

# Chapter 2

## Run State Screen

## Chapter 2 Run State Screen (a screen that shows run state of a whole device )

### 2. 1 Run State Screen

What's Run State Screen . . . . . 2 - 3

### 2. 2 Current Time Display

How to display a current time (Time Display Settings) . . . . . 2 - 5

Place Time Display . . . . . 2 - 6

### 2. 3 Numeric Display

How to display production qty. (Numeric Display Settings) . . . . . 2 - 9

Place Numeric Display . . . . . 2 - 12

### 2. 4 Graph, Meter Display

Graphs that can be displayed on a GP . . . . . 2 - 15

How to display speed (Bar Graph Settings) . . . . . 2 - 16

Place Bar Graph . . . . . 2 - 19

How to display power (Meter Graph Settings) . . . . . 2 - 23

Place Meter Graph. . . . . 2 - 25

### 2. 5 Trend Graph

How to display Trend Graph . . . . . 2 - 28

### 2. 6 Character String Data Display

Various methods to display product names . . . . . 2 - 35

How to display a product name (Setting Value Display Devices) . . . . . 2 - 35

How to display a product name ( S Tag Settings) . . . . . 2 - 36

Place S Tag to display a product name. . . . . 2 - 38

# 2. 1

## Run State Screen

Here, it will be described what Run State Screen is like.



## What's Run State Screen?

### • What can be done?

On Run State Screen, a screen that shows data movement of a whole device can be created. The following describes a current time display, a display of numerical data like production quantity, and a graph display of analog data like power or speed.

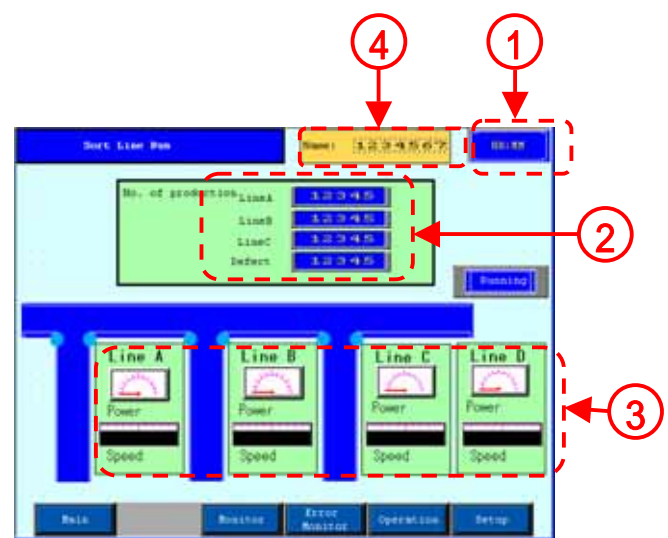
### • Run State Screen

-----  
 Watches the clock data inside of the display and displays the current time.

-----  
 Displays the production qty. of each line in numeric.

-----  
 Displays the values of the power and the speed data of each line in the bar graph.

-----  
 Displays the product names and the lot numbers.



# 2.2

## Current Time Display

Here, it will be described how to display a current time on a GP.

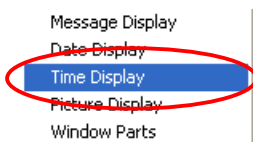


## How to display a current time (Time Display Settings)

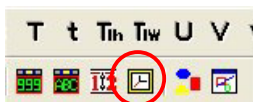
• In order to display a current time on a display unit, a Time Display is used. The Time Display displays it referring to the clock data prepared in the system data area in the GP (timing by Clock Function).

### (1) How to select Time Display

Select Time Display from [Parts] on the menu bar.



Or click the [Time Display] icon.



#### • Menu Bar

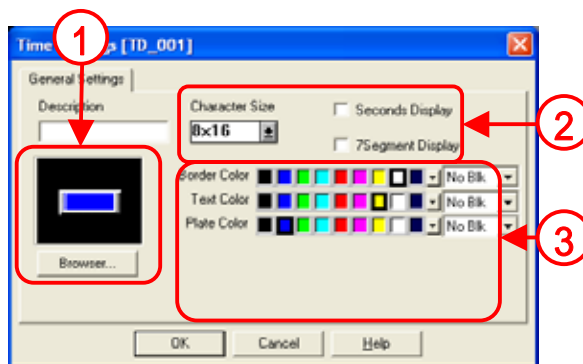


#### • Parts Tool Bar



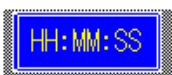
### (2) Time Display Settings

The picture of the currently selected display is displayed. Clicking the Browser enables you to select pictures of a display.



**Character Size:** Set the size of the characters of time.

**Seconds Display:** Not only hours/minutes but also seconds can be displayed.



**7Segment Display:** Display like a calculator.



Set the color of the display picture.

\* Set different colors for [Text Color] and [Plate Color] each. If they are the same, the numeric display cannot be seen.



The errors of clock data is  $\pm 65$  seconds per month in normal temperature and non-electrified condition, but it becomes [from  $-380 + 90$  seconds per month] depending on the number of years of use or external temperature. For a system that requires accurate time, please revise the time regularly.



# Place Time Display

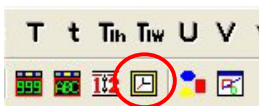
The drawing method of Time Display that displays a current time is described.

[Setup Flow]

1. Open the base screen ,[B2].
2. Set and place Time Display.

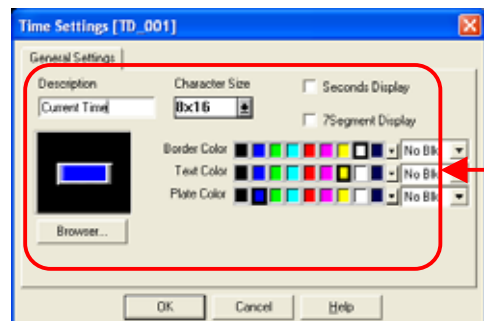
## (1) Select Time Display.

Click the [Time Display] icon from the parts tool bar.



