used to increase or decrease the value currently stored in a word device.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Settings by using the AGOTP]

Set the write trigger in the device write (SET/RST input) list window, and set the monitor condition in the device write (SET/RST input) setting window.

(1) Device write (SET/RST input) list window

Setting Item	Setting Range/Selection	Comment
Write trigger key	Keys that correspond to codes 09H to FEH. Set the key code of a key that is not used by the system (see APPENDIX 6). When setting the numerical value/character input function, set the key code of a key that is not used for an input function.	_____

(2) Device write (SET/RST input) setting window

Setting Item	Setting Range/Selection	Comment				
Operation setting	Data SET	_____				
Word device	_____	Storage destination				
Write data	Fixed value / word device / word + fixed value	_____				
Write format	16 bits / 32 bits					
Fixed value	<table border="1"> <thead> <tr> <th>16 bits</th> <th>32 bits</th> </tr> </thead> <tbody> <tr> <td>+32767 to -32768</td> <td>+2147483647 to -2147483648</td> </tr> </tbody> </table>	16 bits	32 bits	+32767 to -32768	+2147483647 to -2147483648	Within the range of allowable integers
16 bits	32 bits					
+32767 to -32768	+2147483647 to -2147483648					
Word device	_____	Storage source				

[Complementary explanation of setting items]

(3) [Write data]

See the [Complementary explanation of setting items] in Section 6.8.

[Notes on using the function]

(4) Setting key codes

See (1) under [Notes on using the function] in Section 6.7.

(5) Confirming the status of the objective device of the device write function

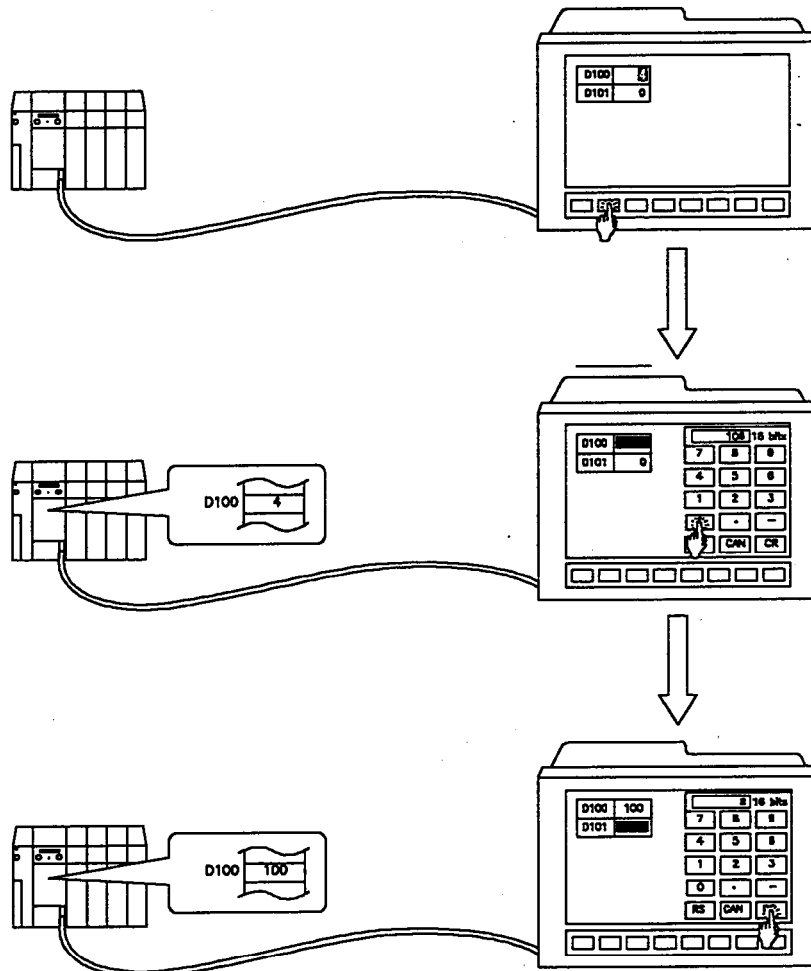
It is possible to set a numerical value display function by following the procedure in Section 8.1 to confirm the status of the objective device.

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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6.10 Writing Arbitrary Numerical Values to Word Devices (Numerical Value/Character-String Input Function ... Numerical Value Input)

[Monitoring function]



[Function]

This function writes an arbitrary numerical value to a word device or the buffer memory of a special function module.

- This function can be executed by displaying a ten key window.
- It can also be executed by creating operation panels/ten key panels and customized windows for numerical value input.
- Numerical values can be input in either the decimal or hexadecimal format.
- If numerical input is executed in the decimal format, a sign and decimal point can also be input.
- The input numerical data can be subjected to weight conversion by performing magnification and offset calculations.

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[Settings by using the AGOTP]

Set the monitoring condition in the device write (numerical value/character-string input) setting window.

Setting Item	Setting Range/Selection		Comment		
Input position	Line: 1 to 25	Column: 1 to 80	First position of an input area		
Col./attribute	Color	Color No.s 0 to 14	Setting for displaying input characters		
	Attribute	Normal (fixed)			
Character size	8 points/16 points				
Magnification	1 (fixed)				
Input format	Input format	Data Type	16-bit	32-bit	Set the input area (used for display) on the monitor screen.
	Decimal	Number of columns	1 to 6 characters	1 to 11 characters	
		Input range	+32767 to -32768	+2147483647 to -2147483648	
		Upper limit value	+32767 to -32768	+2147483647 to -2147483648	
		Lower limit value	+32767 to -32768	+2147483647 to -2147483648	
	Weight conversion	Offset value	+32767 to -32768	+2147483647 to -2147483648	
		Magnification	x 1	x 1	
			+ 1 to 65535	+ 1 to 65535	
	Decimal point position	0 to 10	0 to 10		
	Hexa-decimal	Number of columns	1 to 4 characters	1 to 8 characters	
		Input range	0 to FFFF	0 to FFFFFFFF	
		Upper limit value	0 to FFFF	0 to FFFFFFFF	
		Lower limit value	0 to FFFF	0 to FFFFFFFF	
	Weight conversion	Same as for decimal values. However, the decimal point position is invalid.			
Write trigger key	Keys that correspond to 09H to FEH. Set the key code of a key that is not used by the system (see APPENDIX 6). When setting the numerical value/character input function, set the key code of a key that is not used for an input function.		To determine the timing of a write operation		
Storage device	Word device		Storage source		

6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Complementary explanation of setting items]

(1) Write trigger key

This key determines the timing that writes input data displayed on input position to storage device.

[Notes on using the function]

(1) Method of key input

The input area in which the cursor is positioned is reversed. (Numerical values of corresponding device are normally displayed according to input format in areas other than above.)

Even if the same key is set for more than one input area for a numerical value or character-string input function, the only area for which input is possible is the reversed one.

(2) Movement of the cursor

When the write trigger key is pressed after inputting a numerical value, the numerical value is written to the storage device. When a numerical value is input, if the cursor movement direction signal (see Sections 2.6.1 and 14.1) is OFF, the cursor will move in the same way as if the [→] key shown in the figure below were pressed.

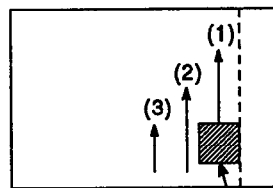
If the cursor movement direction signal is ON, the cursor will move in the same way as if the [↓] key were pressed.

If setting the cursor movement direction signal to "ON", set all the input areas so they are in vertical alignment.

If the lowest digit of one of the setting areas is not in alignment, the cursor will skip that area and move to the next area where the lowest digit is in alignment.

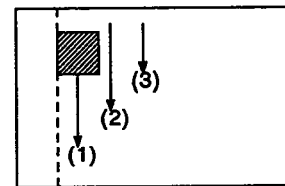
If there is more than one input area, the cursor can be moved in the sequences indicated in the figure below ((1) → (2) → (3)) by pressing the appropriate arrow key ([↑]: up, [↓]: down, [←]: left, [→]: right).

(a) [↑] key

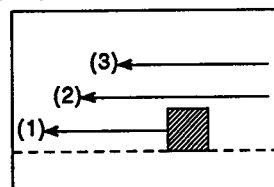


Current cursor position

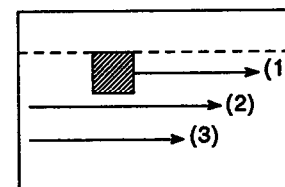
(b) [↓] key



(c) [←] key



(d) [→] key



If the write trigger key is pressed without having input a numerical value, the cursor moves to the next input area (nothing is written to the device).

(3) Data clear

The following keys can be used to erase numerical values during inputting.

Key Used	Effect
[Space] (20H)	The numerical value being input is erased.
[-] (2DH)	The numerical value being input is erased and "-" is displayed in its place.
[BS] (08H)	The least significant digit is erased and the whole figure shifts one place to the right.

(4) Number of input digits

When inputting a decimal value, the +/- symbol, integral part, decimal point, and fractional part are all included in the number of digits (the + symbol can be omitted).

When a decimal point is input, it is not displayed until the next key is struck.

The processing when a number of digits that exceeds the permitted maximum is input is different for the integral part and the fractional part of the value.

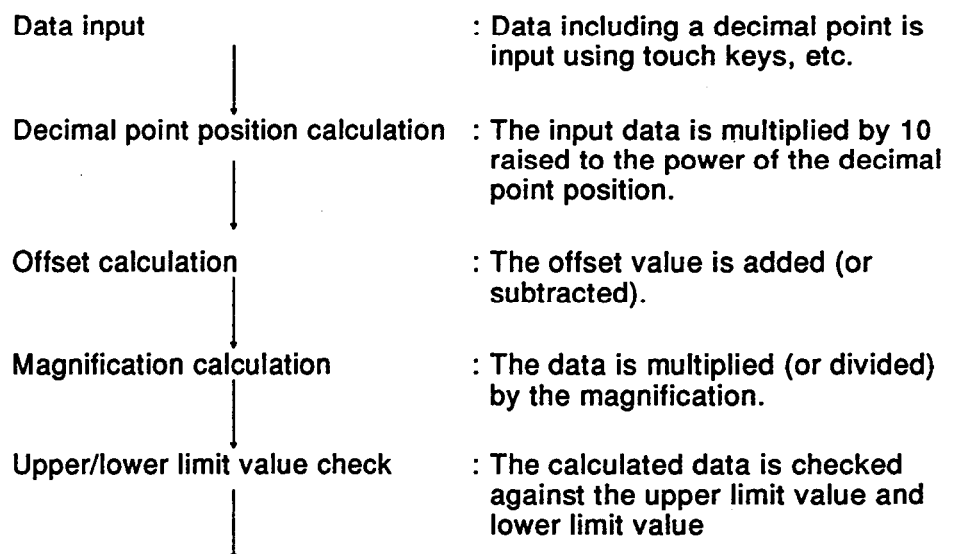
- If there is an integral part of 5 digits and a 6th digit is input, the least significant digit is erased and the 6th digit is input as the least significant digit. By this, the symbol is not erased.
- If there is a fractional part of 3 digits and a 4th digit is input, the least significant digit in the fractional part is erased and the 4th digit is input as the least significant digit of the fractional part.

(5) Setting upper and lower limit values

Values defining the range within which values can be input can be set; values outside the set range cannot be written to devices.

(6) Weight conversion of input data

The method for calculation up to the point when the data input by key is written in the storage device is as follows:



The integral value data is written to the device (digits after the decimal point are discarded).

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(7) Screen display after write trigger key input

- (a) If, after the write trigger key is pressed, the fractional part has fewer digits than the set number of input digits, or only an integral part is input, a zero is added and the value is shifted to the right.

(Example)

Number of input digits: 10, decimal point: 2

Key Input		Screen Display
123.4	→	123.40
.1		0.10

- (b) After the writing trigger key is pressed, the calculations performed in weight conversion are followed in reverse to display the data; i.e., division is performed in place of multiplication, and subtraction in place of addition.

Example: Assume the weight conversion settings are:
 Decimal point position: 2,
 Offset: +100, Magnification: 3

Numerical value after weight conversion
 ↓
 Magnification calculation+3
 ↓
 Offset calculation-100
 ↓
 Decimal point position calculation+100
 ↓
 Numerical value for screen display

* Data input examples are given below.

	Data Input *1	Decimal Point Position Calculation ($\times 10^1$)	Offset Calculation (+100)	Magnification Calculation ($\times 10$)	Upper/Lower Limit Value Check	Value Written to the Storage Device	Monitor Screen Display after Writing Trigger Key Input *2
1	234	2340	2440	24400	OK	24400	234.0
2	23.4	234	334	3340	OK	3340	23.4
3	23.45 (23.5)	235	335	3350	OK	3350	23.5
4	1234.5 (234.5)	2345	2445	24450	OK	24450	234.5
5	245	2450	2550	25500	Upper limit value error	Value not written (previous value retained)	Previous value

(b) Number of input digits: 5
 Decimal point position: 1
 Magnification: +3
 Upper limit value: 1000

Data type: 16 bits
 Offset: +100
 Lower limit value: 50

	Data Input *1	Decimal Point Position Calculation ($\times 10^1$)	Offset Calculation (+100)	Magnification Calculation ($\times 10$)	Upper/Lower Limit Value Check	Value Written to the Storage Device	Monitor Screen Display after Writing Trigger Key Input *2
1	234	2340	2440	813.3...	OK	813	233.9
2	23.4	234	334	111.3...	OK	111	23.3
3	23.47 (23.7)	237	337	112.3...	OK	112	23.6
4	1234.5 (234.5)	2345	2445	815	OK	815	234.5
5	2.3	23	123	41	Lower limit value error	Value not written (previous value retained)	Previous value

*1 The values in parentheses are those displayed on the monitor screen.

*2 Calculations performed when the value is displayed on the monitor screen:

For example 1: (+10) → (-100) → (+100)

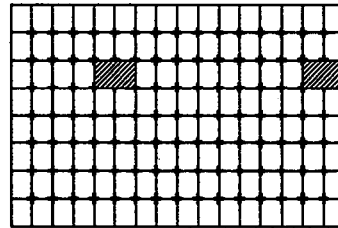
For example 2: (x3) → (-100) → (+100)

(9) Data input in the ten key window

- (a) A ten key window is displayed by inputting the special key set in the special key-code setting window after moving the cursor to a numerical value input area. (The default for the special key setting is the [F2] key.)

If the key code for ten key window display is set for a touch panel and the ten key window displayed by pressing the touch panel, do not use the touch panel positions indicated below.

If these are used the ten key window will not be displayed correctly.



- (b) Input data in decimal in the ten key window.
Replace and input hexadecimal data with decimal data to the input area at which an input format is set in hexadecimal.
- Data type of 16 bits : 6 digits input (±).
 - Data type of 32 bits : 11 digits input (±).

(Example)

Data type of 16 bits

8000H (hexadecimal) → -32768 (decimal)

- (c) When the ten key window is displayed, data can be input sequentially to several input areas.
The displayed ten key window is erased by entering the [EXIT] key. (When the [EXIT] key is pressed, the key tone sounds; when it is released, the window is cleared from the screen.)
- (d) When the ten key window is displayed, the monitoring function of a screen display interrupts an operation.
- (e) The ten key window is displayed on the opposite side of a numerical value input area position on a screen.
If there are multiple numerical value input areas set at the left and right of the screen, so that the area in which the numerical value is to be input is sometimes at the left and sometimes at the right of the screen, the ten key window also shifts position so that it is always on the opposite side to the relevant input area.

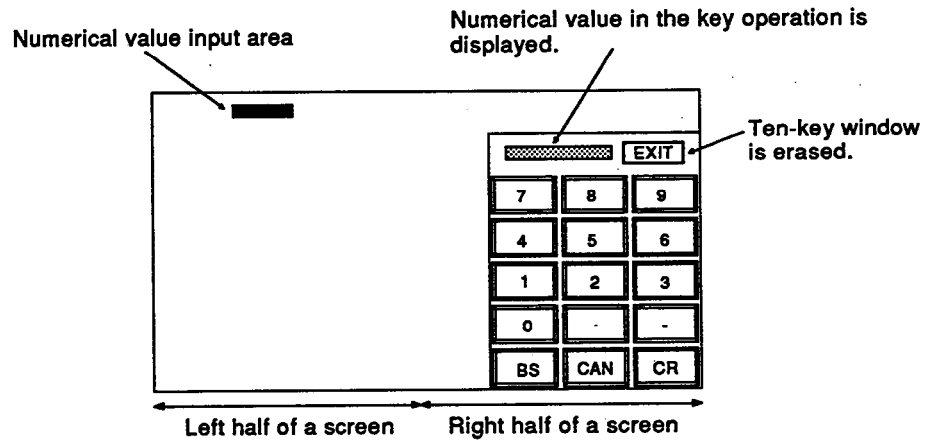
When a numerical value input sprite is in the left side of a screen
.....A ten key window is displayed on the right side.

When a numerical value input sprite is in the right side of a screen
.....A ten key window is displayed on the left side.

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- (f) When using the ten-key panel and operation panel, set the key code for the ten-key window as "FF" (delete) in the special key-code setting window.



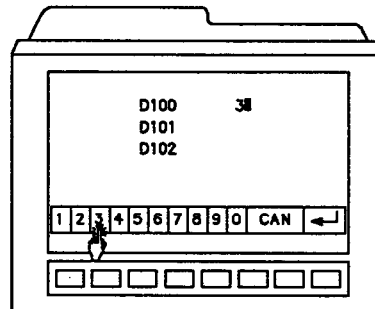
6. TURNING ON/OFF BIT DEVICES AND CHANGING NUMERICAL VALUES OF WORD DEVICES

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[Further available operations]

- (1) Creating a key for numerical value input on the monitor screen

Set the size and position of the touch panel to be used for numerical value input in the touch key display position (area) setting window, and then set the key code of the key to be used for numerical input at the "Touch key code" in the touch key setting window.

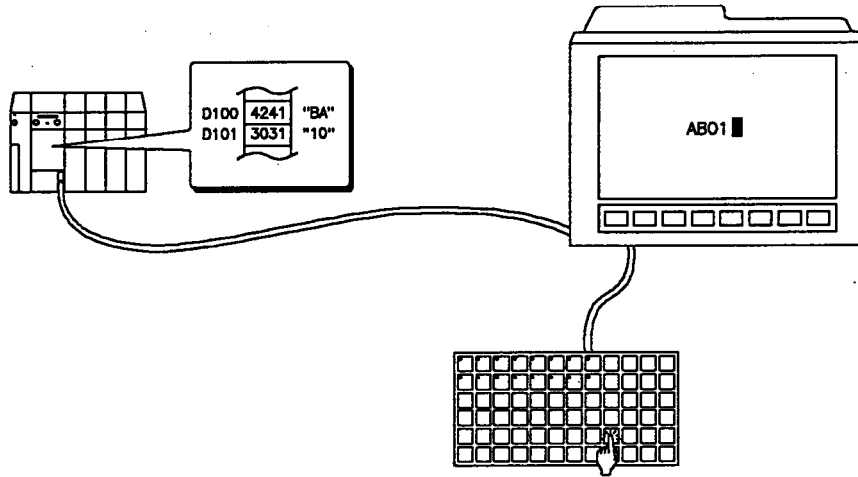


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6.11 Writing Arbitrary Character-String Data (ASCII Code) to Word Devices (Numerical Value/Character-String Input Function Character-String Input)

[Monitoring example]



[Function]

This function writes character-string data (as ASCII codes) to a word device or the buffer memory of a special function module.

- This function can be executed using an operation panel and customized character-string input windows.
- Character-string data for a maximum of 40 characters can be written to word devices.

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[Settings by using the AGOTP]

Set monitoring condition in the device write (numerical value/character-string input) setting window.

Setting Item	Setting Range/Selection		Comment	
Input position	Lines 1 to 25, columns 1 to 80		First position of an input area	
Col./attribute	Color	Color Nos. 0 to 14	Setting for displaying input characters	
	Attribute	Normal (fixed)		
Character size	16			
Magnification	1 (fixed)			
Input format	Input Format	Data Type	—	Set the input area (used for display) on the monitor screen.
	ASCII	Number of columns	1 to 40 characters	
Write trigger key	Keys that correspond to 09H to FEH. Set the key code of a key that is not used by the system (see APPENDIX 6). When setting the numerical value/character input function, set the key code of a key that is not used for an input function.		To determine the timing of a write operation	
Storage device	Word device		Storage source	

[Complementary explanation of setting items]

(1) Write trigger key

This key determines the timing that writes input data displayed on input position to storage device.

[Use of the function]

(1) Character that can be input

ASCII code corresponding to the codes in the range from 20H to 7FH and from A0H to DFH are valid.

The character outside the range becomes invalid, and data is ignored.

(2) Method of key input

The input area in which the cursor is positioned is reversed. (Character-string that corresponds to the numerical value of corresponding devices normally displayed according to input format in areas other than above.)

When a write trigger key is pressed after inputting the character-string, the character string is written in the storage device.

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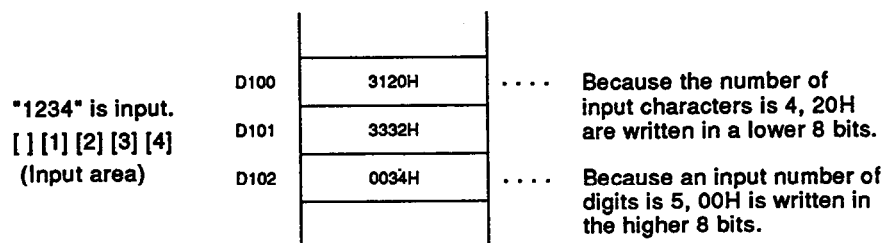
(3) Writing data to the device

The character-string of an input number of digits is written in the order from the lower 8 bits to the higher 8 bits of the first writing device.

- (a) When having less input numbers of characters than the input number of digits, a blank (20H) code is written before an input character code as character data that corresponds to the running short number of characters.
- (b) When an input number of digits is an odd, a 00H code is stored in the higher 8 bits of a final writing device.

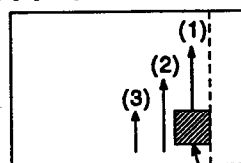
(Example)

When "1234" is input under the condition of input number of digits : 5 and writing device : D100, data is written like the following.



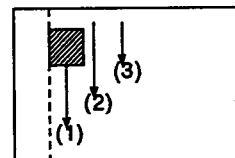
- (4) When a character code is written, if the cursor movement direction signal (see Sections 2.6.1 and 14.1) is OFF, the cursor will move in the same way as if the [→] key shown in the figure below were pressed. If the cursor movement direction signal is ON, the cursor will move in the same way as if the [↓] key were pressed. If setting the cursor movement direction signal to "ON", set all the input areas so they are in vertical alignment. If the lowest digit of one of the setting areas is not in alignment, the cursor will skip that area and move to the next area where the lowest digit is in alignment. If there is more than one input area, the cursor can be moved in the sequences indicated in the figure below ((1) → (2) → (3)) by pressing the appropriate arrow key ([↑]: up, [↓]: down, [←]: left, [→]: right). If the write trigger key is pressed without having input a character code, [→]: the cursor moves to the next input area (nothing is written to the device).

(a) [↑] key

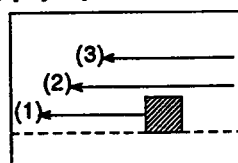


Current cursor position

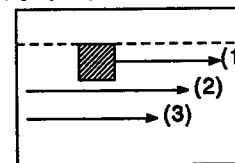
(b) [↓] key



(c) [←] key



(d) [→] key



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(5) Data clear during input

Pressing the "Space" key (20H) clears the character-string being input.

(6) Number of input digits

When number of characters more than an input number of digits is input, the characters shift to the left. The first character is deleted.

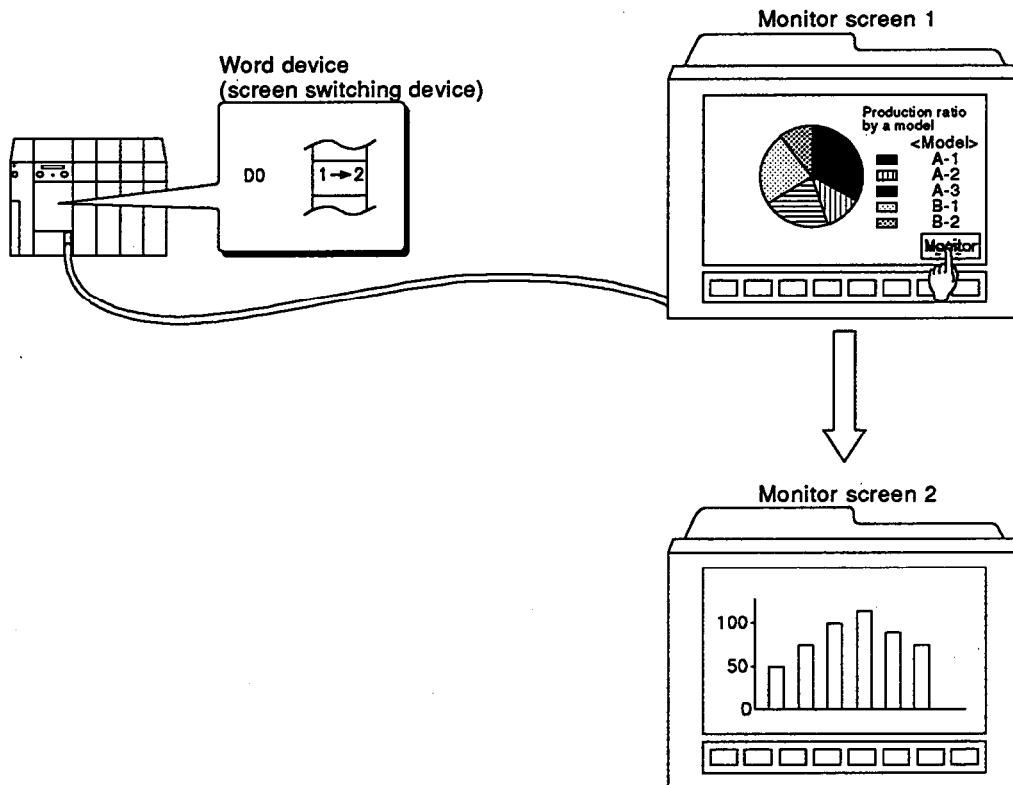
7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

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7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS (SCREEN SWITCHING AND SPECIAL KEY FUNCTIONS)

7.1 Switching from the Currently Displayed Monitor Screen to Another Monitor Screen (Screen Switching Function)

[Monitoring example]



[Function]

This function switches from the currently displayed monitor screen to another monitor screen.

- Switching can be executed by using the device write function (word device SET, bit device SET/RST) or the numerical value/character input function.

7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

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[Settings by using the AGOTP]

Set the monitoring condition in the screen switching/monitoring station switching setting window.

Setting Item	Setting Range/Option	Comment
Screen switching device	Word device	The initial value is D0 of the self station (ACPU)

[Notes on using the function]

- (1) The function must be set when the G controller unit is started up.

Store the numerical value of the monitor screen number to be displayed in the screen switching device (in the range 1 to 250).

If a numerical value outside the range 1 to 250 is stored in the screen switching device, monitor screen number 1 will be displayed.

- (2) Timing of screen switching

(a) When a condition of monitoring of data collection trigger set at a monitor screen is set to "Ordinary", after data collection of 1 time and all displays by the monitoring function are completed, screen switching is enabled.

(b) While a switch setting key is input (in the state that key is pressed), a screen is switched after completing a key operation.

(c) After completing monitoring processing executed at present, a screen is switched.

(d) If the screen status of the currently displayed screen does not change for a long time, screen switching may be delayed.

To avoid this problem, set a display monitoring function that is always changing as a dummy.

For example, set (using one point) the following type of numerical data display:

- An 8-point character display in a color that does not show on the screen (e.g. black).
- Use a monitor device that is set for ordinary collection display so that it changes continually.

- (3) Key input during screen switching

All key input during monitor screen switching is ignored. Key input becomes effective again after screen switching has been completed.

- (4) Setting for the station number switching function when screen switching is executed

When switching to a screen for which the station number switching function is set (see Section 13.1), set the PC station number that is to be monitored in the monitoring station switching device before executing the screen switching operation.

The PC station number set in the monitoring station switching device is monitored from time the screen switches.

7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

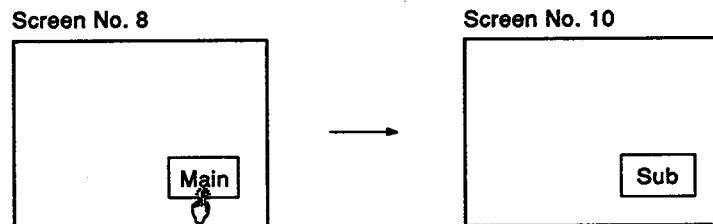
MELSEC-A

(5) Method for switching screens without using the sequence program

Set a device write (word device SET) function for a touch panel and write a fixed value to the storage device. Use the same device as both the storage device for the word device SET function and the screen switching device, and trigger screen switching by key input. When this method is used, screen switching can be executed quickly because it does not require the use of a sequence program.

(Example)

Switching from screen No.8 to screen No.10.



(Setting procedure)

- (a) Set D100 as the screen switching device.
- (b) Set the word device SET function of the device write function (storage device: D100, stored fixed value: 10) for the [Main] touch panel.

7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

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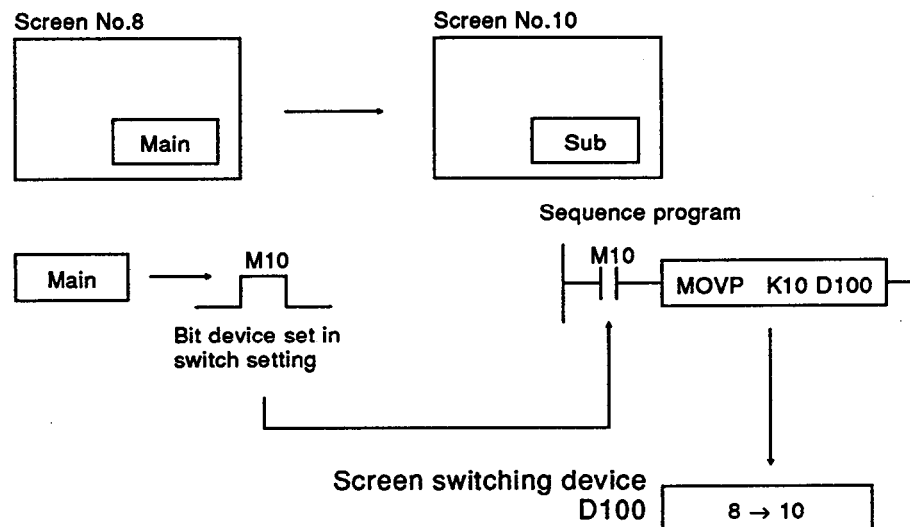
(6) Method for screen switching by using a sequence program

Set a switch function for a touch panel and, using the set bit device, rewrite the contents of the screen switching device by using the sequence program.

Since this method uses a sequence program, the timing that governs screen switching by the ACPU is known.

(Example)

Setting a switch function for the [Main] touch panel, causing it to switch to screen No.10.



(Setting procedure)

- Set D100 as the screen switching device.
- Set bit device M10 as the switching device for the [Main] touch key.
- When creating the sequence program, write to D100 the screen number of the destination screen that is to be displayed with M10 as the condition.

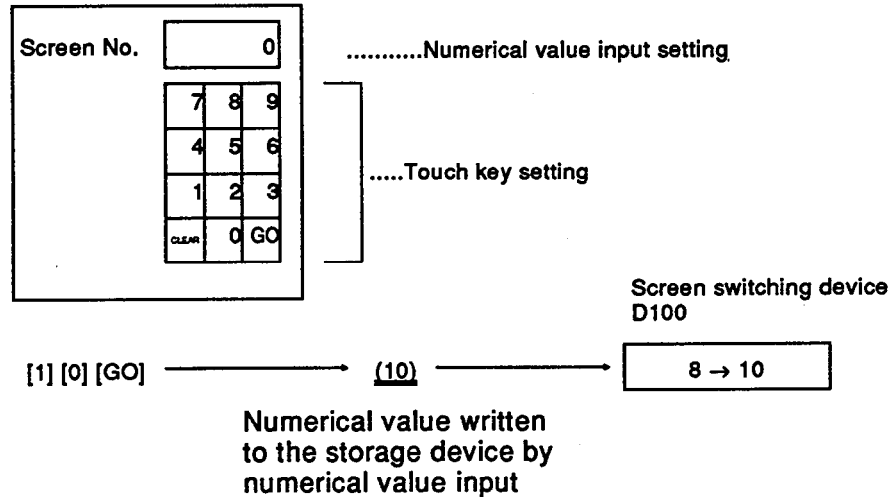
7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

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- (7) Method for switching to any required screen without using the sequence program

The screen can be switched by setting touch keys 0 through 9 on touch panels, setting a numerical value input function for the same monitor screen, and using the same device as both a storage device and a screen switching device.

Setting [0] to [9] for the touch keys, setting numerical value input, and using the numerical value input function from the touch keys to write the screen number of the main screen to a screen switching device.



(Setting procedure)

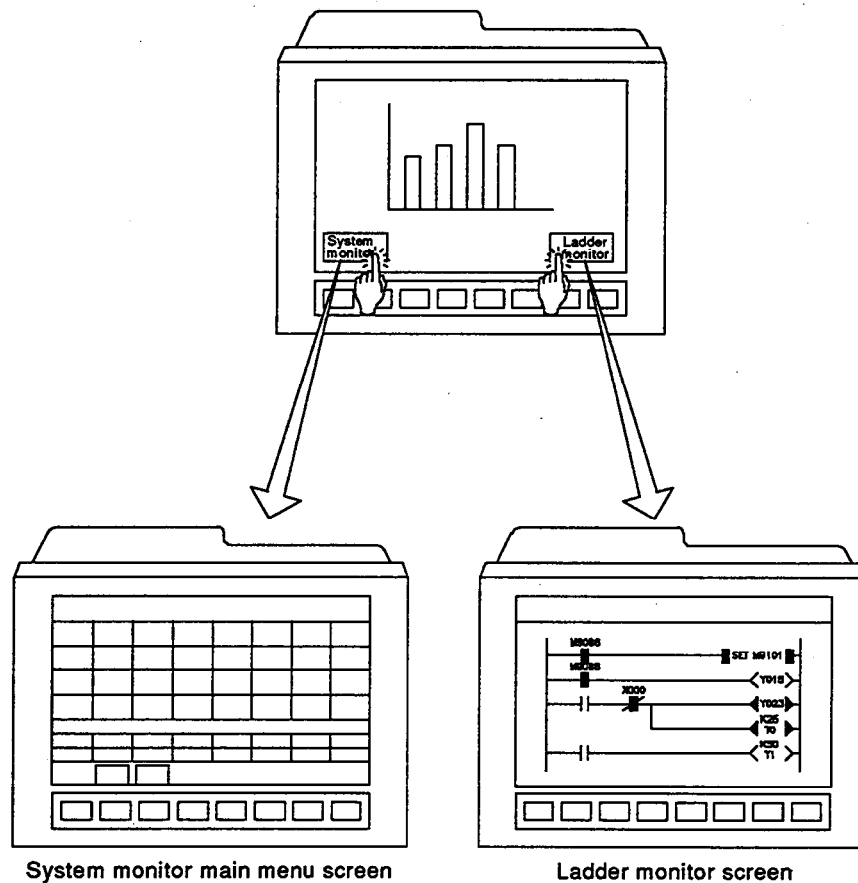
- In touch key setting, set key codes 30H to 39H, 0DH, and 88H for touch panels [0] to [9], [GO], and [CLEAR] respectively.
- In numerical value input setting, set decimal for the input format, set key code 0DH as the write trigger, and set D100 as the storage device.
- Set D100 as the screen switching device.

7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

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7.2 Switching Directly from a Monitor Screen to the System Monitor Screen or Ladder Monitor Screen (Special Key Function)

[Monitoring example]



[Function]

This function switches directly from a monitor screen to the system monitor screen or ladder monitor screen.

- It is possible to display the system menu screen, open a ten key window, or execute the snapshot function by using keys other than [F1] to [F3].
- The functions of the [F1] to [F3] keys on the GOT can be disabled.

7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

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Set the monitoring conditions and key code in the relevant windows, as shown below.

When key input is used to execute the screen switching function, make settings in the window below that is relevant, depending on the input module.

Window	Input Module		
	Touch Panel	Ten-key Panel	Operation Panel
Special key-code setting window	○	○	○
Touch key setting window	○	X	X
Ten-key panel (TK) setting window	X	○	X
Operation panel (KP) setting window	X	X	○

○ : Setting required X : Setting not required

(1) Special key-code set window

Setting Item	Setting Range/Selection		Comment
System monitor	Key code	Codes from 09 _H to FF _H	Setting FF _H makes the screen switching function invalid.
Ladder monitor	Key code	Codes from 09 _H to FF _H	Setting FF _H makes the screen switching function invalid.

(2) Touch key setting window

Setting Item	Setting Range/Selection	Comment
Touch key code	Codes from 09 _H to FF _H	Setting FF _H makes key input invalid.

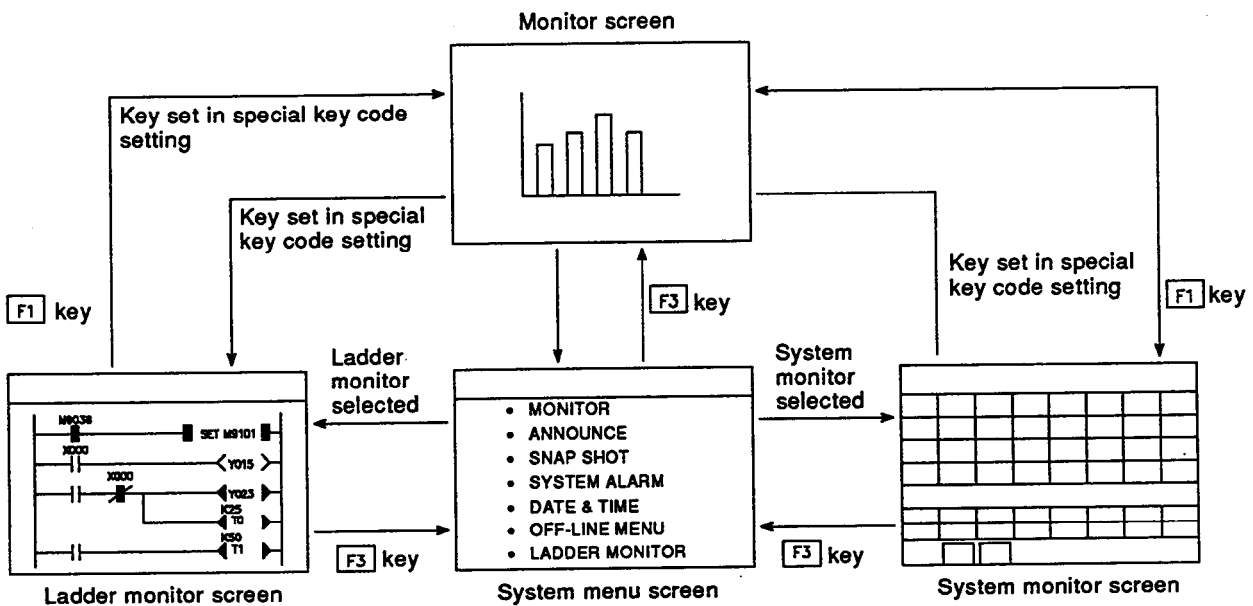
(3) Ten-key panel (TK) setting window/Operation panel (KP) setting window

Setting Item	Setting Range/Selection	Comment
Key code	Codes from 09 _H to FF _H	Setting FF _H makes key input invalid.

7. SWITCHING FROM THE CURRENTLY DISPLAYED MONITOR SCREEN TO OTHER MONITOR SCREENS

[Notes on using the function]

- (1) Executing the function by touch key input
 - (a) Set the key codes for switching the screen to the system monitor screen or ladder monitor screen in the special key-code setting window.
Set key codes that are not used by the system or for the device write function.
 - (b) Set, in the touch key setting window, the same key codes as were set in the special key-code setting window for the touch keys used to switch to the system monitor screen and ladder monitor screen, respectively.
- (2) Executing the function from an operation panel or ten key panel
 - (a) Perform the operation in (1) (a) above.
 - (b) Set, in the ten key panel (TK) setting window or operation panel (KP) setting window, the same key codes as were set in the special key-code setting window for the panel keys used to execute screen switching.
- (3) Method for inactivating the [F1] to [F3] keys on the GOT
Set the system menu, ten key window, and snapshot key codes to FFH.
- (4) Screen transitions



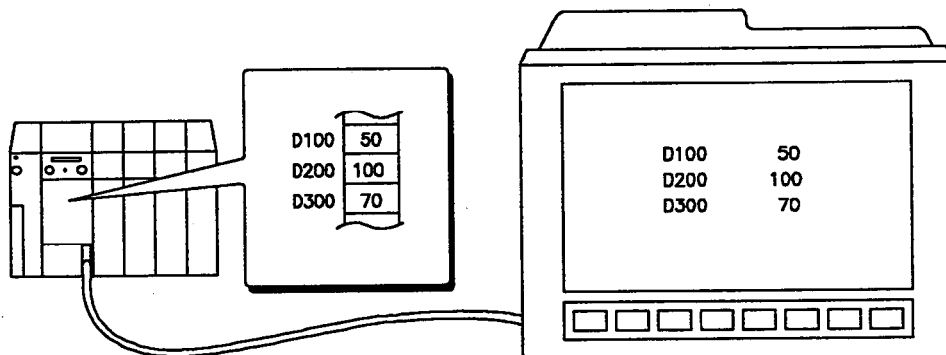
8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

MELSEC-A

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS (NUMERICAL VALUE DISPLAY FUNCTION, BLOCK DISPLAY FUNCTION, CLOCK DISPLAY FUNCTION)

8.1 Displaying the Values of Word Devices (Numerical Value Display Function)

[Monitoring example]



[Function]

This function displays the numerical value data in word devices and the buffer memories of special function modules.

- 16-bit or 32-bit numerical value data can be displayed in binary, decimal, or hexadecimal format.
- The number of digits and position of the decimal point in the numerical value data can be set as required.
- Numerical data can be subjected to arithmetical operations before it is displayed.
- It is possible to make settings so that the display color or display attribute changes if an upper or lower limit is exceeded.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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[Settings by using the AGOTP]

Set numerical value display monitoring conditions in the numerical value display setting window.