## (2) Set Time Display.

Set [Character Size] and [Each Color] as you like. \* There's no setting like addresses for Time Display.



## (3) Place Time Display.

After setting all, click [Place] and place the Time Display on the screen.



# 2.3

## Numeric Display

Here, it will be described how to numeric-display PLC data on a GP.



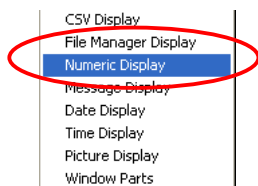


## How to display production qty. (Numeric Display Settings)

- In order to display production quantity in Run Screen, Numeric Display is used.  
Using the Numeric Display enables you to display numeric data on a screen easily.

### (1) How to select Numeric Display

Select Numeric Display from the [Parts] on the menu bar.



Or click the [Numeric Display] icon.



#### • Menu Bar



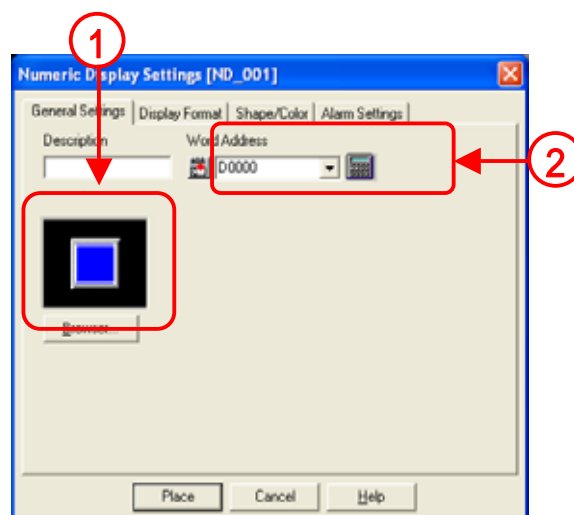
#### • Parts Tool Bar



### (2) Information Settings

The picture of the currently selected display is displayed. Clicking the Browser enables you to select pictures of a display.

Set the word address where the data to display is stored.



**(3) Display Format Settings**

Set a display format. In the case of 32 bit, the descriptions of the designated address and the next address are displayed being linked.

**Code +/-:** Check here when displaying minus data. Enabled only when the display data format is [Dec].

**No. of Display Digits:** Set in how many digits data is displayed.

**Decimal Places:** Set the No. of digits in decimal places.

**Character Size:** Set Character Size.

**Shift Right:** Displayed being shifted to right in a display area

**Shift Left:** Displayed being shifted to left in a display area

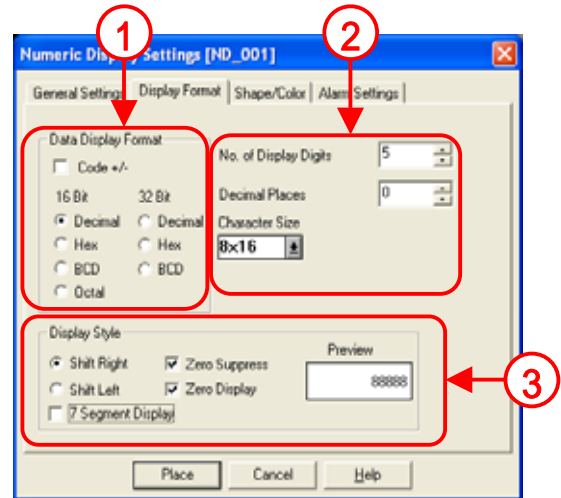
**Zero Suppress:** Decide whether 0 is displayed or not.

Ex.) Checked      123  
      Unchecked    00123

**Zero Display:** Decide whether 0 is displayed or not when data is 0.

Ex.) Checked      0  
      Unchecked    (No display)

**7 Segment Display:** Display like a calculator

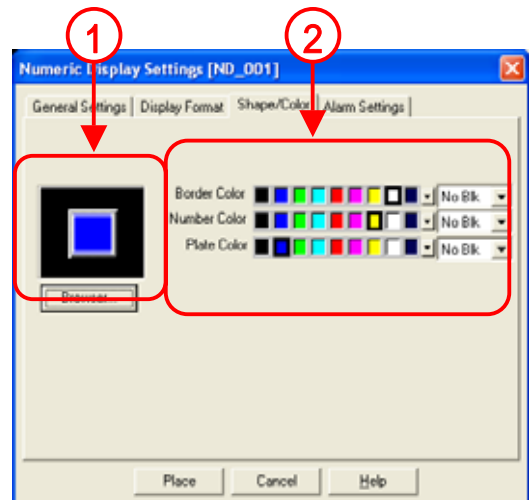


**(4) Shape/Color Settings**

The picture of the currently selected display is displayed. Clicking the Browser enables you to select pictures of a display.

Set a color for the display picture.

\* Set different colors for [Number Color] and [Plate Color] each. If they are the same, the numeric display cannot be seen.



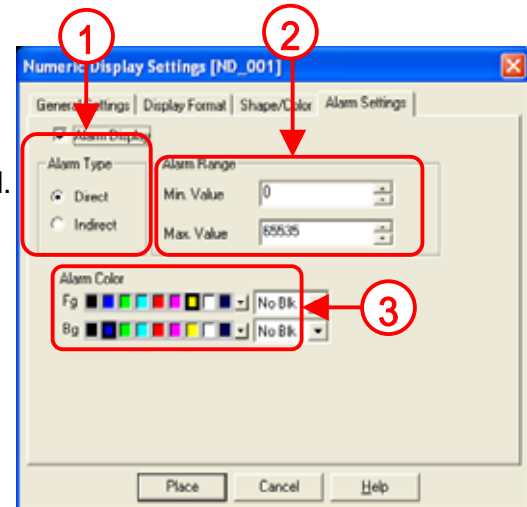
**(5) Alarm Settings**

**Alarm Display:** When the displayed data is within the already setup alarm range, it can be displayed in a different color.

**Direct:** Makes the Min./Max. Value of Alarm Range fixed.

**Indirect:** Makes the Min./Max. Value of Alarm Range changeable.

The Min./Max Values are stored in the address displayed in the alarm range.



Set a range of alarm values.

Set a display color for the time when Alarm is triggered.

**★ Point**

When Direct is selected in Alarm Settings, the max. and the min. values that trigger an alarm are fixed.

When Indirect is selected, word addresses are automatically allocated in sequence, starting from the designated Address as for the Min. and the Max. Values.

Ex.) Alarm Type: When Direct is selected

Alarm Range Min.: 40  
Max.: 1000

When the data is smaller than 40 or bigger than 1000, an alarm is displayed.

Alarm Type: When Indirect is selected

Alarm Range Min.: the value stored in Word Address+2  
Max.: the value stored in Word Address+1

When the data is smaller than the min. value or bigger than the max. value, an alarm is displayed.



## Place Numeric Display

Let's display production quantity using Numeric Display.

The drawing method of Numeric Display that displays production qty of each line will be described.

[Setup Flow]  
 1. Open the base screen, [B2].  
 2. Set and place Numeric Display.

### (1) Setup Flow

1. Open the base screen, [B2].
2. Set and place Numeric Display.

### (2) Select Numeric Display Setting

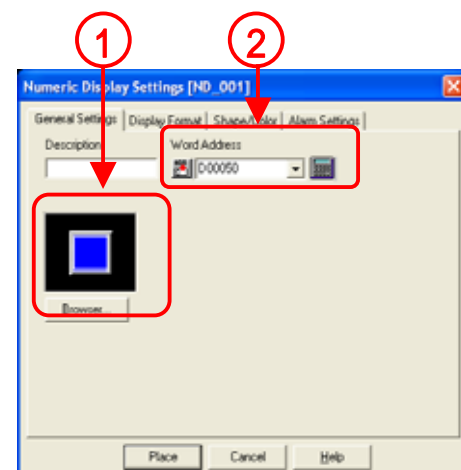
Click the [Numeric Display] icon from the parts tool bar.



### (3) Set Information.

Click the Browser and set the display picture as you like.

Set [D50] in [Word Address].

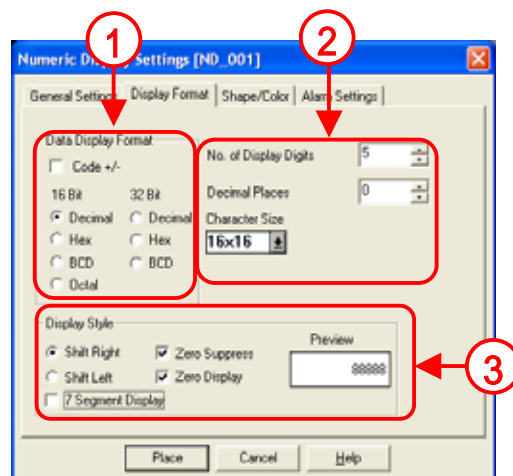


**(4) Open Display Format Setting.**

Set [16 bit, DEC] for [Data Display Format].

Set [5] for No. of Display Digits, [0] for Decimal Places, [2x1(f)] for Character Size.

Set [Display Style] as you like.



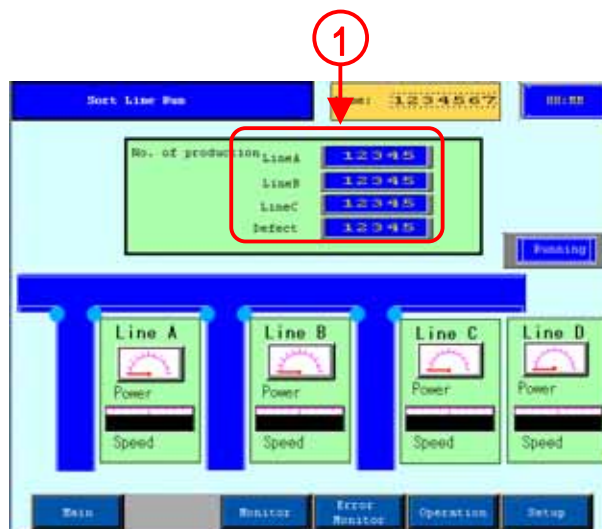
**(5) Place Numeric Display**

Place the setup Numeric Display next to [Line A].

Place the Numeric Display also next to [Line B], [Line C], and [Defect].

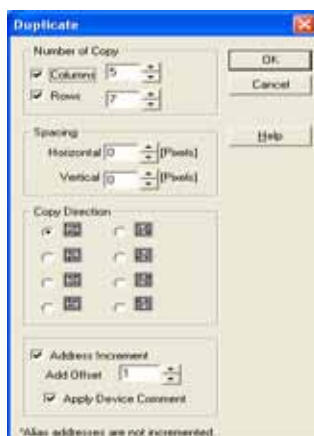
Set the addresses as shown below.

- For [Line B], D51
- For [Line C], D52
- For [Defect], D53



**★ Point**

- Using Edit Function enables you to make plural copies of objects in a group. If they are parts or tags in which addresses can be set, automatic addition of addresses is possible. (\*Select [Duplicate] from [Edit] of the menu bar.)



# 2.4

## Graph, Meter Display

Here, it will be described how to display PLC data in a bar graph.