Setting Item	Setting Range/Selection		Comment	
Data collection trigger	Ordinary/bit device leading edge/falling edge		Set the colors and attributes when the upper and lower limits are exceeded.	
Display position	Line: 1 to 25 Column: 1 to 80			
Display attribute	Standard	Color		Set the display color (15 colors)
		Attribute		Normal/reverse
	Upper limit	Color	Set the display color (15 colors)	
		Attribute	Normal/reverse	
	Lower limit	Color	Set the display color (15 colors)	
		Attribute	Normal/reverse	
Character size	8 points/16 points			
Magnification	1/2/4/8 (times)			
Display format Scale/Offset	Input Format	Data Type	16-bit	32-bit
		Number of columns	1 to 13 characters	1 to 13 characters
	Decimal	Sign	Signed (Display range: -32768 to 32767)	Signed (Display range: -2147483648 to 2147483647)
			Unsigned (Display range: 0 to 65535)	Unsigned (Display range: 0 to 4294967295)
		Upper limit value	With sign: -32768 to 32767	With sign: -2147483648 to 2147483647
		Lower limit value	Without sign: 0 to 65535	Without sign: 0 to 4294967295
	Weight conversion	Offset value	-32768 to 32767	-2147483648 to 2147483647
		Multiplication/ division	x 1 to 65535	x 1
			+ 1 to 65535	+ 1 to 65535
	Decimal point position	0 to 10	0 to 10	
	Hexadecimal	Number of columns	1 to 4	1 to 8
		Upper limit value	0 to FFFF	0 to FFFFFFFF
		Lower limit value		
		Weight conversion	Same as decimal, except the decimal point position is invalid.	
	Binary (BIN)	Display columns	16 (fixed)	32 (fixed)
Weight conversion		Same as decimal, except the decimal point position is invalid.		
Monitor device	Word device			

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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[Complementary explanation of setting items]

(1) Display format

If -12345 is displayed in decimal, the relationship between the displayed number of digits and a display format is as follows:
(When the position of a decimal point is 2)

- If the displayed number consists of eight digits:
[][-][1][2][3][.][4][5] The head digit is blank.
- If the displayed number consists of six digits:
[1][2][3][.][4][5] The head digits are rounded off.

(2) Scale/Offset


- (a) Weight conversion can be done. (Conversion is done handling the monitor device value as an integer.)

$((\text{Monitor device value}) \times (\text{Multiplier})) + (\text{Offset value})$

or

$((\text{Monitor device value}) + (\text{Divisor})) + (\text{Offset value})$

(Values after the decimal point are rounded off.)

 Value to be displayed

- (b) Set the Scale/Offset at a value so that overflow or underflow does not occur during operation.
If overflow or underflow error occurs, an uncertain value is displayed. (This is because, when an error occurs, the next operation is done based on the value of 16 or 32 bits.)

(3) Display attribute

When the upper and lower limits are set with the display format, the display attributes are switched.
When a value exceeds the set limit, the colors and attributes change according to the set display format.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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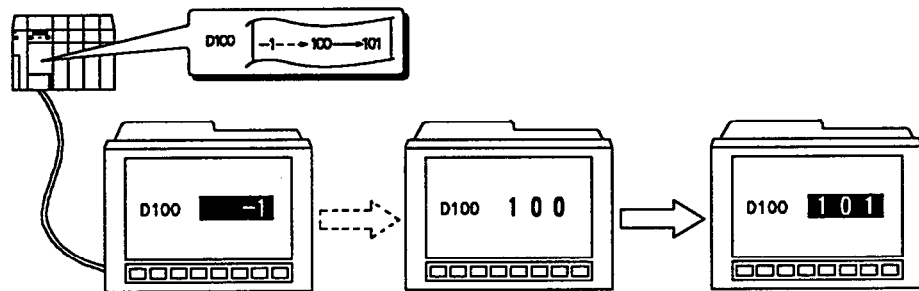
[Further available operations]

- (1) Changing the display color or display attribute when an upper or lower limit is exceeded

By setting different colors and/or attributes for "standard" and "upper limit/lower limit" in the display attribute, the display color and/or display attribute can be changed when the upper or lower limit value is exceeded.

(Example)

Changing the display attribute from "normal" to "reverse" when the value of D100 is a negative value of 101 or greater.

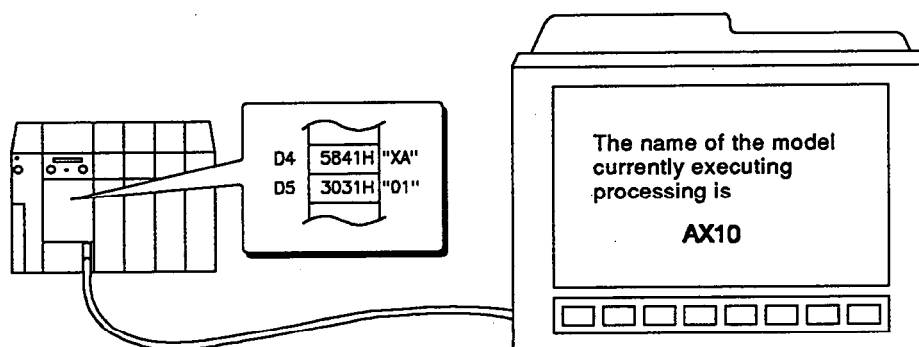


8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

MELSEC-A

8.2 Displaying a Character-String by Regarding the Values of Word Devices as Character Codes (Numerical Value Display Function)

[Monitoring example]



[Function]

This function displays a character-string by regarding numerical data stored consecutively in word devices or in the buffer memory of a special function module as character codes.

- A maximum of 40 one-byte characters, or 20 two-byte characters (20 points of word devices) can be displayed as one character-string.
- The display of any character-string can be designated from the ACPU.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

[Settings by using the AGOTP]

Set monitoring condition to display a character-string in the numerical value display setting window.

Setting Item	Setting Range/Selection	Comment	
Data collection trigger	Ordinary time/bit device leading edge/falling edge		
Display position	Line: 1 to 25 Column: 1 to 80		
Col. attribute	Color		Set the display color (15 colors).
	Attribute		Normal/reverse
Character size	8 points/16 points		
Magnification	1/2/4/8 (times)		
Display format	ASCII		
Number of display columns	1 to 40 characters (16-point characters are used)		
Monitor device	Word device		

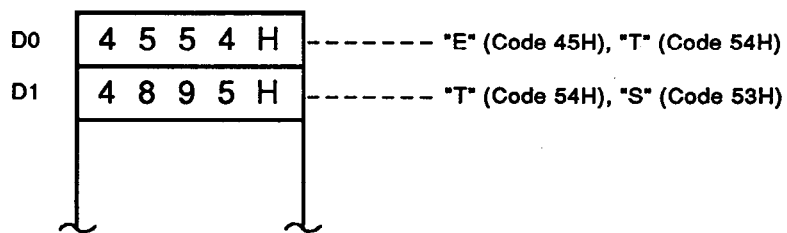
[Notes on using the function]

(1) Method of storing a character code

Store the character code in order from a lower byte of a set monitor device.

(Example)

Store character codes in D0 to D1 to display "TEST".

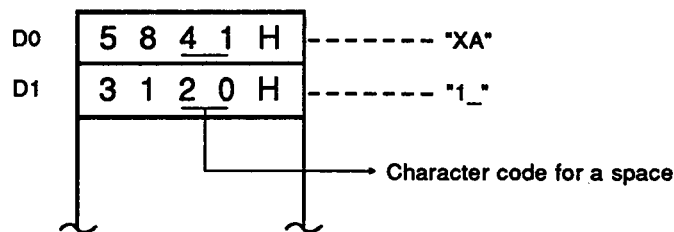


(2) Inserting spaces between characters

To insert a space between two characters, store 20H in the most significant or least significant bits of the relevant device.

(Example)

Character codes stored in D0 to D1 to display AX_1:



(3) When the number of display columns is odd

The most significant bit of the final character code storage device for each character-string is ignored.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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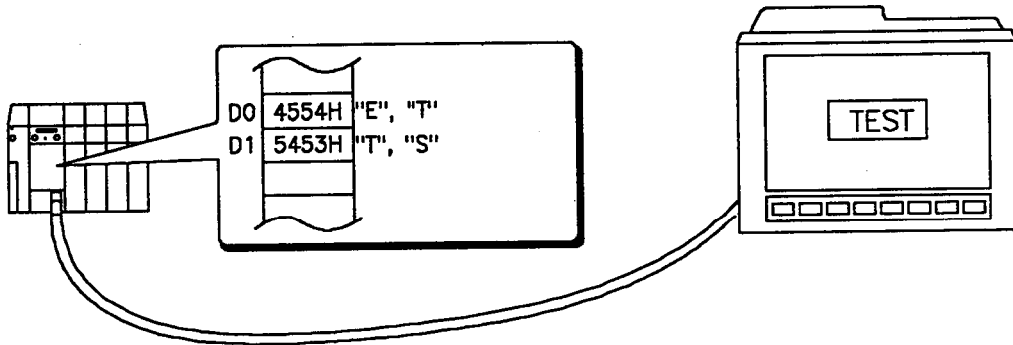
[Further available operations]

(1) Displaying any required character-string

Any character-string can be displayed by storing the appropriate character codes as the values of word devices set as monitor devices.

(Example)

Character codes stored in D0 to D1 to display "TEST".

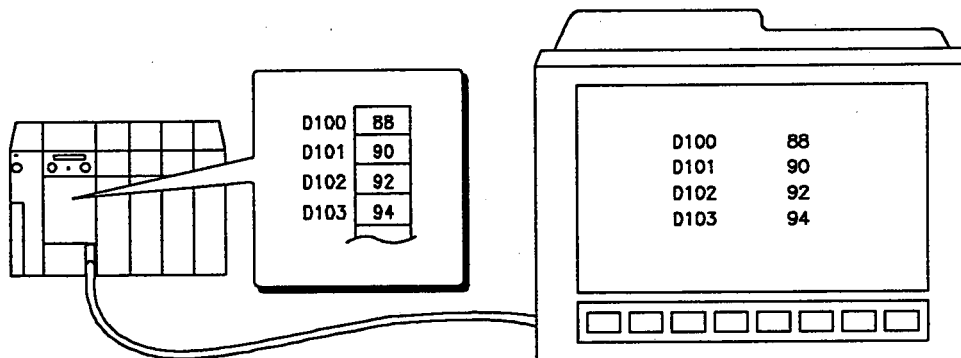


8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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8.3 Displaying the Values of Consecutive Word Devices (Block Data Display Function)

[Monitoring example]



[Function]

This function displays, in a batch, the numerical data stored consecutively in word devices or the buffer memory of a special function module.

- Numerical value data can be displayed consecutively in either the vertical (max. 20 values) or horizontal direction.
- The number of digits and position of the decimal point in the numerical value data can be set as required.
- Numerical data can be subjected to arithmetical operations before it is displayed.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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[Settings by using the AGOTP]

Set block data display monitoring condition in the block data setting window.

Setting Item	Setting Range/Selection		Comment		
Data collection trigger	Ordinary/bit device leading edge/falling edge		_____		
Display position	Line: 1 to 25 Column: 1 to 80				
Col./attribute	Color	Set the display color (15 colors).			
	Attribute	Normal/Reverse			
Character size	8 points/16 points				
Magnification	1/2/4/8 (times)				
Display format Scale/Offset	Input Format	Data Type	16-bit		
	Decimal	Number of columns	1 to 13	1 to 13	
		Sign	Signed (Display range: -32768 to 32767)		
			Unsigned (Display range: 0 to 65535)		
		Weight conversion	Offset values	-32768 to 32767	-2147483648 to 2147483647
			Multiplication/ division	x 1 to 65535	x 1
				+ 1 to 65535	+ 1 to 65535
	Decimal point position	0 to 10	0 to 10		
	Hexadecimal	Display columns	1 to 4	1 to 8	
		Weight conversion	Same as decimal, except the decimal point position is invalid.		
	Binary (BIN)	Display columns	16 (fixed)	32 (fixed)	
		Weight conversion	Same as decimal, except the decimal point position is invalid.		
Block display type	Vertical/horizontal				
Number of display blocks/intervals	Number of blocks	Horizontal: 1 to 20, Vertical: 1 to 20	_____		
	Intervals	6 to 40 columns	Horizontal kind only		
Monitor device	Word device		_____		

[Complementary explanation of setting items]

(1) Display format

If -12345 is displayed in decimal, the relationship between the displayed number of digits and a display format is as follows:
(When the position of a decimal point is 2)

- If the displayed number consists of eight digits:
[][-][1][2][3][.][4][5] The head digit is blank.
- If the displayed number consists of six digits:
[1][2][3][.][4][5] The head digits are rounded off.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

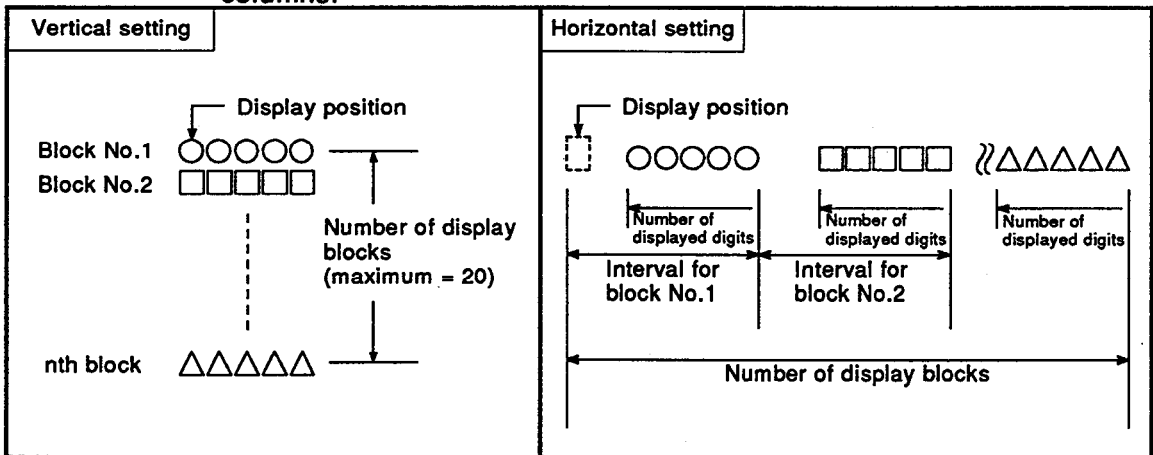
(2) Scale/Offset

- (a) Weight conversion can be done. (Conversion is done handling the monitor device value as an integer.)
- $$\frac{((\text{Monitor device value}) \times (\text{Multiplier})) + (\text{Offset value})}{((\text{Monitor device value}) + (\text{Divisor})) + (\text{Offset value})}$$
- (Values after the decimal point are rounded off.)
- Value to be displayed

- (b) Set the Scale/Offset at a value so that overflow or underflow does not occur during operation. If overflow or underflow error occurs, an uncertain value is displayed. (This is because, when an error occurs, the next operation is done based on the value of 16 or 32 bits.)

(3) Number of display blocks / Intervals

For the "number of display blocks" setting, set the number of numerical data displayed in either the vertical or horizontal direction. The intervals setting is made when the numerical data is displayed in the horizontal direction. Set the display interval for the numerical value data as the number of columns.



(4) Monitor device

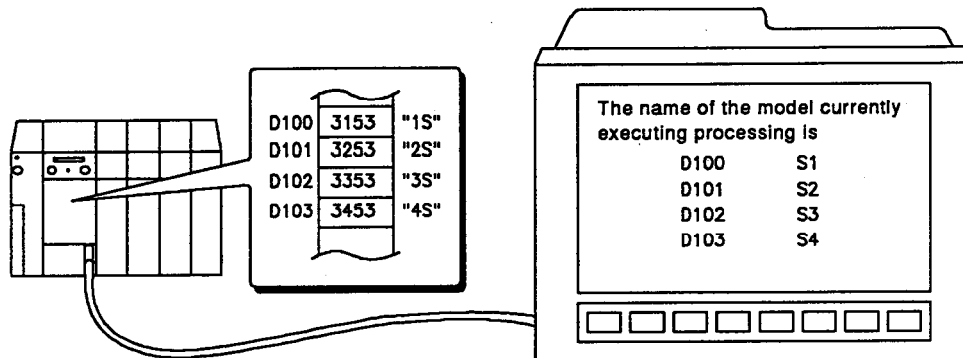
Set the head device number of the numerical data to be displayed.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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8.4 Displaying Multiple Character-Strings by Regarding the Values of Consecutive Word Devices as Character Codes (Block Data Display Function)

[Monitoring example]



[Function]

This function displays multiple character-strings by regarding numerical data stored consecutively in word devices or in the buffer memory of a special function module as character codes.

- Multiple character-strings can be displayed consecutively in either the vertical (max. 20 character-strings) or horizontal directions.
- The display of any character-string can be designated from the ACPU.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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[Settings by using the AGOTP]

Set block data display monitoring condition in the block data setting window.

Setting Item	Setting Range/Selection		Comment
Data collection trigger	Ordinary/bit device leading edge/falling edge		
Display position	Line: 1 to 25 Column: 1 to 80		
Col./attribute	Color	Set the display color (15 colors)	
	Attribute	Normal/reverse	
Character size	8 points/16 points		
Magnification	1/2/4/8 (times)		
Display format	ASCII		
Number of display columns	1 to 40 characters (16-point characters are used)		
Block display type	Vertical/horizontal		
Number of blocks/Space	Number of blocks	Vertical: 1 to 20, Horizontal: 1 to 20	
	Space	For 6 to 40 columns	
Monitor device	Word device		

[Notes on using the function]

See "Notes on using the function" in Section 8.2.

[Complementary explanation of setting items]

(1) Number of display blocks/Intervals

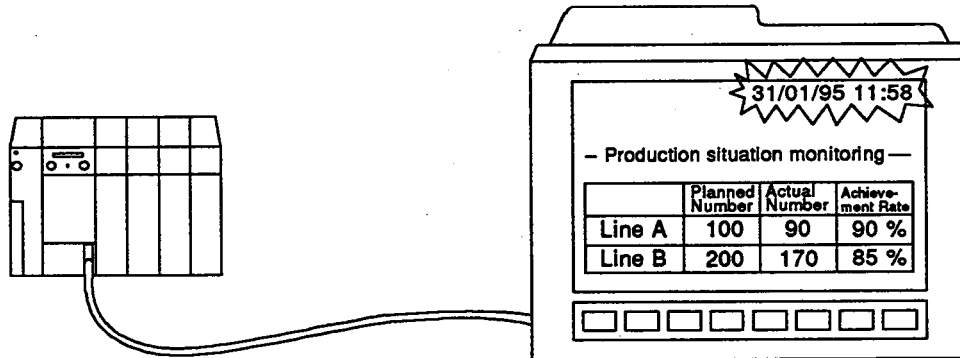
See "Complementary explanation of setting items" in Section 8.3.

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

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8.5 Displaying ACPU Clock Data (Clock Data Display)

[Monitoring example]



[Function]

This function displays the clock data of the ACPU.
In a data link connection the clock data of the master station is displayed and in a network connection the clock data of the control station is displayed.

- This function can be used provided the ACPU is one of the models listed below:
 - A1SJCPU
 - A2USCPU(S1)
 - A3NCPU
 - A73CPU
 - A4UCPU
 - A1SCPU
 - A1NCPUCPU
 - A2ACPU(S1)
 - A2UCPU(S1)
 - A2SCPU
 - A2NCPUCPU(S1)
 - A3ACPU
 - A3UCPU

8. DISPLAYING THE CONTENTS OF DEVICES AS NUMERICAL VALUES AND CHARACTERS

[Settings by using the AGOTP]

Set clock display monitoring condition in the clock setting window.

Setting Item	Setting Range/Selection	Comment
Display position	Line: 1 to 25 Column: 1 to 67	_____

[Notes on using the function]

(1) Display format

The date and time are displayed in the following format, which cannot be changed:

Color/attribute White/normal display

Character size 16 points

Magnification 1

Order The date and time is displayed in the following order, with 2 digits for each entry:

Day/Month/Year_Hour:Minute

Total of 14 characters

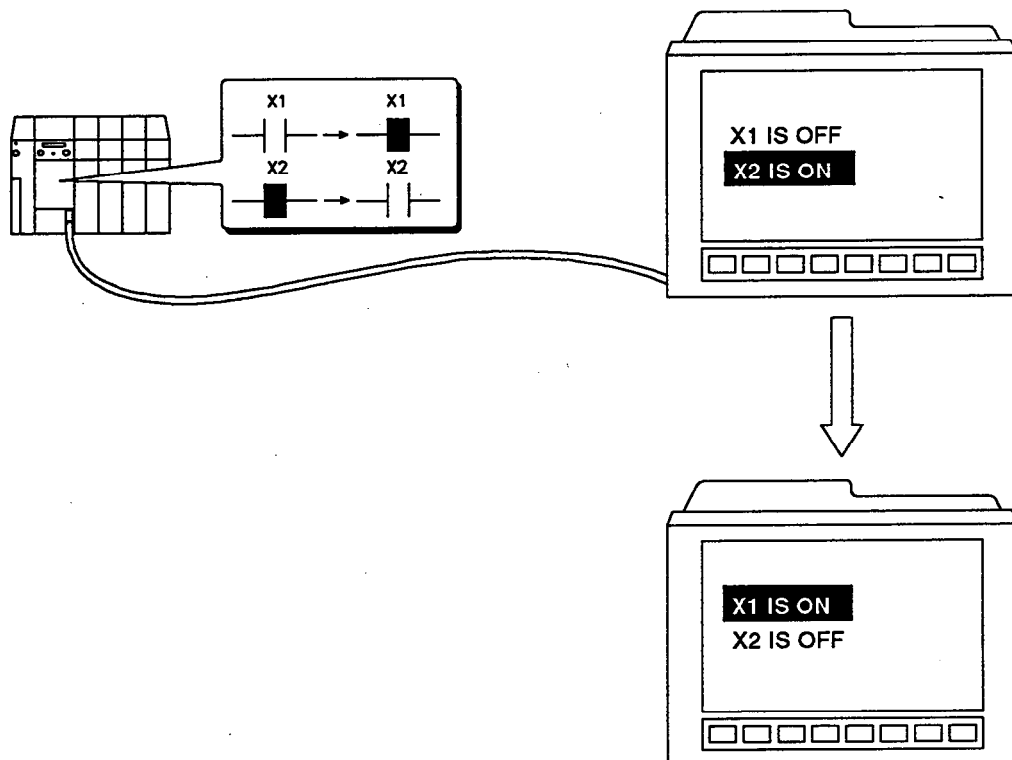
9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS) (CHARACTER-STRING DISPLAY FUNCTION, ALARM LIST DISPLAY FUNCTION, ERROR ALERT DISPLAY FUNCTION)

9.1 Displaying Messages (Comments) Corresponding to the ON/OFF Status of Bit Devices (Character-String Display Function)

[Monitoring example]



[Function]

This function displays a message (comment) that corresponds to the ON/OFF statuses of bit devices.

- The message (comment) can be displayed blinking.
- Either a word device or bit number in a buffer memory can be specified as the monitor device.
- It is possible to display a message (comment) only in the ON status or only in the OFF status.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

[Settings by using the AGOTP]

Set the monitoring condition of a character-string display in the character-string setting window.

Setting Item	Setting Range/Selection		Comment
Data collection trigger	Ordinary/bit device leading edge/falling edge		_____
Display position	Line: 1 to 25 Column: 1 to 80		
Magnification	1/2/4/8 (times)		
Monitor device	Bit device/designated bit of word device		
Bit device	_____		
Comment at ON	Comment	1 to 80 characters	The range that can be displayed in one line.
Comment at OFF	Comment	1 to 80 characters	
Col./attribute	Color	Set the display color (15 colors)	
	Attribute	Normal/reverse	
Blink	None/low speed/medium speed/high speed		Limited to one item on a single screen.

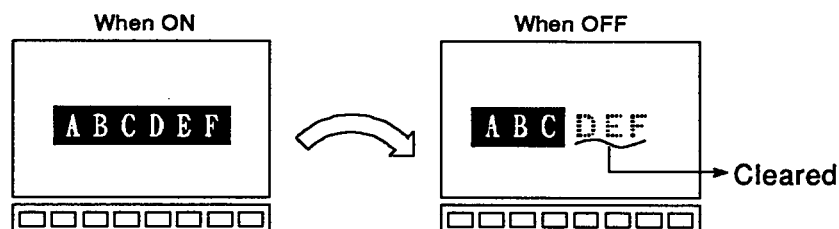
[Notes on using the function]

- (1) When the lengths of the comments corresponding to the ON and OFF statuses are different

It does not matter if the comments that correspond to the ON and OFF statuses are of different lengths because, on switching, the previously displayed comment is cleared, so that no part of the previous comment that is not overlapped by the new one is left on the screen.

(Example)

Comment when ON: ABCDEF (reverse display)
 Comment when OFF: ABC (reverse display)



- The lengths of the reverse displays could be made equal by entering three spaces after the "ABC" of the OFF comment.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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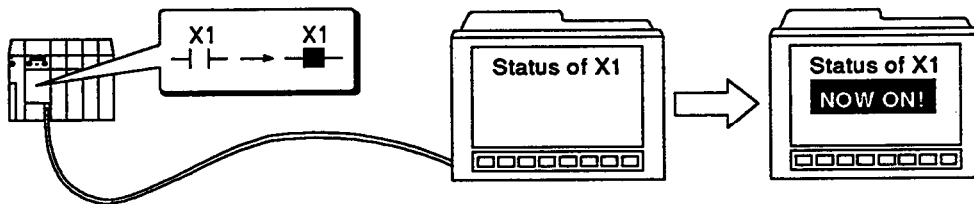
[Further available operations]

- (1) Displaying a message (comment) only when ON or only when OFF

It is possible to display a comment only when the device status is ON or only when it is OFF by setting only the "comment at ON" or only the "comment at OFF".

(Example)

Displaying a comment only when X1 is ON.

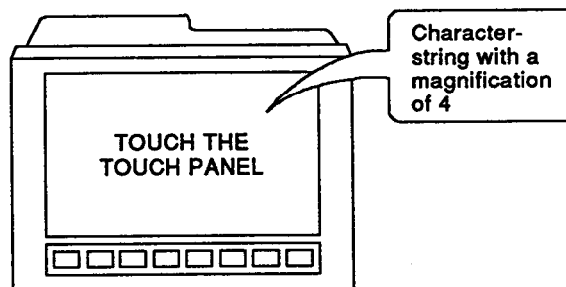


- (2) Displaying canvas screen character-strings with a magnification of 4 or 8 by using this function

Character-strings with a magnification of 4 or 8 can be displayed as canvas screen character-strings by setting "Magnification" to 4/8 and then setting the same comment for "Comment at ON" and "Comment at OFF".

(Example)

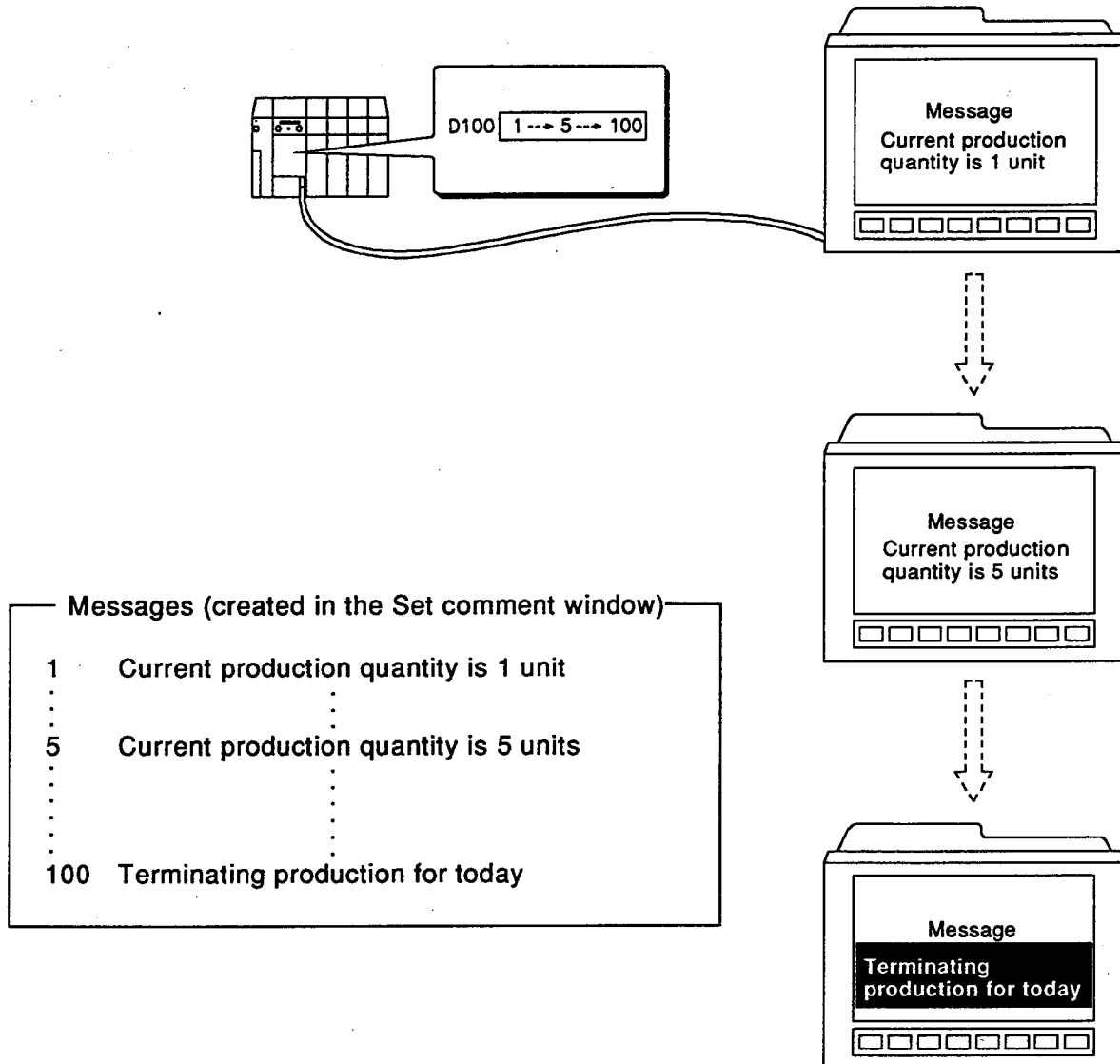
Displaying a character-string with a magnification of 4 on the monitor screen at all times.



9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

9.2 Displaying Messages (Comments) Corresponding to Word Device Values (Character-String Function)

[Monitoring example]



[Function]

This function displays a message (comment) that corresponds to numerical data in a word device or the buffer memory of a special function module.

- Up to 32767 different message (comment) can be displayed (the messages are created in the comment setting window).
- The message (comment) can be displayed blinking.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

MELSEC-A

[Settings by using the AGOTP]

Set monitoring condition in the character-string display setting window and the comment setting window.

(1) The character-string display setting window

Setting Items	Setting Ranges/Selection	Comment
Data collection trigger	Ordinary/bit device leading edge/falling edge	_____
Display position	Line: 1 to 25 Column: 1 to 80	
Magnification	1/2/4/8 (times)	
Monitor device	Word device	
Word device	_____	0 to 32767 can be stored. However, if the comment is not registered, the currently-displayed character string (comment) is erased.

(2) The comment setting window

Setting Items	Setting Ranges/Selection	Comment
Comment	1 to 80 characters (number of characters per comment)	On one line
Color	Set the display color.	Can be set to each comment. (Max. 32768)
Attribute	Normal/reverse	Limited to one item on a single screen.
Blink	None/low speed/medium speed/high speed	

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

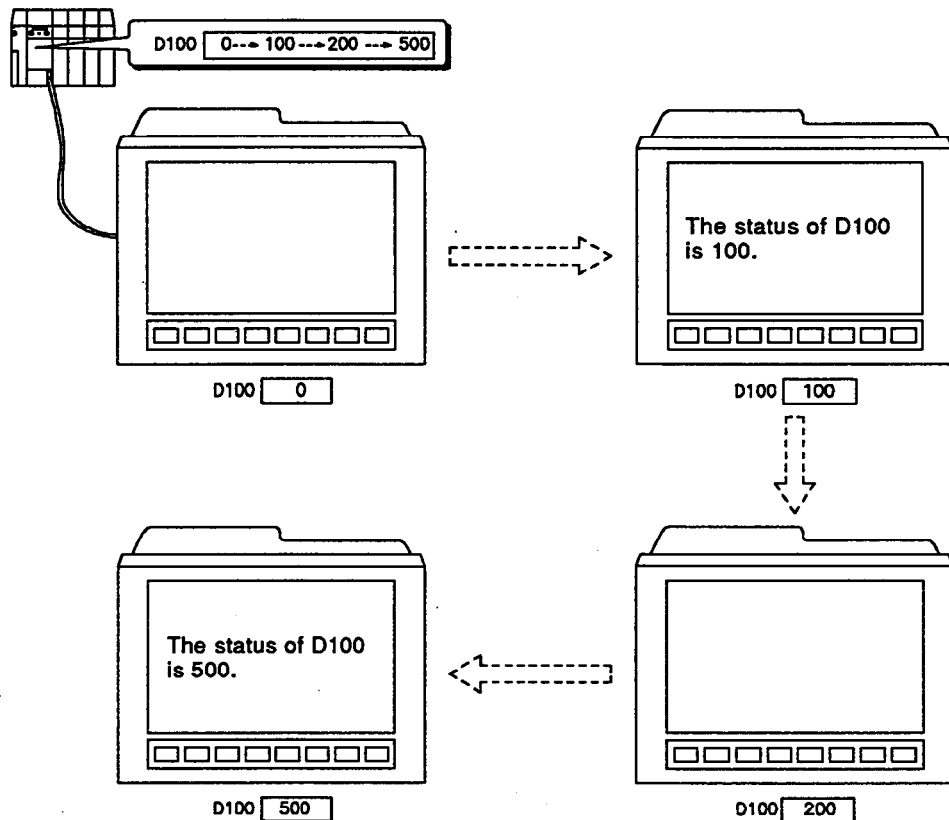
[Further available operations]

(1) Displaying a message (comment) only at a designated value

A comment can be displayed at a particular word device value value (e.g., 100, 200, 300) by making its comment number corresponding to that word device value.

(Example)

Displaying a comment only when the value of D100 is 100 or 500.



Messages (created in the comment setting window)	
100	The status of D100 is 100
101 to 499	
500	The status of D100 is 500.

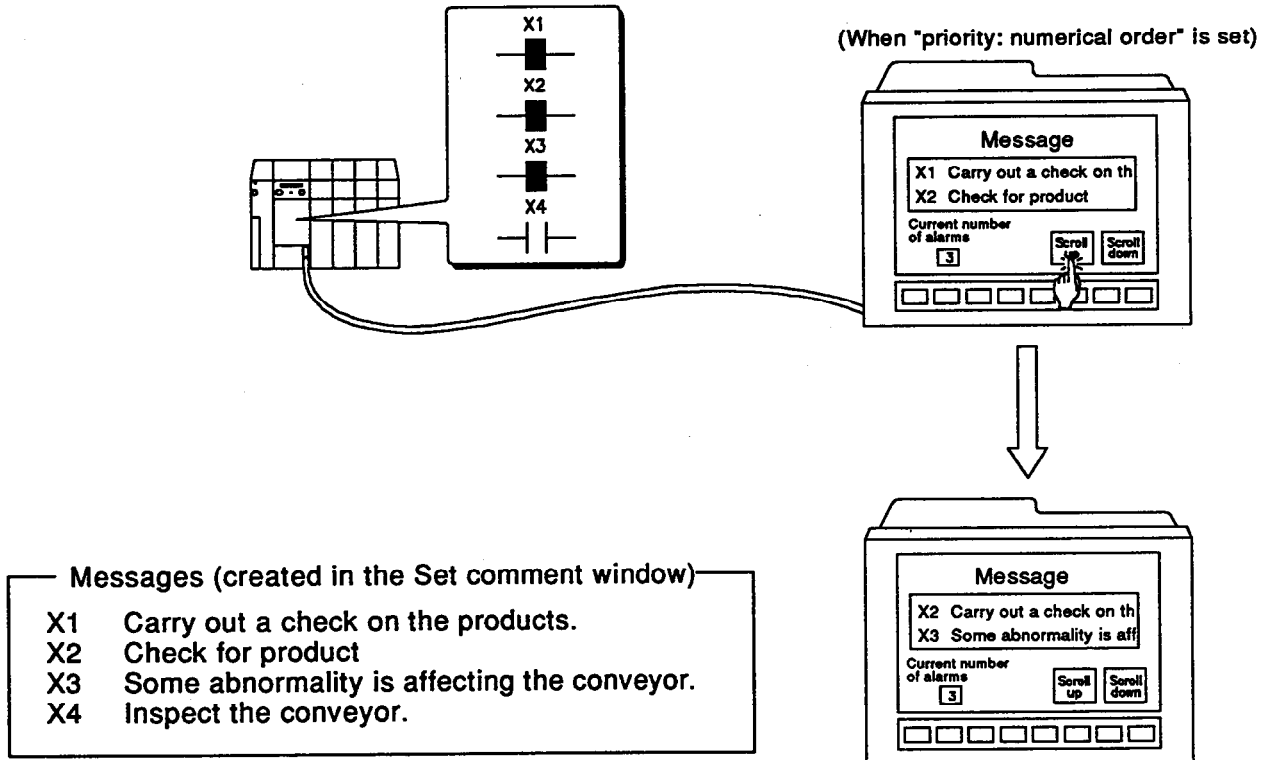
Only create comments for comment numbers that correspond to the values at which the comments are to be displayed.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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9.3 Displaying Messages in the Multiple Comment Display Mode by Making Messages (Comments) Corresponding to Consecutive Bit Devices (Alarm List Display Function)

[Monitoring example]



[Function]

This function establishes a correspondence between messages (comments) and a number of consecutive bit devices, and displays the messages that correspond to devices that are currently ON in order of priority.

- The order of priority for display can be based on the occurrence or numerical order.
- The number of bit devices that are currently ON can be stored in a designated word device.
- If not all of the messages (comments) that are currently ON are displayed in the display area, the displayed messages (comments) can be switched by using the [Scroll up] and [Scroll down] keys.
- Either a word device or bit number in a buffer memory can be specified as the monitor device.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

MELSEC-A

[Settings by using the AGOTP]

Set the monitoring conditions in the alarm list display setting window and comment setting window.

(1) Alarm list display setting window

Setting Item	Setting Range/Selection		Comment
Display mode/Priority	Multiple comment	Can not be used.	
	Priority	Occurrence/numerical order	
Data collection trigger	Ordinary (fixed)		
Display position	Top left	Line: 1 to 25 column: 1 to 80	
	Bottom right	Line: 1 to 25 column: 1 to 80	
Head comment number	0 to 32767		
Magnification	1/2/4/8 (times)		
Storage for number of occurrences	Word device		
Word device	_____		
Monitor device	Device	Designated bit of bit device/word device	
	Number of points	1 to 255	
Bit device	_____		

(2) Comment setting window

Setting Item	Setting Range/Selection	Comment
Comment	1 to 80 characters per comment	On one line
Color	Set the display color (15 colors)	Can be set for each comment. (Max. 32768)
Attribute	Normal/reverse	
Blink	None/low speed/medium speed/high speed	Limited to one item on a single screen.

[Complementary explanation of setting items]

(1) Priority

Set the method for determining the order of priority when multiple comments are displayed.

- Occurrence order: Comments are displayed in the order that their monitor devices came ON.
- Numerical order: Comments are displayed in the order of the monitor device numbers (lowest first).

(2) Display position

Set the area in which the comments are displayed.
The square frame defined by the top left and bottom right settings is the display area.

(3) Head comment number

Set the head number of the comments to be displayed.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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(4) Storage for number of occurrences

Set the word device that will store the data for the number of monitor devices that are ON.

(5) Monitor device

Set the head bit device or bit of word device of those corresponding to the comment numbers of the comments to be displayed; consecutive bit devices or bit of word device totaling the number specified in the "Number of points" setting will be allocated.

(Example)

The allocation ranges for particular devices when the "Number of points" setting is "5" are indicated below.

- When bit device X0 is set :
X0, X1, X2, X3, X4
- When bit 13 of word device D0 is set:
D0: b13, b14, b15
D1: b0, b1

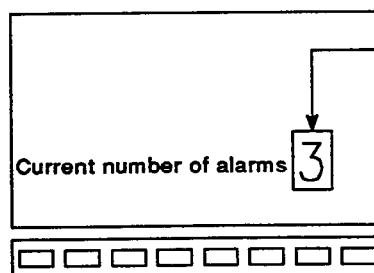
(6) Blink

Even though the blink intervals are set at low speed/medium speed/high speed when creating comments, the monitoring display part does not blink.

[Notes on using the function]

(1) Checking the number of bit devices that are currently ON

Since the number of monitor devices that are currently ON is written from the G controller unit to the number of occurrences storage device (word device), this number can be checked.



The number of alarm occurrences can be checked by displaying the contents of the number of occurrences storage device using the numerical value display function.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

(2) Orders of priority for display

(a) Occurrence order

The comments are displayed in the order that their monitor devices come ON.

(b) Numerical order

The comments are displayed in the order of the monitor device numbers (lowest first) of the monitor devices that are ON.

(Example)

The order of display dictated by these two systems in the case of the settings shown below is indicated in 1) and 2).

(Comment No.)	(Comment)	(Monitor device)	
100:	AAAA	X110	Number of points: 4
101:	BBBB	X111	
102:	CCCC	X112	
103:	DDDD	X113	

1) Setting = "occurrence order"

(1) Devices come ON in the order X110, X113, X112

```
CCCC
DDDD
AAAA
```



(2) X111 comes ON

```
BBBB
CCCC
DDDD
AAAA
```



(3) X112 goes OFF

```
BBBB
DDDD
AAAA
```

2) Setting = "numerical order"

(1) Devices come ON in the order X110, X113, X112

```
AAAA
CCCC
DDDD
```



(2) X111 comes ON

```
AAAA
BBBB
CCCC
DDDD
```

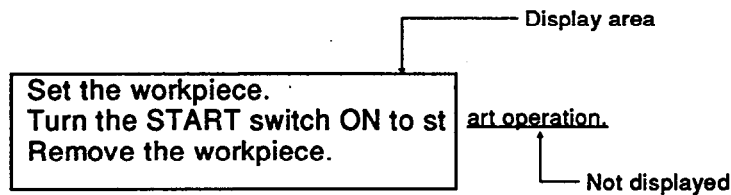


(3) X112 goes OFF

```
AAAA
BBBB
DDDD
```

(3) Display area

Since each comment is displayed on one line only, parts of comments that extend beyond the right margin of the display area are not displayed.

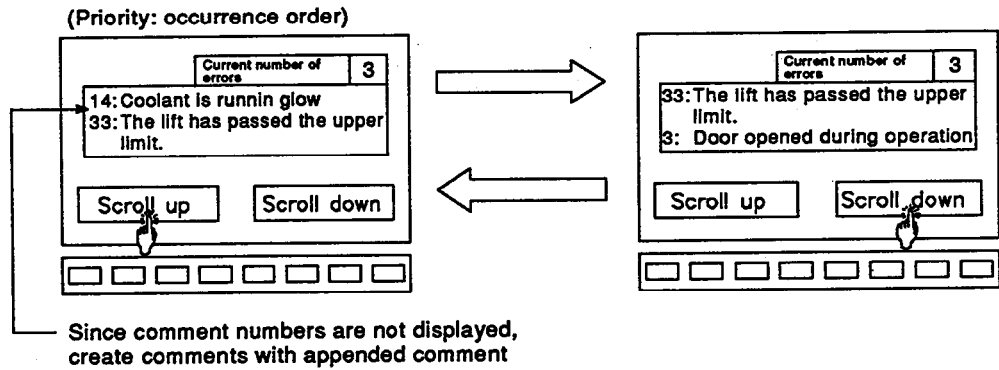


9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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(4) Displaying other comments in the display area

Comments outside the display area can be displayed by pressing the "Scroll up" and "Scroll down" keys.

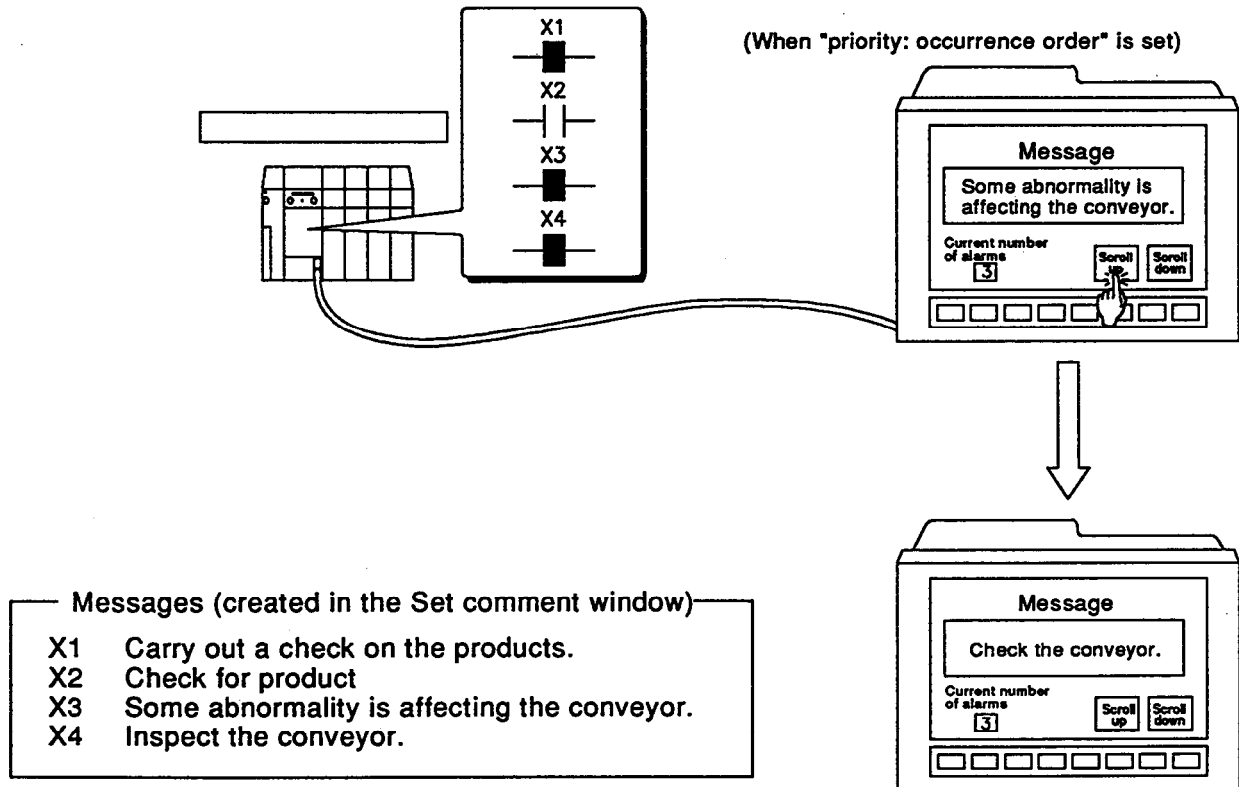


- Set "Scroll up" and "Scroll down" by assigning key codes F2H and F3H in touch key setting.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

MELSEC-A

9.4 Displaying Messages in the Single Comment Mode by Marking Messages (Comments) Corresponding to Consecutive Bit Devices (Alarm List Display Function)



[Function]

- This function establishes a correspondence between messages (comments) and a number of consecutive bit devices, and displays the message that has the highest priority.
- The order of priority for display can be based on the occurrence or numerical order.
- The message (comment) is continued on the next line when it reaches the right edge of the display area.
- The number of bit devices that are currently ON can be stored in a specified word device.
- The message (comment) that follows the currently displayed message (comment) in the order of priority can be displayed by using the [Scroll up]/[Scroll down] keys.
- Either a word device or bit number in a buffer memory can be specified as the monitor device.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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[Settings by using the AGOTP]

Set the monitoring conditions in the alarm list display setting window and comment setting window.

(1) Alarm list display setting window

Setting Item	Setting Range/Selection		Comment
Display mode/Priority	Multiple comment	Can be used.	
	Priority	Occurrence/numerical order	
Data collection trigger	Ordinary (fixed)		
Display position	Top left	Line: 1 to 25 column: 1 to 80	
	Bottom right	Line: 1 to 25 column: 1 to 80	
Head comment number	0 to 32767		
Magnification	1/2/4/8 (times)		
Storage for number of occurrences	Word device		
Word device	_____		
Monitor device	Device	Designated bit of bit device/word device	
	Number of points	1 to 255	
Bit device	_____		

(2) Comment creation window

Setting Item	Setting Range/Selection	Remark
Comment	1 to 80 characters per comment	On one line
Color	Set the display color (15 colors)	Can be set for each comment. (Max. 32768)
Attribute	Normal/reverse	
Blink	None/low speed/medium speed/high speed	Limited to one item on a single screen.

[Complementary explanation of setting items]

(1) Priority

Set the method for determining the order of priority.

- Occurrence order: Comments are displayed in the order that their monitor devices comes ON.
- Numerical order: Comments are displayed in the order of the monitor device numbers (lowest first).

(2) Display position

Set the area in which the comments are displayed.

The square frame defined by the top left and bottom right settings is the display area.

(3) Head comment number

Set the head number of the comments to be displayed.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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(4) Storage for number of occurrences

Set the word device that will store the data for the number of monitor devices that are ON.

(5) Monitor device

Set the head bit device or bit of word device of those corresponding to the comment numbers of the comments to be displayed; consecutive bit devices or bit of word device totaling the number specified in the "Number of points" setting will be allocated.

(Example)

The allocation ranges for particular devices when the "Number of points" setting is "5" are indicated below.

- When bit device X0 is set :
X0, X1, X2, X3, X4
- When bit 13 of word device D0 is set:
D0: b13, b14, b15
D1: b0, b1

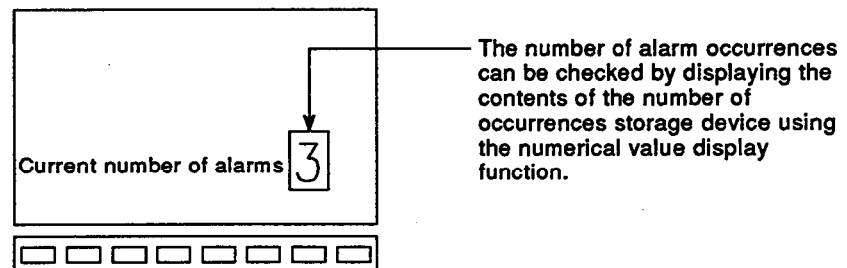
(6) Blink

Even though the blink intervals are set at low speed/medium speed/high speed when creating comments, the monitoring display part does not blink.

[Notes on using the function]

(1) Checking the number of bit devices that are currently ON

Since the number of monitor devices that are currently ON is written from the G controller unit to the number of occurrences storage device (word device), this number can be checked.

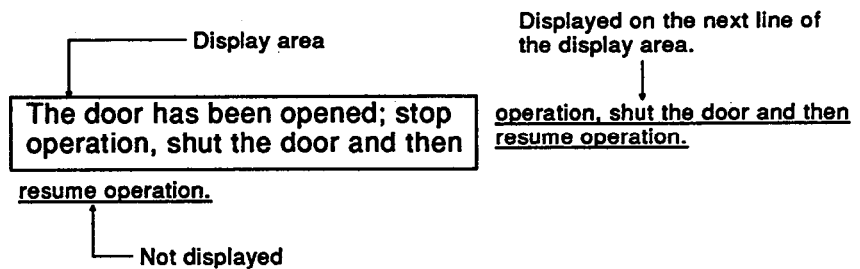


(2) Display area

Even if multiple monitor devices are ON, only the comment that corresponds to the monitor device with the highest priority is displayed in the display area.

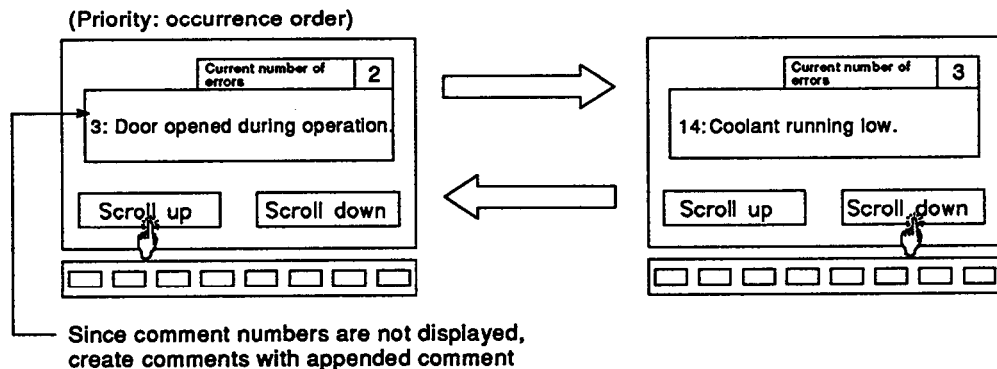
Basically, each comment is displayed on one line, but if part of a comment extends beyond the right margin of the display area, that part is displayed on the next line.

If a comment extends beyond the right margin on the bottom line of the display area, the part that cannot be accommodated is not displayed.



(3) Switching the display to other comments

Other comments whose devices are ON can be displayed by using the "Scroll up" and "Scroll down" keys.



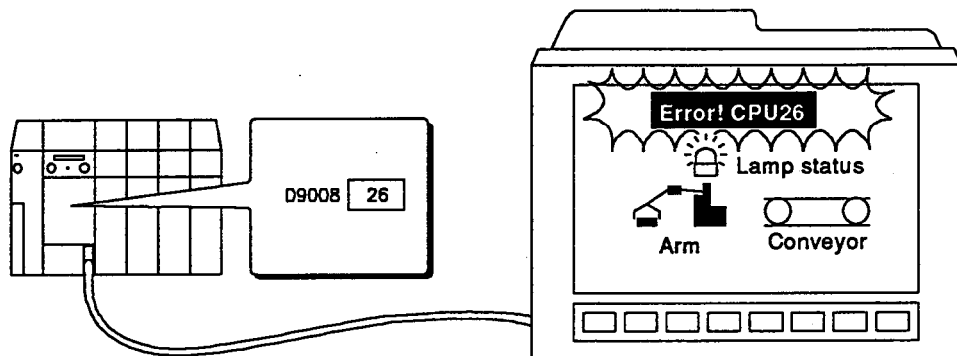
- Set the "Scroll up" and "Scroll down" keys by assigning key codes F2H and F3H in touch key setting.

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

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9.5 Displaying Alert Messages when Errors Occur (Error Alert Message Display)

[Monitoring example]



[Function]

This function displays a blinking error alert message when an error occurs.

- When a system error or G controller error occurs, the generating source and error code of the detected error are displayed in addition to the error alert message.
(The display is automatically cleared when the cause of occurrence of the error is eliminated.)
- When a device that is set "ON" by an alarm setting in the announcement setting window turns "ON", the device number is displayed in addition to the error alert message.
(The display is automatically cleared when the cause of occurrence of the error is eliminated.)

9. DISPLAYING THE CONTENTS OF DEVICES USING MESSAGES (COMMENTS)

[Settings by using the AGOTP]

Set error alert display monitoring condition in Set error alert window. Refer to the following table.

(1) Error alert setting window

Setting Item	Setting Range/Selection	Comment
Display position	Line: 1 to 25 Column: 1 to 80	_____
Magnification	1/2/4/8 (times)	
Alert message	1 to 64 characters	Per line
Col./attribute	Color	Set the display color (15 colors)
	Attribute	

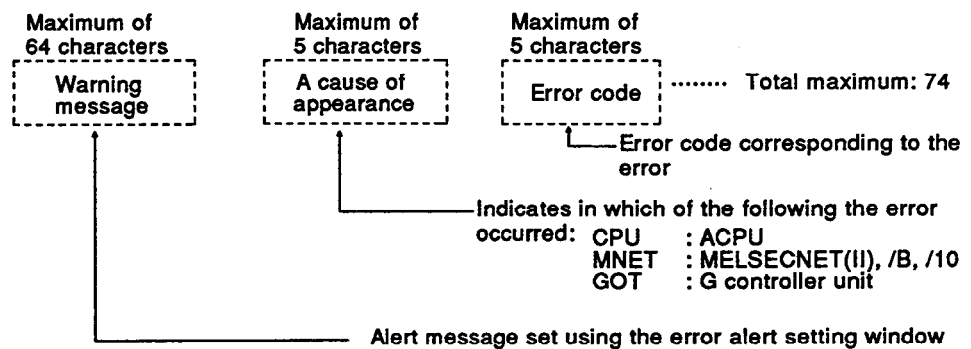
(2) Announcement setting window

Setting Item	Setting Range/Selection	Comment
Monitor device	Bit device leading edge	Set in 1 point units
Alarm	ON/OFF	

[Notes on using the function]

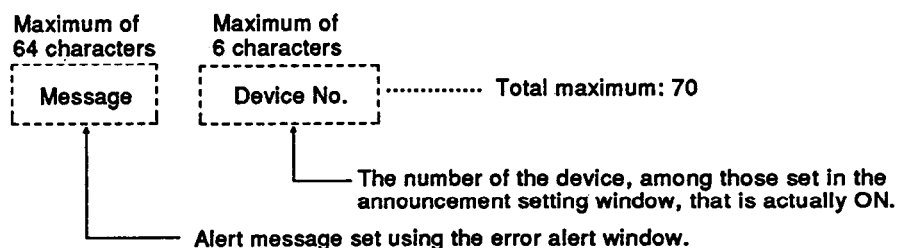
(1) Display format for error alert message display

The display format for error alert message display is shown below.



(2) Display format for error alert message display (announcement function)

The display format for error alert message display (announcement function) is shown below.



(3) Checking the type of error that has occurred

The occurrence history of system errors detected by the G controller unit can be checked by using the system alarm display function. (See the A77GOT-S5 User's Manual.)

(4) Generating factor of an error alert

- (a) When an error code is stored in D9008 of ACPU
- (b) When the G controller detects an error of error code No. 300 or higher.
- (c) When data link special relay (M9200 numbers of generation) of ACPU turns ON (A special relay that is valid for a master station and a special relay that is valid for a local station are different.)
- (d) When MELSECNET/10 link special relay (SB0000 numbers of generation) turns ON.

(5) Announcement function

See Section 12.6 about the announcement function.

(6) Order of priority for the error alert message display function

- (a) The error alert is managed and is displayed in the priority that followed order of the item number of the following error occurrence factor.
 - 1) Announcement (alarm message)
The priority is attached to the alarm message of a maximum of 256 in the order of setting in the announcement setting window. The priority of an alarm message set first is highest.
 - 2) System error of the G controller (Error code: 300 or more)
The priority of each system error of the G controller is the same.
 - 3) MELSECNET/B and MELSECNET(II) error (Error code: 200 to 299)
The priority of each error of MELSECNET/B and MELSECNET(II) is the same.
MELSECNET/10 error (Error codes: 500 to 599)
All MELSECNET/10 errors have the same priority.
 - 4) ACPU error (Error code: 0 to 199)
The priority of each error of ACPU is the same.

When these errors occur, an error alert is displayed according to the following rule.

- The error alert of an error of which priority is highest is displayed.
 - When a generating factor of a displayed error alert is removed, the error alert of the error which priority is highest and occurred last is displayed most.
 - When an error of which priority is higher than an error which error alert is displayed at present occurs, the error alert of an error of which priority is higher is displayed. (A display changes.)
 - When an error of the priority that is the same as an error which error alert is displayed at present occurs, an error alert is displayed as follows.
 - i) When the G controller system error occurs
The error alert of occurring several system errors is displayed sequentially. (Display changes sequentially.)
 - ii) When an error other than above i) occurs
The error alert of the error that occurred last is displayed. (A display changes.)
 - When an error which error alert is not displayed at present is occurring and when a generating factor of the error is removed, the error alert of the error is not displayed. (An error alert display of the present does not change.)
- (b) When the G controller unit is started up earlier than MELSEC-NET/B and the MELSECNET(II) data link system by starting up the ACPU, the error alert of MELSECNET/B and MELSECNET(II) is displayed until a start-up of data link system is completed.
- (c) When the G controller unit is started up earlier than the MELSEC-NET/10 network system by starting up the ACPU, the MELSEC-NET/10 error alert is displayed until start-up of the network system is completed.

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS) AS GRAPHICS (PARTS)

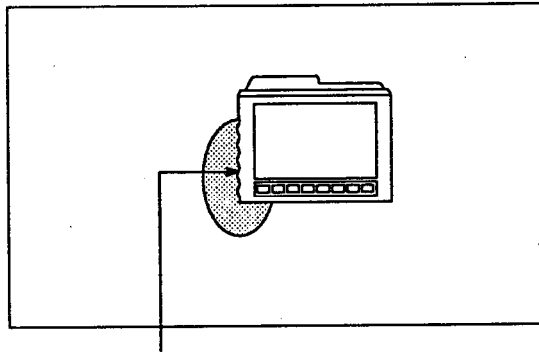
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10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS) (PART DISPLAY FUNCTION)

10.1 Things that should be Known about the Part Display Function

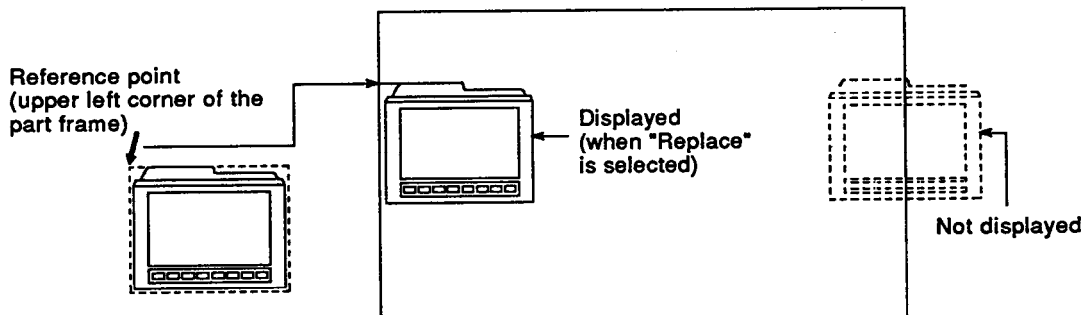
- (1) Do not overlap the displays of different part display functions. If displays are overlapped the resulting image will be unclear.

Example when
"Background" is
selected for the

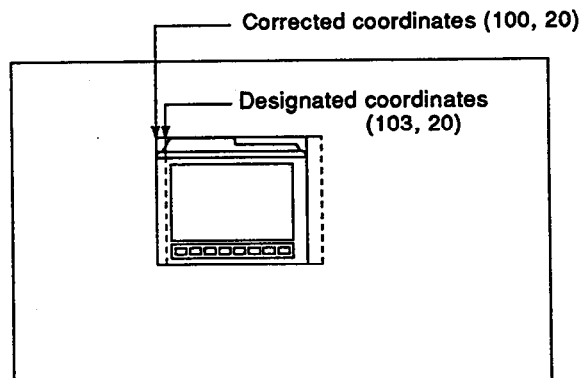


The display is distorted.

- (2) Do not make coordinate specifications which make it impossible to display the entire part. The part will not be displayed.



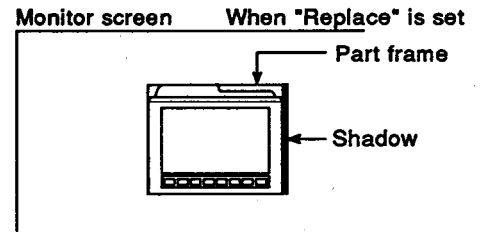
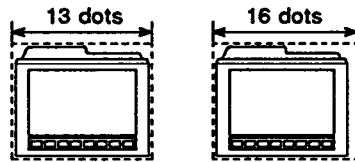
- (3) Make the X coordinate of the reference point (upper left corner of the part frame) an integral multiple of 4. If the value set is not an integral multiple of 4, it is corrected to the nearest integral multiple of 4 by counting downward (i.e., by moving to the left on the screen).



10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

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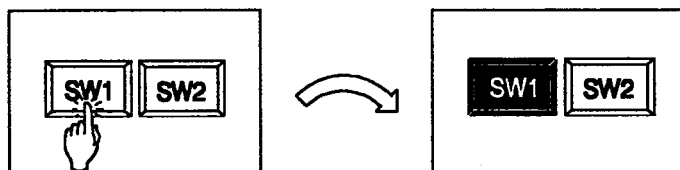
- (4) Create the part so that the size of the part frame in the X-axis direction is a number of dots that is an integral multiple of 4.
If the number of dots in the X direction is not an integral multiple of 4, the part display area is corrected (by expansion) so that it becomes an integral multiple of 4.



POINT

Switches and push buttons whose operation causes the display to switch in accordance with the ON/OFF status of bit devices can be displayed by using the touch key graphic display function. (See Section 6.)

Since there is no need to register the switches or push buttons as parts when this method is used, memory area is saved.



10.2 Display Mode

The display mode setting determines which of the following will happen when a part is displayed: the canvas screen is not displayed in the part display area, the part is displayed together with the existing background, or the part and background are displayed in combination after exclusive logical sum processing.

(1) "Replace"

When this setting is made, the canvas screen is not displayed inside the part display area when a part is displayed.

(2) "Background"

When this setting is made, the canvas screen is displayed inside the part display area when a part is displayed.

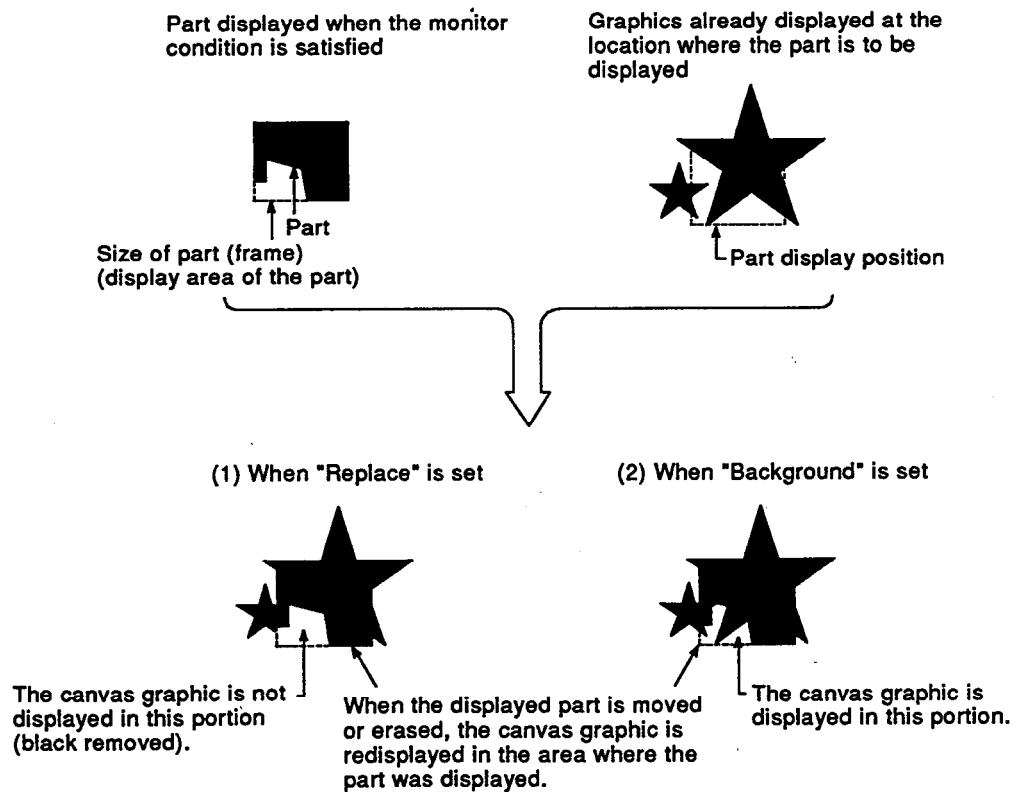
(3) XOR synthesis

When this setting is made, the canvas screen is displayed inside the part display area after XOR synthesis.

XOR synthesis is a function whereby the part and background colors are subjected to exclusive logical sum processing to determine the display color.

(Examples of displays during monitoring with different display mode settings)

(a) When "Replace" or "Background" is set



10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

(b) When "XOR" is set

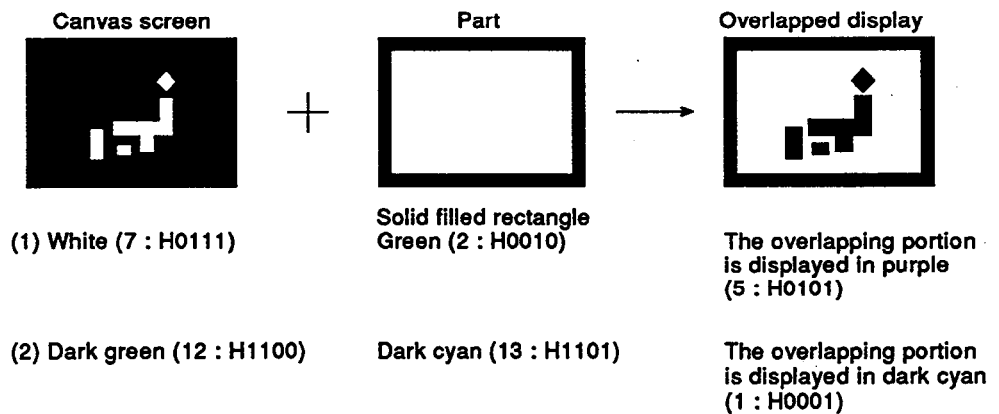
- In the case of a monochrome display, if the canvas screen is white and the part is also created in white, the overlap will be displayed in black after XOR synthesis.
(If the canvas screen is created in white and the part in black, the overlapping parts will be displayed in white.)
- With a color display, XOR synthesis (exclusive logical sum processing) is performed on the basis of the bit statuses corresponding to the display colors (black: 0, blue: 1, green: 2, cyan: 3, red: 4, purple: 5, yellow: 6, white: 7, gray: 8, dark blue: 9, dark red: 10, dark purple: 11, dark green: 12, dark cyan: 13, dark yellow: 14).

Remark

In exclusive logical sum processing, the following bit calculations are performed.

Input: A	Input: B	Output
0	0	0
0	1	1
1	0	1
1	1	0

(Example for a color display)



POINTS

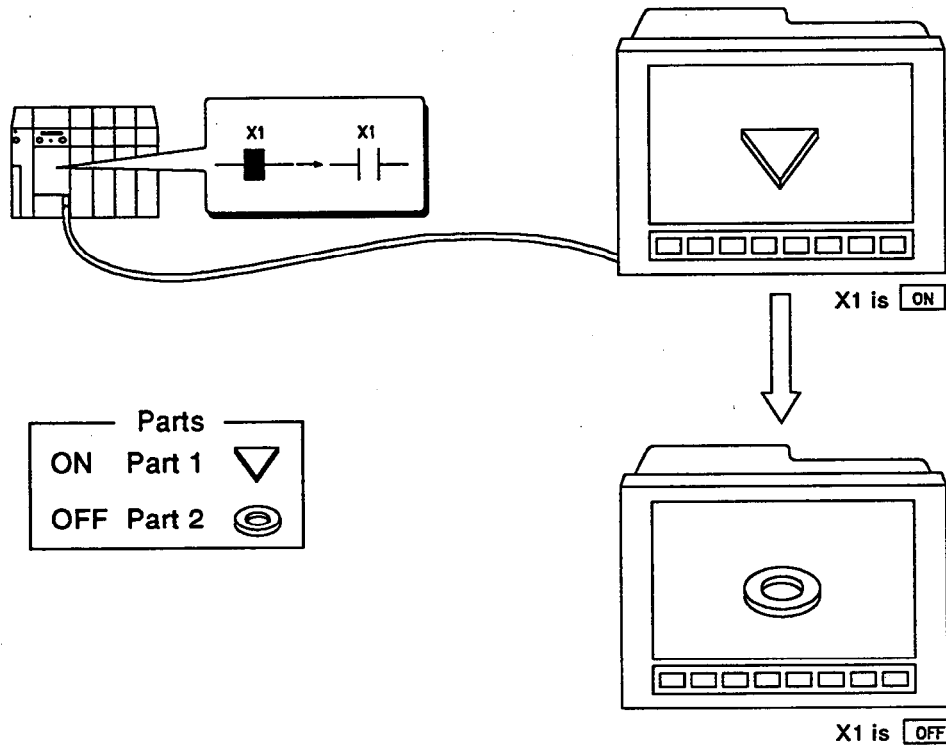
1. Create parts that are going to be overlapped as solid filled graphics.
2. You are recommended to check the colors displayed at overlapping portions by using the image display function of the AGOTP toolbox menu.

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

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10.3 Displaying Graphics (Parts) that Correspond to the ON/OFF Statuses of Bit Devices

[Monitoring example]



[Function]

This function displays graphics (parts) that correspond to the ON/OFF statuses of bit devices.

- The graphics (parts) can be displayed blinking.
- Graphics can be displayed in response to the ON/OFF status of the designated bit of a word device or buffer memory.
- It is also possible to display a graphic (part) only when the bit is ON or only it is OFF.

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

[Settings by using the AGOTP]

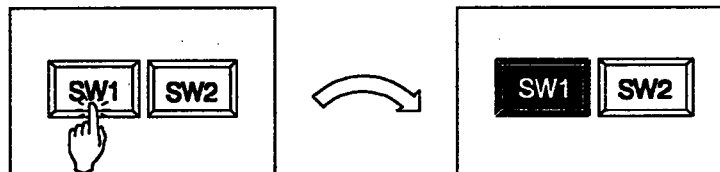
Set the monitor conditions in the part setting window.

Setting Item	Setting Range/Selection		Comment
Display type	Display		_____
Background	Replace/background/XOR		
Data collection trigger	Ordinary/bit device leading edge/bit device falling edge		One per screen
Blink	None/low speed/medium speed/high speed		_____
Display switching	Bit device		
Bit device	_____		
Part drawing No. setting	When ON	No.1 to No.255	Setting part No.0 deletes the part.
	When OFF	No.1 to No.255	
Reference point coordinates	X-axis: 0 to 639, Y-axis: 0 to 399		Dot

POINT

Switches and push buttons whose operation causes the display to switch in accordance with the ON/OFF status of bit devices can be displayed by using the touch key graphic display function. (See Section 6.)

Since there is no need to register the switches or push buttons as parts when this method is used, memory area is saved.

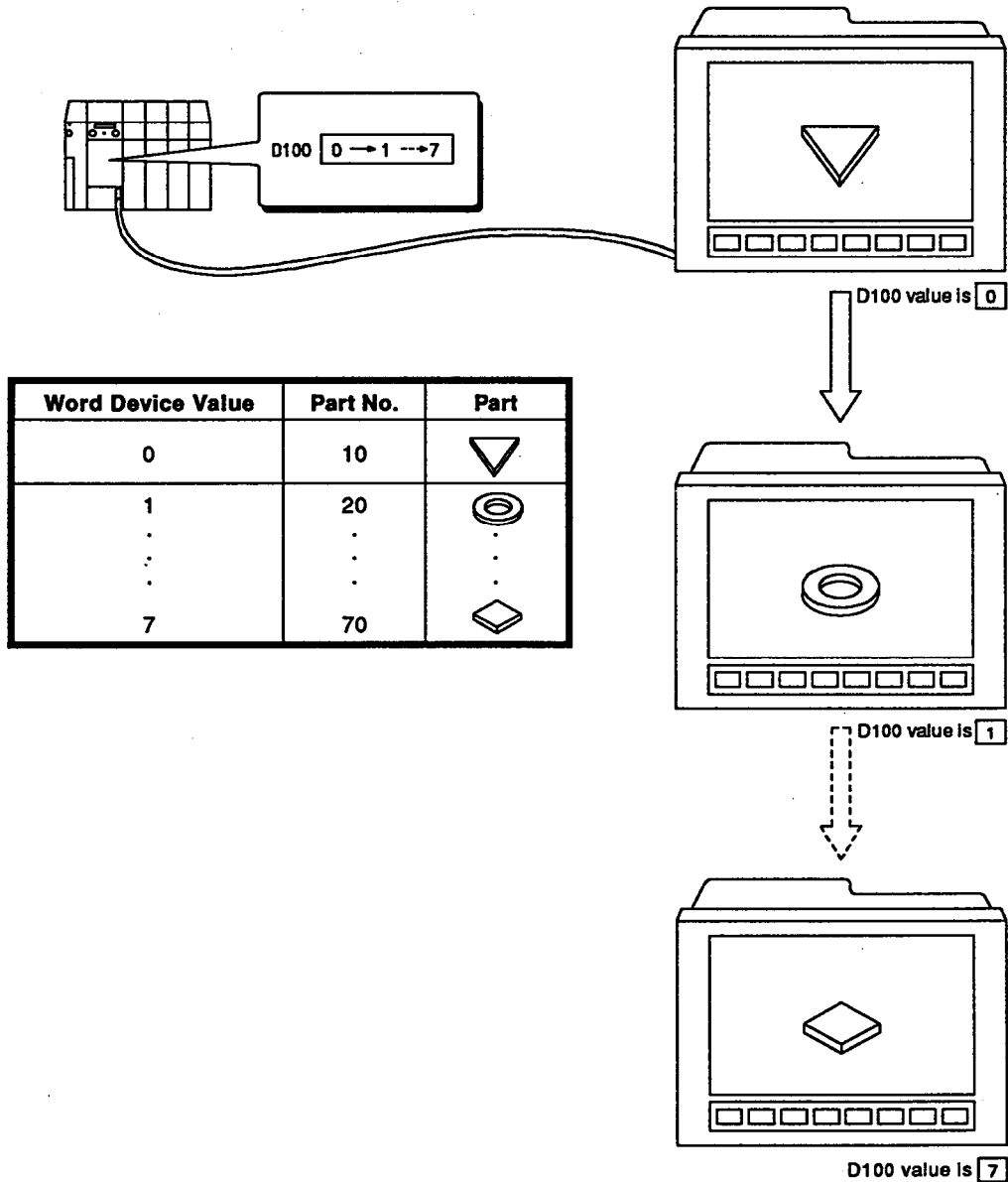


10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

MELSEC-A

10.4 Displaying Graphics (Parts) that Correspond to Word Device Values (0 to 7)

[Monitoring example]



[Function]

This function displays graphics (parts) that correspond to the numerical value data (0 to 7) in a designated word device or the buffer memory of a special function module.

- The graphics (parts) can be displayed blinking.

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

MELSEC-A

[Settings by using the AGOTP]

Set the monitor conditions in the part setting window.

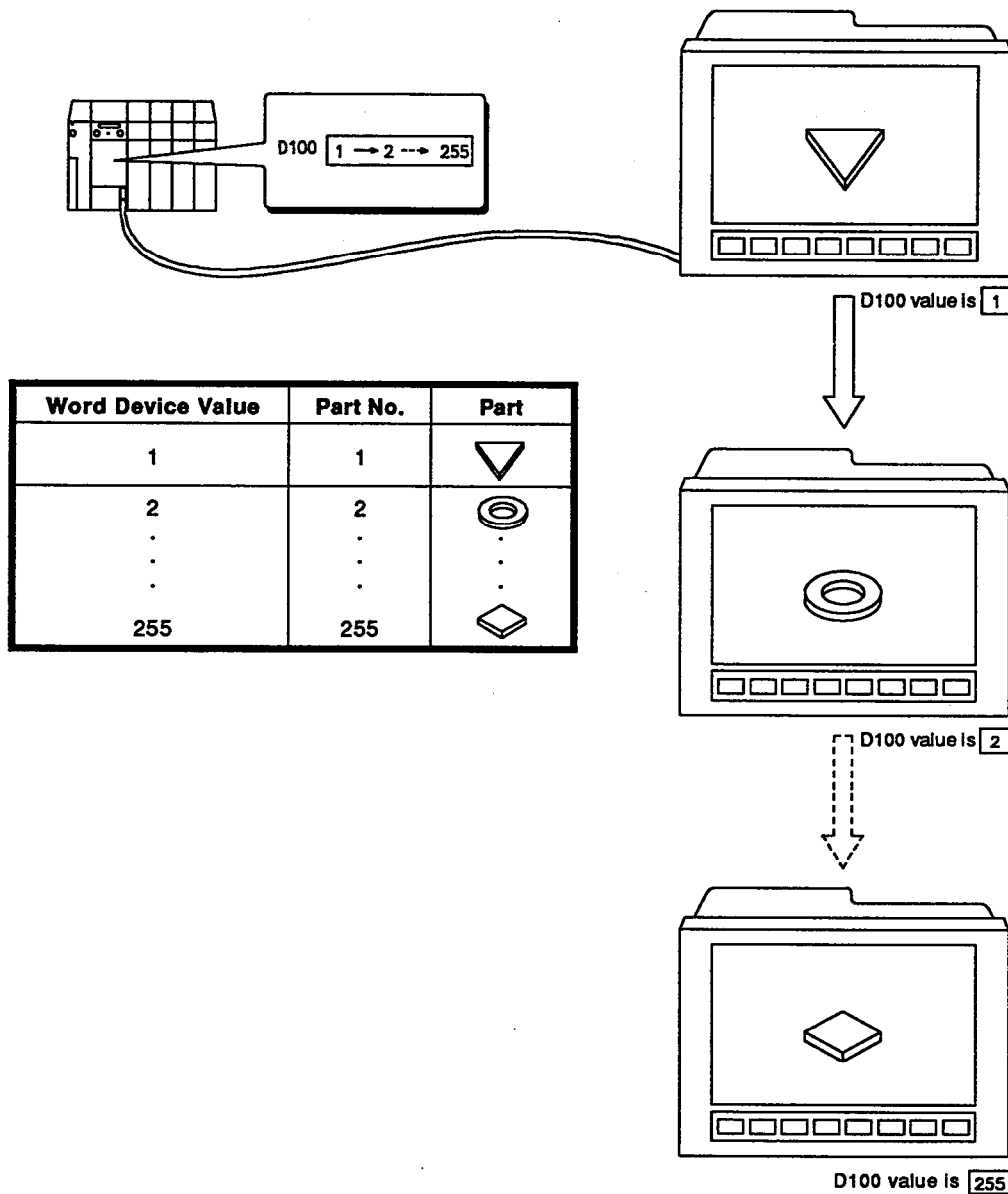
Setting Item	Setting Range/Selection	Comment
Display type	Display	_____
Background	Replace/background/XOR	
Data collection trigger	Ordinary/bit device leading edge/bit device falling edge	One per screen
Blink	None/low speed/medium speed/high speed	_____
Display switching	Word device	
Word device	_____	
Part drawing No. setting	Set part numbers corresponding to values 0 to 7. (No.1 to No.255)	Setting part No.0 deletes the part.
Reference point coordinates	X-axis: 0 to 639, Y-axis: 0 to 399	Dot

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

MELSEC-A

10.5 Displaying Graphics (Parts) that Correspond to the Values (0 to 255) of Word Devices

[Monitoring example]



[Function]

This function displays graphics (parts) by regarding the numerical value data in a designated word device or the buffer memory of a special function module as a part number.

- The graphics (parts) can be displayed blinking.

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

MELSEC-A

[Settings by using the AGOTP]

Set the monitor conditions in the part setting window.

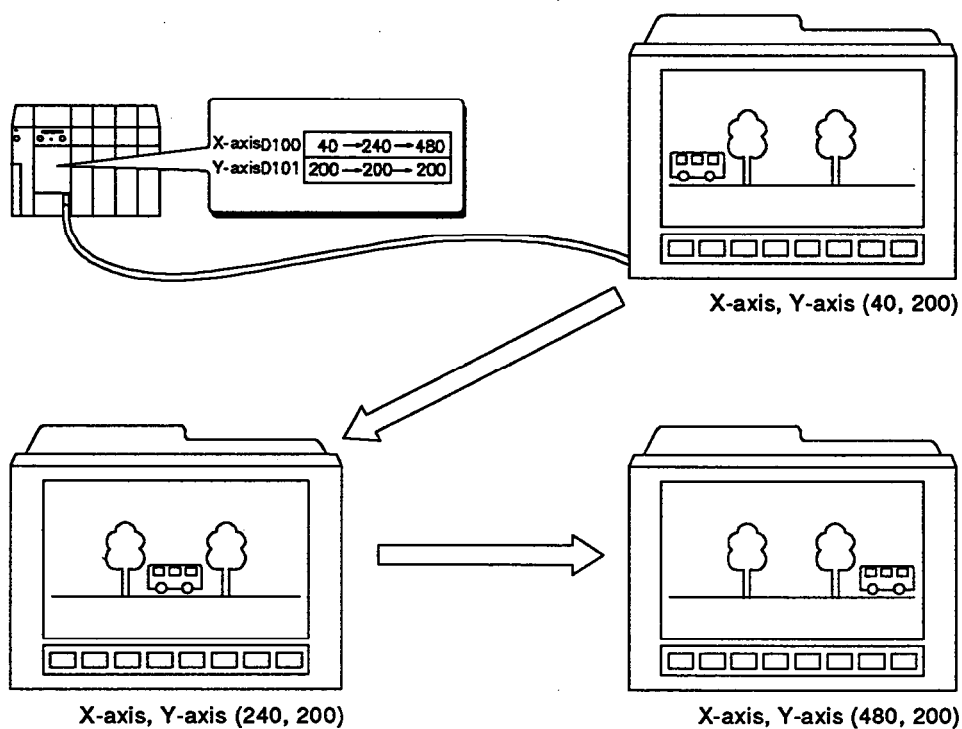
Setting Item	Setting Range/Selection	Comment
Display type	Display	_____
Background	Replace/background/XOR	
Data collection trigger	Ordinary/bit device leading edge/bit device falling edge	
Blink	None/low speed/medium speed/high speed	One per screen
Display switching	Direct	_____
Word device	_____	
Reference point coordinates	X-axis: 0 to 639, Y-axis: 0 to 399	Dot

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

MELSEC-A

10.6 Depicting Motion with Graphics (Parts)

[Monitoring example]



[Function]

This function depicts the motion of objects by using graphics (parts).