## Graphs that can be displayed on a GP.

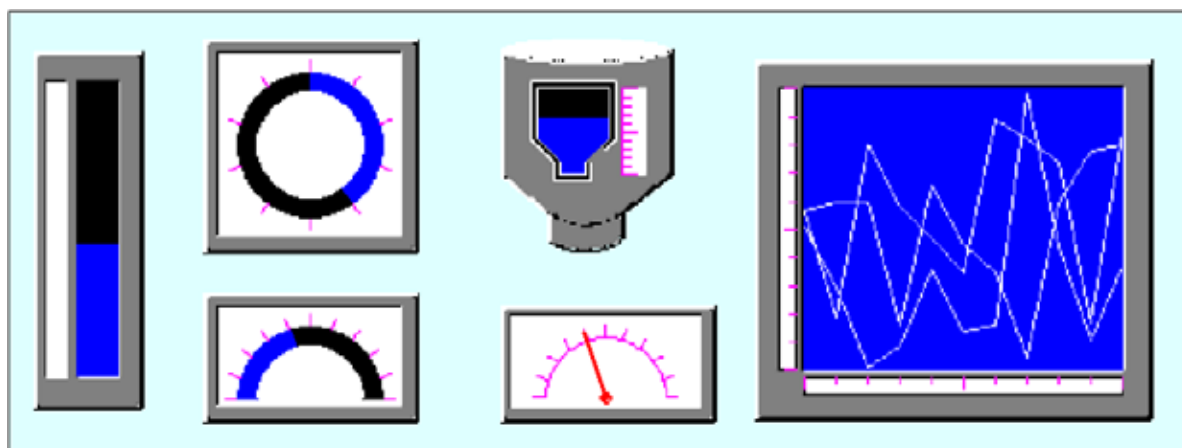
• Graphs that can be displayed on a GP are a bar graph, a pie graph, a half pie graph, a meter graph, a trend graph etc. Using parts enables you to place graphs with scales by simple setup and placement. The scales are automatically divided into 10 equally and then placed. And they can be increased or decreased.

### • Each Graph Display (How to select it from the parts tool bar)



-  **Bar Graph:** PLC's word address data is displayed in a bar graph.
-  **Pie Graph:** PLC's word address data is displayed in a pie graph.
-  **Half Pie Graph:** PLC's word address data is displayed in a half pie graph.
-  **Tank Graph:** PLC's word address data is displayed in a tank graph.
-  **Meter Graph:** PLC's word address data is displayed in a meter graph.
-  **Trend Graph:** PLC's word address data is displayed in a trend graph.

### Display Example



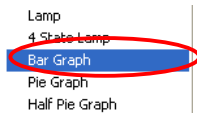


# How to display speed (Bar Graph Setting)

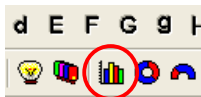
• For monitoring state of analog data such as speed or power, Meter or Graph Display is often used.

## (1) How to select Bar Graph

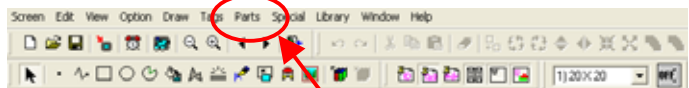
Select [Bar Graph] from [Parts] of the menu bar.



Or click the [Bar Graph] icon.



### • Menu Bar



### • Parts Tool Bar



## (2) Information Settings

Clicking the Browser enables you to select graph pictures.

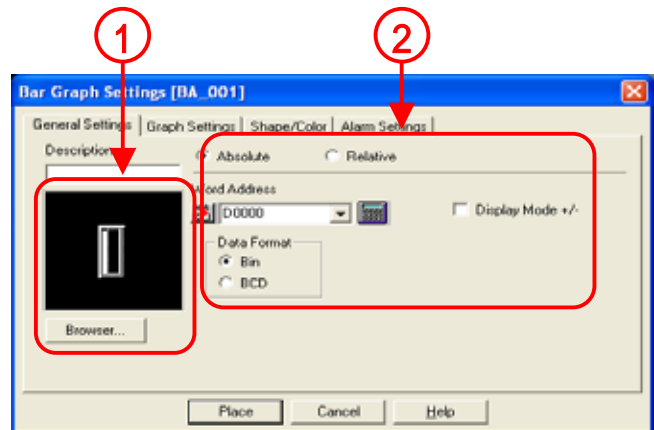
### [Absolute]

**Word Address:** Set the word address where the data to display is stored.

**Data Format:** Set the format of the data stored in the word address.

**Display Mode +/-:** Set here when displaying negative data. (Possible to set here in the case of Bin only)

### [Absolute]



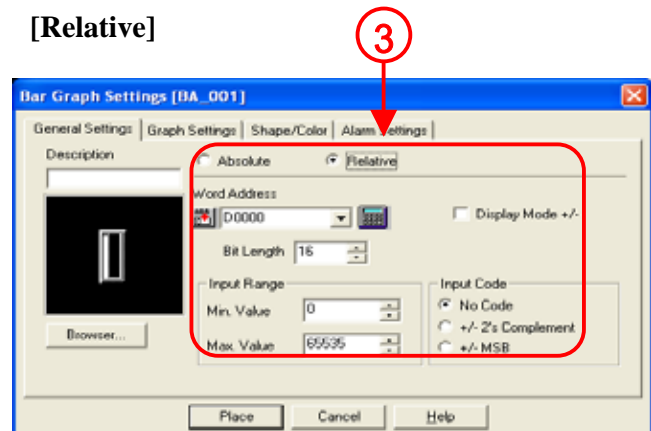
### [Relative]

**Bit Length:** Set an effective bit length of the data stored in the word address.

**Input Range:** Set a range of the data stored in the word address.

**Input Code:** With [No Code] selected, only positive numbers are treated. When treating negative numbers, select [+/- 2's Complement] or [+/- MSB].

### [Relative]





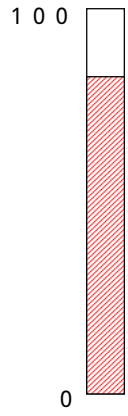
★ Point

About the difference between [Absolute] and [Relative]

[Absolute]

The display range in which a bar graph grows is only between 0 to 100 of address data. When the data value is more than 100, the bar grows fully and remains still.

Ex.) When the data value is 80, the graph grows as shown in the right.



[Relative]

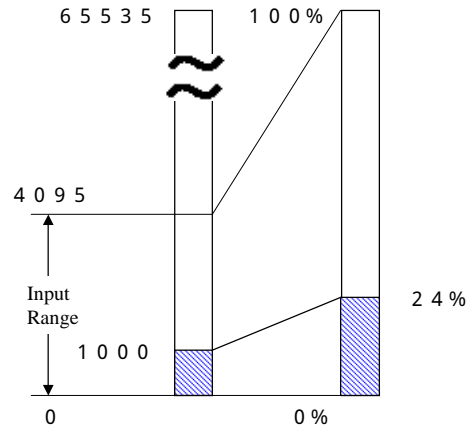
For the Max./Min. values of the display range of a bar graph, an optional data value can be set.