- The graphics (parts) can be displayed blinking.
- The graphic (part) can be switched each time a motion occurs.

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

MELSEC-A

[Settings by using the AGOTP]

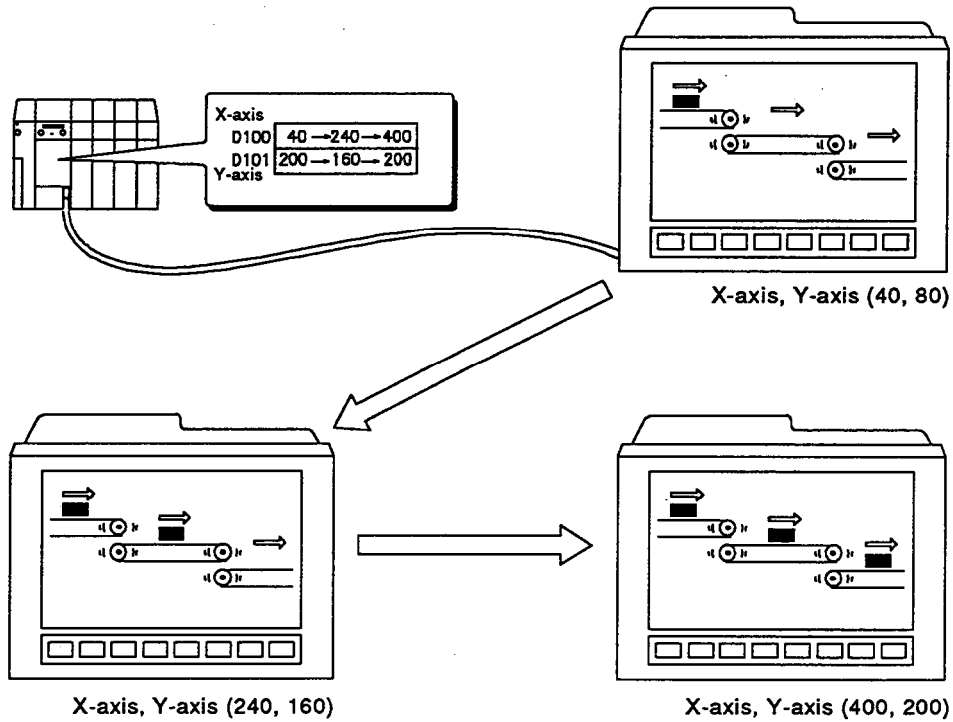
Set the monitor condition in the part setting window.

Setting Item	Setting Range/Selection	Comment														
Display type	Movement	_____														
Background	Replace/background/XOR															
Data collection trigger	Ordinary/bit device leading edge/bit device falling edge															
Blink	None/low speed/medium speed/high speed															
Display switching	Fixed/word device/bit device/direct	One per screen														
Bit device/word device	_____	_____														
Part No. setting	<table border="1"> <thead> <tr> <th>Fixed</th> <th colspan="2">No.1 to No.255</th> </tr> </thead> <tbody> <tr> <td>Word device</td> <td colspan="2">Set part numbers corresponding to values 0 to 7 (No.1 to No.255)</td> </tr> <tr> <td rowspan="2">Bit device</td> <td>When ON</td> <td>No.1 to No.255</td> </tr> <tr> <td>When OFF</td> <td>No.1 to No.255</td> </tr> <tr> <td>Direct</td> <td colspan="2">_____</td> </tr> </tbody> </table>	Fixed	No.1 to No.255		Word device	Set part numbers corresponding to values 0 to 7 (No.1 to No.255)		Bit device	When ON	No.1 to No.255	When OFF	No.1 to No.255	Direct	_____		Setting part No.0 deletes the part.
	Fixed	No.1 to No.255														
	Word device	Set part numbers corresponding to values 0 to 7 (No.1 to No.255)														
	Bit device	When ON	No.1 to No.255													
When OFF		No.1 to No.255														
Direct	_____															
Reference point coordinates	X-axis: Word device Y-axis: (X-axis word device) + 1	_____														

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

10.7 Depicting Motion With Graphics (Parts) while Leaving a Trace

[Monitoring example]



[Function]

This function depicts the motion of objects with graphics (parts) while leaving the graphics for completed stages of the motion displayed.

- The graphics (parts) can be displayed blinking.
- The graphic (part) can be switched each time a motion occurs.

10. DISPLAYING THE CONTENTS OF DEVICES AS GRAPHICS (PARTS)

MELSEC-A

[Settings by using the AGOTP]

Set the monitor condition in the part setting window.

Setting Item	Setting Range/Selection	Comment														
Display type	Locus															
Background	Replace/background															
Data collection trigger	_____															
Blink	_____															
Display switching	Fixed/word device/bit device/direct															
Bit device/word device	_____															
Part No. setting	<table border="1"> <thead> <tr> <th>Fixed</th> <th colspan="2">No.1 to No.255</th> </tr> </thead> <tbody> <tr> <td>Word device</td> <td colspan="2">Set part numbers corresponding to values 0 to 7 (No.1 to No.255)</td> </tr> <tr> <td rowspan="2">Bit device</td> <td>When ON</td> <td>No.1 to No.255</td> </tr> <tr> <td>When OFF</td> <td>No.1 to No.255</td> </tr> <tr> <td>Direct</td> <td colspan="2">_____</td> </tr> </tbody> </table>	Fixed	No.1 to No.255		Word device	Set part numbers corresponding to values 0 to 7 (No.1 to No.255)		Bit device	When ON	No.1 to No.255	When OFF	No.1 to No.255	Direct	_____		Setting part No.0 deletes the part.
	Fixed	No.1 to No.255														
	Word device	Set part numbers corresponding to values 0 to 7 (No.1 to No.255)														
	Bit device	When ON	No.1 to No.255													
When OFF		No.1 to No.255														
Direct	_____															
Reference point coordinates	X-axis: Word device Y-axis: (X-axis word device) + 1	_____														

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM (LEVEL DISPLAY FUNCTION, GRAPH DISPLAY FUNCTION)

11.1 Things that should be Known when Setting the Level Display Function or Graph Display Function

(1) Data collection triggers that can be set for each function

The collection timing that can be designated as a condition for data collection for the G controller unit (data collection trigger) is indicated for each function below.

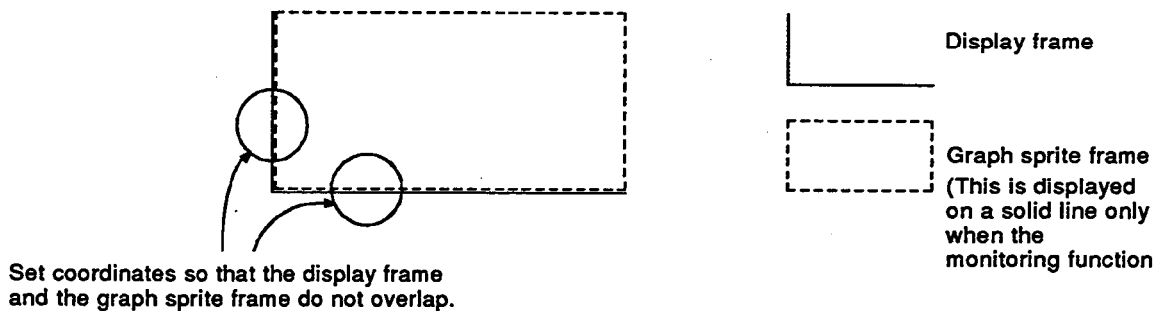
Function	Data Collection Trigger			
	Ordinary time (at G controller unit leading edge/falling edge)	At bit device leading edge/falling edge	Sampling (at intervals specified by the user)	Time designation (at times designated by the user)
Level display	○	○	X	X
Trend graph	X	○	○	○
Bar graph	○	○	X	X
Polygonal line graph	○	○	X	X
Spline graph	○	○	X	X
Scattered graph	X	○	○	X
Pie graph	○	○	X	X

(2) Graph sprite frame

This setting determines the coordinates of the upper left point and lower right point of the graph display range. When drawing a display frame for a graph display on a canvas screen, set the coordinates so that the display frame and the graph sprite frame do not overlap.

(Example)

When a bar graph display function is set

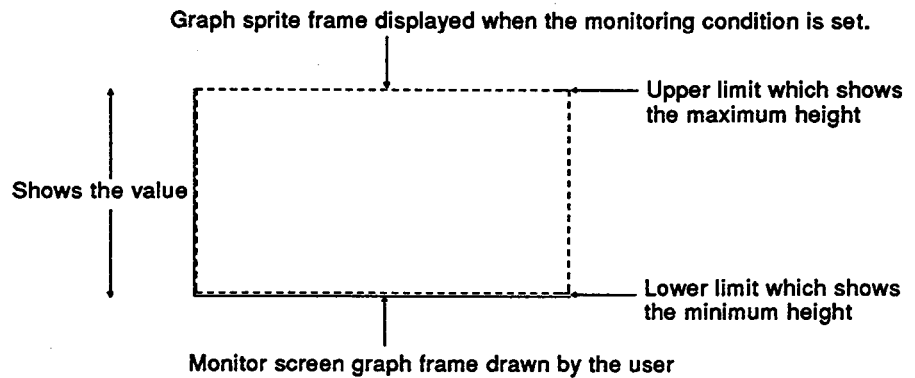


11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

(3) Upper limit and lower limit

This must be set so that the G controller may find the height of a graph in the graph display range (graph sprite frame) as shown below:

- **Upper limit**
Standard value for finding the maximum height (100% state) of a graph. Any value greater than the upper limit is treated as the upper limit in the graph display.
- **Lower limit**
Standard value for finding the minimum height (0% state) of a graph. Any value less than the lower limit is treated as the lower limit in the graph display.



(4) Point interval

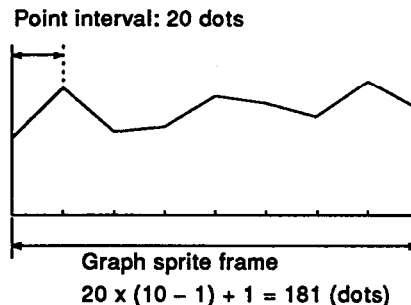
(a) Trend graph display function

The data display interval (X-axis direction) of the trend graph is set by dot unit.
The graph sprite frame of a trend graph is determined by a point interval and the number of points. Calculate by using the following expression.

$$\text{(Graph sprite frame)} = \text{(point interval)} \times \{(\text{number of points}) - 1\} + 1$$

(Example)

It is necessary to secure 181 dots as length of the X-axis of a graph sprite frame to display 10 collected data in 20 dots interval.



(b) Polygonal line graph display function and spline graph display function


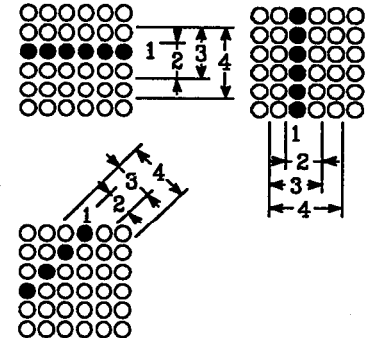




The point interval is automatically determined on setting the graph sprite frame and the number of points in the X-axis direction.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

(5) Line attributes for trend graphs, polygonal line graphs, and spline graphs

Select the line attribute from 5 kinds of lines and 4 kinds of line sizes.

Line Type	Line Size	
 (Solid line)	Fine line (1 dot)	<Relationship between line sizes and a line dot> 
 (Broken line)	Medium line (2 dots)	
 (Dotted line)	Thick line (3 dots)	
 (Long and short dash line)	Extra thick line (4 dots)	
 (Long and two short dashes line)		

(6) Point attributes for scattered graphs

Select the point attribute from 8 kinds points and 3 kinds of point sizes.

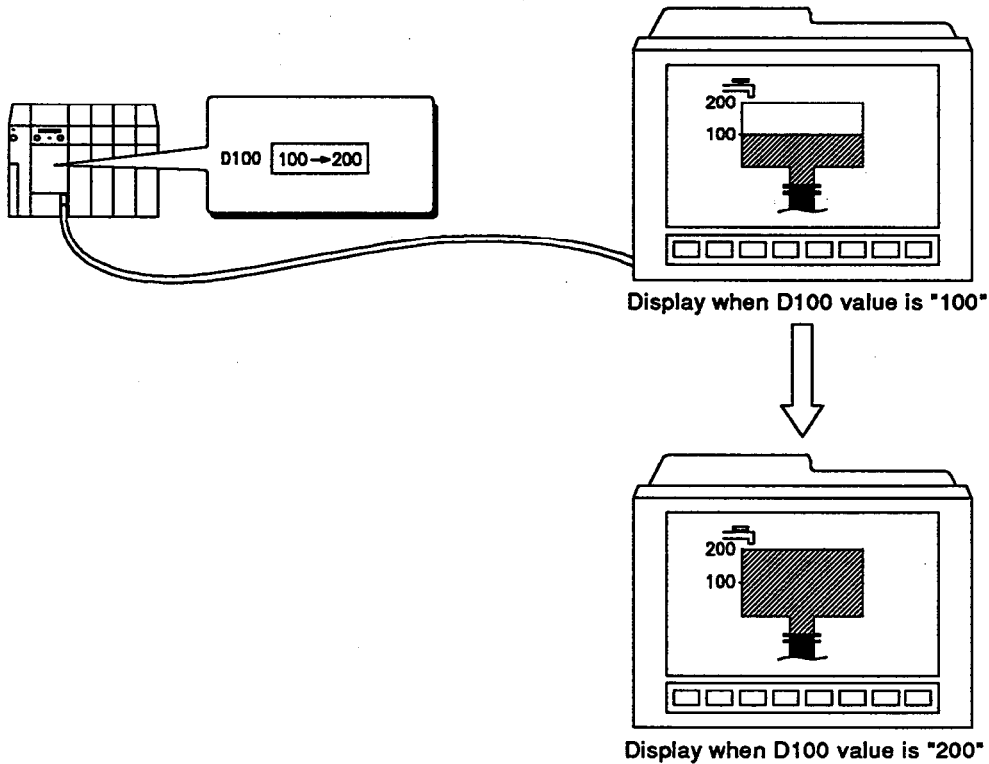
No.	Point Type	No.	Point Size	Remark
0	●	0	Small (5 x 5 dots)	<ul style="list-style-type: none"> The number of display dots is shown in () of point size.
1	■			
2	▲			
3	+	1	Medium (7 x 7 dots)	
4	○			
5	□	2	Large (9 x 9 dots)	
6	△			
7	x			

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.2 Displaying Word Device Values as Levels Indicating a Ratio in Relation to Upper and Lower Limits (Level Display Function)

[Monitoring example]



[Function]

This function displays the numerical value data in a word device or the buffer memory of a special function module in a level display that indicates a ratio in relation to upper and lower limit values.

- The display color and filling pattern for the level display can be selected without restriction.
- It is possible to set the display direction for the level display (up/down/right/left).
- Any closed graphic can be used for a level display.
- It is possible to exclude a part of the area inside the level display graphic from the level display.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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[Settings by using the AGOTP]

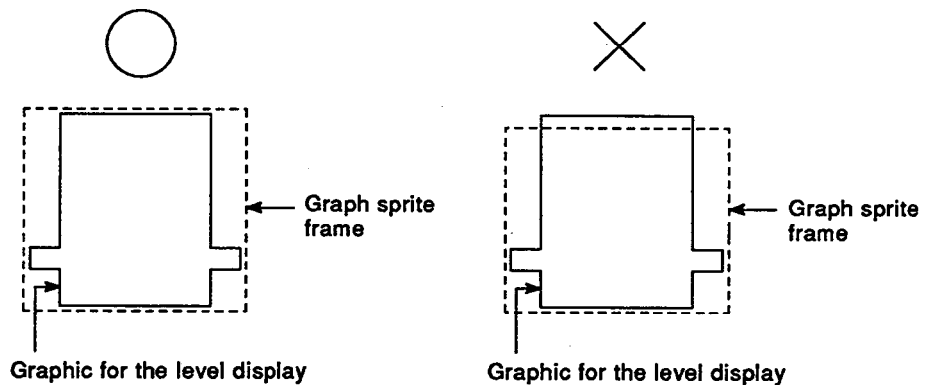
Set level display monitoring condition in the level setting window.

Setting Item	Setting Range/Selection		Comment									
Data collection trigger	Ordinary/Bit device leading edge/falling edge		_____									
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis: 0 to 399	Dot									
	Lower right	X-axis: 0 to 639, Y-axis: 0 to 399										
Display direction	Left/right/up/down		_____									
Bound Start	Boundary colors	Set the same color as used for the graphic for the level display (15 colors)	Color of level display frame									
	Start	X-axis: 0 to 639, Y-axis: 0 to 399	Inside of level display									
Col. Fill	Color	Set the display color (15 colors)	Fill color									
	Paint pattern	Set the filling color	Pattern									
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to</td> <td>+2147483647 to</td> </tr> <tr> <td>Lower limit</td> <td>-32768</td> <td>-2147483648</td> </tr> </tbody> </table>		Data Type	16-bit	32-bit	Upper limit	+32767 to	+2147483647 to	Lower limit	-32768	-2147483648	_____
	Data Type	16-bit	32-bit									
	Upper limit	+32767 to	+2147483647 to									
Lower limit	-32768	-2147483648										
Monitor device	Word device											

[Complementary explanation of setting items]

(1) Graph sprite frame

Set the graph sprite frame so that it completely contains the graphic for the level display.



(2) Start

Set any required coordinates within the graphic for the level display.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

[Notes on using the function]

The level display filling range is converted by setting the upper and lower limit values for filling and a level sprite frame.

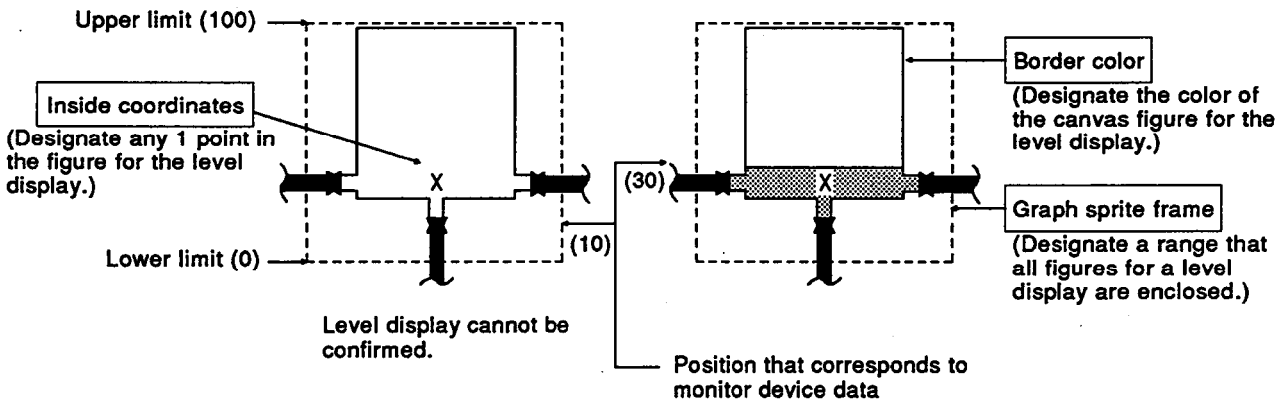
Note that if either of the following applies to the monitor device value, it will not be recorded in the level display.

- Monitor device data is smaller than the lower limit data.
- Monitor device data is smaller than the lowest data of the figure to be filled.

(Display example)

Display direction : Upward
 Inside coordinates : X part
 Upper limit : 100
 Lower limit : 0
 Monitor device data : 10

Display direction : Upward
 Inside coordinates : X part
 Upper limit : 100
 Lower limit : 0
 Monitor device data : 30



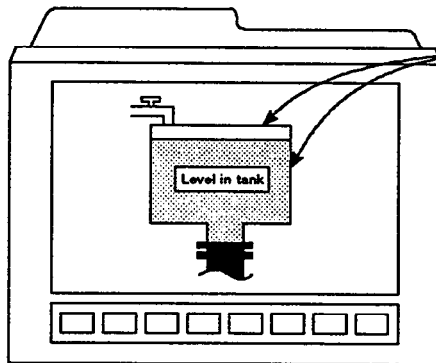
11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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[Further available operations]

- (1) Excluding a part of the area inside the graphic for the level display from the level display

If the graphic for the level display and a graphic inside the graphic for the level display are displayed with the same line color, the inner graphic can be excluded from the level display.

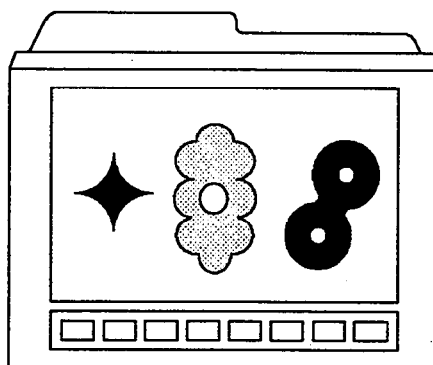


Draw these lines in the same color. If different line colors are used, the entire area can be filled by the level display.

- (2) Displaying a filled graphic comprising curved lines as a canvas screen using this function

The level display function can be used to generate a level display in any closed graphic, and is therefore applicable even to graphics like those shown below, which are created by joining curved lines. In order to keep a graphic in the completely filled state at all times, the value of the monitor device must be made higher than the upper limit value.

For example, by setting a screen switching device as the monitor device and the monitor screen number as the upper limit value, the graphic will be kept permanently filled.

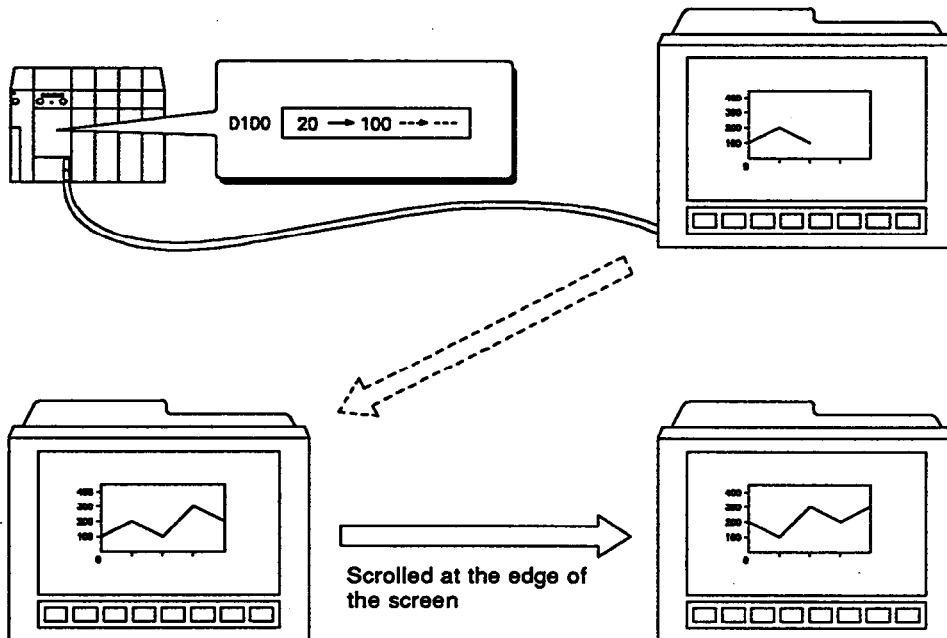


11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.3 Displaying Word Device Values in the Form of a Trend Graph (Scrolling Type) (Trend Graph Display Function)

[Monitoring example]



[Function]

This function collects the numerical value data in a word device or the buffer memory of a special function module in accordance with a designated timing, displays it in the form of a trend graph, and, when the graph display reaches the edge of the screen, scrolls the display. (Scrolling type)

- The display color, line type, and line size for the graph can be set as required.
- The graph display direction (left/right) can be set as required.
- The maximum number of graphs that can be set for display is 16 (corresponding to 16 word devices).

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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[Settings by using the AGOTP]

Set monitoring condition in the trend graph setting window.

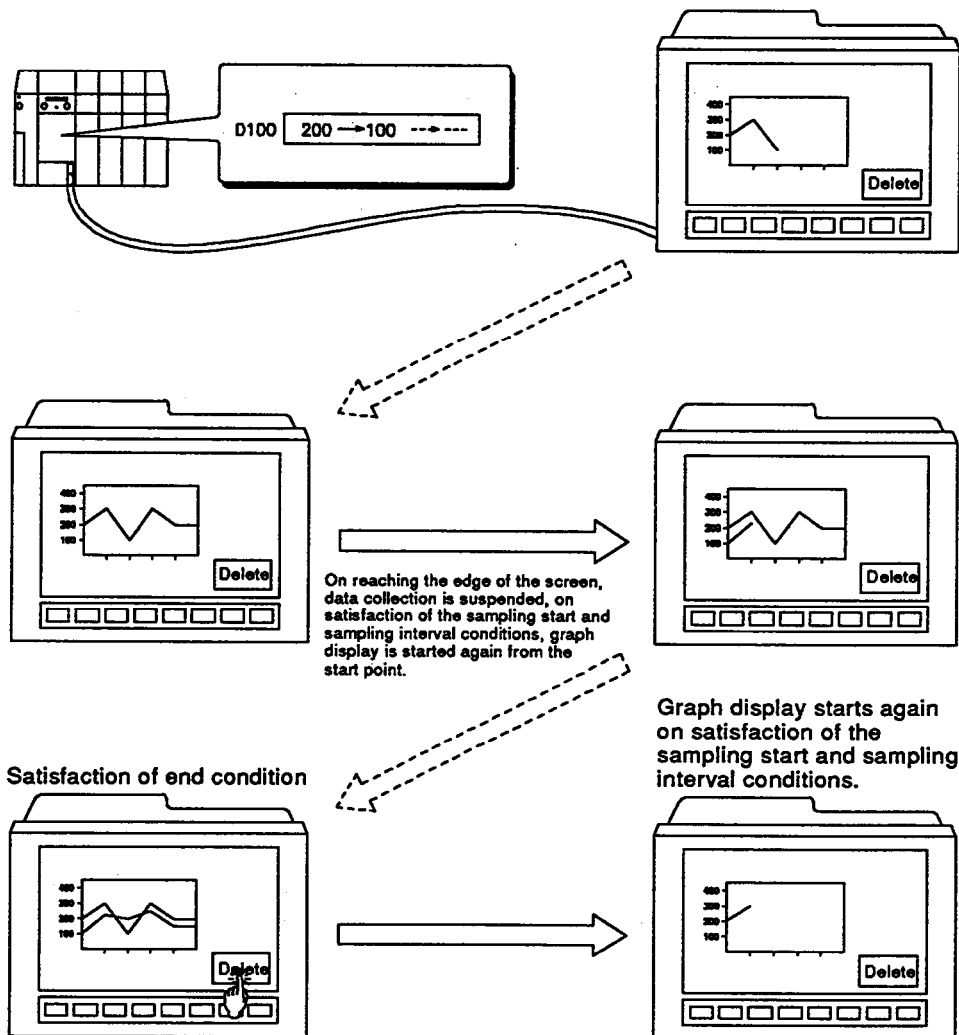
Setting Item	Setting Range/Selection			Comment									
Trend graph type	Scroll			_____									
Data collection trigger	Collection method	Screen display		_____									
	Data collection trigger	Sampling	Interval of 100 msec to 3600 sec (60 minutes)	Select any one of them									
		Bit device	Leading edge/falling edge										
Graph sprite frame	Upper left	X-axis: 0 to 639; Y-axis: 0 to 399		Dot									
	Lower right	X-axis: 0 to 639; Y-axis: 0 to 399											
Display direction	Left/right			_____									
Point space	1 to 500 dots			Max. 500 points									
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to</td> <td>+2147483647 to</td> </tr> <tr> <td>Lower limit</td> <td>-32768</td> <td>-2147483648</td> </tr> </tbody> </table>			Data Type	16-bit	32-bit	Upper limit	+32767 to	+2147483647 to	Lower limit	-32768	-2147483648	_____
	Data Type	16-bit	32-bit										
	Upper limit	+32767 to	+2147483647 to										
Lower limit	-32768	-2147483648											
Number of graph lines	1 to 16			Per graph									
Monitor device	Device	Word device continuous/random		For number of graph bars set									
	Graph	Color	Set the display color (15 colors)										
		Line attribute	Line type		Set the line type (5 types)								
	Line size		Set the line size (4 types)										

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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11.4 Displaying Word Device Values in the Form of a Trend Graph (Overwrite Type) (Trend Graph Display Function)

[Monitoring example]



[Function]

This function collects numerical value data in a word device or the buffer memory of a special function module in accordance with a designated timing, displays it in the form of a trend graph, and, when the graph reaches the edge of the screen, displays the graph again from the start point, superimposing it on the existing screen image. (Overwriting type)

- The display color, line type, and line size for the graph can be set as required.
- The graph display direction (left/right) can be set as required.
- The maximum number of graphs that can be set for display is 16 (corresponding to 16 word devices).
- The number of times the graph is overwritten can be set.
- A trend graph whose end condition has been satisfied can be deleted by means of the graph deletion device.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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[Settings by using the AGOTP]

Set monitoring conditions of overwrite type trend graph display on the trend graph setting window.

Setting Item	Setting Range/Selection			Comment									
Trend graph type	Overwrite			_____									
Data collection trigger	Sampling start	Bit device	Leading edge/falling edge	_____									
	Sampling interval	Bit device	Leading edge/falling edge	Select any one of them									
		Sampling	100 msec to 3600 sec (60 minutes) interval										
	Completion condition	Bit device	Leading edge/falling edge	Select any one of them									
		Number of execution times	1 to 500 times										
Indirect device	Word device (can be set for 1 to 32767)												
Graph deletion	Bit device	Leading edge/falling edge	_____										
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis: 0 to 399		Dot									
	Lower right	X-axis: 0 to 639, Y-axis: 0 to 399											
Display direction	Left/right			_____									
Point space	1 to 500 dots			Max. 500 points									
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to -32768</td> <td>+2147483647 to -2147483648</td> </tr> <tr> <td>Lower limit</td> <td></td> <td></td> </tr> </tbody> </table>			Data Type	16-bit	32-bit	Upper limit	+32767 to -32768	+2147483647 to -2147483648	Lower limit			_____
	Data Type	16-bit	32-bit										
	Upper limit	+32767 to -32768	+2147483647 to -2147483648										
Lower limit													
Number of graph lines	1 to 16			Per graph									
Monitor device	Device	Word device continuous/random		For number of graph bars set									
	Graph	Color	Set the display color (15 colors)										
		Line attribute	Line type		Set the line type (5 types)								
		Line size	Set the line size (4 types)										

[Complementary explanation of setting items]

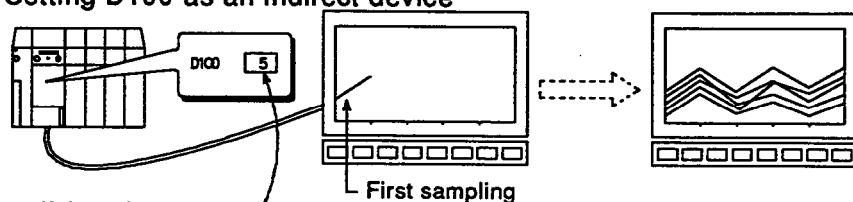
(1) Data collection trigger

When the completion condition is set to the indirect device, the specified value at the first sampling is thereafter regarded as the designated number of execution times. The execution time can be set for 1 to 32767.

When this item is set to 0, the graph display is done one time.

(Example)

Setting D100 as an indirect device



Even if the value of D100 changes after graph display has started, the D100 value at the first sampling remains valid.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

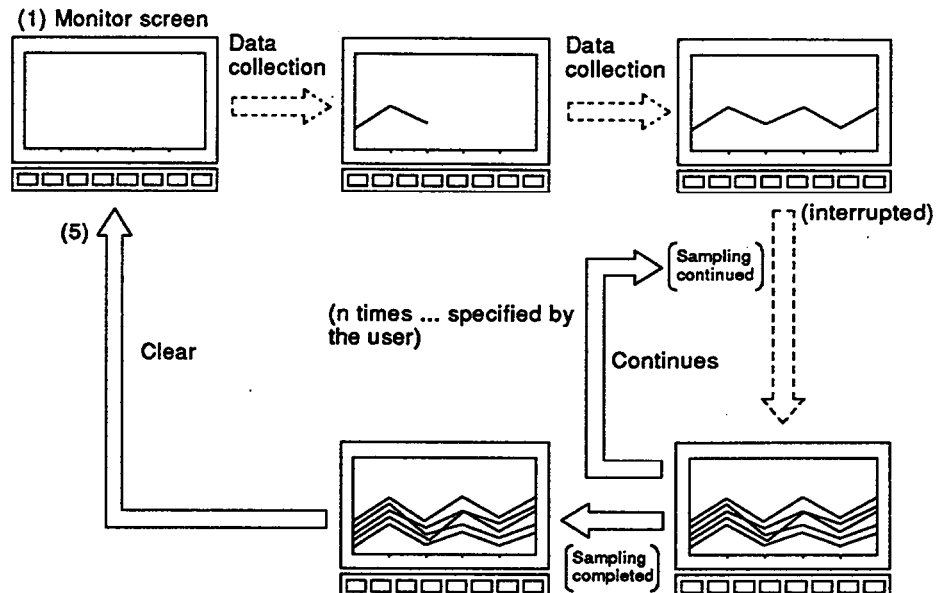
MELSEC-A

[Notes on using the function]

(1) Graph display operations

Displaying a monitor screen in which this type of trend graph is set starts data collection and the graph display using the data collection trigger as shown below.

- (a) After the sampling start and sampling interval conditions are satisfied, data collection and the graph display start.
- (b) The graph display is executed according to the display direction. The original point is located on either the right or left side of the graph sprite frame. Every time data collection is executed at the sampling interval, the data is extended by one point.
- (c) When the data collection and display reach the opposite side of the graph sprite frame, data collection and graph display are interrupted.
- (d) After interrupting the data collection and graph display, as was done in (1) above, satisfying the sampling start and sampling interval conditions resumes and continues data collection and the graph display until the completion conditions are satisfied.
- (e) When the trend graph is redisplayed after the sampling completion condition are satisfied, satisfy the graph deletion conditions. (Contents displayed in the graph sprite frame are deleted.) After the graph deletion conditions have been satisfied, data collection and the graph display are resumed by satisfying the sampling conditions.



The triggers become valid in the following cases:

- "Sampling start" Before starting data collection and the graph display.
After data is collected for an entire graph and displayed. After data deletion is executed following the sampling completion.
- "Sampling completed"... After data collection and graph display are started or resumed.
- "Sampling interval" After data and the graph display are started or resumed until data collection and graph displays for an entire graph are completed.
- "Graph delete" After the sampling completed conditions are satisfied.

(2) Trend graph display format

From the first sampling to the last sampling, the overlap operation is done for each sampling.

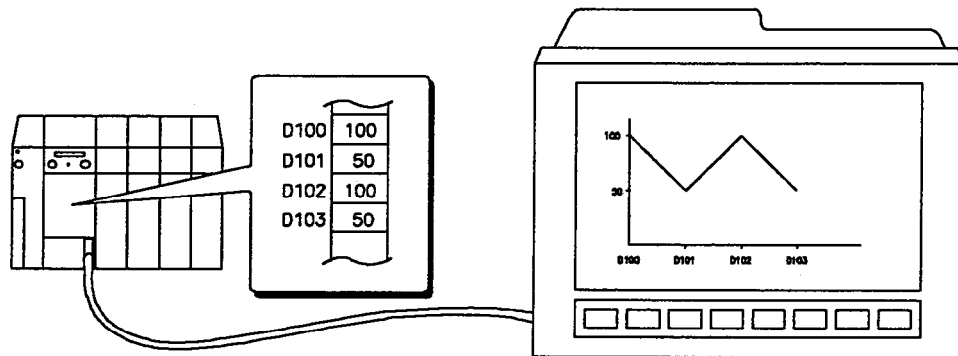
(When the number of times of data collection exceeds the number of display points, giving the next sampling start command continues the graph display from the original point.)

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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11.5 Displaying the Values in Multiple Word Devices in the Form of a Trend Graph (Batch Display Type)

[Monitoring example]



[Function]

This function collects the numerical value data of multiple word devices or buffer memories of special function modules in a batch and displays them in a single trend graph. (Batch display type)

- The display color, line type, and line size for the graph can be set as required.
- The graph display direction (left/right) can be set as required.
- The maximum number of points (word devices, buffer memories) that can be set for the display of one trend graph is 500.
- The maximum number of graphs that can be set for display is 16.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

[Setting by using the AGOTP]

Set a condition of monitoring of a trend graph display of a batch display type in the trend graph setting window.

Setting Item	Setting Range/Selection		Comment									
Trend graph type	Batch display		_____									
Data collection trigger	Bit device leading edge/falling edge		Read trigger									
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis: 0 to 399	Dot									
	Lower right	X-axis: 0 to 639, Y-axis: 0 to 399										
Display direction	Left/right		_____									
Point space	1 to 500 dots		Max. 500 points									
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to</td> <td>+2147483647 to</td> </tr> <tr> <td>Lower limit</td> <td>-32768</td> <td>-2147483648</td> </tr> </tbody> </table>		Data Type	16-bit	32-bit	Upper limit	+32767 to	+2147483647 to	Lower limit	-32768	-2147483648	_____
	Data Type	16-bit	32-bit									
	Upper limit	+32767 to	+2147483647 to									
Lower limit	-32768	-2147483648										
Number of graph lines	1 to 16		Per graph									
Monitor device	Device	Word device		For number of graph bars set								
	Graph	Color	Set the display color (15 colors)									
		Line attribute	Line type		Set the line type (5 types)							
			Line size		Set the line size (4 types)							

[Complementary explanation of setting items]

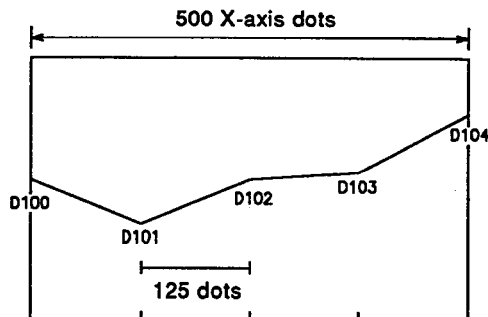
(1) Point space

Set the point space by setting the number of dots in the X-axis direction of the graph sprite and the number of monitor device points.

(Example)

Point space when the values of D100 to D104 (all 16-bit data) are displayed in graph form.

Number of graphs: 1, Number of X-axis dots: 500



$$\text{Point space} = 500 (\text{number of X-axis dots}) + (5 (\text{number of monitor device points}) - 1)$$

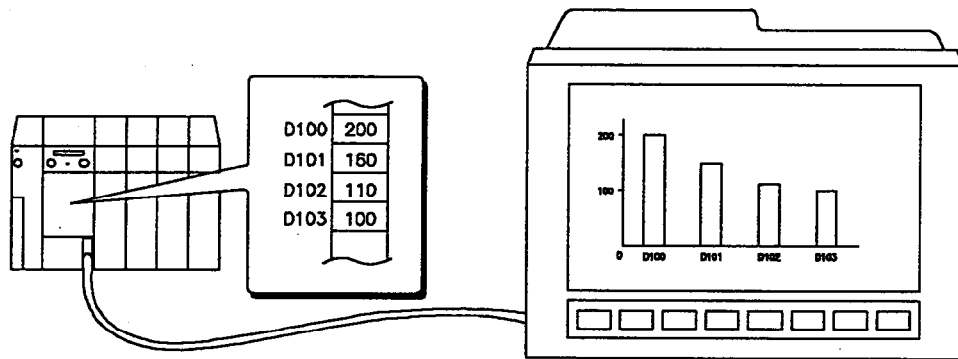
In the example above, the point space would be set as 125 dots.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.6 Displaying the Values in Multiple Word Devices in the Form of a Bar Graph (Bar Graph Display Function)

[Monitoring example]



[Function]

This function displays the numerical value data of multiple word devices or buffer memories of special function modules in the form of a bar graph.
(Normal type)

- The display color and filling pattern can be set as required.
- The graph display direction (vertical/left/right) can be set as required.
- The maximum number of bars that can be set for display is 20 (number of word devices or buffer memories).
- The width of the bars in the bar graph, and the interval between them, can be set as required.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

[Setting by using the AGOTP]

Set the bar graph display monitoring conditions in the bar graph setting window.

Setting Item	Setting Range/Selection		Comment									
Data collection trigger	Ordinary/bit device leading edge/falling edge		_____									
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis:0 to 399	Dot									
	Lower right	X-axis: 0 to 639, Y-axis:0 to 399										
Display direction	Vertical(down)/left/right		_____									
Offset/bar width	Offset	0 to 100 dots	_____									
	Bar width	1 to 500 dots										
Space/number of points	Space	1 to 500 dots	Number of bars									
	Number of points	1 to 20										
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to</td> <td>+2147483647 to</td> </tr> <tr> <td>Lower limit</td> <td>-32768</td> <td>-2147483648</td> </tr> </tbody> </table>		Data Type	16-bit	32-bit	Upper limit	+32767 to	+2147483647 to	Lower limit	-32768	-2147483648	_____
	Data Type	16-bit	32-bit									
	Upper limit	+32767 to	+2147483647 to									
Lower limit	-32768	-2147483648										
Display type	Normal	Graph type										
Number of elements	1 (fixed)											
Monitor device	Device	Word device continuous/random	The display color and filling pattern are common to all elements.									
	Color	Set the display color (15 colors)										
	Paint pattern	Set the filling pattern										

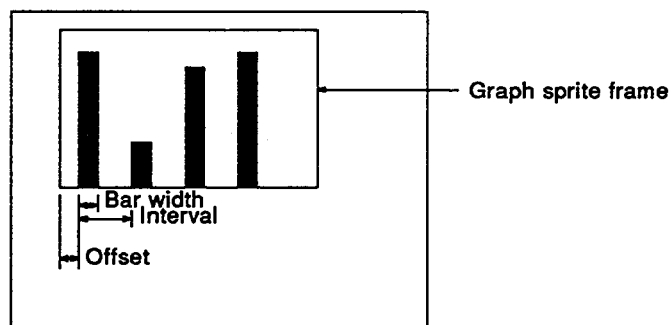
[Complementary explanation of setting items]

(1) Offset / bar width

Set these by referring to the example presented below.

(Example)

Display direction: vertical Number of bar graph points: 4



11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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[Notes on using the function]

(1) Display format

The size of a bar can be found by converting the upper and lower limits, and graph display range (number of dots in the direction the bar extends) specified in the bar graph display setting.

The result of (data upper limit) – (data lower limit) is considered to be the maximum level (100 %), and the bar is extended according to the values stored in the monitor device.

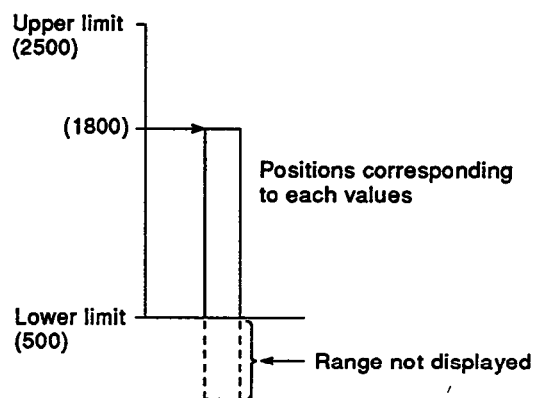
A value less than the lower limit cannot be displayed as a bar.

(Example)

Upper limit: 2500

Lower limit: 500

Monitor device value: 1800

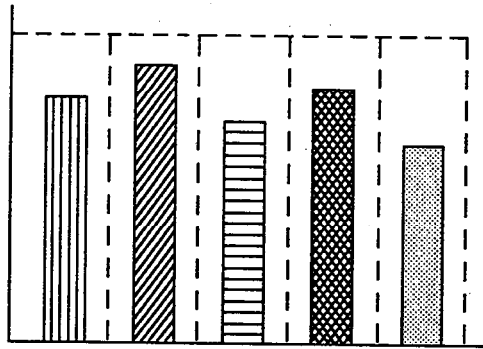


11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

[Further available operations]

- (1) Displaying a bar graph with a different display color for each device

By setting the bar graph display function in one point units (making different settings for each device) it is possible to display a bar graph with a different color for each bar.

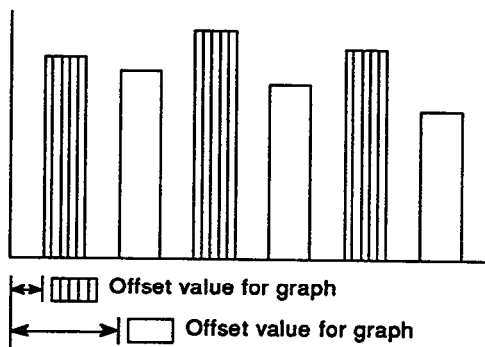


Graph sprite frame range in each bar graph display

- It is possible to display a bar graph by setting multiple graph sprite frames at the same coordinates and assigning them each a different offset value.

(Example)

Superimposing one bar graph on another with a different filling pattern.

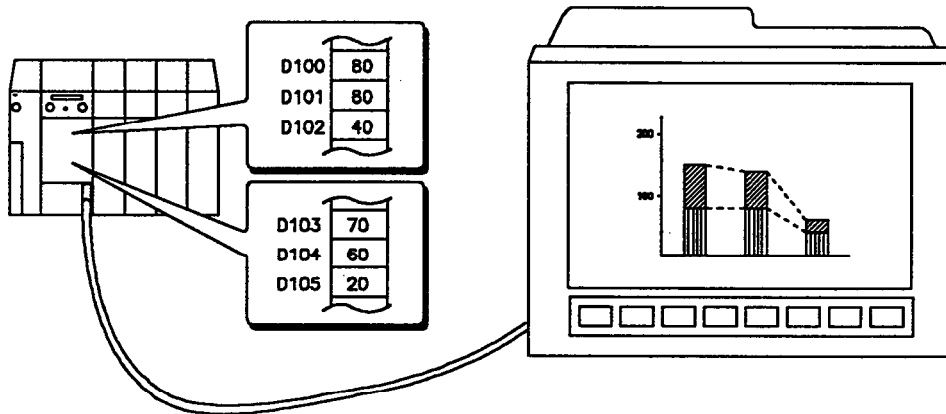


11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.7 Displaying the Values in Multiple Word Devices Cumulatively in the Form of a Bar Graph (Bar Graph Display Function)

[Monitoring example]



[Function]

This function displays the numerical value data of multiple word devices or buffer memories cumulatively in the form of a bar graph, with the same elements in each bar connected by dotted lines.

- A maximum of different elements (number of word devices, buffer memories) can be set to compose one bar graph.
- Display colors and filling patterns can be set for each element of the graph.
- The display direction (vertical/left/right) can be set as required.
- The maximum number of bars that can be set for display is 20 (corresponding to 20 word devices).
- The width of the bars in the bar graph, and the interval between them, can be set as required.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

[Settings by using the AGOTP]

Set bar graph display monitoring condition in the bar graph setting window.

Setting Item	Setting Range/Selection		Comment									
Data collection trigger	Ordinary/bit device leading edge/falling edge		_____									
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis:0 to 399	Dot									
	Lower right	X-axis: 0 to 639, Y-axis:0 to 399										
Display direction	Vertical(down)/left/right		_____									
Offset/bar width	Offset	0 to 100 dots	_____									
	Bar width	1 to 500 dots										
Space/number of points	Space	1 to 500 dots	Number of bars									
	Number of points	1 to 20										
	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to</td> <td>+2147483647 to</td> </tr> <tr> <td>Lower limit</td> <td>0</td> <td>0</td> </tr> </tbody> </table>		Data Type	16-bit	32-bit	Upper limit	+32767 to	+2147483647 to	Lower limit	0	0	Negative value handled as 0
	Data Type	16-bit	32-bit									
Upper limit	+32767 to	+2147483647 to										
Lower limit	0	0										
Display type/ number of elements	Display type	Cumulated										
	Number of elements	Cumulated	1 to 5									
Monitor device	Device	Word device continuous/random										
	Color	Set the display color (15 colors).										
	Paint pattern	Set the filling pattern.										
			Set for number of points x number of elements									

[Complementary explanation of setting items]

(1) Offset, bar width

See "Complementary explanation of setting items" in Section 11.6.

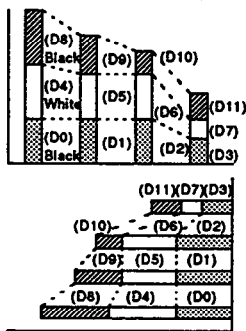
11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

(2) Monitor device

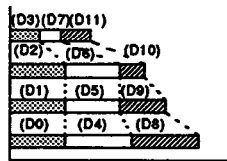
When a monitor device is set for displaying a cumulative-type bar graph, data destinations targets for each element are specified.

(Example)

- The graph consists of four bars.
- A bar includes three elements.
- The data destinations are D0 to D3, D4 to D7, D8 to D11 of the ACPU. (A set of elements is stored sequentially.)



() Indicates a data destination



No.	PC station No.	Device	Color	Type	↑
1	A2C-FF	D0	Black		
2	A2C-FF	D1			
3	A2C-FF	D2			
4	A2C-FF	D3	White		
5	A2C-FF	D4			
6	A2C-FF	D5			
9	A2C-FF	D8	Black		
10	A2C-FF	D9			
11	A2C-FF	D10			
12	A2C-FF	D11			

[Notes on using the function]

(1) Display format

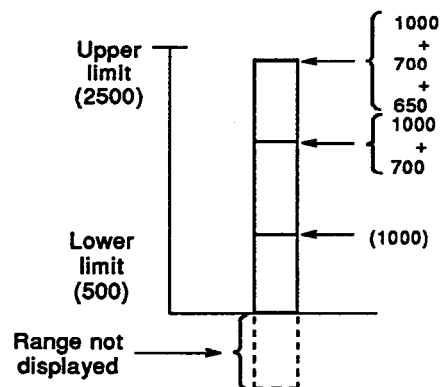
The size of a bar can be found by converting the upper and lower limits, and graph display range (number of dots in the direction the bar extends) specified in the bar graph display setting.

The result of (data upper limit) – (data lower limit) is considered to be the maximum level (100 %), and the bar is extended according to the values stored in the monitor device.

A value less than the lower limit cannot be displayed as a bar.

(Example)

Upper limit : 2500
 Lower limit : 500
 Monitor device value
 Element 1 : 1000
 Element 2 : 700
 Element 3 : 650

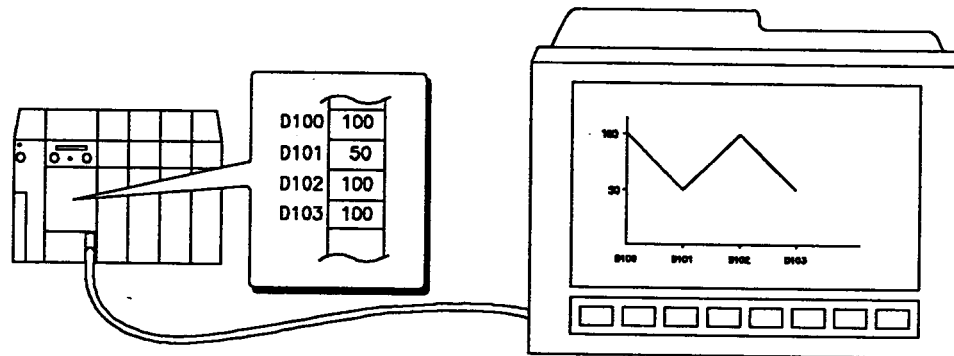


11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.8 Displaying the Values in Multiple Word Devices in the Form of a Polygonal Line Graph (Polygonal Line Graph Display Function)

[Monitoring example]



[Function]

This function collects the numerical value data of multiple word devices or buffer memories of special function modules in a batch and displays it in the form of a polygonal line graph.

- The display color, line type, and line size for the graph can be set as required.
- The graph display direction (left/right) can be set as required.
- The maximum number of points (number of word devices or buffer memories) that can be set for one polygonal line graph is 100.
- The maximum number of graphs that can be set for display is 16.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

[Settings by using the AGOTP]

Set polygonal line graph display monitoring condition in the polygonal line graph setting window.

Setting Item	Setting Range/Selection			Comment		
Data collection trigger	Ordinaly/bit device leading edge/falling edge			_____		
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis: 0 to 399		Dot		
	Lower right	X-axis: 0 to 639, Y-axis: 0 to 399				
Number of X-axis points/space	Number of points: 2 to 100			Space designation is not necessary. (Automatic display)		
Display format	Data Type		16-bit	32-bit		
	Upper limit		+32767 to	+2147483647 to		
	Lower limit		-32768	-2147483648		
Number of graph lines	1 to 8			Per graph		
Monitor device	Device	Word device continuous/random			Number of points of the X-axis x number of graph bars	
	Graph	Color	Set the display color (15 colors).			
		Line attribute	Line type	Set the line type (5 types).		
			Line size	Set the line size (4 types).		

[Complementary explanation of setting items]

(1) Number of X-axis points/space

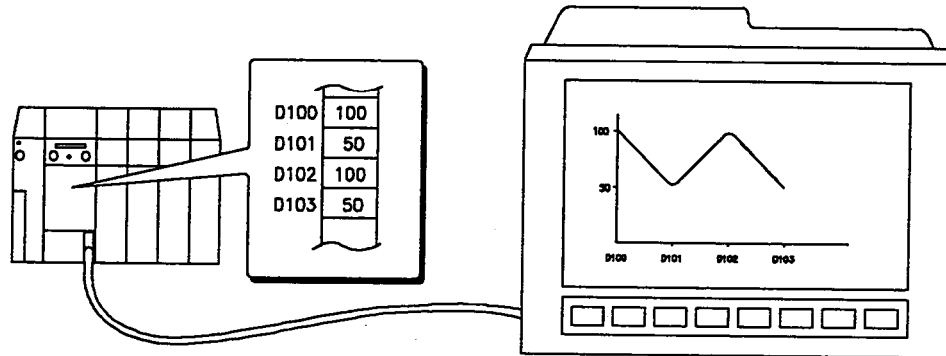
The space is determined automatically by the number of dots of the X-axis of the graph sprite frame and the number of points of the X-axis. (number of monitor device points per graph).

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.9 Displaying the Values in Multiple Word Devices in the Form of a Spline Graph (Spline Graph Display Function)

[Monitoring example]



[Function]

This function collects the numerical value data of multiple word devices or buffer memories of special function modules in a batch and displays it in the form of a spline graph.

- The display color, line type, and line size for the graph can be set as required.
- The graph display direction (left/right) can be set as required.
- The maximum number of points (number of word devices or buffer memories) that can be set for one spline graph is 100.
- The maximum number of graphs that can be set for display is 16.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

[Settings by using the AGOTP]

Set spline graph display monitoring condition in the spline graph setting window.

Setting Item	Setting Range/Selection			Comment									
Data collection trigger	Ordinary/bit device leading edge/falling edge			_____									
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis: 0 to 399		Dot									
	Lower right	X-axis: 0 to 639, Y-axis: 0 to 399											
Number of X-axis points/space	Number of points: 3 to 100			Space designation is not necessary. (Automatic display)									
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to</td> <td>+2147483647 to</td> </tr> <tr> <td>Lower limit</td> <td>-32768</td> <td>-2147483648</td> </tr> </tbody> </table>			Data Type	16-bit	32-bit	Upper limit	+32767 to	+2147483647 to	Lower limit	-32768	-2147483648	_____
	Data Type	16-bit	32-bit										
	Upper limit	+32767 to	+2147483647 to										
Lower limit	-32768	-2147483648											
Number of graph lines	1 to 8			Per graph									
Monitor device	Device	Word device continuous/random		Number of points of the X-axis x number of graph bars									
	Graph	Color	Set the display color (15 colors).										
		Line attribute	Line type		Set the line type (5 types).								
			Line size		Set the line size (4 types).								

[Complementary explanation of setting items]

(1) Number of X-axis points/space

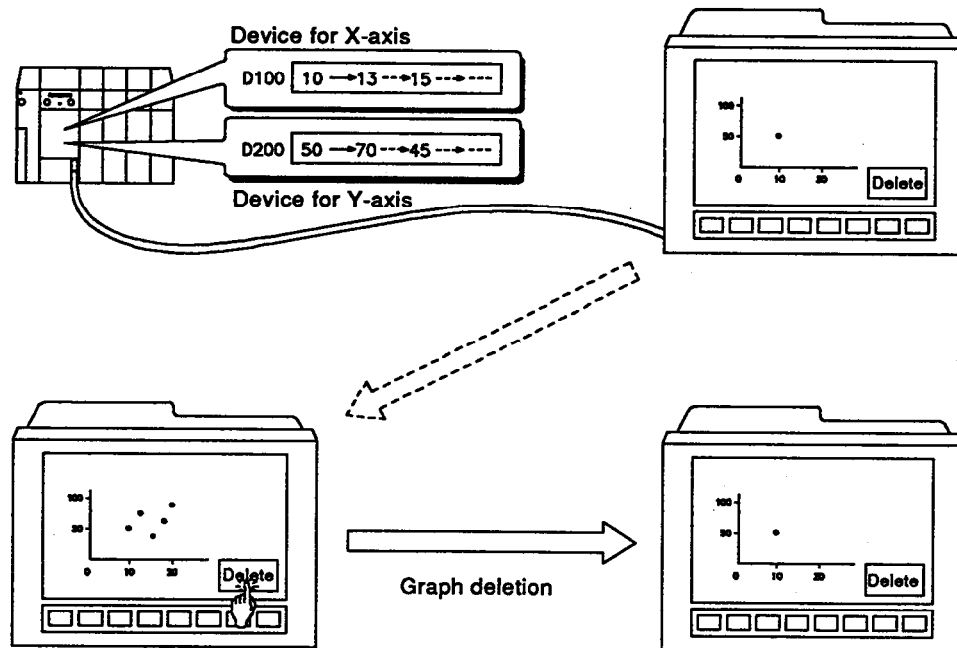
The space is determined automatically by the number of dots of the X-axis of the graph sprite frame and the number of points of the X-axis. (number of monitor device points per graph).

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.10 Displaying Word Device Values in the Form of a Scattered Graph (Sampling Type)

[Monitoring example]



[Function]

This function collects the numerical value data in word devices or special function module buffer memories that correspond to the X-axis and Y-axis and displays them in the form of a scattered graph (sampling type).

- The display color, point type, and point size for the graph can be set as required.
- The displayed scattered graph can be deleted by switching the graph deletion device ON/OFF.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

[Settings by using the AGOTP]

Set scatter graph display monitoring condition in the scatter graph setting window.

Setting Item	Setting Range/Selection		Comment								
Type of display	Sampling type		_____								
Data collection trigger	Bit device	Leading edge/falling edge	Select any one of them								
	Sampling	100 msec to 3600 sec (60 minutes) interval									
Graph deletion device	Bit device leading edge/falling edge		_____								
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis:0 to 399	Dot								
	Lower right	X-axis: 0 to 639, Y-axis:0 to 399									
Point attribute	Color	Set the display color (15 colors)	Displayed in the same points								
	Point type	Set the point type (7 types)									
	Point size	Set the point size (3 types)									
[] axis parameter	X-axis, Y-axis (Selected when the display format or the monitoring device item is set)		The same setting for both the X-axis and Y-axis is not necessary.								
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767 to</td> <td>+2147483647 to</td> </tr> <tr> <td>Lower limit</td> <td>-32768</td> <td>-2147483648</td> </tr> </tbody> </table>			Data Type	16-bit	32-bit	Upper limit	+32767 to	+2147483647 to	Lower limit	-32768
Data Type	16-bit	32-bit									
Upper limit	+32767 to	+2147483647 to									
Lower limit	-32768	-2147483648									
Monitor device	Device	Word device	_____								
	Number of points	1 (fixed)									

[Complementary explanation of setting items]

(1) Graph deletion device

This is a condition to delete the displayed sampling type graph.

When deleting a graph or when starting a graph display again, turn ON/OFF the graph deletion device.

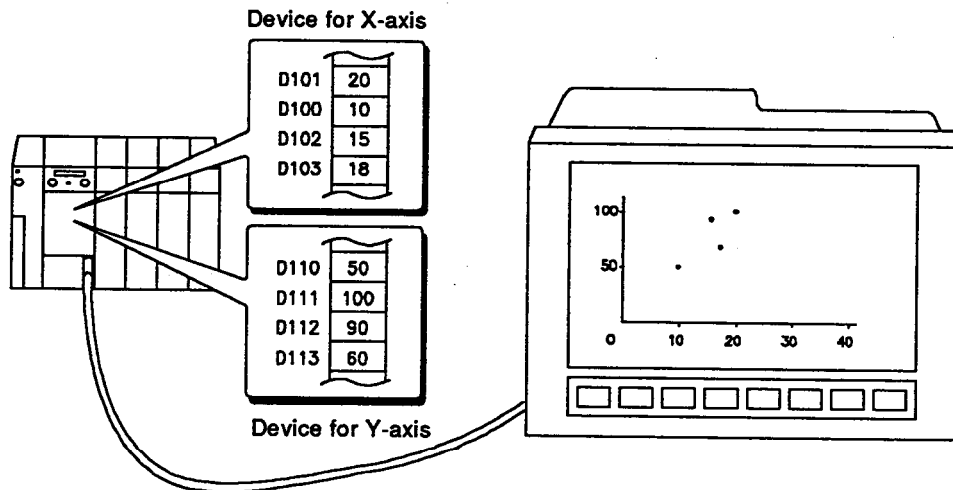
If several graph sprite frames are set and overwritten in the same coordinates, all graphs are deleted by giving graph deletion instruction to any one of the graphs.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

MELSEC-A

11.11 Displaying the Values in Multiple Word Devices in the Form of a Scatter Graph (Batch Type)

[Monitoring example]



[Function]

This function collects the numerical value data in word devices or special function module buffer memories that correspond to the X-axis and Y-axis and displays them in the form of a scatter graph (batch type).

- The display color, line type, and line size for the graph can be set as required.
- The maximum number of points (number of word devices or buffer memories) that can be set for one scattered graph is 100.

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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[Settings by using the AGOTP]

Set scatter graph display monitoring condition in the scatter graph setting window.

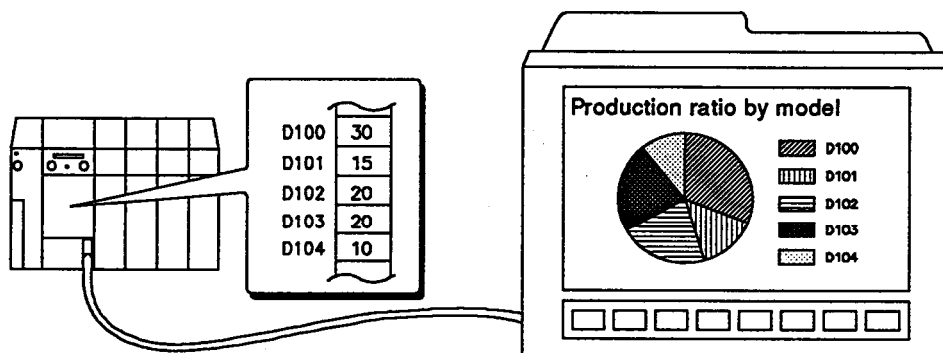
Setting Item	Setting Range/Selection			Comment									
Type of display	Sampling type			_____									
Data collection trigger	Bit device leading edge/falling edge												
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis:0 to 399		Dot									
	Lower right	X-axis: 0 to 639, Y-axis:0 to 399											
Point attribute	Color	Set the display color (15 colors)		Displayed in the same points									
	Point type	Set the point type (7 types)											
	Point size	Set the point size (3 types)											
[] axis parameter	X-axis, Y-axis (Selected when the display format or the monitoring device item is set)			The same setting for both the X-axis and Y-axis is not necessary.									
Display format	<table border="1"> <thead> <tr> <th>Data Type</th> <th>16-bit</th> <th>32-bit</th> </tr> </thead> <tbody> <tr> <td>Upper limit</td> <td>+32767</td> <td>+2147483647</td> </tr> <tr> <td>Lower limit</td> <td>-32768</td> <td>-2147483648</td> </tr> </tbody> </table>				Data Type	16-bit	32-bit	Upper limit	+32767	+2147483647	Lower limit	-32768	-2147483648
	Data Type	16-bit	32-bit										
	Upper limit	+32767	+2147483647										
Lower limit	-32768	-2147483648											
Monitor device	Device	Word device continuous		_____									
	Number of points	1 to 100											

11. DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

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11.12 Displaying a Pie Graph with the Total of the Values in Multiple Word Devices Taken as 100% (Pie Graph Display Function)

[Monitoring example]



[Function]

This function displays the numerical value data of multiple word devices or buffer memories of special function modules in the form of a pie graph, taking the total of the values to be 100%.

- A maximum of 16 different elements (number of word devices, buffer memories) can be set to compose one pie graph.
- Display colors and filling patterns can be set for each element of the graph.

11: DISPLAYING THE CONTENTS OF DEVICES IN LEVEL OR GRAPH FORM

[Settings by using the AGOTP]

Set pie graph display monitoring condition in the pie graph display setting window as follows.

Setting Item	Setting Ranges/Section		Comment
Data collection trigger	Ordinary/bit device leading edge/falling edge		_____
Graph sprite frame	Upper left	X-axis: 0 to 639, Y-axis: 0 to 399	Dot
	Lower right	X-axis: 0 to 639, Y-axis: 0 to 399	
Border color	Color Nos. 1 to 14		_____
Display format	Data Type	16-bit	<ul style="list-style-type: none"> • Use one of the data types. • Negative value handles as 0
	Valid range	+32767 to 0		+2147483647 to 0
Number of elements	1 to 16		Number of monitoring points
Monitoring device	Device	Word device continuous/random	Set for the number of elements
	Color	Set the display color (15 colors).	
	Paint pattern	Set the filling pattern.	

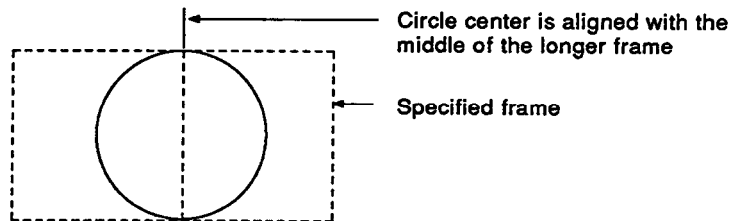
[Complementary explanation of setting items]

(1) Graph sprite frame

When the vertical side of a set graph sprite frame does not match with horizontal side, the frame is set automatically by the shorter side.

(Example)

When the horizontal side is longer than the vertical one:



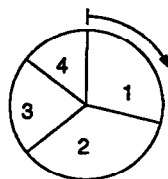
[Notes on using the function]

(1) Display format for the circle graph

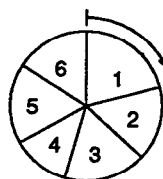
The graph is displayed on a true circle and is displayed on a clockwise rotation direction in the order of setting monitored device.

(Example)

When the number of elements is 4



When the number of elements is 6



12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

MELSEC-A

12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS (REPORT FUNCTION, ANNOUNCEMENT FUNCTION, SNAP SHOT FUNCTION)

12.1 Things that should be Known about the Report Function

Numerical data stored in a word device and buffer memory of a special-function module is collected and printed by each data collection trigger, or collected data is stored in a memory card and output to a printer by a print trigger by using this function.

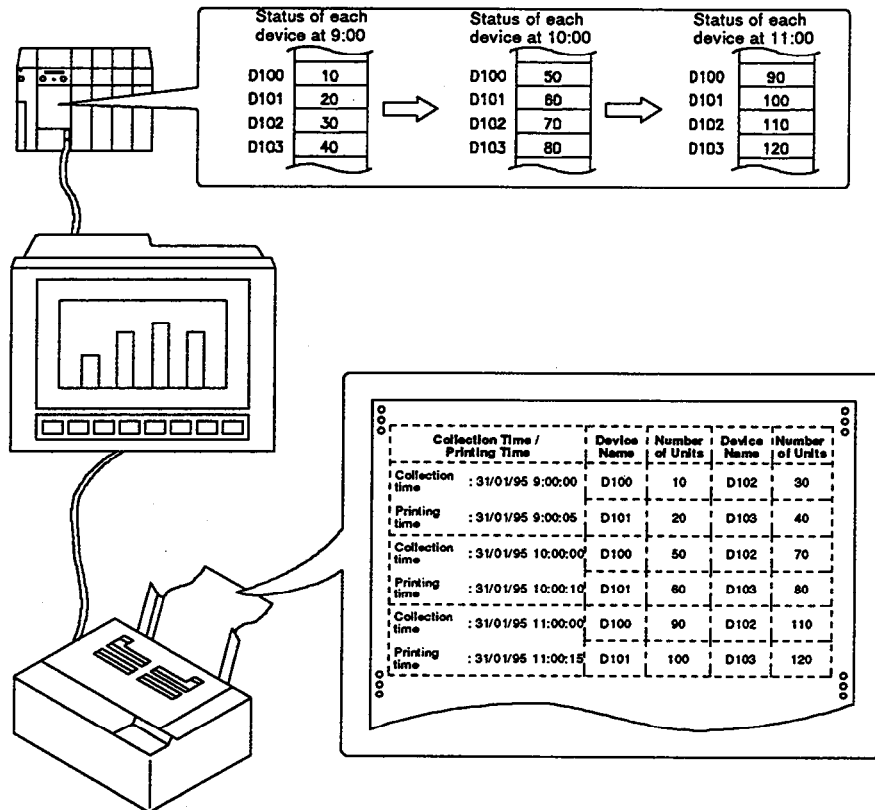
This function is called the report function.

(1) Types of report function

There are three types of report function, as indicated below.

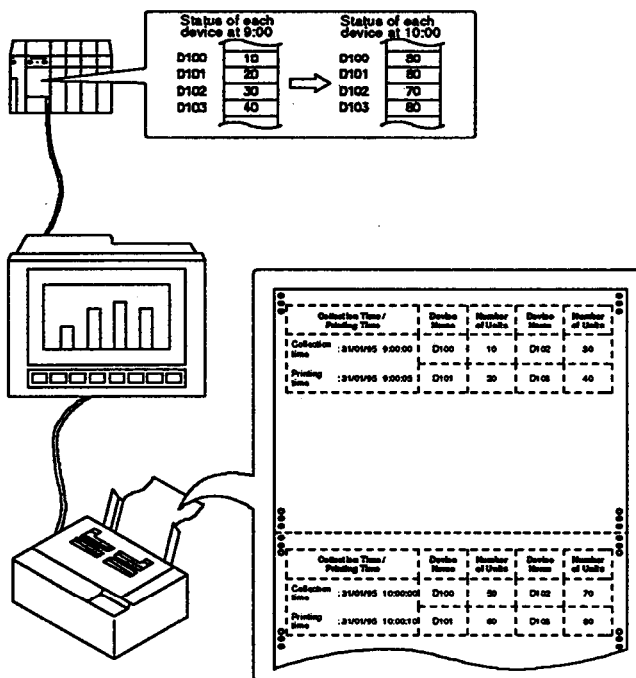
(a) Real-time report continuous (without page changing)

Collected data is printed repeatedly at each data collection trigger. On occurrence of data collection triggers subsequent to the first, printing is continued without changing the page.



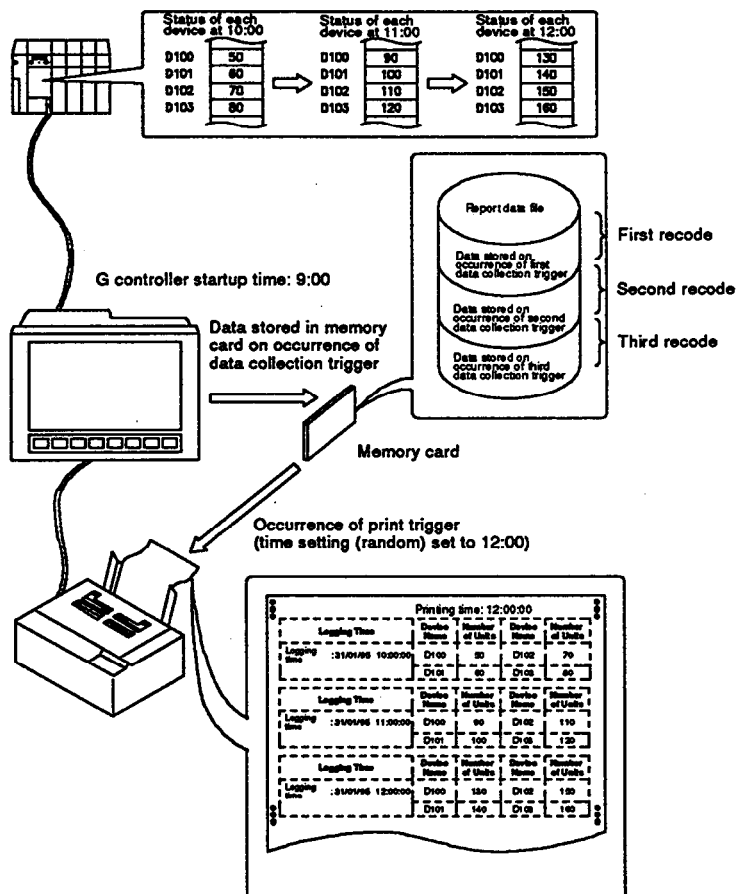
(b) Real-time report with page changing

This is a function whereby data is collected and printed at each data collection trigger. The page is changed each time a data collection trigger occurs.



(c) Logging report type

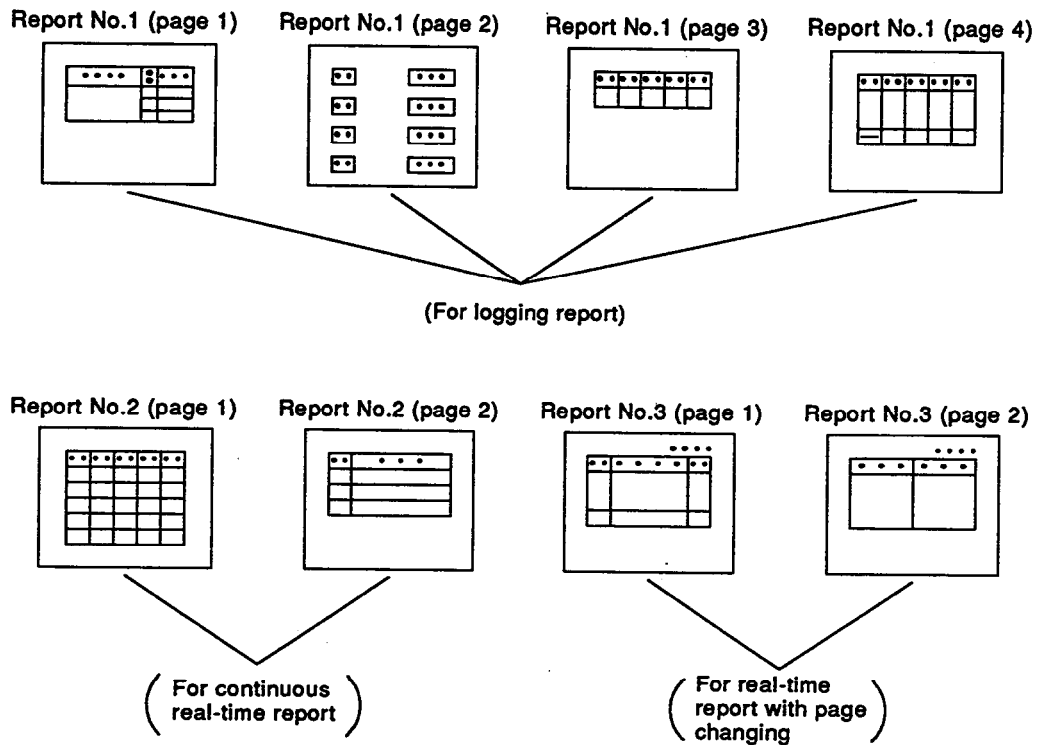
This is a function whereby data is collected at each data collection trigger, the collected data is stored in the memory card, and, on occurrence of the printing trigger, the stored data is printed. Page changing processing is executed on completion of printing.



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(2) Number of report function settings possible

The maximum number of reports that can be registered for one G controller unit is eight (equivalent to eight report canvas pages).
 A single report can be made to comprise more than one page: the maximum is eight pages.
 However, when a report comprises more than one page, the number of reports that can be registered at the G controller unit is decreased.



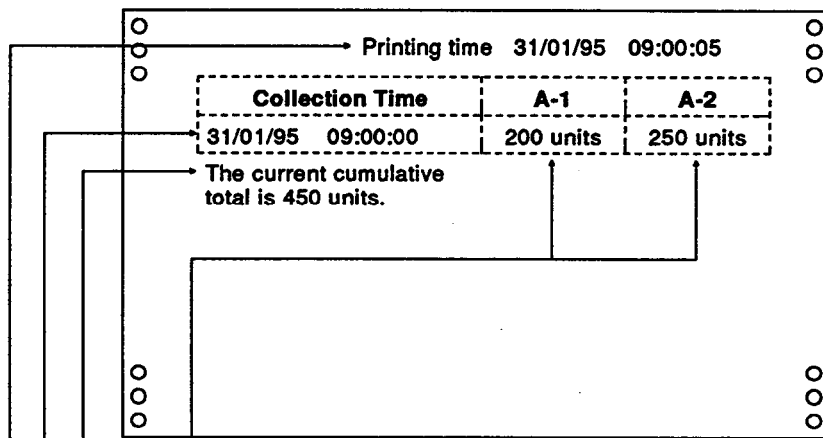
Report file edit window settings

Report file edit	
Report No.	Report title
No.1 (P.1)	Logging report 1/4
(P.2)	Logging report 2/4
(P.3)	Logging report 3/4
(P.4)	Logging report 4/4
No.2 (P.1)	Real-time report 1/2 (continuous)
(P.2)	Real-time report 2/2 (continuous)
No.3 (P.1)	Real-time report 1/2 (page changing)
(P.2)	Real-time report 2/2 (page changing)

(3) Types of data that can be printed with the report function

- Collected data, logging data The numerical value data in word devices or the buffer memories of special function modules can be printed in decimal or hexadecimal format.
It is also possible to print the comments that correspond to the numerical value data.
- Collection time, logging time, The collection time of the data, and the printing start time, can be printed.

Printing example



The numerical value data of the word device or buffer memory of a special function module can be printed in decimal or hexadecimal format. (The set number of lines is printed.)

The comments that correspond to the numerical value data can be printed. (The number of characters in the comment is printed.)

The data collection time and logging time can be printed. (17 characters are printed.)

The printing time for the data can be printed. (17 characters are printed.)

(4) Number of collected data that can be set

The data to be printed can be set within the following ranges.
Note that the numbers of words stated in this explanation are the total numbers of words calculated in accordance with the monitor device setting:

- When 16 bits are designated: 1 word
- When 32 bits are designated: 2 words
- When a comment is designated: 1 word

Convert the setting contents into the number of words and calculate the total number of words.

- (a) When only a real-time report is set
 - Set 256 words or less per report canvas.
- (b) When only a logging report is set
 - Set 256 words or less per report canvas, and set the size of the report data file to 16000 words or less.
 - The size of report data file per report canvas is as follows:
 - $n1 \times (n2 + 10)$... Unit: Words
 - n1: The collection frequency (set in the report parameter window) in the monitoring conditions.
 - n2: Total number of words of a device set at a report canvas.
 - When a logging report is composed of several pages, calculate the size of a report canvas (1 page) by using the above expression. Then, set the total number of words for all pages to 16000 or less.
- (c) When a real-time report + logging report is set
 - Set 256 words or less per report canvas.
 - Set so that the sum of the number of words set for all real time reports and the size of all report data files is 16000 words or less.

POINT

When executing the logging report function, secure a file area in the memory card, taking considerations such as the data size and collection frequency into account. (See APPENDIX 2)

12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

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- (5) When the printing timings of different functions coincide
- (a) Operation when printing of other data (another report function, or an announcement function or snapshot function) is requested while a report is being printed out
- When printing of the data currently being printed is completed, printing of the data for which the printing request was made is started.
- (b) Page changing function when the data of several functions is printed continuously
- When the data of several functions is printed continuously, the page changing operation is executed in the manner shown below.

Data Type Previously Printed Out Type of Data to be Printed Out		Message Printed Out Using the Announcement Function	Printing Collected Data Using the Report Function			Printing Out Displayed Data Using the Snapshot Function
			Real-time Report Continuous	Real-time Report Page Changing	Logging Report	
Message printed out using the announcement function		X	X	O	O	O
Printing out collected data using the report function	Real-time report continuous	X	X	O	O	O
	Real-time report page change	O	O	O	O	O
	Logging report	O	O	O	O	O
Printing out displayed data using the snapshot function		O	O	O	O	O

O: Page changing
X: No page changing

- (c) Operation when a logging report data storage and printing request is made during use of the snapshot function
- If a request is made for logging report data storage and printing while a snapshot function (redisplay, storage of screen data in a memory card, or printing of screen data) is in progress, the logging report data storage and printing is executed after completion of the snapshot function operation, which means that the actual logging time (data collection time) and printing time will be later than the set times.
When making the relevant settings, take care to ensure that execution of a snapshot function will not coincide with a request for data storage and printing for a logging report.

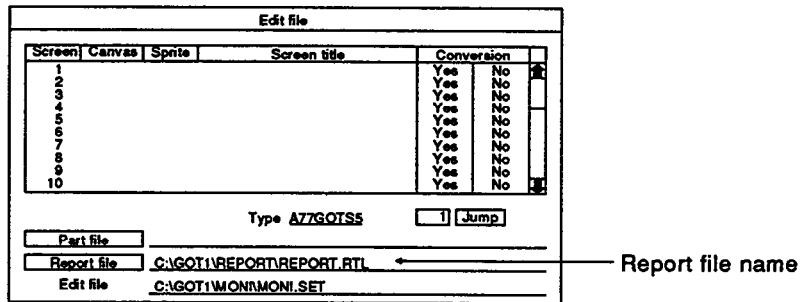
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12.2 Data Creation Procedure for the Report Function

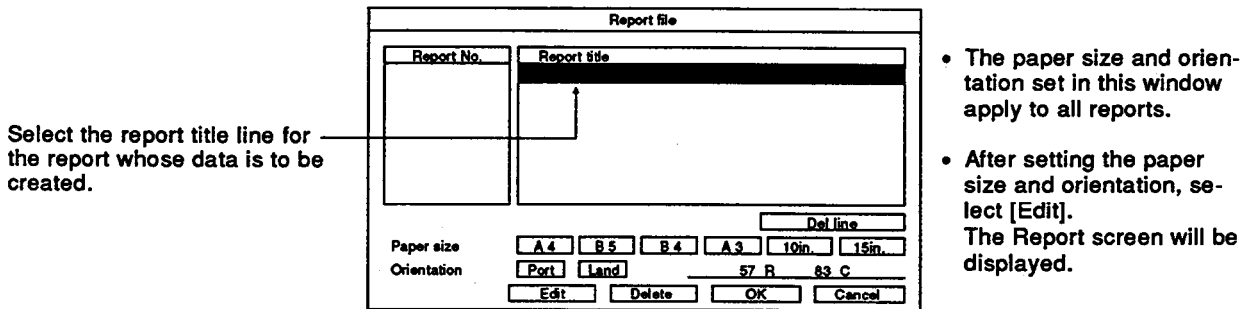
Set the report canvas and monitoring conditions for the report function in the screens and windows shown in (1) to (8) below using the AGOTP. For details on the operations involved, refer to the AGOTP Operating Manual.

- The only printers that can be connected to a G controller unit are ESC/P24 compatible models. When "A77GOT-S5" is selected for the AGOTP type selection setting, the printer type is automatically set as ESC/P24, so there is no need to set the printer to be connected in the printer setting window.
- Make sure a printer is connected before using the report function.
- Once printing for a report function has been started, it is not possible to suspend or stop it part way through.

(1) Set the report file name in the Edit file window.



(2) In the Report file window, select the paper size and orientation, and the report title line for the report whose report canvas data is to be created.



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- (3) Set the title of each report in the Title window (set a title for each page).

The screenshot shows a window titled "Title". Inside, there is a table with two columns: "No." and "Title". The first row contains "1" and "Real-time report (continuous) 1". Below the table, there are buttons for "Del Line", "Jump", "OK", and "Cancel". A "Title" input field is located below the "Del Line" button.