Ex.) Input Range: Min. [0] to Max. [4095]

When the data value is 1000, the graph grows

$$\frac{1000}{4095} \times 100 = 24\%$$

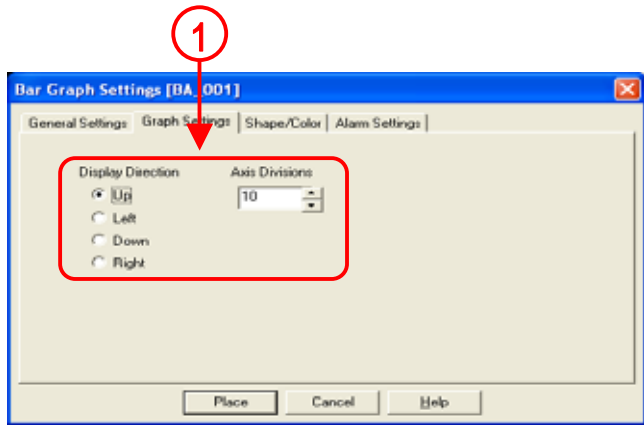
(Decimal places are discarded.)



(3) Graph Settings

**Display Direction:** Select a graph's display direction.

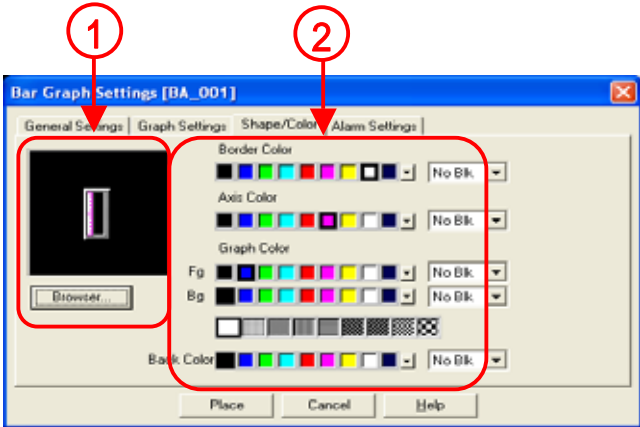
**Axis Divisions:** Can be set only when a picture with scales is selected. When scales are not needed, set [0].



**(4) Shape/Color Settings**

Clicking the Browser enables you to select a graph picture.

Set a color for the graph.



**(5) Alarm Settings**

**Alarm Display:** When the displayed data is in the already setup alarm range, it can be displayed by numeric in a different color.

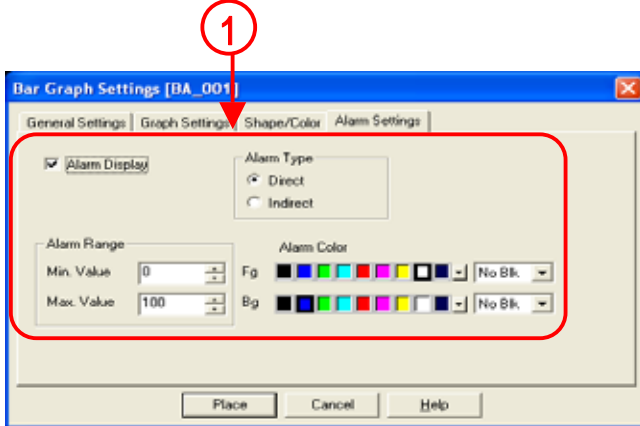
**Alarm Type:** If [Direct] is set, the max. and the min. values of the alarm range are fixed. If [Indirect] is set, the max. and the min. values of the alarm range are changeable.

**Alarm Range:** Set a range of alarm values.

\*The unit of values in the alarm range is percent.

Input Range is [Min.:0 to 99] and [Max.:1 to 100].

**Alarm Color:** Set a display color for the time when an alarm is triggered.





# Place Bar Graph

The drawing method of a bar graph that displays speed of each line will be described.

[Setup Flow]

1. Open the base screen [B2].
2. Set and place Bar Graph.

## (1) Select Bar Graph.

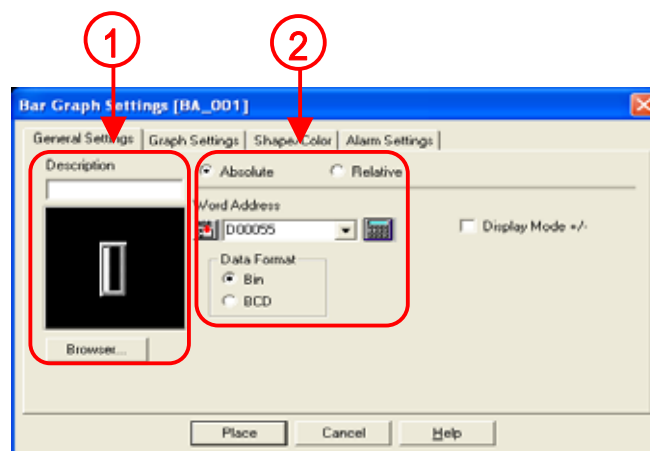
Click the [Bar Graph] icon from the parts tool bar.



## (2) Information Settings

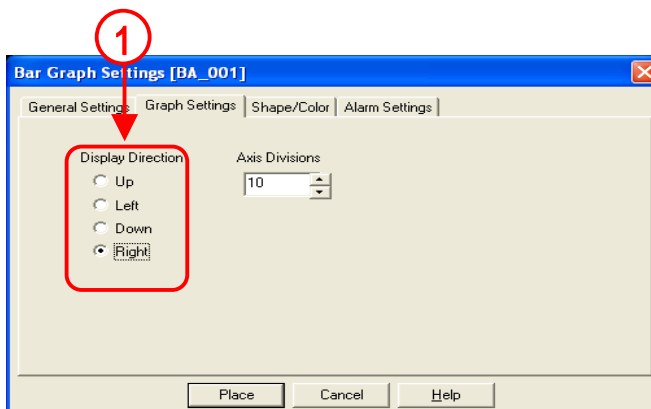
Click the Browser and set a bar graph picture as you like.