- Click the right mouse button while the Report screen is displayed to call up the tool box, then select the "Title" menu option to open the Title window.

- (4) On the Report screen, create the report canvas (frame for printing the data, data names and units). (Create this data for each page.)

Example report drawing:

Data Collection Time	Model	MC-1	MC-2
		Current Total	Current Total
	A1	units	units
	A2	units	units
	A3	units	units

- Draw the report canvas by selecting the "Line Draw" menu and "Text" menu options from the tool box.

When lines (rectangles, straight lines) are drawn on the Report screen, they appear as solid lines on the screen, but they are actually printed like this: ---|

Data Collection Time	Model	MC-1	MC-2
		Current Total	Current Total
	A1	units	units
	A2	units	units
	A3	units	units

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(5) Make the following settings in the Report parameter window.

Report parameter			
Report format	<input type="checkbox"/> Real/cont.	<input type="checkbox"/> Real/page	<input type="checkbox"/> Log/page
Trigger	<input type="checkbox"/> Sampling	<input type="checkbox"/> Bit device	<input type="checkbox"/> Time
Start position	TOP <input type="text"/> mm L-END <input type="text"/> mm (Max.100mm)		
Repeat range	Page <input type="text"/> 1	Start <input type="text"/> 0	End <input type="text"/> 0 Freq. <input type="text"/> 0
Sample setting	No. <input type="text"/> 1	Overwrite <input type="checkbox"/> Yes	<input type="checkbox"/> No
Data del timing	<input type="checkbox"/> Power ON	<input type="checkbox"/> Print	<input type="checkbox"/> Bit device
Print trigger	<input type="checkbox"/> Bit device	<input type="checkbox"/> Time	
Mem. card/Comment	<input type="text"/> 112		
<input type="button"/> Delete <input type="button"/> OK <input type="button"/> Cancel			

- Report type
- Printing start position
- Data collection timing
- Printing range and number of repetitions for repeat printing
- Collection frequency and printing timing for a logging report

The settings to be made in the Report parameter window differ according to the type of report.

For details on the settings made in the Report parameter window, see the "Complementary explanation of setting items" in Sections 12.3 through 12.5.

POINT

When one report comprises multiple pages, set the monitoring conditions in the Report parameter window according to the page, as indicated below.

Setting Item	First Page	nth Page	Final Page
Report format	○	—	—
Data collection trigger *1	○	○	○
Printing start position	○	—	—
Repeat range, repeat number of times	—	—	○
Collection frequency/ Overflow action	○	—	—
Data deletion timing	○	—	—
Printing trigger	○	—	—

*1 The data collection trigger must be set for all pages (set the same data collection trigger).

(6) Make the following settings in the Report setting (print allocation) window

- This window will not open if no data collection trigger has been set in the Report parameter window.
- After setting the data, select the "OK" option of the tool box. The report file window will be redisplayed.

- Type of data to be printed
- Order of data printed in the logging report
- Setting of the data to be printed (word device, buffer memory of special function module)
- Printing format (decimal, hexadecimal, comment, etc.)
- Display position of data to be printed

The settings to made in the Report setting (print allocation) window differ according to the type of report.

For details on the settings made in the Report setting (print allocation) window, see the "Complementary explanation of setting items" in Sections 12.3 through 12.5.

(7) When setting the second page of a report, or when setting data for a report type that differs from that of the previous page, select the report title for the type of data to be created in the Report file window, and select [Edit].

Then carry out settings (3) through (6).

Select the report title line for the data to be created.

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- (8) After setting all the data for each report function, set the page number(s) in the Report file window.
 When a report consists of more than one page, set the page numbers in the way shown in the example below.

(Example)

Here, a two-page logging report and one-page real time report (continuous) are set under the same report parameter conditions.

Report No.	Report title
No.1 (P.1)	Logging report 1/2
No.2 (P.1)	Logging report 2/2
No.3 (P.1)	Real-time report (continuous) 1

Del line: _____

Paper size:

Orientation: 57 R 83 C

- Click the "No.2 (P.1)" field with the left mouse button.



Report No.	Report title
No.1 (P.1)	Logging report 1/2
No.2 (P.2)	Logging report 2/2
No.2 (P.1)	Real-time report (continuous) 1

Del line: _____

Paper size:

Orientation: 57 R 83 C

(Example)

Here a four-page real time report (continuous) is set with the same report parameter conditions applicable to all pages.

Report No.	Report title
No.1 (P.1)	Real-time report (continuous) 1/4
No.2 (P.1)	Real-time report (continuous) 2/4
No.3 (P.1)	Real-time report (continuous) 3/4
No.4 (P.1)	Real-time report (continuous) 4/4

Del line: _____

Paper size:

Orientation: 57 R 83 C

- After the "No.2 (P.1)" field, click "No.3 (P.1)" and "No.4 (P.1)" in that order.



Report No.	Report title
No.1 (P.1)	Real-time report (continuous) 1/4
(P.2)	Real-time report (continuous) 2/4
(P.3)	Real-time report (continuous) 3/4
(P.4)	Real-time report (continuous) 4/4

Del line: _____

Paper size:

Orientation: 57 R 83 C

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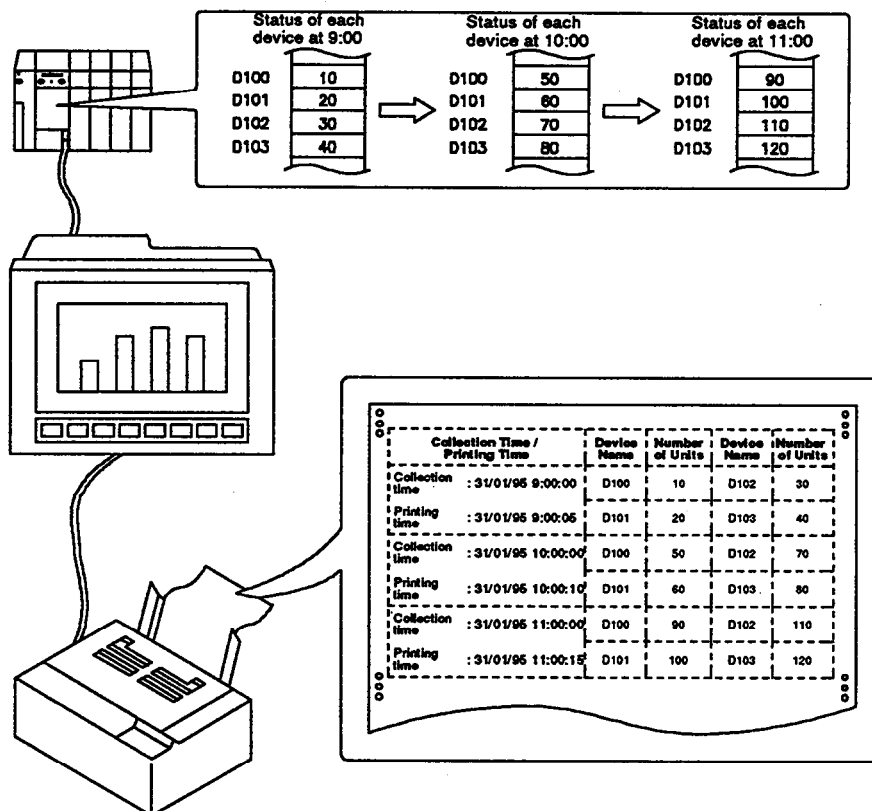
12.3 Printing Word Device Values and Corresponding Messages (Comments) in a Real Time (Continuous) Report (Report Function)

[Function]

This function collects and prints data at each data collection trigger. On occurrence of data collection triggers subsequent to the first, printing is continued without changing the page.

(Example)

Data collection trigger set as time designation (random) 9:00, 10:00, 11:00



- Provided the G controller has been started up, the report function can be executed.
- At 9:00, 10:00, and 11:00, the numerical value data in D100 to D103 is collected and printed.

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[Settings by using the AGOTP]

Carry out settings (1) through (3) in Section 12.2.
Set the monitoring conditions in the report parameter window and report setting (print allocation) window.

(1) Report parameter window

Setting Item	Setting Item/Selection		Comment			
Report format	Real-time continuous		_____			
Data collection trigger	Bit device	Leading edge/falling edge				
	Time setting	Continuous/random: For 48 times				
Printing start position	0 to 100		Set on the first page of the relevant report			
Repeat range	Setting possible for real-time report, continuous, only.		Set on the last page of the relevant report for which printing allocation is performed.			
		Page		Start- ing line	Com- pleting line	Num-ber of repeti-tions
	Real-time	Conti- nuous		1 to 8	1 to 83	1 to 83
	Page changing	_____	_____	_____	_____	

[Complementary explanation of setting items]

(1) Printing start position

Set a position on a printer sheet that report canvas coordinates (0,0) are made to correspond.
It is different according to the setting a printer and a printer to be used.
Set it according to a printer to be used.

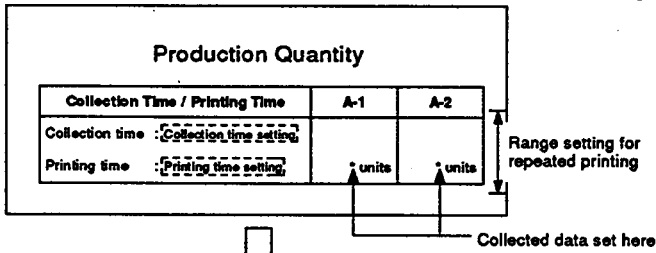
(2) Repeat range

- A report canvas and a set data in the setting range can be printed for every data collection trigger by setting any range (line unit) on a report canvas.
- For the repeat printing range, set printing time/data collection time/collected data at the final page of an applicable report to be set by the report setting (printing allocation) window.
- Only report canvas is printed after a line next to repeat printing range, and printing of a set data is ignored.

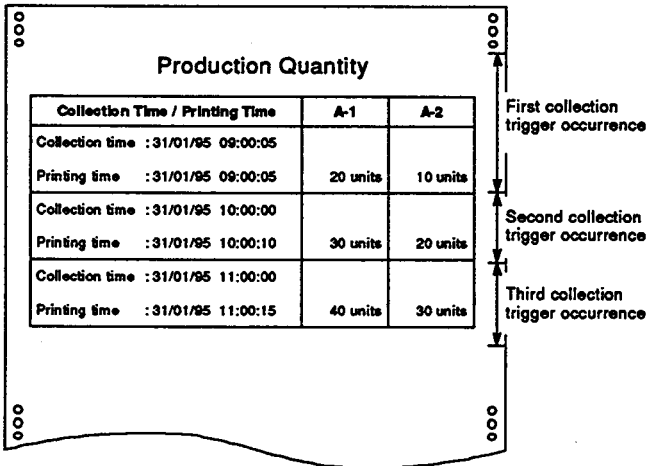
12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

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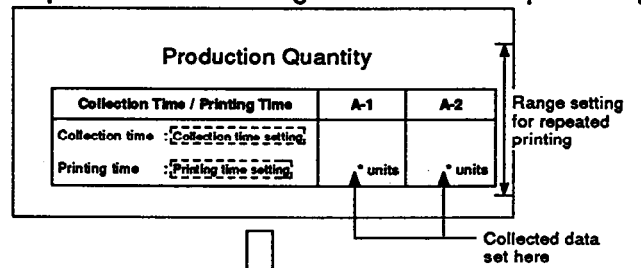
(Example 1)
Report canvas drawing contents and repeat range



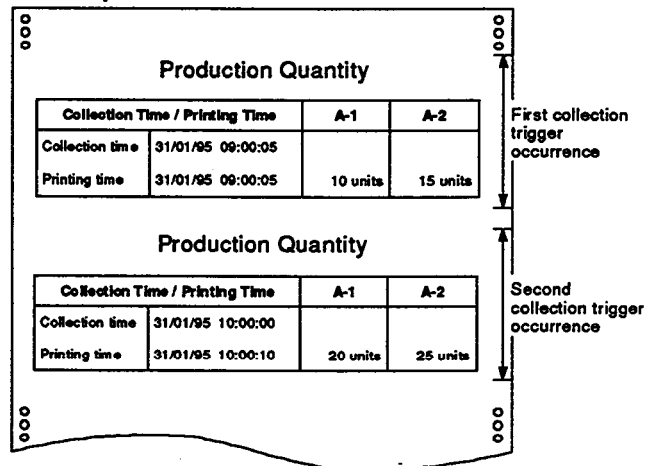
Actual printout



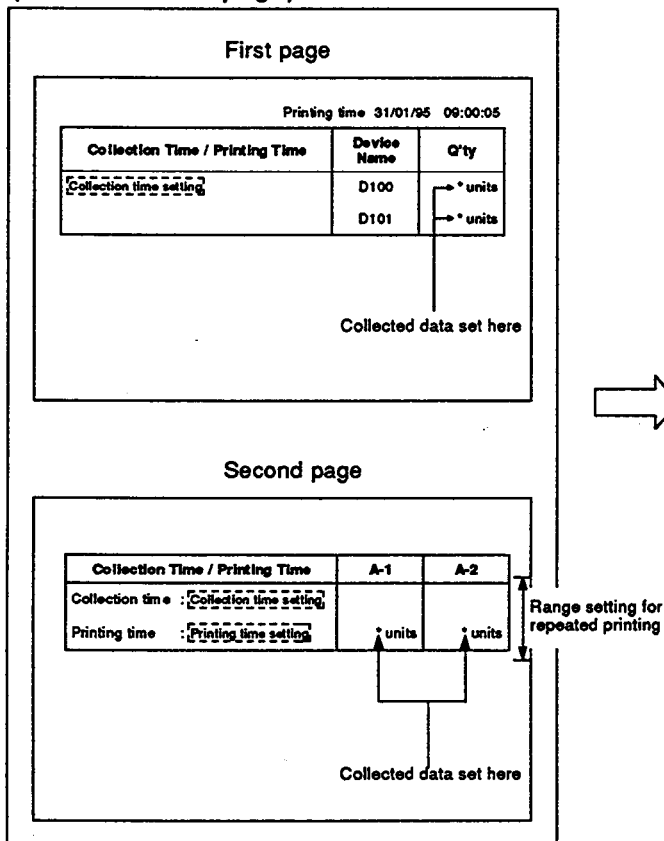
(Example 2)
Report canvas drawing contents and repeat range



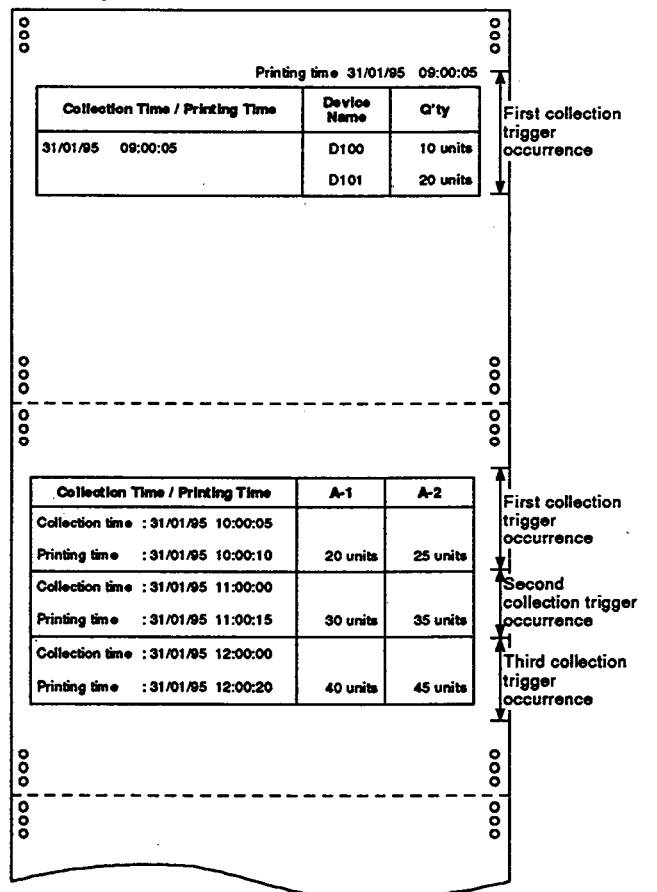
Actual printout



(Example 3)
Report canvas drawing contents and repeat range
(more then one page)



Actual printout



 : Used for explanatory purposes.

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(2) Report setting (print allocation) window

Setting Item	Setting Item/Selection	Comment				
Print position	Lines: 1 to 83, Columns: 1 to 130 (The setting ranges depend on the paper size and orientation set in the report file window.)	Set in accordance with the paper size and drawing contents.				
Print type	Printing time/data collection time/collected data	Set the data type.				
For a real-time report	Word device	Set only when the print type is set to "Collected data"				
Print format	Setting is enabled only when the print type is set to "Collected data."					
	Printing Format	Decimal		Hexadecimal		Comment
	Data type	16-bit	32-bit	16-bit	32-bit	—
	Number of printed digits	1 to 3	1 to 13	1 to 4	1 to 8	—
	Printing range when the data is signed	32767 to -32768	2147483647 to -2147483648	—	—	Comment number set in the set comment window: 0 to 32767
Printing range when the data is not signed	65535 to 0	4294967295 to 0	FFFF to 0	FFFFFFFF to 0	—	
Decimal point position	0th to 10th digit	0th to 10th digit	—	—	—	
					Number of digits includes the sign and decimal point	
					When the decimal point position is 0	
					Counting up from the lowest digit	

[Complementary explanation of setting items]

(1) Print position

Set the first printing position of printing time/data collection time/collected data on a report canvas displayed on a screen.

(2) Print type

Set the type of data to be printed.

Printing time : The time that printing of the collected data is started is printed.

Data collection time : The time at which the data printed was collected is printed.

Collected data : The numerical value data of word devices or the buffer memories of special function modules, and the comments that correspond to the numerical value data, are printed.

(3) Print format

When collected data is set in the setting item of a printing classification, set the printing format of collected data.

When printing is executed, if the number of digits in the collected data is lower than the set number of digits, blanks are printed for the superfluous higher digits.

For the "number of printed digits" setting, set a number of digits that includes the sign and decimal point, or a higher number.

If "Comment" is set as the print format, create the comment in the comment setting window.

The comment whose comment number corresponds to the numerical value data in the collected data (word device or buffer memory of a special function module) is printed.

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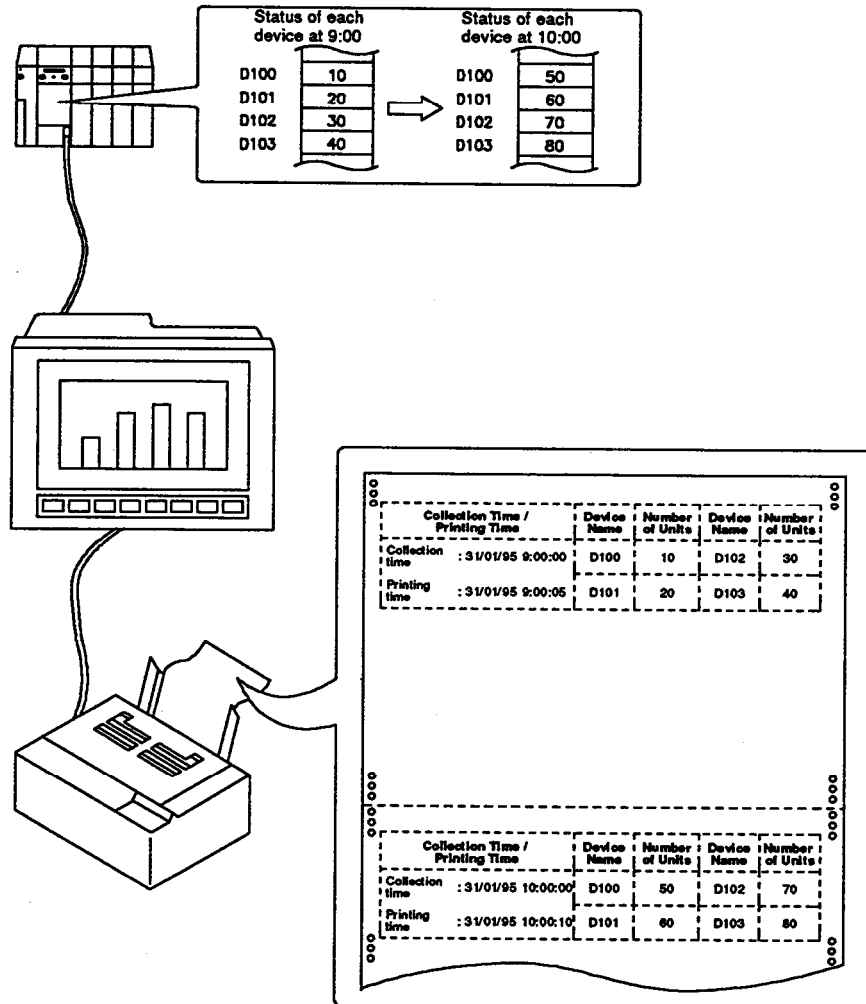
12.4 Printing Word Device Values and Corresponding Messages (Comments) in a Real Time Report with Page Changing (Report Function)

[Function]

This function collects and prints data at each data collection trigger. On occurrence of data collection triggers subsequent to the first, printing is continued after changing the page.

(Example)

Data collection trigger set as time designation (random) 9:00, 10:00.



- Provided the G controller has been started up, the report function can be executed.
- At 9:00 and 10:00, the numerical value data in D100 to D103 is collected and printed.

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[Settings by using the AGOTP]

Carry out settings (1) through (3) in Section 12.2.
Set the monitoring conditions in the report parameter window and report setting (print allocation) window.

(1) Report parameter window

Setting Item	Setting Item/Selection		Comment			
Report format	Real-time continuous		_____			
Data collection trigger	Bit device	Leading edge/falling edge				
	Time setting	Continuation /random: For 48 times				
Printing start position	0 to 100		Set on the first page of the relevant report			
Repeat range	Setting possible for real-time report, continuous, only.			Set on the last page of the relevant report for which printing allocation is performed.		
		Page	Start-ing line		Com-pleting line	Num-ber of repeti-tions
	Real-time	Conti-nuous	1 to 8		1 to 83	1 to 83
	Page changing	_____	_____	_____	_____	

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[Complementary explanation of setting items]

Refer to the "Complementary explanation of setting items" in Section 12.3.

(2) Report setting (print allocation) window

Setting Item	Setting Item/Selection	Comment					
Print position	Lines: 1 to 83, Columns: 1 to 130 (The setting ranges depend on the paper size and orientation set in the report file window.)	Set in accordance with the paper size and drawing contents.					
Print type	Printing time/data collection time/collected data	Set the data type.					
For a real-time report	Word device	Set only when the print type is set to "Collected data"					
Print format	Setting is enabled only when the print type is set to "Collected data."						
	Printing Format	Decimal		Hexadecimal		Comment	
	Data type	16-bit	32-bit	16-bit	32-bit	—	
	Number of printed digits	1 to 3	1 to 13	1 to 4	1 to 8	—	
	Sign	Printing range when the data is signed	32767 to -32768	2147483647 to -2147483648	—	—	Comment number set in the set comment window: 0 to 32767
		Printing range when the data is not signed	65535 to 0	4294967295 to 0	FFFF to 0	FFFFFFFF to 0	
Decimal point position	0th to 10th digit	0th to 10th digit	—	—	—		
						Number of digits includes the sign and decimal point	
						When the decimal point position is 0	
						Counting up from the lowest digit	

[Complementary explanation of setting items]

Refer to the "Complementary explanation of setting items" in Section 12.3.

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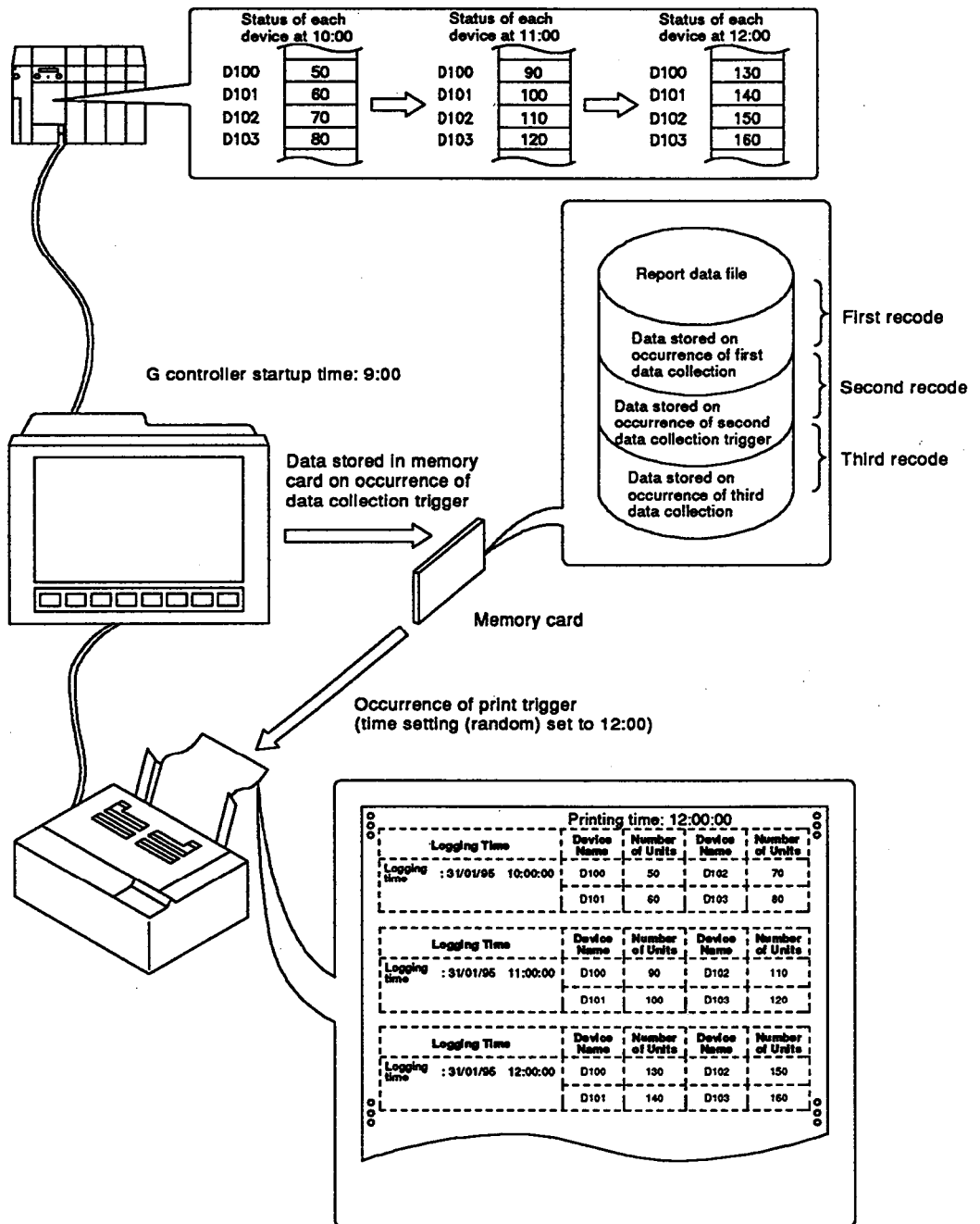
12.5 Printing the Values of Word Devices and Corresponding Messages (Comments) in a Logging Report with Page Changing (Report Function)

[Function]

This function collects data at each data collection trigger, stores the collected data in the memory card, and prints the data stored in the memory card on occurrence of the printing trigger. Page changing processing is executed on completion of printing. A memory card is required in order to use this function.

(Example)

Data collection trigger set as "sampling" with an interval of 60 minutes, and collection frequency set to 3.



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[Settings by using the AGOTP]

Carry out settings (1) through (3) in Section 12.2.
Set the monitoring conditions in the report parameter window and report setting (print allocation) window.

(1) Report parameter window

Setting Item	Setting Item/Selection		Comment																	
Report format	Logging page eject		Set it on the first page of report.																	
Data collection trigger	Logging page changing	Sampling		100 msec to 3600 sec. (60 minutes)interval																
		Bit device		Leading edge/falling edge																
		Time setting		Continuation /random: For 48 times																
Printing start position	0 to 100																			
Repeat number of times	<table border="1"> <thead> <tr> <th></th> <th>Page</th> <th>Starting line</th> <th>Completing line</th> <th>Number of repetitions</th> </tr> </thead> <tbody> <tr> <td>Logging page eject</td> <td>1 to 8</td> <td>1 to 83</td> <td>1 to 83</td> <td>—</td> </tr> <tr> <td></td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> </tbody> </table>					Page	Starting line	Completing line	Number of repetitions	Logging page eject	1 to 8	1 to 83	1 to 83	—		—	—	—	—	This can only be set on the last page of the printing allocation of an applicable report.
		Page	Starting line	Completing line	Number of repetitions															
Logging page eject	1 to 8	1 to 83	1 to 83	—																
	—	—	—	—																
Collection frequency	1 to 500			Number of records																
Overflow action	Overwrite (continuation)/cancel (end)			Set next processing method when data of number of collection (collection frequency) is stored.																
Data del (delete) timing	Power input	When the G-controller is start up		Set the timing of deleting data of report data file.																
	Print out	After the printout is completed																		
	Bit device	Leading edge/falling edge																		
Print trigger	Bit device	Leading edge/falling edge		Set the timing of printing data of report data file.																
	Time designation	Continuous/random: For 48 times																		

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[Complementary explanation of setting items]

(1) Repeat range

- A report canvas and a set data in the setting range can be stored for every data collection trigger by setting any range (line unit) on a report canvas.
- For the repeat printing range, set printing time/logging time/logging data at the final page of an applicable report to be set by the report setting (printing allocation) window.
- Only report canvas is printed after a line next to repeat printing range, and logging data, etc. is not stored in the file area.
- When setting this item, set repeat number of times, and time series and record No. of the report setting (printing allocation) window.

(2) Repeat number of times

Set the number of times the data of the repeat range set as described above is to be repeated before storage in the file area.

(3) Collection frequency

Set the number of times data is stored in the file area (number of records).

When making this setting, take into account the "repeat number of times" set in (2) above.

(4) Overflow action

Set whether - after the quantity of data corresponding to the collection frequency setting described above has been stored in the file area - the existing data in the file area is overwritten or data storage is stopped on occurrence of the next data collection trigger.

Overwrite : Data storage is continued by overwriting the data stored when the first data collection trigger occurred (the first record).

Cancel : No data is stored on occurrence of the next data collection trigger.

To start storing data again, all the stored data must be deleted.

The data can be deleted on establishment of the condition set for "data delete timing".

(5) Data delete timing

Set the timing in accordance with which the stored data is deleted.

Power input : Deleted when the G controller unit is started up

Print out : Deleted on occurrence of the printing trigger after printout is completed

Bit device : Deleted at the leading edge or falling edge of the bit device designated by the user

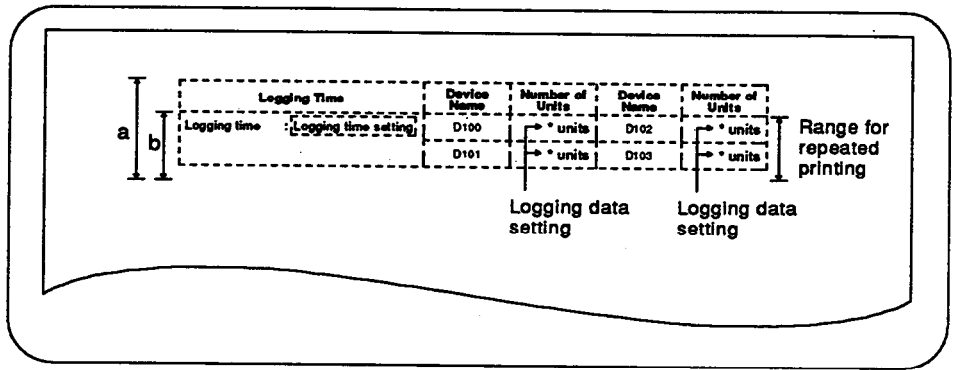
If data is being stored in the report file area or printing is in progress when the time dictated by the designated timing is reached, the data is deleted after waiting for this processing to be completed.

12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

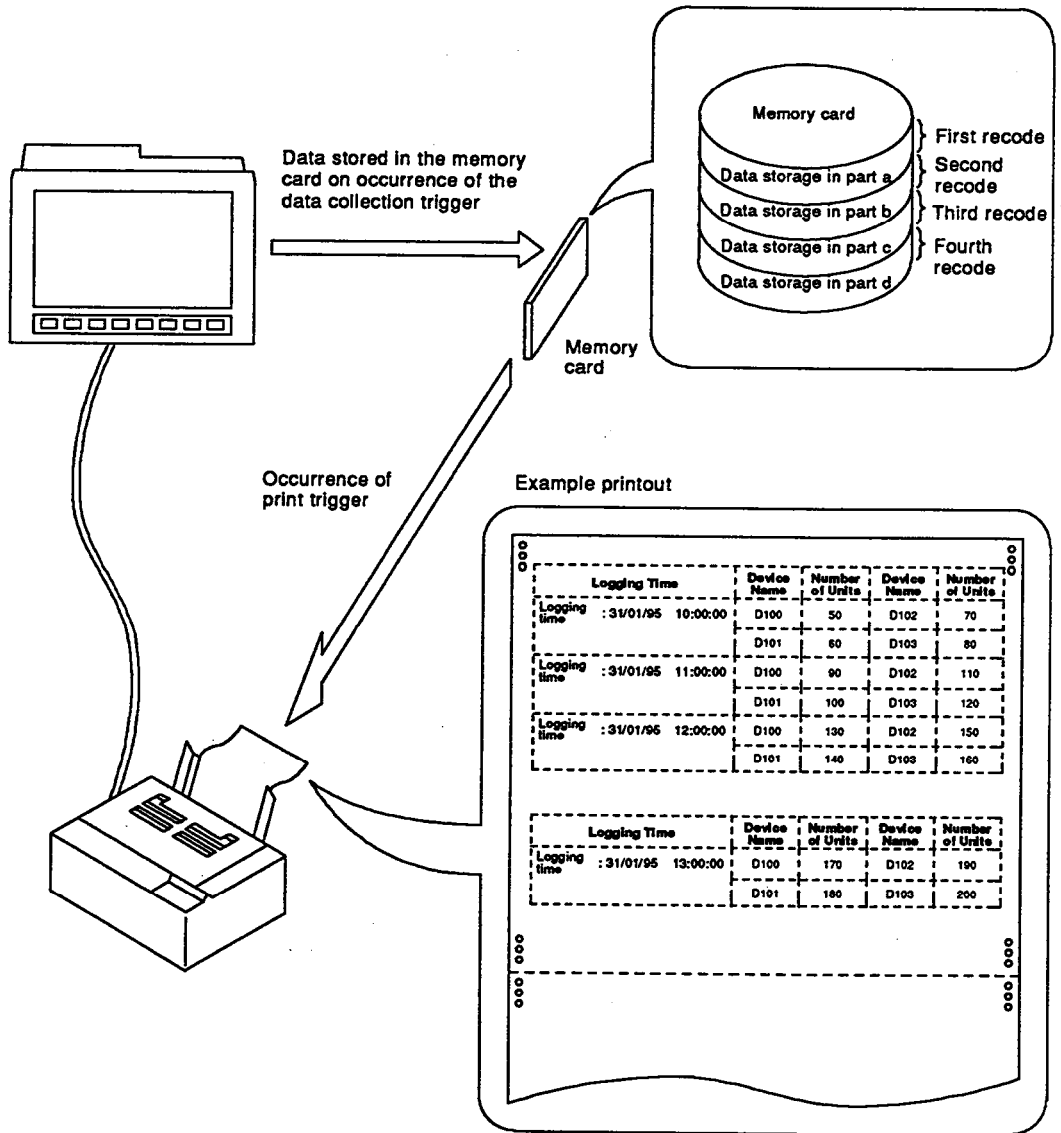
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(Example)

Repeat range setting: 2, collection frequency: 4, overflow action: cancel



: used for explanatory purposes.



12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

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(2) Report setting (printing allocation) window

Setting Item	Setting Item/Selection					Comment	
Print position	Lines: 1 to 83, Clumns: 1 to 130 (The setting ranges depend on the paper size and orientation set in the report file window.)					Set in accordance with the drawing contents and paper size.	
Print type	Print time/logging time/logging data					Set the data type.	
Common settings for logging	Time series	Old/New				Set record No. which corresponds to the device which collected data is printed.	
	Record No.	1 to 500					
Logging data	Word device					Set only when the print type is set to "Logging data".	
Print format	Setting is enabled only when print type is set to "Logging data".						
	Printing Format	Decimal		Hexadecimal		Comment	
	Data type	16-bit	32-bit	16-bit	32-bit		
	Number of printed digits	1 to 3	1 to 13	1 to 4	1 to 8	Number of digits includes the sign and decimal point.	
	Sign	Printing range when the data is signed	32767 to -32768	2147483647 to -2147483648	---	---	Comment number set in the set comment window: 0 to 32767
		Printing range when the data is not signed	65535 to 0	4294967295 to 0	FFFF to 0	FFFFFFFF to 0	
Decimal point position	0th to 10th digit	0th to 10th digit	---	---	---	When the decimal point position is 0 Counting up from the lowest digit	

[Complementary explanation of setting items]

(1) Printing position

Set the first printing position of printing time/logging time/logging data on a report canvas displayed on a screen.

(2) Print type

Set the type of data to be stored in the file area for printing.

Print : The time when printing is started on occurrence of the printing trigger is printed.

Logging time : The time when the data is stored in the file area is printed.

Logging data : The numerical value data of the word device or the buffer memory of the special function module, and the comment corresponding to the numerical data, is printed.

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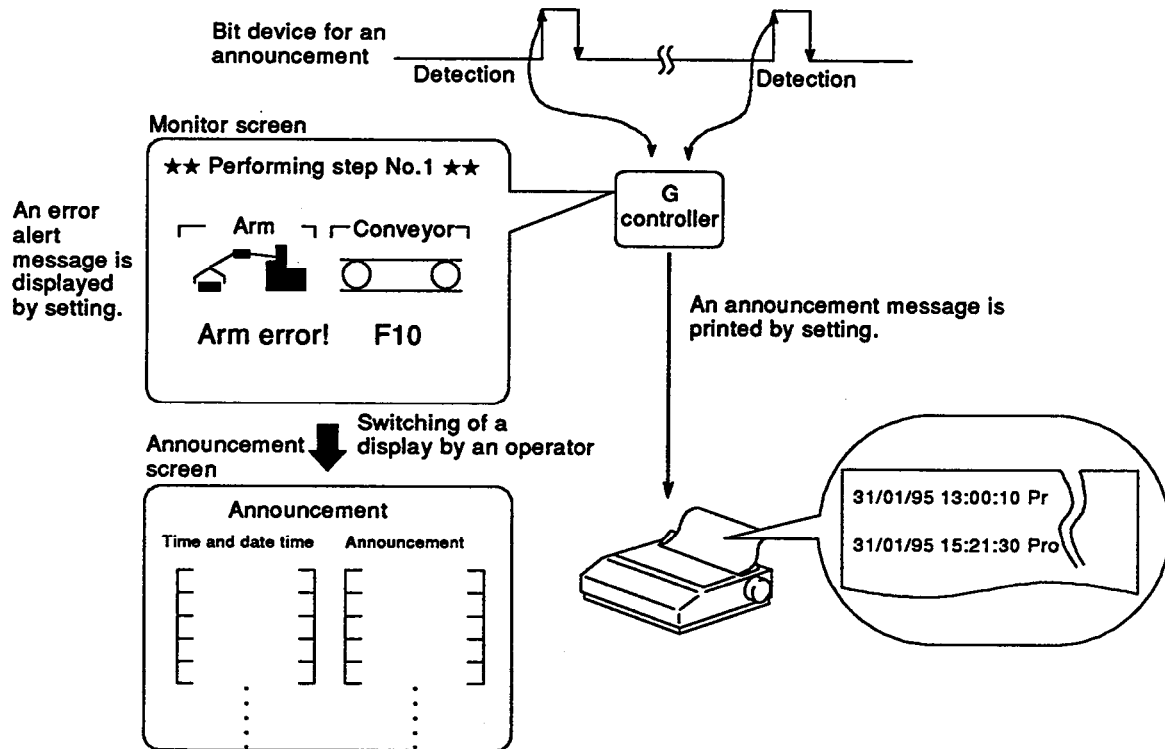
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12.6 Printing an Announcement Message at the Leading Edge of a Bit Device (Announcement Function)

[Function]

This function prints out comments allocated to bit devices by the user. It can be used to display user-defined error alert messages on the monitor screen.

The occurrence history of announcement displays can be checked on the announce screen, which is called from the system menu.



[Settings by using the AGOTP]

Set monitoring condition in the announce setting window.

Setting Item	Setting Range/Option	Comment
Monitor device	Bit device leading edge	————
Alarm	ON/OFF	For an error alert
Printer	ON/OFF	For announcement message printing
Announcement message	48 characters per line A maximum of 256 lines	Setting contents per point

12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

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[Complementary explanation of setting items]

(1) Alarm

(a) When ON is set

- The error alert message and the device number that is turned ON is blinking in the monitor screen.
- An announcement message is reversed on an announce screen in the system menu.

(b) When OFF is set

- An error alert message is not displayed on a monitor screen.
- An announcement message is displayed normally on an announcement screen in the system menu.

(2) Printer

When ON is set, an announcement message is printed when a bit device turns ON.

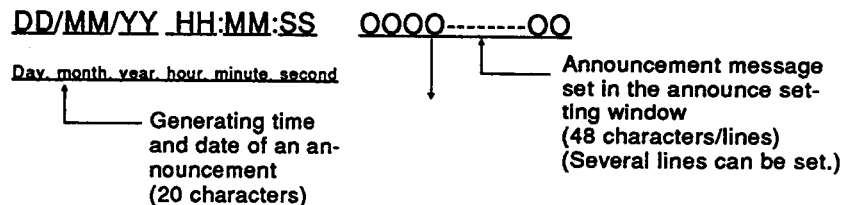
[Notes on using the function]

(1) Printing operation

When an announcement occurs during executing printing by the report function or during executing printing by a snapshot, an announcement message is printed after completing printing.

(2) Print format

After printing it in the following order, return and line feed are executed.



(3) Specifying the position where an announcement message is printed out

The position where a bit device announcement message is detected using the announcement function is determined as shown below: (If the setting contains an error, correct printing cannot be done.)

(4) Announcement point

An announcement can be set 256 points on 1 point/1 line. When the message of several lines is used per 1 point announcement, the used announcement number of points of the number of lines that can be set decreases.

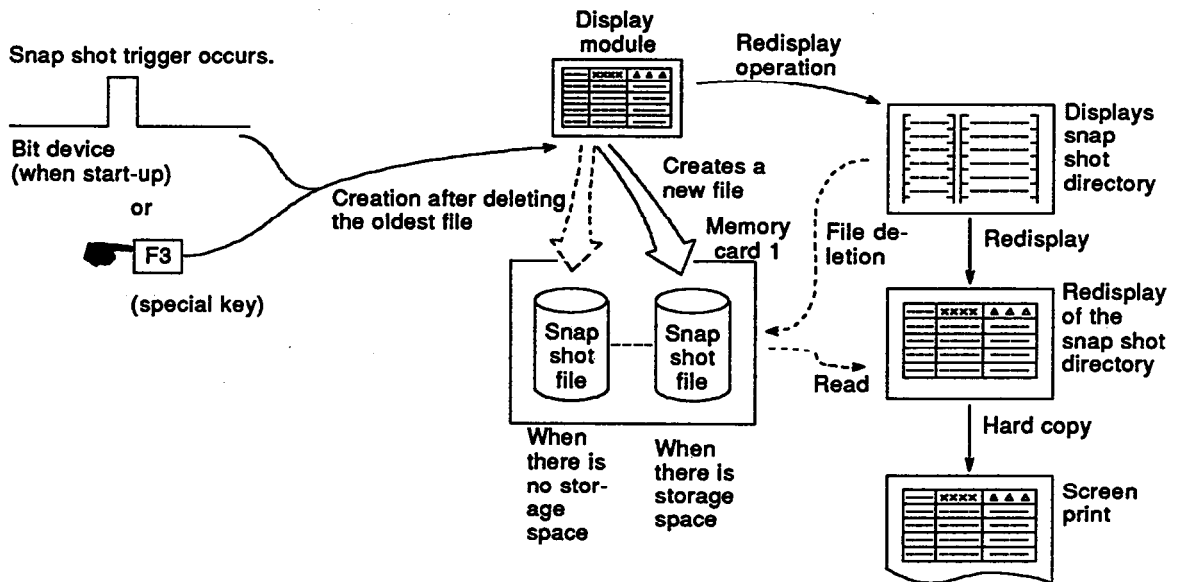
12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

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12.7 Storing the Currently Displayed Monitor Data in a Memory Card and Printing it (Snap Shot Function)

[Function]

This function saves the monitor display contents in a snapshot file and prints it on occurrence of a snapshot trigger during monitoring.



[Settings by using the AGOTP]

Set the monitoring conditions and key code in the setting windows.

(1) Snapshot setting window

Setting Item	Setting Range/Selection	Comment
Trigger device	Bit device leading edge . . . Self station (ACPU) only	_____

(2) Special key code setting window

Setting Item	Setting Range/Selection	Comment
Snapshot	Key code setting	Codes 09H to FFH
		Setting FFH makes the snapshot function invalid.

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(3) Touch key setting window

Setting Item	Setting Range/Selection	Comment
Touch key code setting	Codes 09 _H to FF _H	Setting FF _H makes key input invalid.

(4) Ten-key panel (TK) setting window/Operation panel (KP) setting window

Setting Item	Setting Range/Selection	Comment
Key code setting	Codes 09 _H to FF _H	Setting FF _H makes key input invalid.

[Notes on using the function]

(1) Setting method

(Setting common to all screens)

- (a) Set the trigger device to execute the snapshot function in the set snapshot window.
- (b) Set the key code to execute the snapshot function in the special key code setting window.
Set a key code that is not used by the system and not used for a device writing function.

(Setting for each screen.)

- (c) For the touch key used to execute the snapshot function on screens that use this function, set the same key code in the set touch key setting window as was set in the special key code setting window.
Key codes are set for the touch keys in the initial settings.

(Setting common to all screens)

- (d) For the panel key used to execute the snapshot function, set the same key code as was set in the special key code setting window in the ten-key panel (TK)/operation panel (KP) setting window.

12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

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- (e) When the snapshot function is executed by key input, make settings in the window below that is relevant, depending on the input module.

Window \ Input Module	Touch Panel	Ten-key Panle	Operation Panel	[F3] Key under the Display
Special key code setting window	O	O	O	O
Touch key setting window	O	X	X	X
Ten-key panel (TK) setting window	X	O	X	X
Operation panel (KP) setting window	X	X	O	X

O: Setting required X: Setting not required

- When the [F3] key under the display is used, set the key code in the special key code setting window to "93H".

(2) Snap shot file capacity

The file capacity depends on the contents of the monitor screen for which the snap shot function is used. The contents of the screen can be estimated as shown below:

(a) Type 1

Monitor screens created by using any of the following monitoring functions contain about 5 Kbytes of data.

Numerical data display, Pie graph display,
 Character string display, Polygonal line graph display,
 Block data display, Spline graph display,
 Clock data display, Scatter graph display (only in batch display),
 Error alert display (only when no error alert message is displayed)

(b) Type 2

Monitor screens created using monitoring functions other than those listed for Type 1 above, and monitor screens in which an error alert message is displayed using the error alert display function contain about 136 Kbytes of data.

12. PRINTING THE CONTENTS OF DEVICES AND MONITOR DISPLAYS

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(3) Number of snapshot files

Number of snapshot files that can be stored to a memory card is shown below.

Memory Card Capacity (In Kbyte Units) (File Area Capacity)	64	128	256	512 or more
Type of Monitor Screen				
Screen shown in (2)-(a) (Type 1)	5	10	10	10
Screen shown in (2)-(b) (Type 2)	0	0	1	2

When a snap shot trigger occurs, if the memory card contains enough space to store a new snap shot file, the snap shot file will be created in conformance with the above table.

If (a) there is no space in the memory card to store the data, or (b) the memory card already contains the number of files corresponding to the table, the data is created after deleting the oldest type of each file.

(4) Snap shot file deletion

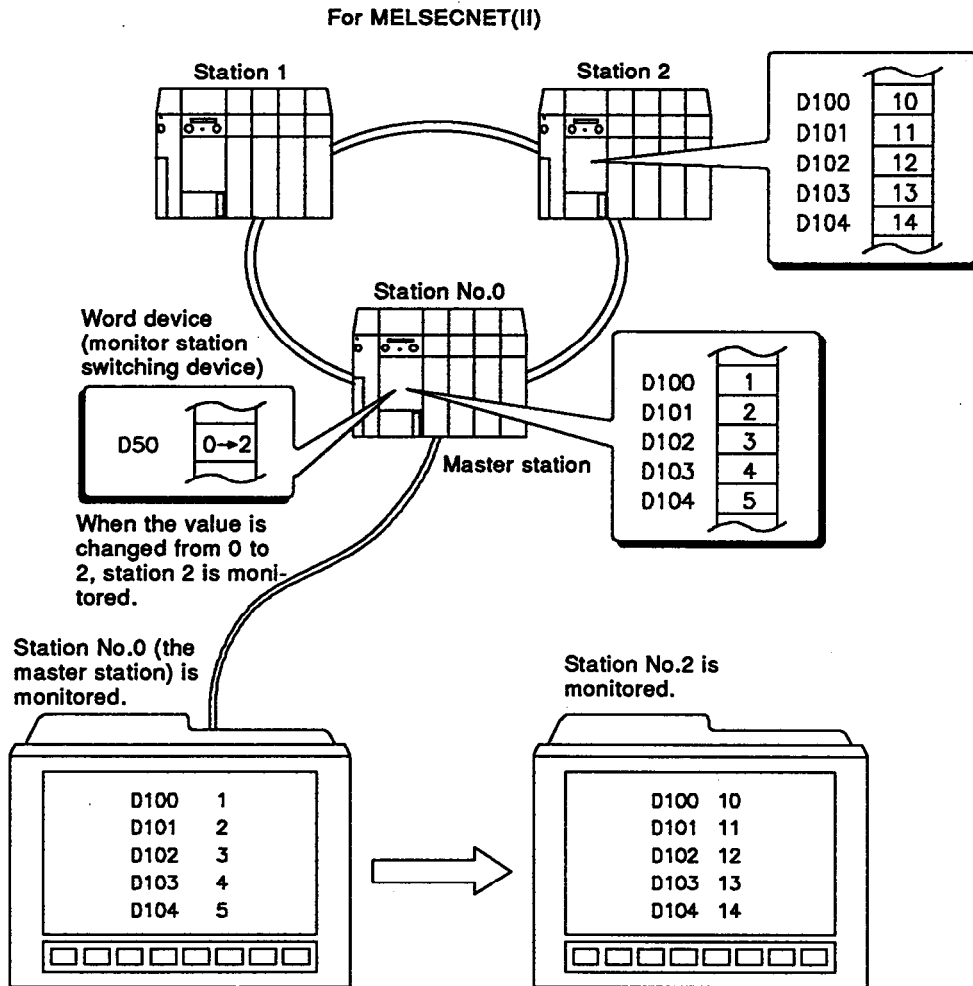
Snap shot files stored to the memory card can be deleted by using the snap shot directory screen.

Refer to the A77GOT-S5 User's Manual.

13. MONITOR STATION NUMBER SWITCHING FUNCTION

13.1 Displaying Multiple Statuses of the Same Device, Used with a Data Link or Network System, on One Screen

[Monitoring example]



[Function]

This function is used in situations where there is more than one ACPU in a data link or network system that is using the same device for the same purpose, to monitor the statuses of several ACPUs on the same monitor screen by switching the monitoring destination PC station number.

13. MONITOR STATION NUMBER SWITCHING FNCTION

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[Complementary explanation of the function]

- (1) While a monitor screen is being displayed, the PC station number being monitored can be switched to another PC station number by writing the station number of the switching destination to the monitoring station switching device.
- (2) The station number changes in accordance with the numerical value set in the monitoring station switching device as shown below.

Device Contents	Station No.
0	0 (master station/control station)
1	1
.	.
.	.
64	64
FE	Station No. set for each monitor function
FF	Self station

* If the device contents are in the range 65 to FD, they are invalid and processing proceeds on the basis of the previous data.

- (3) When switching the station number, make sure that the switching source and switching destination ACPUs conform to one of the following patterns.

Switching Source	→	Switching Destination
AnU	→	AnU
AnA	→	AnA
A3H · A3M	→	A3H · A3M
Other than above	→	Other than above

* Correctly set the CPU type of the station to be switched to in the PC type selection window. If the setting does not agree with the actual PC type, there is a possibility of malfunction.

- (4) The use of this function is restricted in one of the following ways depending on the method used to connect the G controller unit.
 - (a) In the case of an ACPU connection to an ACPU incorporated in an MNET (II) or MNET/B system:
 - If the connection is to a master station, the function can be used with all local stations.
 - If the connection is to a local station, the function can only be used with the master station.
 - (b) In the case of an ACPU connection to an ACPU incorporated in an MNET/10 system
 - If the connection is to an AnUCPU, the function can be used with all stations.
 - If the connection is to a CPU other than an AnUCPU, the function can only be used with the control station.
 - (c) In the case of a data link connection, the function can only be used with the master station.
 - (d) In a network connection, the function can only be used with AnUCPU stations.

13. MONITOR STATION NUMBER SWITCHING FNCTION

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[Settings by using the AGOTP]

Set the monitor conditions in the screen switching /monitoring station switching setting window and monitoring station switching setting window as follows.

(1) Screen switching/monitoring station switching setting window

Setting Item	Setting Range/Selection	Comment
Monitoring station switching device	Word device	_____

(2) Set monitoring station switching window

Setting Item	Setting Range/Selection	Comment
Monitoring station switching	YES/NO	The initial setting is "NO"

[Notes on using the function]

(1) Setting method

When using the station number switching function, make settings in the windows indicated above according to the following procedures.

(Settings common to all screens)

- (a) Set a station number switching device for each screen in the screen switching/monitoring station switching setting window.

(Setting for each screen)

- (b) Set "YES" only in the monitored station switching setting window for the monitor screen for which the station number is to be switched.

- The station number switching function will not be valid for monitor screens for which "NO" is set.
- To switch the screen to a screen for which this function is set, refer to item (4) of "Notes on using the function" in Section 7.1.

(2) Displaying the monitor screen

When the station number is switched, the same canvas screen is redisplayed.

- (3) Monitoring functions and monitoring conditions for which the station number switching function is not valid

The following monitoring functions and monitor function devices are not affected by the station number switching function and always collect the data of the station number set in the PC type selection window.

- Trigger devices for each sprite setting
- Trend graph overwriting (start, end, and delete trigger devices)
- Numerical value input (applies only to screen switching devices and monitoring station switching devices)
- Word device SET (applies only to screen switching devies and monitoring station switching devices)
- Screen switching devices
- Station number switching devices
- Reports
- Announce
- Time action
- Snap shot triggers
- System information
- Error alerts

- (4) Switching from the touch panel

To change the numerical value in the monitoring station switching device from the touch panel, use the device writing function.

14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

14.1 Transferring G Controller System Information between the G Controller Unit and an ACPU (System Information Function)

The system information function cannot be used if the G controller unit is connected in a bus connection.

In the case of a bus connection, the G controller system information can be checked by using the G controller unit I/O signals and buffer memory (for details, see Section 15).

[Function]

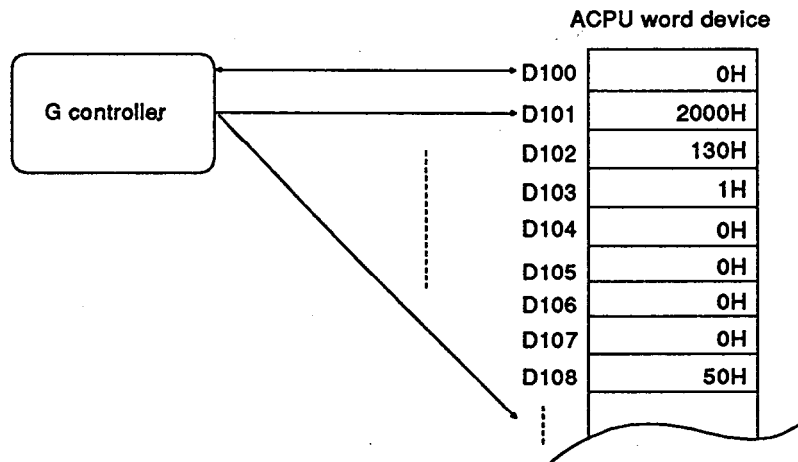
This function outputs the G controller system information to a designated ACPU word device.

The output data falls into two types:

- Data that can be written from both the G controller and ACPU.
(Number of points: 1)
- Data that can only be written from the G controller.
(Number of points: 15)

(Example)

Output when the head devices of the output word device are D100 and D101:



[Settings by using the AGOTP]

Set the monitoring conditions in the GOT system setting window.

Setting Item	Setting Range/Selection	Comment
Read device	Word device	Set a device other than a write device.
Write devices	Word device	Set the head word device of the output destination.

14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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[Complementary explanation of setting items]

(1) Storage device

- (a) The setting will be invalid if the set word device is also used for screen switching.
- (b) Special registers number D9000 and higher cannot be set as the word device.
- (c) Do not write data to word devices set as write devices from the sequence program etc.

[Notes on using the function]

(1) Summary of devices to be set output information

- (a) The types of information output to the set word devices are listed in the table below.

	Name	Read/Write	Initial Value
Read device	System signal 1 storage area	Read/write both possible	0
Write device + 0*	System signal 2 storage area		
1	G controller code storage area	For writing only	
2	Currently displayed screen No. storage area		
3 to 6	Not used		
7	Current cursor position storage area		
8	Previous cursor position storage area		
9	Input key code storage area		
10 to 14	Not used		

* Each information item is stored in the set storage device or later.

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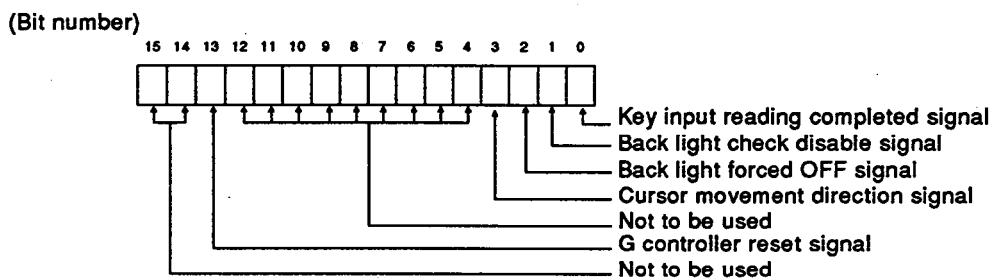
(b) Each data item is updated in accordance with the following timing.

Storage Area for Each Information Item	Information Updating Timing
Read device	Read in 2.4 second cycle
Write device +0 to +14	Updated in 2.4 second cycle

(c) If using a data link connection, use a link register (W) that is allocated to the [M station → L station] area in the link parameters as the read device. Use a link register that is allocated to the G controller unit in the [L station → M station] area as the write device. If devices other than those designated here are used, there may be delays in monitoring.

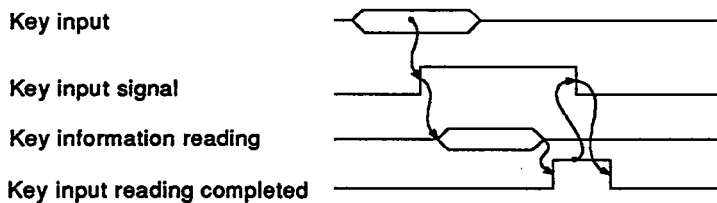
(2) System signal 1 storage area

(a) The system signal 1 storage area stores the information indicated below.
Both reading and writing are possible for this area only.



(b) Key input reading completed signal (bit 0)

- 1) This signal serves to set the key input signal (bit 15 of system signal 2 storage area) to "OFF".
- 2) The key input reading completed signal should be ON/OFF according to the timing shown below.

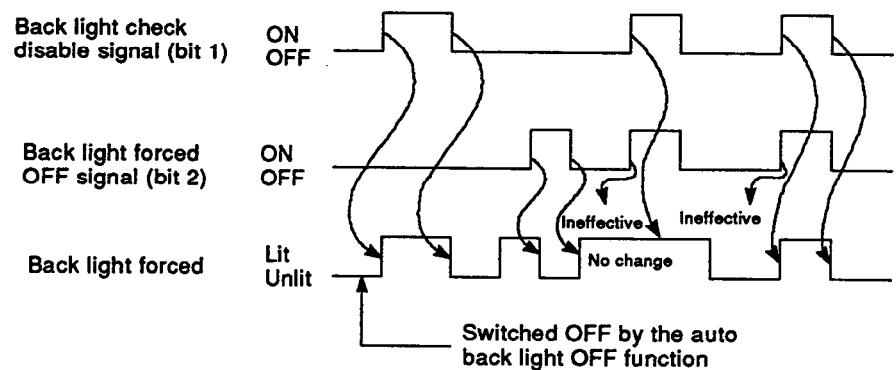


14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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(c) Back light check disable signal (bit 1)

- 1) This signal serves to make the auto back light OFF function set using the AGOTP effective or ineffective.
- 2) The auto back light OFF function is ineffective when the auto back light check disable signal is set to "ON" and effective when it is set to "OFF".
- 3) While the back light check disable signal is ON, all processing related to the back light is disabled. Consequently, even if the back light forced OFF signal comes ON it will be ineffective and the back light will remain ON.

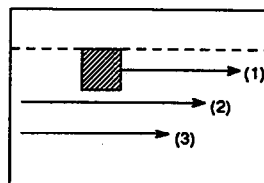


(d) Back light forced OFF signal (bit 2)

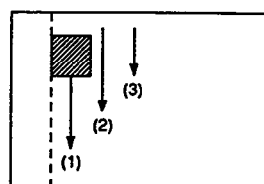
- 1) This signal forces the display's back light OFF.
- 2) The back light is forced OFF when the back light forced OFF signal is set to "ON".

(e) Cursor movement direction signal (bit 3)

- 1) This signal specifies the cursor movement direction if more than one numerical value/character input function set on one screen.
- 2) When the cursor movement direction signal is switched OFF, the cursor moves as shown in the figure below after the input of the write trigger (similar movement is controlled by pressing the [→] cursor key.)



- 3) When the cursor movement direction signal is switched ON, the cursor moves as shown in the figure below after the input of the write trigger (similar movement to that caused by pressing the [↓] cursor key.)

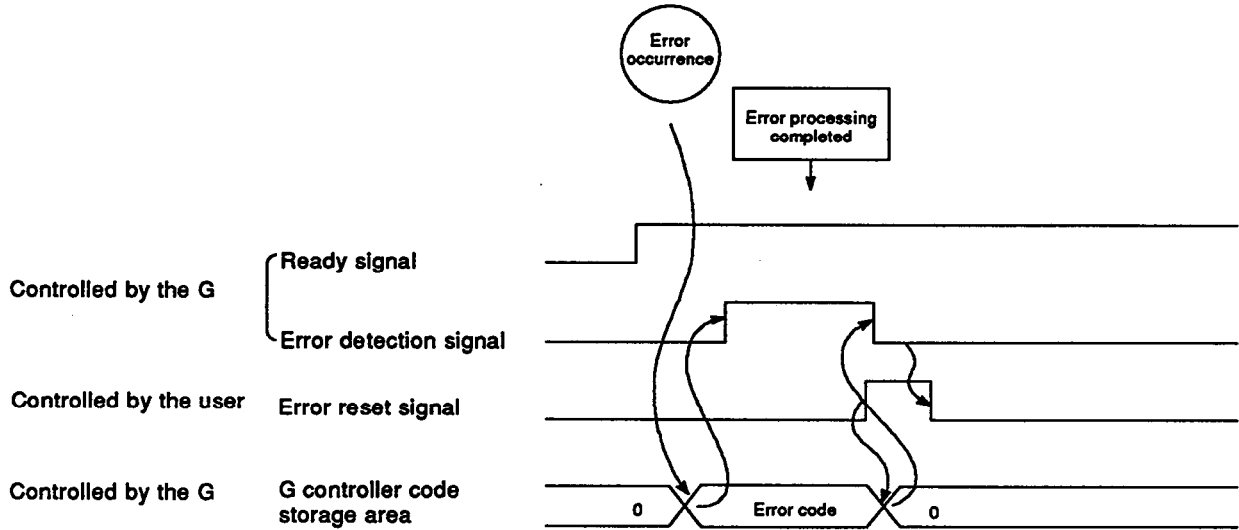


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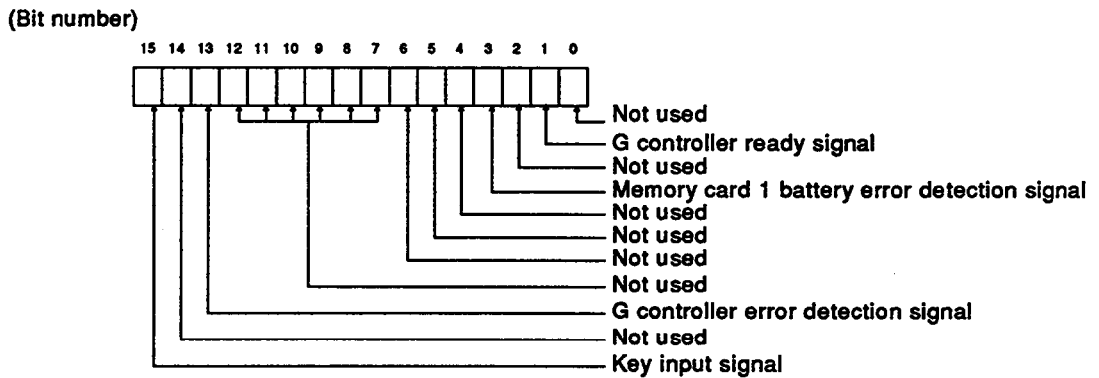
(f) G controller reset signal (bit 13)

- 1) This signal serves to set the G controller error detection signal (bit 13 of the system signal 2 storage area) to "OFF".
- 2) After an error generating factor has been eliminated by setting the G controller error detection signal to "ON", set the G controller error reset signal to "ON". Set the G controller error reset signal to "ON" after the G controller error detection signal has changed to "OFF".



(3) System signal 2 storage area

- (a) The system signal 2 storage area stores the information indicated below.



14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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- (b) G controller unit ready signal (bit 1)
- 1) This signal is set to ON when the G controller has started up and is operating normally.
 - 2) It is set to "OFF" when it has become impossible to continue G controller operation.
In this case, reset the G controller unit by pressing the reset switch ON the G controller unit.
 - 3) If the G controller unit ready signal is OFF there is a fault in the software or hardware of the G controller unit and the unit should be replaced.
- (c) Memory card 1 battery error detection signal (bit 3)
- 1) This signal is set to "ON" when a battery error is detected in the memory card installed in the memory card interface in the G controller unit.
It is normally OFF.
 - 2) If the memory card 1 battery error detection signal changes to "ON", do one of the following:
 - Change the battery.
 - Re-install the battery correctly. (See the A77GOT-S5 User's Manual.)
- (d) G controller error detection signal (bit 13)
- 1) This signal is set to "ON" when an error that does not prevent continued operation of the G controller occurs.
It is normally OFF.
 - 2) If the G controller error detection signal changes to "ON", read the error code in the error code storage area of the system information, and eliminate the error generating factor by referring to the error code list (See the A77GOT-S5 User's Manual.).
Then set the G controller reset signal (bit 13 of the system signal 1 storage area) to "ON".
Setting the G controller reset signal to "ON" will cause the G controller error detection signal to change to "OFF".
 - 3) If the cause of the error has not been eliminated when the G controller error detection signal has been set to "OFF" by setting the G controller reset signal to "ON", the G controller error detection signal will come ON again.
- (e) Key input signal (bit 15)
- 1) This signal changes to "ON" when there is key input from a touch key, key on the ten-key panel, or key on the operation panel.
 - 2) The key code for the key from which has been pressed is stored in the input key code storage area of the system information.
 - 3) When the key input reading completed signal (bit 0 of the system signal 1 storage area) is set to "ON" after the key input has been read, the key input signal changes to "0".
 - 4) While the key input signal is ON, subsequent key input is ignored.

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(4) G controller error code storage area

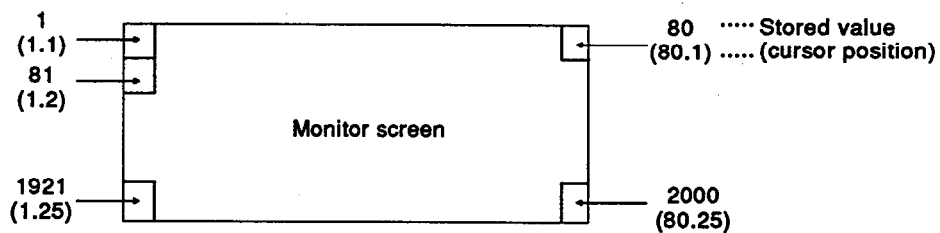
- (a) When an error that does not prevent continued operation of the G controller occurs, the error code is stored in this area.
When two or more error codes occur simultaneously the error code is stored in this area.
- (b) When the error code is stored in this area, the G controller error detection signal of the system information is changed to "ON".
Read the error code and eliminate the error generating factor by referring to the error code list.
When the G controller reset signal is set to "ON", "0" is stored in this area.
If the error generating factor has not been eliminated, the error code is stored in this area again.

(5) Currently displayed screen No. storage area

- (a) The screen number of the currently displayed screen is stored in this area.
- (b) The screen number data that can be stored is indicated below:
 - 1 to 250: Indicates that a monitor screen created by the user is currently being displayed.
 - 1: Indicates that nothing is currently displayed.
 - 2: Indicates that screen [] to [] of the system menu is currently displayed.

(6) Current cursor position storage area

- (a) If the numerical value input function or character string input function is registered for the currently displayed monitor screen, the current cursor position (position of the right edge column of the relevant input area) is stored in this area as a value in the range 1 to 2000 (see figure below).



- (b) If the numerical value input function or character string input function is not registered for the currently displayed monitor screen, the value "0" is stored in this area.

(7) Previous cursor position storage area

- (a) If the numerical value input function or character string input function is registered for the currently displayed monitor screen, a value within the range indicated in (6) on the previous page is stored in this area in accordance with the number of input areas (registered number) and the execution/non-execution of data input (device writing).
 - 1) Input areas: 1, Data input: not executed "0" stored
 - 2) Input areas: 1, Data input: executed
..... The same value as was stored in the current cursor position storage area described is also stored in this area.
 - 3) Input areas: 2 or more, data input: not executed ... "0" stored.
 - 4) Input areas: 2 or more, data input: executed
..... The value stored in the current cursor position storage area (described in (6) on the previous page) in the immediately preceding data input operation is stored in this area.
- (b) If the numerical value input function or character string input function is not registered for the currently displayed monitor screen, the value "0" is stored in this area.

POINT

The purpose of the previous cursor position storage area is to enable identification of the input area for the last completed device writing operation.

(8) Key code storage area

- (a) When there is key input from the touch panel, the ten-key panel, or the operation panel, the corresponding key code is stored in this area.
- (b) If a key for which no key code is set is pressed a OFF is stored in this area.
- (c) The key input signal is turned "ON" when the key code is stored. Although it goes OFF when the key input reading completed signal is turned ON, the data in this area remains unchanged until the next key input.

14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

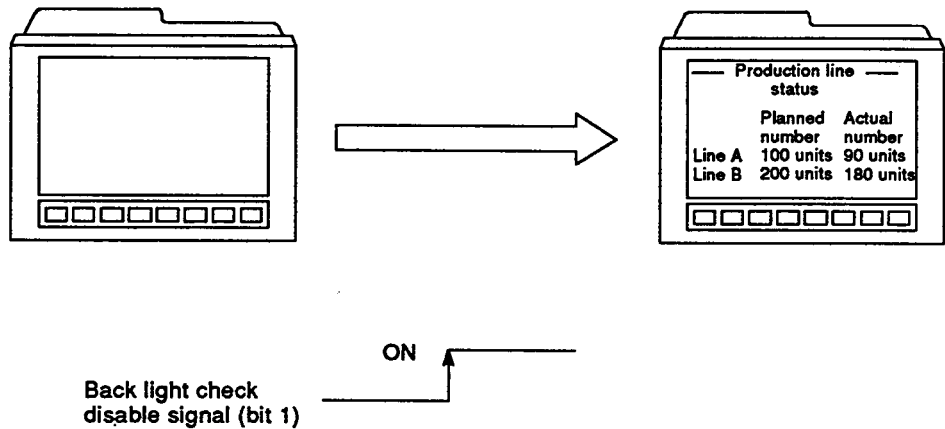
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[Further available operations]

- (1) Switching the back light from the OFF to ON status without touching the display area of the G controller unit

When the back light is currently OFF, it can be switched ON by switching bit No.1 (back light check disable signal) of the system signal 1 storage area read device (word device) from OFF to ON using the sequence program.

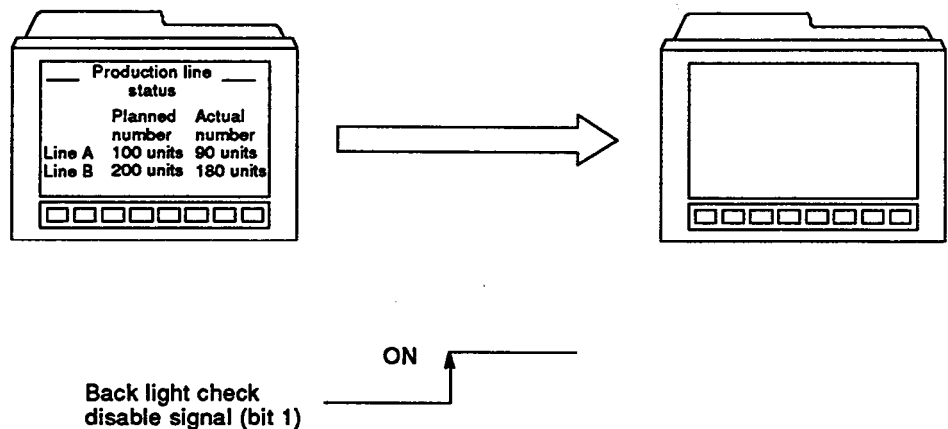
Switching the back light check disable signal back from ON to OFF will turn the back light OFF.



- (2) Forcibly switching the back light OFF

The back light can be switched OFF forcibly, regardless of the time set in the back light OFF time setting window, by switching bit No.2 (back light forced OFF signal) of the system signal 1 storage area read device (word device) from OFF to ON.

On switching the back light forced OFF signal back from ON to OFF, the back light OFF time set in the back light OFF time setting window becomes effective.



14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

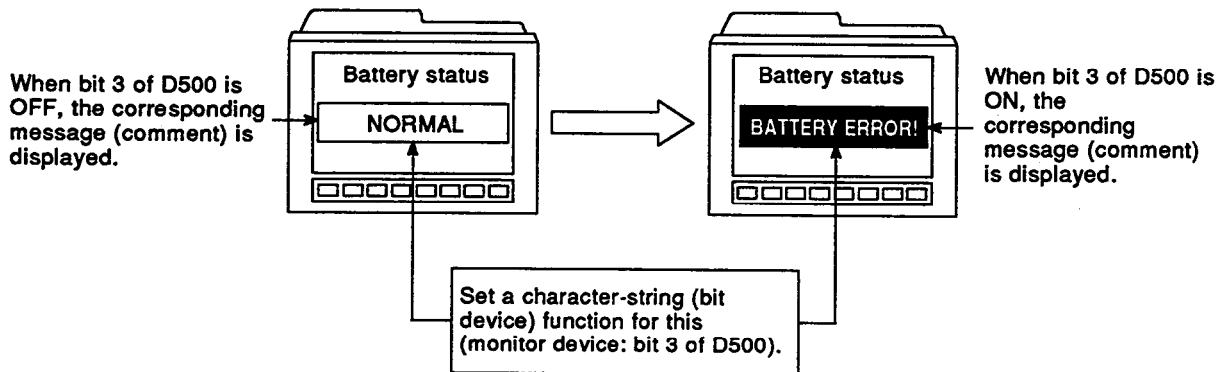
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(3) Checking the status of the memory card battery

The memory card battery status can be checked by setting a character-string display (bit device) function with bit No.3 (memory card 1 battery error detection signal) of the system signal 2 storage area read device (word device) as the monitor device.

(Example)

When the write device for the system information output from the G controller is set as D500:

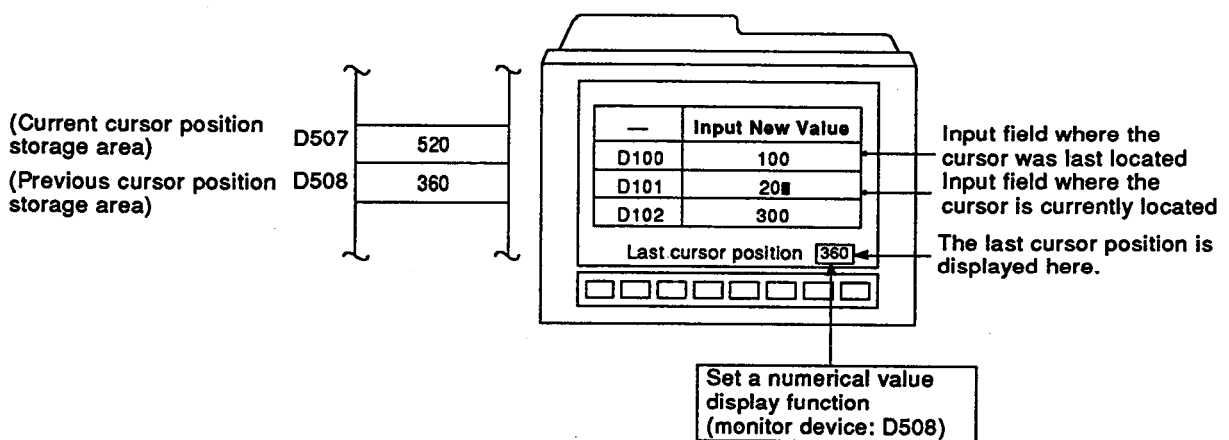


(4) Checking the word device that last executed numerical value input or character-string input

The last word device that last executed a numerical value input or character-string input function can be checked by setting a numerical value display function with the write device (word device) used for the previous cursor position storage area as the monitoring data.

(Example)

When the write device for the system information output from the G controller is set as D500:

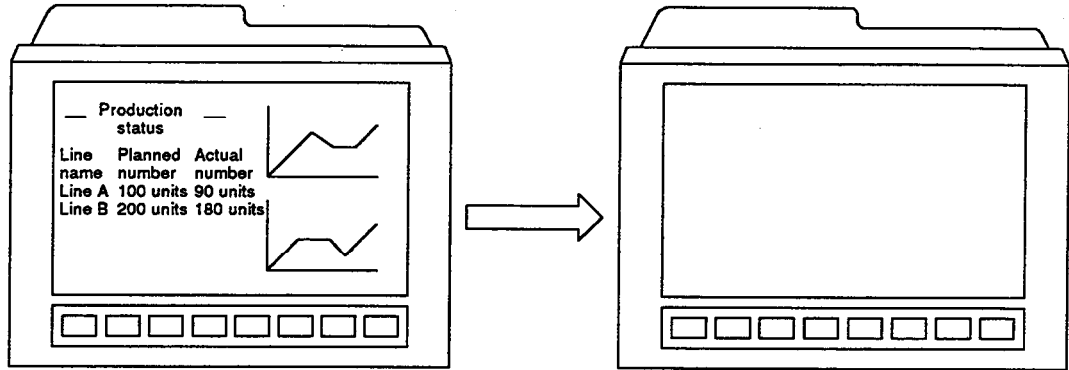


14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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14.2 Switching the G Controller Unit Back Light OFF Automatically (Back Light OFF Function)

[Monitoring example]



[Function]

This function switches the back light OFF automatically after the elapse of a set period of time.

- The time lapse before the back light is automatically switched OFF can be set to any value between 1 minute and 60 minutes.
- After the back light has been switched OFF automatically, it can be switched back ON by touching the display area of the G controller unit.

14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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[Settings by using the AGOTP]

Set monitoring condition in the back light OFF time setting window.

Setting Item	Setting Range/Selection	Comment
Time	0 to 60	<ul style="list-style-type: none">• Set it in minute unit.• Setting 0 turns ON always.

[Notes on using the function]

(1) Condition for starting the OFF watchdog timer count

- Without screen switching
- Without a touch key (a function key on the bottom of the indicator is contained) input
- The back light check disabled signal in the system signal 1 storage area of the system information function is OFF.

When one of the condition becomes unestablished while OFF watchdog timer is executing count, OFF watchdog timer is cleared.

(2) Touch key input when the back light is OFF

When a back light turns OFF, a touch key cannot be input.

A key operation of a display and a touch can be restarted by inputting either special key on the bottom of the indicator.

14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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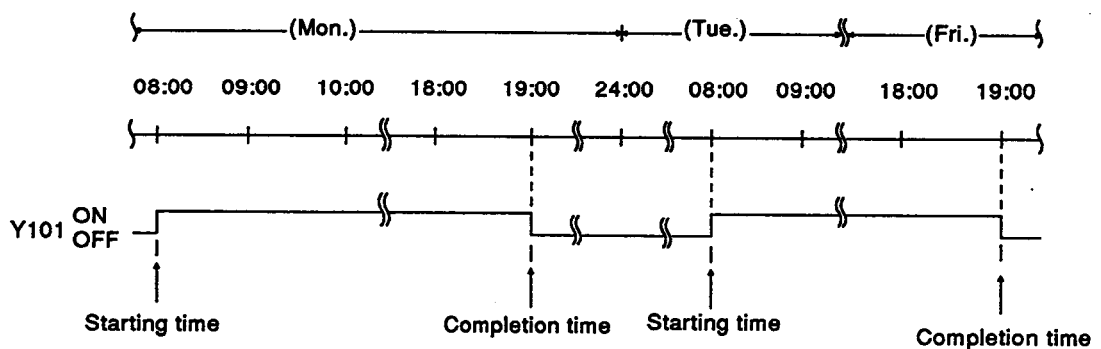
14.3 Switching a Bit Device ON at a Designated Time (Time Action Function)

[Function]

This function keeps ON a bit device from a designated time to another designated time by using the day of the week and time managed by ACPU. Individual settings can be made for up to 8 points (bit devices). The settings can be made within one day, or over a period of more than one day, by specifying a starting time on one day and a completion time on another day. The starting time and completion time can be specified in minutes.

(Example)

Keeping Y101 turned ON between 8:00 to 19:00 from Monday to Friday



[Settings by using the AGOTP]

Set monitoring condition in the time action setting (time setting) window.

Setting Item	Setting Range/Selection	Comment
Bit device	Bit device	_____
Starting times	00:00 to 24:00	
Completion times	00:00 to 24:00	
Days	Everyday/not everyday (Thru)	Designated days/continuous
	Sun/Mon/Tue/Wed/Thur/Fri/Sat	Designate the operating days

[Complementary explanation of setting items]

(1) Days

When "Thru" is set, when time action is set for multiple groups of consecutive days and the starting and end times are the same for each group, all the time action settings must be done separately.

When M0 is set to be kept ON between 08:00 and 17:00 on Monday and Tuesday and between 08:00 and 17:00 from Thursday and Saturday; Designate M0 for each case.

14. SYSTEM INFORMATION FUNCTION, BACK LIGHT OFF FUNCTION, TIME ACTION FUNCTION

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[Notes on using the function]

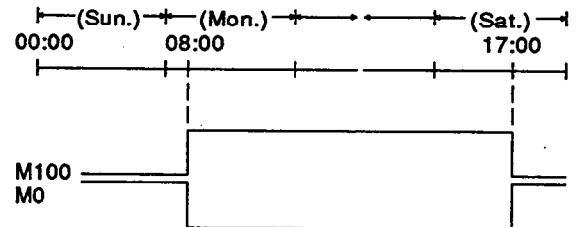
(1) When "Thru" is set

- (a) When setting it in the same bit device, the day of the week to be operated should not be overlapped.
- (b) The day of the week to be operated is Sunday to Saturday. When it is necessary that the day of the week that operates should extend on Sunday from Saturday, set it through ACPU. When keeping ON between Saturday 17:00 and Monday 08:00; Create a sequence program as follows by using M100 that is not used by system control.



Set the monitoring condition as follows.

Setting Items	Set Data
Bit device	M100
Starting time	08:00
Completion time	17:00
Days	Thru
	Mon, Tue, Wed, Thur, Fri, Sat



* M100 (controlled by the G controller) and M0 (controlled by the ACPU)

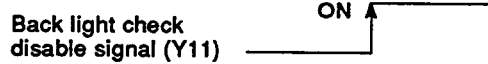
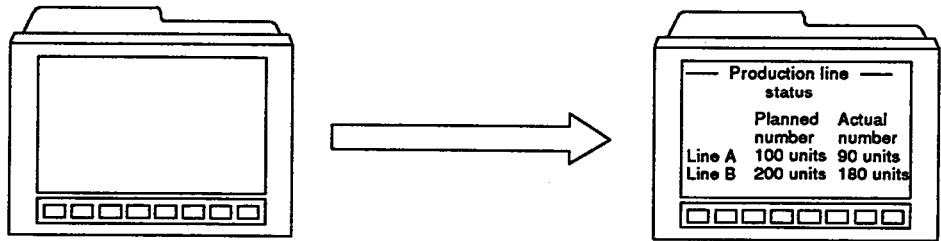
- (c) When the day of the week to be operated is set to 1 day, a setting bit device turns OFF at 24:00 of the day of the week to be operated. When setting completion time, set it through ACPU by a method that is similar to (b).