Check [Absolute] and set D55 for Word Address, Bin for Data Format.



## (3) Graph Settings

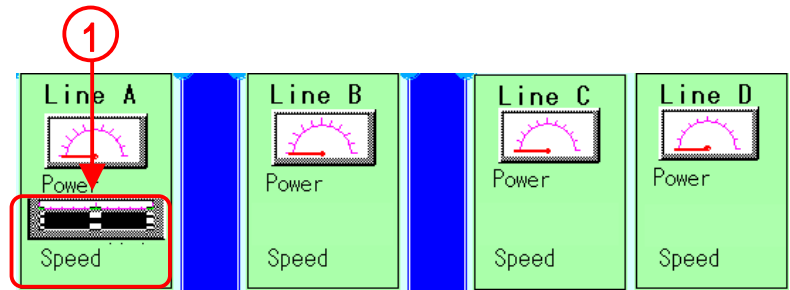
Set Right for [Display Direction].



**(4) Place the graph.**

-----

Click [Place] and place the bar graph on the screen.

**(5) Set and place other graphs.**

-----

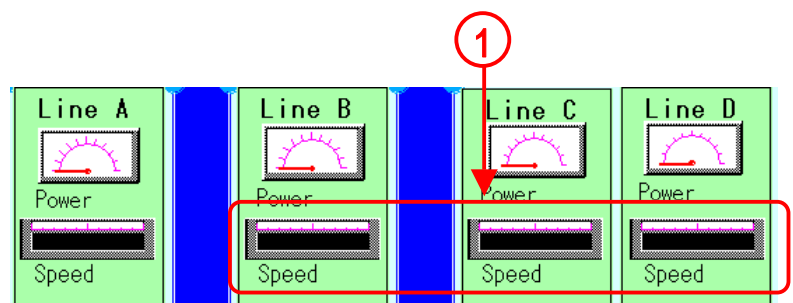
Set the bar graphs that display line speed of Line B-D as well as the bar graph that displays the line speed of Line A.

The speed data of Line B to D is stored as shown below.

**Line B:**Word Address [D56]

**Line C:**Word Address [D57]

**Line D:**Word Address [D58]



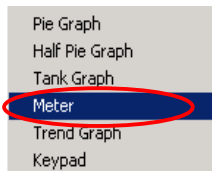


# How to display Power (Meter Graph Settings)

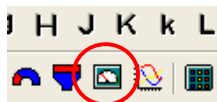
• For monitoring state of analog data such as speed or power, Meter or Graph Display is often used.

## (1) How to select Meter Graph

Select [Meter] from [Parts] of the menu bar.



Or click the [Meter Graph] icon.



### • Menu Bar



### • Parts Tool Bar



## (2) Information Settings

Clicking the Browser enables you to select a graph picture.

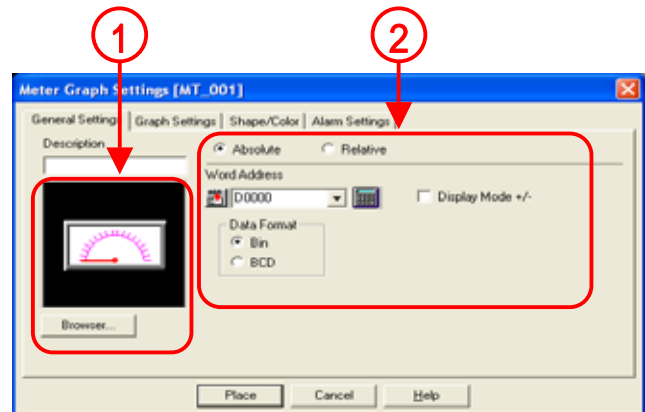
### [Absolute]

**Word Address:** Set the word address where the data to display is stored.

**Data Format:** Set the format of the data stored in the word address.

**Display Mode +/-:** Set here when displaying negative data. (Possible to set here in the case of Bin only)

### [Absolute]



### [Relative]

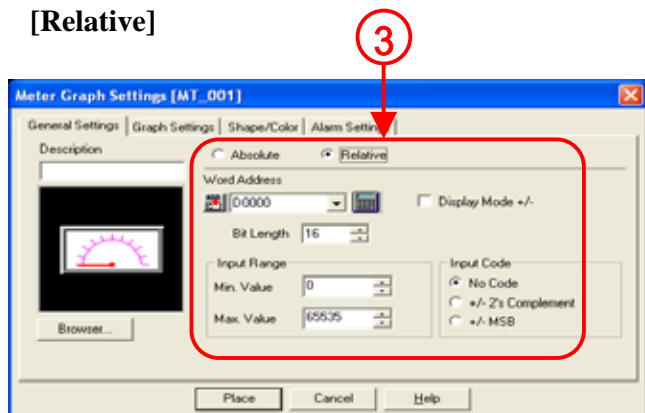
**Bit Length:** Set an effective bit length of the data stored in the word address.

**Input Range:** Set a range of the data stored in the word address.

**Input Code:** With [No Code] selected, only positive numbers are treated. When treating negative numbers, select [+/- 2's Complement] or [+/- MSB].

\* For the difference between [Absolute] and [Relative], refer to P2-17.

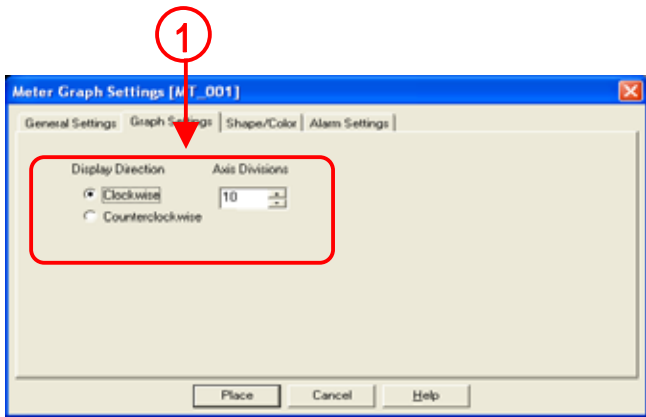
### [Relative]



**(3) Graph Settings**

**Display Direction:** Select a graph's display direction.

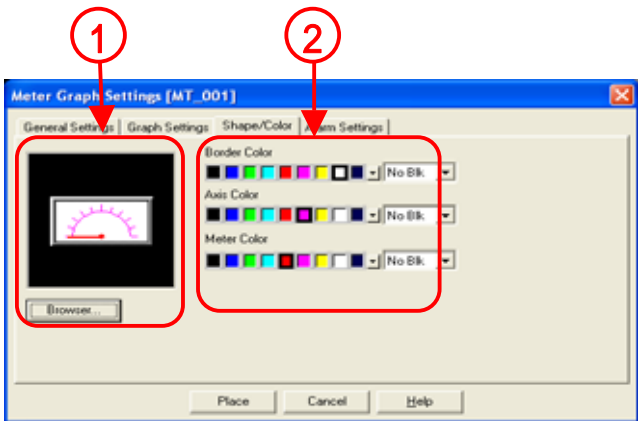
**Axis Divisions:** Can be set only when a picture with scales is selected. When scales are not needed, set [0].



**(4) Shape/Color Settings**

Clicking the Browser enables you to select a graph picture.

Set a color for the graph.



**(5) Alarm Settings**

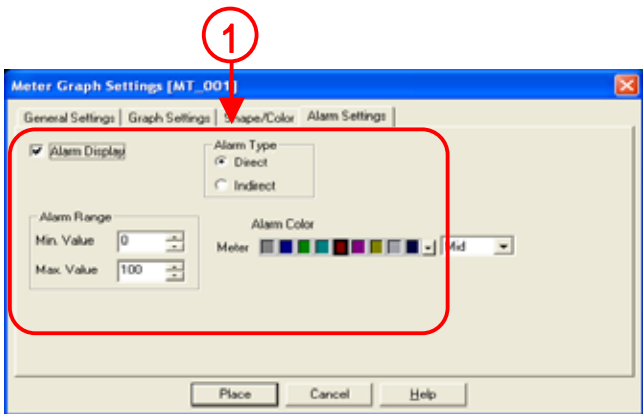
**Alarm Display:** When the displayed data is in the already setup alarm range, it can be displayed by numeric in a different color.

**Alarm Type:** If [Direct] is set, the max. and the min. values of the alarm range are fixed. If [Indirect] is set, the max. and the min. values of the alarm range are changeable.

**Alarm Range:** Set a range of alarm values.

\*The unit of values in the alarm range is percent. Input Range is [Min.:0 to 99] and [Max.:1 to 100].

**Alarm Color:** Set a display color for the time when an alarm is triggered.





## Place Meter Graph.

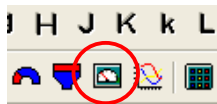
The drawing method of a meter graph that displays power values of each line will be described.

[Setup Flow]

1. Open the base screen [B2].
2. Set and place Meter Graph.

### (1) Select Meter Graph.

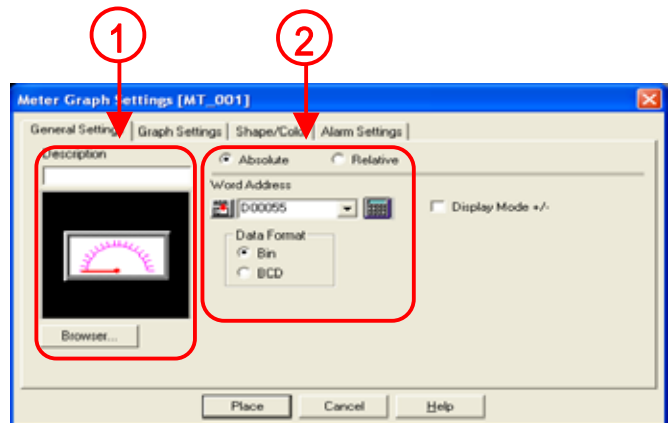
Click the [Meter Graph] icon from the parts tool bar.



### (2) Information Settings

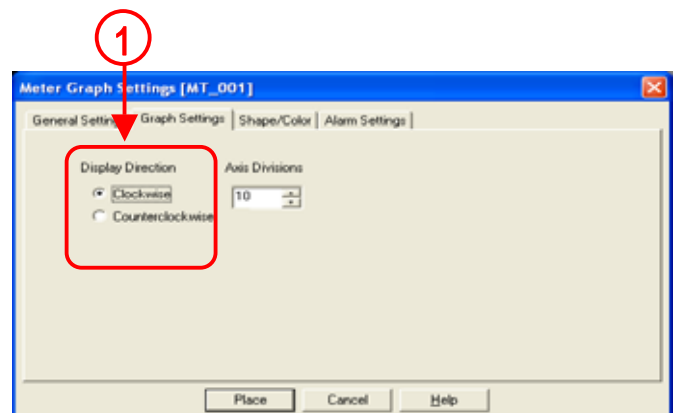
Click the Browser and set a meter graph picture as you like.

Check [Absolute] and set D55 for Word Address, Bin for Data Format.



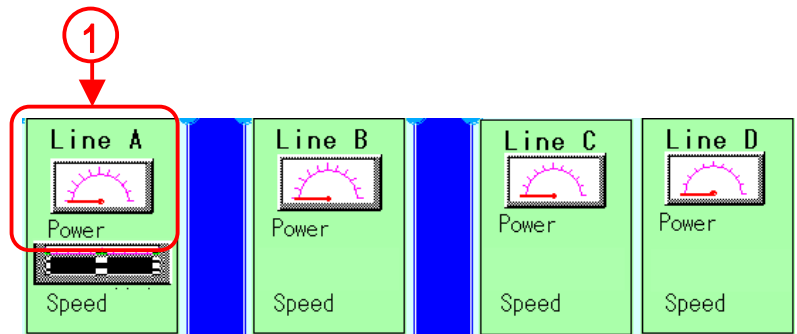
### (3) Graph Settings

Set [Clockwise] for Display Direction.