15. CHECKING THE G CONTROLLER SYSTEM INFORMATION USING THE G CONTROLLER UNIT I/O SIGNALS, etc.

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- (3) Switching the back light from the OFF to ON status without touching the display area of the G controller unit

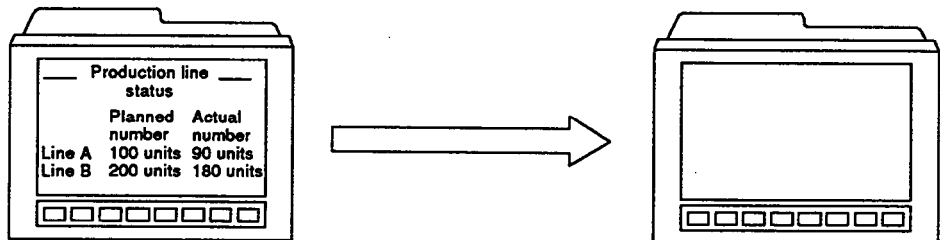
When the back light is OFF, it can be switched ON by switching the back light check disable signal (Y11) from OFF to ON. The back light can be switched OFF again by switching the back light check disable signal OFF.



- (4) Forcibly switching the back light OFF forcibly

By switching the back light forced OFF signal (Y12) from OFF to ON, the back light can be switched ON forcibly, irrespective of the time set in the back light OFF time setting window.

On switching the back light forced OFF signal back from ON to OFF, the back light OFF time set in the back light OFF time setting window becomes effective.



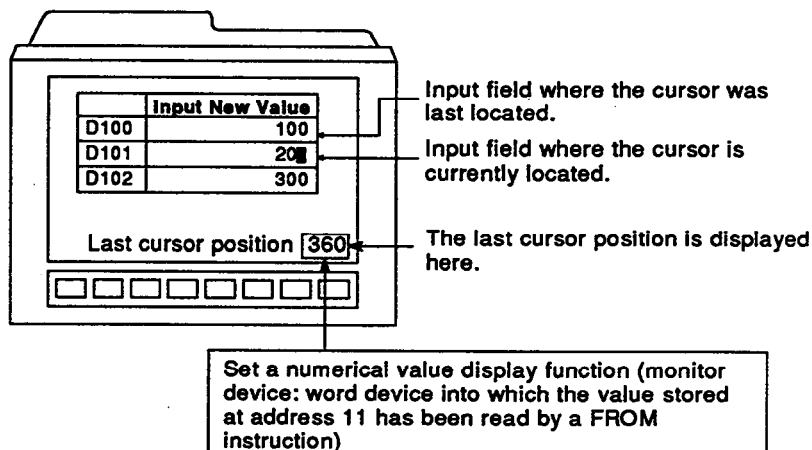
15. CHECKING THE G CONTROLLER SYSTEM INFORMATION USING THE G CONTROLLER UNIT I/O SIGNALS, etc.

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15.2 Checking the G Controller System Information, etc., with the Buffer Memory

- (1) Checking the word device that last executed numerical value input or character-string input

The last word device that executed a numerical value input or character-string input function can be checked by reading the value in the previous cursor position storage area (Address 11) to a word device by using a FROM instruction, and setting a numerical value display function with that word device as the monitor device.



- (2) Reading touch panel input information at the ACPU

It is possible to check which key is currently being pressed by reading the value stored in the touch panel input information storage area (Addresses 2 to 9) with the sequence program.

- Input numbers of the touch keys

X0	X8	X10	X18	X20	X28	X30	X38	X40	X48	X50	X5B	X60	X68	X70	X78
X1	X9	X11	X19	X21	X29	X31	X39	X41	X49	X51	X59	X61	X69	X71	X79
X2	XA	X12	X1A	X22	X2A	X32	X3A	X42	X4A	X52	X5A	X62	X6A	X72	X7A
X3	XB	X13	X1B	X23	X2B	X33	X3B	X43	X4B	X53	X5B	X63	X6B	X73	X7B
X4	XC	X14	X1C	X24	X2C	X34	X3C	X44	X4C	X54	X5C	X64	X6C	X74	X7C
X5	XD	X15	X1D	X25	X2D	X35	X3D	X45	X4D	X55	X5D	X65	X6D	X75	X7D
X6	XE	X16	X1E	X26	X2E	X36	X3E	X46	X4E	X56	X5E	X66	X6E	X76	X7E
X7	XF	X17	X1F	X27	X2F	X37	X3F	X47	X4F	X57	X5F	X67	X6F	X77	X7F

F1	F2	F3	↑	↓	←	→	↵
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15. CHECKING THE G CONTROLLER SYSTEM INFORMATION USING THE G CONTROLLER UNIT I/O SIGNALS, etc.

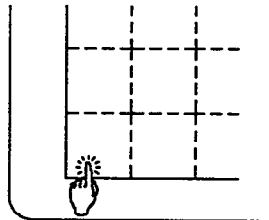
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- Correspondence with bits of the buffer memory

Address	b15				b8				b7				b0			
2	XF	XE	XD	XC	XB	XA	X9	X8	X7	X6	X5	X4	X3	X2	X1	X0
3	X1F	X1E	X1D	X1C	X1B	X1A	X19	X18	X17	X16	X15	X14	X13	X12	X11	X10
4	X2F	X2E	X2D	X2C	X2B	X2A	X29	X28	X27	X26	X25	X24	X23	X22	X21	X20
5	X3F	X3E	X3D	X3C	X3B	X3A	X39	X38	X37	X36	X35	X34	X33	X32	X31	X30
6	X4F	X4E	X4D	X4C	X4B	X4A	X49	X48	X47	X46	X45	X44	X43	X42	X41	X40
7	X5F	X5E	X5D	X5C	X5B	X5A	X59	X58	X57	X56	X55	X54	X53	X52	X51	X50
8	X6F	X6E	X6D	X6C	X6B	X6A	X69	X68	X67	X66	X65	X64	X63	X62	X61	X60
9	X7F	X7E	X7D	X7C	X7B	X7A	X79	X78	X77	X76	X75	X74	X73	X72	X71	X70

(Example)

Touching the touch panels at the bottom left of the G controller unit display area.



During touch key input, the value in address 2 of the buffer memory becomes "0080H".

- When two or more touch panels are touched simultaneously, all of the corresponding bits will be ON while the panels are pressed.
- There is no relationship between the touch panel input numbers (X0 to X7F) and the position at which the G controller unit is connected to the main base module.

(3) Reading operation panel/ten key panel key input information at the ACPU

It is possible to check which key is currently being pressed by reading the value stored in the operation panel/ten key panel input information storage area (Addresses 13 to 16) with the sequence program.

- Key input numbers

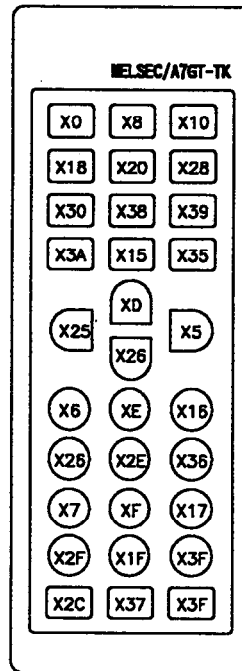
[Operation panel]

X0	X8	X10	X1B	X20	X28	X30	X38	X5	XD	X15	X1D
								X25	X2D	X35	X3D
X1	X9	X11	X19	X21	X29	X31	X39	X6	XE	X16	X1E
X2	XA	X12	X1A	X22	X2A	X32	X3A	X26	X2E	X36	X3E
X3	XB	X13	X1B	X23	X2B	X33	X3B	X7	XF	X17	X1F
X4	XC	X14	X1C	X24	X2C	X34	X3C	X27	X2F	X37	X3F

15. CHECKING THE G CONTROLLER SYSTEM INFORMATION USING THE G CONTROLLER UNIT I/O SIGNALS, etc.

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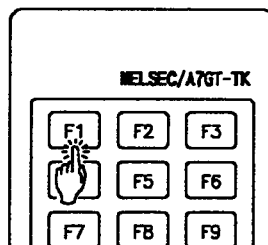
[Ten key panel]



- Correspondence with bits of the buffer memory

Address	b15	-----							b8	b7	-----							b0
13	XF	XE	XD	XC	XB	XA	X9	X8	X7	X6	X5	X4	X3	X2	X1	X0		
14	X1F	X1E	X1D	X1C	X1B	X1A	X19	X18	X17	X16	X15	X14	X13	X12	X11	X10		
15	X2F	X2E	X2D	X2C	X2B	X2A	X29	X28	X27	X26	X25	X24	X23	X22	X21	X20		
16	X3F	X3E	X3D	X3C	X3B	X3A	X39	X38	X37	X36	X35	X34	X33	X32	X31	X30		

(Example)
Pressing the [F1] ten key panel



During key input, the value in address 13 of the buffer memory becomes "0001H".

APPENDICES

APPENDIX 1 MEMORY CAPACITY SETTING FOR MONITOR SCREEN DATA

The required memory capacities (reference value) for the following types of data created and registered by the user for the G controller are given in the AGOTP Operating Manual.

- Canvas screen data, Made by using the AGOTP Part data
- Monitoring condition data . . . Set by the AGOTP.

The memory capacity values mentioned below must be determined according to the graphic images, character-strings, and monitoring conditions set on the screen, and totaled up to set required memory capacity.

The memory capacity set as mentioned above can be used as the reference value when selecting an internal memory which is used to store monitoring data that is converted from the above data for the G controller unit.

Actual memory capacity can be checked on the conversion window when data is converted by the AGOTP.

Item	Required Memory Capacity	
	Method of Calculation	Calculation Memory Capacity
System data storage area	Fixed	3 Kbytes
Memory capacity of all canvas screens created by the AGOTP	See the SW2IVD-AGOTP Operating Manual	
Memory capacity of all parts created by the AGOTP		
Memory capacity of all monitoring conditions set by the AGOTP		
Canvas screen management data storage area *1	The number of graphics x 12 + 16 bytes (on one screen)	
Monitor screen monitoring condition management data storage area *1	Monitoring condition number of points x 4 + 4 bytes (on one screen)	
The total of memory capacity		

*1 Calculate it for the number of all screens.

APPENDIX 2 REQUIRED MEMORY CAPACITY OF A MEMORY CARD

The required memory capacity (reference value) of a memory card is shown below.

Add all required values of data to be actually stored, and calculate a required memory capacity.

It helps to select a memory card.

Area Name	Type of Function/Data	Required Memory Capacity (Unit: byte)	Remarks	
—	System data	*2	Indispensable for every memory card.	
Monitoring data area	Monitoring data	See APPENDIX 1	Necessary to store monitoring data.	
	Monitoring condition data	See APPENDIX 1		
File area	Snapshot file	Numerical value display function	Monitor screen created only by the function shown in the left About 5200 (5 Kbytes)	
		Character-string display function		
		Block data display function		
		Clock data display function		
		Error alert display function *1		
		Pie graph display function		
		Polygonal line graph display function		
		Spline graph display function		
		Scatter graph display function (Only batch display)		
	Screen containing a function other than above	About 140000 (About 136 Kbytes)	Only memory card 1 is available. Per file (For the number which can be stored, see Section 12.7.)	
System monitoring area	Monitoring data necessity memory capacity (unit: byte) to confirm the memory contents of special function module	About 392000 (About 390 Kbytes)		Varies according to the number of screens and type of screen to be converted.

*1 When an error alert is not displayed

*2 Varies according to the size of a file area.

Size of a File Area	Required Memory Capacity
64	4
128	4
256	5
512	7
1024	13

APPENDIX 3 METHOD FOR CALCULATING THE NUMBER OF SPRITES THAT CAN BE SET ON ONE SCREEN

There is a fixed maximum for the number of sprites that can be set on one screen due to restrictions imposed by the working memory. If the calculation formulae presented below are not satisfied, the set sprites will not operate correctly.

The internal working memory is divided into two areas: the fixed area and the variable area; the sprites must be set so that the total requirement for both these areas does not exceed 32 Kbytes. In the absence of any specification to the contrary, the data used when the calculation is performed is restricted to that in the relevant screen.

(1) Calculation of the fixed area

$$a = (\text{Total number of triggers}^{*1} \times 1 + (\text{total number of samples}^{*1} + \text{total number of time designations}^{*1}) \times 10) + 32$$

$$b^{*2} = (\text{Number of collected data} \times \text{data size} + 16) \times \text{number of reports}$$

$$\text{Fixed area} = (a + b + 10596) \text{ (bytes)}$$

*1) The total number of triggers, total number of samples, and total number of time designations, are the figures for all screens.

*2) This is calculated only when there is a report setting. The "data size" must be calculated in byte units.

(2) Calculation of the variable area

The variable area is 0 bytes if there are no sprite settings for the relevant screen.

$a^{1 \text{ to } 5}$: Control information storage area for one screen

$b^{1 \text{ to } 15}$: Control data storage area for one screen

$$a_1^{*1} = (\text{Total number of sprites in one screen} \times 6) + 32$$

$$a_2^{*1} = ((\text{Max. number of points for spline curve setting} + 5) \times 8) + 16$$

$$a_2^{*2} = (\text{Number of numerical value display settings}^{*3} + \text{number of character-string display settings} + \text{number of level display settings}) \times 10 + 48$$

$$a_4 = ((44 \times \text{number of numerical value input settings}) + 10) + 16$$

$$a_5 = (\text{Number of numerical value input trigger keys} \times 2) + 32$$

$$b_1 = (42 \times \text{number of ASCII display settings}) + 16$$

$$b_2 = ((\text{Data width}^{*4} + 2) \times \text{number of numerical value display settings other than ASCII display}) + 16$$

$$b_3 = (3 \times \text{number of character-string display settings using bit devices}) + 16$$

$$b_4 = (8 \times \text{number of character-string display settings using word devices}) + 16$$

$$b_5 = (8 \times \text{number of part display settings}) + 16$$

$$b_6 = ((\text{Number of points} \times \text{number of graphs} \times \text{data width}^{*4} + 8) \times \text{number of settings}) + 16 \quad \text{: (trend graph)}$$

$$b_7 = ((\text{Number of points} \times \text{number of graphs} \times \text{data width}^{*4} + 8) \times \text{number of settings}) + 16 \quad \text{: (polygonal line/spline graph)}$$

$$b_8 = ((\text{Number of elements} \times \text{data width}^{*4}) + 2) \times \text{number of settings} + 16 \quad \text{: (pie graph)}$$

$$b_9 = ((\text{Number of X-axis elements} \times \text{number of Y-axis elements}) \times \text{data width}^{*4} + 2) \times \text{number of settings} + 16 \quad \text{: (scatter graph)}$$

$$b_{10} = ((\text{Number of points} \times \text{number of elements} \times \text{data width}^{*4}) + 2) \times \text{number of settings} + 16 \quad \text{: (bar graph)}$$

$$b_{11} = ((\text{Number of blocks} \times \text{data width}^{*4}) + 4) \times \text{number of settings} + 16$$

: (numerical value block display)

$$b_{12} = ((40 \times \text{number of blocks} + 4) \times \text{number of settings}) + 16$$

: (ASCII block display)

$$b_{13} = (8 \times \text{number of level display settings}) + 16$$

$$b_{14} = (68 \times \text{number of device write}^{*5} \text{ settings}) + 16$$

$$b_{15} = (\text{Number of alarm list monitor points} \times 8) + 16$$

- *1) Calculate for spline curve settings only.
- *2) Calculate for normal time collection settings only.
- *3) Calculate except for ASCII display.
- *4) Calculate using the following values: 16-bit length = 2, 32-bit length = 4.
- *5) Include device write settings using ASCII in the calculation
The sprite setting must comply with the following requirements

$$\underline{\text{Variable area} = ((\text{sum of a1 to a5}) + (\text{sum of b1 to b15})) \text{ (bytes)}}$$

$$\underline{(\text{Fixed area} + \text{variable area}) \text{ 32768 (bytes)}}$$

<Example calculation of the maximum number of monitor function points that can be set on one screen>

1. For numerical value input functions

(1) Conditions

- (a) No monitoring functions other than numerical value input functions are set.
- (b) Only one screen is converted.

(2) Calculation

In this calculation, the number of points for the numerical value input functions is "X".

(a) Fixed area

Since there is no sampling setting or time designation setting for a numerical value input function, $a = X + 32$.

Also, since there is no report setting, $b = 0$.

$$\text{Fixed area} = (X + 32) + 10596 = X + 10628$$

(b) Variable area

Four items need to be calculated, namely a1, a4, a5, and b14.
The other values are as follows.

$$a1 = 6X + 32$$

$$a4 + 44X + 10 + 16 = 44X + 26$$

$$a5 = 2X + 32$$

$$b14 = 68X + 16$$

(c) Number of setting points for numerical value input functions

Fixed area + variable area 32768, therefore:

$$X + 10628 + 6X + 32 + 44X + 26 + 2X + 32 + 68X + 16 < 32768$$

$$121X + 10734 < 32768$$

$$X < 182.099 \dots$$

(3) Result

The maximum number of points for numerical value input functions is 182.

2. For numerical value display functions

(1) Conditions

- (a) No monitoring functions other than numerical value display functions are set.
- (b) Only one screen is converted.

(2) Calculation

In this calculation, the number of points for the part display functions is "X".

(a) Fixed area

Since there is no sampling setting or time designation setting for a part display function, $a = X + 32$.

Also, since there is no report setting, $b = 0$.

$$\text{Fixed area} = (X + 32) + 10596 = X + 10628$$

(b) Variable area

Three items need to be calculated, namely a_1 , a_3 , and b_2 . The other values are as follows.

$$a_1 = 6X + 32$$

$$a_3 = 10X + 48$$

$$b_2 = 6X + 16 \text{ (calculated using 32-bit length)}$$

(c) Number of setting points for part display functions

Fixed area + variable area < 32768, therefore:

$$X + 10628 + 6X + 32 + 10X + 48 + 6X + 16 < 32768$$

$$23X + 10724 < 32768$$

$$X < 958.4$$

(3) Result

The maximum number of points for numerical value display functions is 958.

APPENDIX 4 PROCESSING TIME

The processing times (reference values) for graphic, character-string, and monitor functions are shown here.

The actual processing time will depend on the monitoring functions and monitoring conditions used, and the number of set points.

(1) Processing time for graphic figures and characters

The table below shows the maximum numbers of figures and characters that can be displayed per screen.

The figures or characters in ordinary numbers can all be displayed instantaneously.

Type of Figure or Character	Figure/Character Size	Number of Figures/ Characters	Line Width/ Character Attribute	Processing Time (Unit: sec)
Straight line	48-dot length	1200	1-dot width	1.0
	48-dot length	530	4-dot width	0.7
Rectangle	Square 24 dots by 24 dots	300	1-dot width	0.5
			4-dot width	1.1
Continuous line	Right angle triangle with 2 sides of 24 dots	400	1-dot width	0.7
			4-dot width	1.1
Circle	Circle with a radius of 12 dots	300	1-dot width	0.3
			4-dot width	0.5
Oval	Oval with a length of 36 dots and a breadth of 24 dots	210	1-dot width	2.6
			4-dot width	6.0
Filled rectangle	24 by 24 dot square (solid filling)	304	—	0.6
Fill	Solid fill for 24 by 24 dot square	304	1-dot width	1.8
	Solid fill for circle with 12-dot radius	304	1-dot width	3.9
Text characters	Alphabet	2000	Normal	0.5
			Reverse	0.8
Graphic characters	Alphabet	2000	Standard	2.1

(2) Processing times for monitoring functions

Monitoring Function	Monitoring Conditions			Processing Time (Unit: sec)								
				RS422		BUS		C24		NET/10		
	Background	Data Collection Trigger	Part Size (X axis x Y axis)	First Time	2nd Time or Later	First Time	2nd Time or Later	First Time	2nd Time or Later	First Time	2nd Time or Later	
Part display Moving part display Fixed part display	Replace	Bit device	32 x 32 dots	a moment		a moment		a moment		a moment		
			200 x 200 dots	1.21	1.0	0.44	a moment	1.27	0.97	0.82	0.43	
		Ordinary	32 x 32 dots	a moment		a moment		a moment		a moment		
			200 x 200 dots	0.91	0.56	0.60	a moment	0.92	0.59	0.79	0.41	
		Background	Bit device	32 x 32 dots	a moment		a moment		a moment		a moment	
				200 x 200 dots	1.38	1.02	0.84	0.78	1.45	1.16	0.97	0.82
	Ordinary	32 x 32 dots	a moment		a moment		a moment		a moment			
		200 x 200 dots	1.53	1.31	0.87	0.78	1.56	1.33	1.19	1.06		

Monitoring Function	Monitoring Conditions			Processing Time (Unit: sec)							
				RS422		BUS		C24		MNET/10	
	Type	Data Collection Trigger	Number of Monitor Device Points Set	16- Bit	32- Bit	16- Bit	32- Bit	16- Bit	32- Bit	16- Bit	32- Bit
Numerical value display	—	Bit device	10 points	0.43	0.46	a moment		0.52	0.61	0.31	0.40
			20 points	0.51	0.55	a moment		0.59	0.72	0.41	0.54
			32 points	0.59	0.68	a moment		0.71	0.84	0.52	0.63
		Ordinary	10 points	0.20	0.28	a moment		0.35	0.53	a moment	
			20 points	0.28	0.62	a moment		0.50	1.03	a moment	0.31
			32 points	0.54	1.06	0.25	0.28	0.88	1.78	0.31	0.50
Character string display	Display by bit device	Bit device	10 points	1.43	/	0.46	/	2.97	/	1.16	/
			20 points	3.56		0.88		5.31		2.28	
			32 points	5.91		1.50		8.69		3.34	
		Ordinary	10 points	0.39		a moment		2.24		a moment	
			20 points	0.54		0.21		0.60		0.31	
			32 points	0.90		0.35		0.62		0.47	
	Display by word device	Bit device	10 points	1.43	0.37	3.06	1.28				
			20 points	3.75	0.79	5.63	2.03				
			32 points	5.94	1.16	8.32	3.44				
		Ordinary	10 points	0.47	0.41	0.47	a moment				
			20 points	0.54	0.44	0.61	a moment				
			32 points	0.80	0.44	0.76	a moment				
Block data display	—	Bit device	16 blocks x 2 points	0.35	0.57	a moment		0.66	0.82	1.10	1.41
			16 blocks x 4 points	0.88	1.00	0.50	0.50	1.28	1.56	1.40	1.72
			16 blocks x 10 points	2.09	2.62	0.87	0.04	3.25	4.03	1.88	2.94
		Ordinary	16 blocks x 2 points	0.32	0.43	a moment		0.41	0.56	0.25	0.31
			16 blocks x 4 points	0.66	0.91	0.40	0.56	0.81	1.15	0.50	0.66
			16 blocks x 10 points	1.59	2.50	1.00	1.25	2.00	2.82	1.06	1.44

Monitoring Function	Monitoring Conditions			Processing Time (Unit: sec)								
				RS422		BUS		C24		MNET/10		
	Type	Data Collection Trigger	Number of Monitor Device Points Set	16- Bit	32- Bit	16- Bit	32- Bit	16- Bit	32- Bit	16- Bit	32- Bit	
Trend graph	Scrolling	Sampling 100 msec	Graph sprite frame size: 240 x 120 dots Number of points: 10	Number of graphs	1	a moment	a moment	a moment	a moment	a moment	a moment	
					2	a moment	a moment	a moment	a moment	a moment		
					8	a moment	a moment	a moment	a moment	a moment		
					16	0.34	0.42	a moment	0.41	0.53	a moment	
		Graph sprite frame size: 240 x 120 dots Number of points: 20	Number of graphs	1	a moment	a moment	a moment	a moment	a moment			
				2	a moment	a moment	a moment	a moment	a moment			
				8	0.77	0.84	a moment	0.85	0.92	0.43	0.52	
				16	1.01	1.14	a moment	1.13	1.26	0.87	0.99	
Bar graph	Normal	Bit device	Continuous	Number of graphs	2	a moment	a moment	a moment	a moment	a moment		
					5	0.39	0.40	a moment	0.41	0.41	a moment	
					10	0.43	0.44	a moment	0.50	0.50	0.32	0.32
					2	0.28	0.31	a moment	0.41	0.43	a moment	
					5	0.38	0.41	a moment	0.50	0.53	a moment	
					10	0.53	0.59	a moment	0.72	0.78	0.45	0.49
		Ordinary	Continuous	2	a moment	a moment	a moment	a moment				
				5	a moment	a moment	a moment	a moment				
				10	a moment	a moment	a moment	a moment				
			Random	2	a moment	a moment	a moment	a moment				
				5	a moment	a moment	a moment	a moment				
				10	a moment	a moment	0.31	0.56	a moment			
	Accumulation	Number of elements: 5	Continuous	2	0.93	0.97	a moment	1.19	1.25	0.77	0.83	
				5	1.16	1.16	a moment	1.31	1.38	0.93	0.93	
				10	1.31	1.34	0.44	0.44	1.53	1.63	1.02	1.02
			Random	2	1.04	1.19	a moment	1.31	1.35	0.80	0.86	
				5	1.28	1.47	a moment	1.72	1.93	0.93	0.93	
				10	1.66	2.12	0.47	0.53	2.41	3.50	1.02	1.05
		Number of elements: 5	Continuous	2	0.72	0.81	a moment	1.03	1.03	0.61	0.61	
				5	0.81	0.82	a moment	1.06	1.09	0.70	0.70	
				10	0.91	1.00	a moment	1.16	1.31	0.82	0.88	
			Random	2	0.91	0.94	a moment	1.03	1.32	0.86	0.86	
				5	1.06	1.22	a moment	1.35	1.66	0.99	0.99	
				10	1.40	1.88	a moment	1.47	2.97	1.28	1.28	
Level display	—	Bit device	Graph sprite frame size: 160 x 160 dots	Number of graphs	1	a moment	a moment	a moment	a moment			
					3	0.75	0.81	a moment	0.63	0.63	a moment	
					6	1.19	1.25	a moment	1.13	1.15	a moment	
		Ordinary			1	a moment	a moment	a moment	a moment			
					3	a moment	a moment	a moment	a moment			
					6	a moment	a moment	a moment	a moment			

Monitoring Function	Monitoring Conditions				Processing Time (Unit: sec)								
					RS422		BUS		C24		MNET/10		
	Type	Data Collection Trigger	Number of Monitor Device Points Set		16- Bit	32- Bit	16- Bit	32- Bit	16- Bit	32- Bit	16- Bit	32- Bit	
Polygonal line graph	————	Bit device	Graph sprite frame size: 240 x 120 dots Number of points: 10	Number of elements	1	0.40	0.40	a moment		0.40	0.38	a moment	
					2	0.57	0.59	a moment		0.59	0.69	0.35	0.45
					4	0.90	1.02	0.20	0.20	1.12	1.32	0.78	0.89
					8	1.54	1.81	0.34	0.35	2.09	2.38	1.31	1.42
			Graph sprite frame size: 240 x 120 dots Number of points: 20	Number of elements	1	0.52	0.53	a moment		0.53	0.53	0.37	0.39
					2	0.52	0.74	a moment		0.72	0.78	0.37	0.41
					4	1.06	1.27	a moment	0.40	1.21	1.57	0.85	0.91
					8	1.84	2.34	0.37	0.47	2.35	2.93	1.55	1.58
		Ordinary	Graph sprite frame size: 240 x 120 dots Number of points: 10	Number of graphs	1	a moment		a moment		a moment		a moment	
					2	0.34	0.41	a moment		0.44	0.50	a moment	
					4	0.62	0.78	a moment		0.87	0.93	a moment	
					8	1.44	1.56	0.34	0.35	1.72	1.91	1.26	1.29
			Graph sprite frame size: 240 x 120 dots Number of points: 20	Number of graphs	1	a moment		a moment		a moment		a moment	
					2	0.38	0.50	a moment		0.47	0.59	a moment	
					4	0.84	1.03	0.25	0.25	1.00	1.25	0.61	0.64
					8	1.66	2.03	0.40	0.41	2.06	2.66	1.47	1.54
Spline graph	————	Bit device	Graph sprite frame size: 240 x 120 dots Number of points: 10	Number of graphs	1	0.97	1.03	0.59	0.65	0.91	0.91	0.79	0.82
					2	1.59	1.56	1.19	1.25	1.72	1.87	1.24	1.42
					4	3.03	3.13	2.31	2.31	3.12	3.43	2.83	2.89
					8	5.84	6.09	4.56	4.66	6.31	6.56	5.23	5.39
			Graph sprite frame size: 240 x 120 dots Number of points: 20	Number of graphs	1	1.56	1.56	1.22	1.25	1.44	1.57	1.35	1.44
					2	2.68	2.91	2.34	2.37	2.88	2.90	2.41	2.45
					4	5.34	5.35	4.46	4.50	5.40	5.97	4.98	5.03
					8	10.29	10.75	8.87	8.94	10.97	11.66	9.53	9.56
		Ordinary	Graph sprite frame size: 240 x 120 dots Number of points: 10	Number of graphs	1	0.63	0.63	0.53	0.56	0.62	0.65	0.58	0.58
					2	1.31	1.31	1.09	1.15	1.37	1.44	1.22	1.26
					4	2.66	2.75	2.18	2.28	2.84	2.97	2.41	2.45
					8	5.46	5.60	4.31	4.38	5.81	6.03	4.92	5.08
			Graph sprite frame size: 240 x 120 dots Number of points: 20	Number of graphs	1	1.22	1.25	1.09	1.18	1.15	1.22	1.17	1.23
					2	2.38	2.47	2.18	2.28	2.50	2.63	2.27	2.30
					4	5.00	5.22	4.44	4.50	5.15	5.41	4.86	4.92
					8	10.16	10.28	8.87	8.90	10.31	10.93	9.12	9.15
Pie graph	————	Bit device	Graph sprite frame size: Radius: 100 dots	Number of elements	4	a moment		a moment		a moment		a moment	
					10	a moment		a moment		a moment		a moment	
					16	0.53	0.53	a moment		0.56	0.59	0.32	0.32
		Ordinary	Graph sprite frame size: Radius: 100 dots	Number of elements	4	0.50	0.50	a moment		a moment		a moment	
					10	0.50	0.50	a moment		a moment		a moment	
					16	0.50	0.50	a moment		a moment		a moment	
Scatter graph	Batch display	Bit device	5 points		0.50	0.63	a moment		0.66	0.69	a moment		
			20 points		0.72	0.72	a moment		0.81	0.87	a moment		
			50 points		0.90	1.19	a moment		0.97	1.69	a moment		
	Sample	Sampling 100 msec	1 point → 2 points (continuous)		a moment		a moment		0.28	0.28	a moment		

APPENDIX 5 KEY CODE SETTING RANGES

When the key code of an operation panel/touch key panel is set to use a "special key" and the device write function, the following codes must be set to function keys and alphanumeric keys:

(The keys of a standard operation panel are shown in ().)

Key	Entry Code (H)	Key	Entry Code (H)	Key	Entry Code (H)	Key	Entry Code (H)	Key	Entry Code (H)
SP	20	@	40		60	→	80	(BS)	08
!	21	A	41	a	61	←	81	GO(CR)	0D
•	22	B	42	b	62	↑	82	Scroll Up	F2
#	23	C	43	c	63	↓	83	Scroll Down	F3
\$	24	D	44	d	64		84		
%	25	E	45	e	65		85		
&	26	F	46	f	66		86		
,	27	G	47	g	67		87		
(	28	H	48	h	68	(Clear)	88		
)	29	I	49	i	69		89		
*	2A	J	4A	j	6A		8A		
+	2B	K	4B	k	6B	(Prev)	8B		
,	2C	L	4C	l	6C	(Next)	8C		
-	2D	M	4D	m	6D		8D		
.	2E	N	4E	n	6E		8E		
/	2F	O	4F	o	6F		8F		
0	30	P	50	p	70		90		
1	31	Q	51	q	71	F1	91		
2	32	R	52	r	72	F2	92		
3	33	S	53	s	73	F3	93		
4	34	T	54	t	74	F4	94		
5	35	U	55	u	75	F5	95		
6	36	V	56	v	76	F6	96		
7	37	W	57	w	77	(F7)	97		
8	38	X	58	x	78	(F8)	98		
9	39	Y	59	y	79	(F9)	99		
:	3A	Z	5A	z	7A	(F10)	9A		
;	3B	[	5B	{	7B	(Set)	9B		
<	3C	¥	5C	|	7C		9C		
=	3D	]	5D	}	7D		9D		
>	3E	^	5E	~	7E		9E		
?	3F	_	5F	|	7F		9F		

- Section 5 gives details about such keys as the CR, SP, and arrow keys (used differently for each function). Refer to each function explanation of Section 5 about those keys.
- The following is the range of the entry code that is not used for the system.
09H to 0CH, 0EH to 1FH, 84H to 87H, 89H, 8AH, 8DH to 90H, 9CH to 9FH, E0H to EDH, EFH to F1H, F4 to FEH, FFH (This means no entry code is allocated.)

APPENDIX 6 DRAWING PAPER

Use the drawing paper as specified below to draw on a canvas screen or a report canvas screen. Make copies as required.

First sheet: For drawing a canvas screen and parts
Second sheet: For drawing a report canvas

The "....." marks on a drawing paper indicate the graphic coordinate points.

First sheet: Interval of 8 dots
Second sheet: Interval of 16 dots

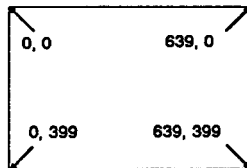
The "[]" marks indicate the text coordinate points.

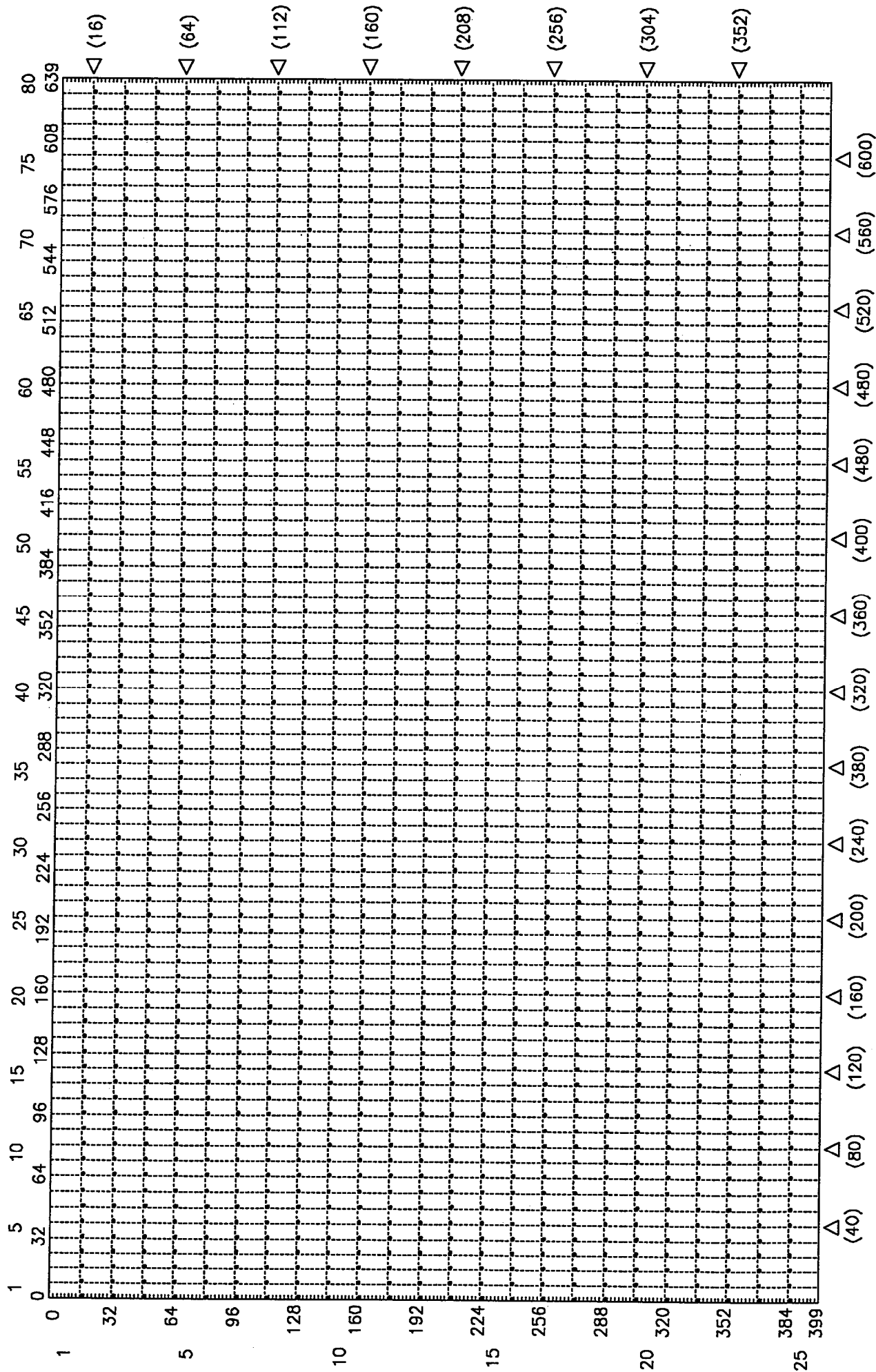
The Δ ([]) and \triangleright ([]) marks indicate the divisional coordinate points of the touch key.

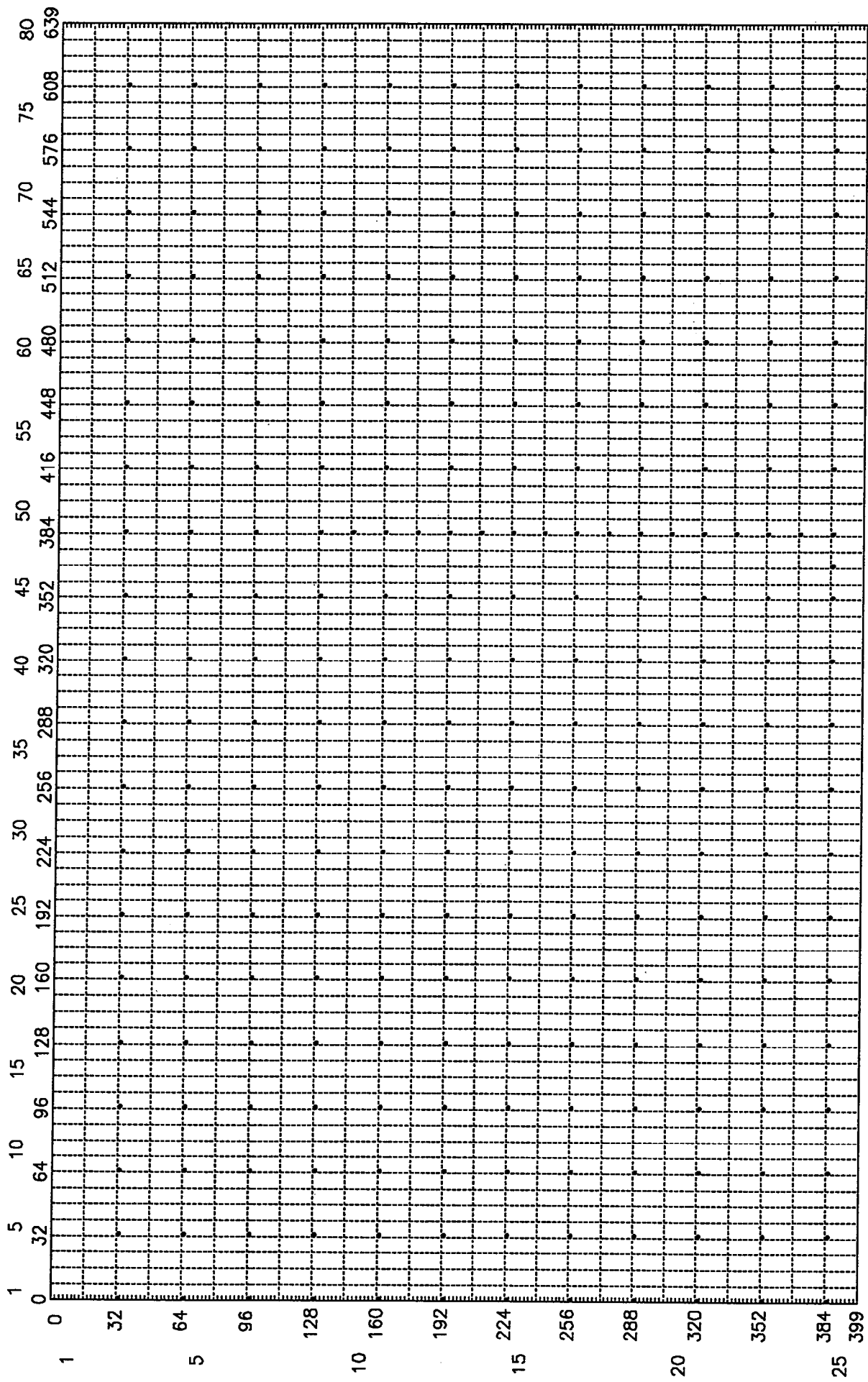
One column consists of 8 x 16 dots.

0 to 15 dots of the Y axis becomes the dead band of a touch key operation.

(Coordinates shown on the paper)







IMPORTANT

- (1) Design the configuration of a system to provide an external protective or safety interlocking circuit for the PCs.
- (2) The components on the printed circuit boards will be damaged by static electricity, so avoid handling them directly. If it is necessary to handle them take the following precautions.
 - (a) Ground your body and the work bench.
 - (b) Do not touch the conductive areas of the printed circuit board and its electrical parts with non-grounded tools, etc.

Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.

Owing to the very great variety in possible applications of this equipment, you must satisfy yourself as to its suitability for your specific application.

Graphic operation terminal type A77GOT-S5

Reference Manual

MODEL	A77GOT-S5-R-E
MODEL CODE	13JF76
IB(NA)66549-A(9504)MEE	

 **MITSUBISHI ELECTRIC CORPORATION**

HEAD OFFICE : MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100-0005 TELEX : J24532 CABLE MELCO TOKYO
NAGOYA WORKS : 1-14 , YADA-MINAMI 5 , HIGASHI-KU , NAGOYA , JAPAN

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