**(4) Place the graph.**

Click [Place] and place the meter graph on the screen.

**(5) Set and place other graphs.**

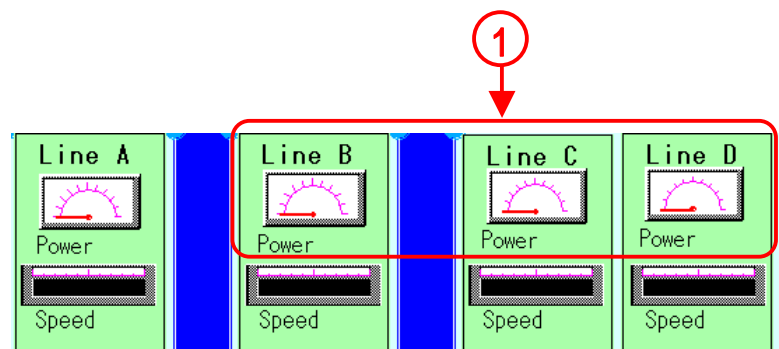
Set the meter graphs that display line power of Line B-D as well as the meter graph that displays the line power of Line A.

The power data of Line B to D is stored as shown below.

**Line B:** Word Address [D56]

**Line C:** Word Address [D57]

**Line D:** Word Address [D58]





# 2.5

## Trend Graph Display

Here, it will be described how to display PLC data in a trend graph.



# How to display Trend Graph

• For monitoring changes of data in time, Trend Graph is appropriate. It's convenient for watching data changes for a long time dating back to the past.

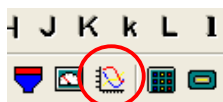
\*In the sample screen, this function is not used.

## (1) How to select Trend Graph

Select [Trend Graph] from [Parts] of the menu bar.



Or click the [Trend Graph] icon.



### • Menu Bar



### • Parts Tool Bar

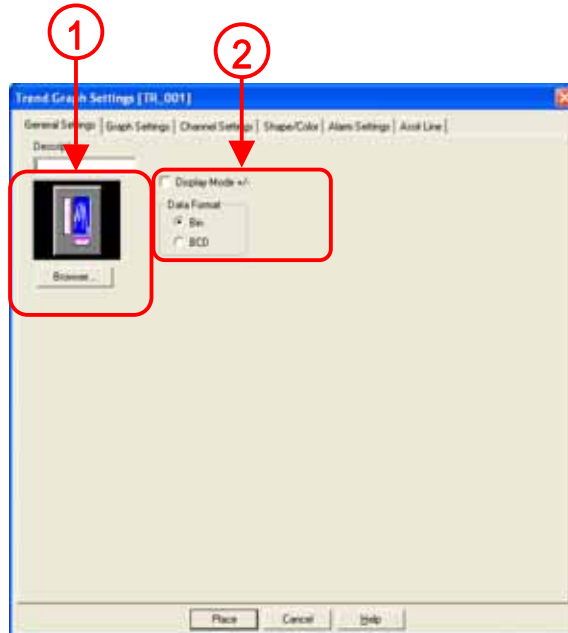


## (2) Information Settings

Clicking the Browser enables you to select a graph picture.

**Display Mode +/-:** Set here when displaying negative data. (Possible to set here in the case of Bin only)

**Data Format:** Set the format of the data stored in the word address.



### (3) Graph Settings

Set a graph type.

(\*For the details, refer to the next page)

**Display Direction:** Set the direction in which the trend graph stretches.

**Data Samples:** Set the number of data displayed on one trend graph.

**Scroll:** Set the number of data to scroll when the display area of the trend graph is full.

**Sampling Time:** Set a cycle of taking data by a unit, second.

**Backup:** When [Graph Backup] is checked, it's possible to save the data of the trend graph when the power turns off and display it when the power turns on. When [Synchronous Mode] is checked, the graph is drawn following the data in sequence, starting from the data before the power turns off. When it's not checked, the data of the trend graph starts again from [0].

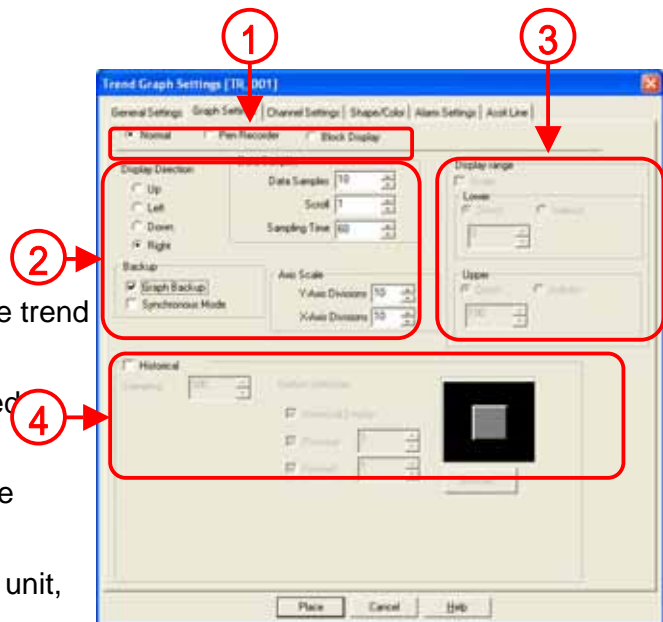
**Axis Scale:** Set how many divisions are put for horizontal and vertical directions each. When the scales are not needed, set [0].

**Display Range:** When Scale is checked, it's possible to set the lower and the upper values of the width of the data displayed in the trend graph.

(\*This function is effective for GP2000 series only and only when the graph display is [Block Display].)

**Historical:** It's possible to display histories in the trend graph. Set the number of data to save for [Sampling] and place a switch for historical display.

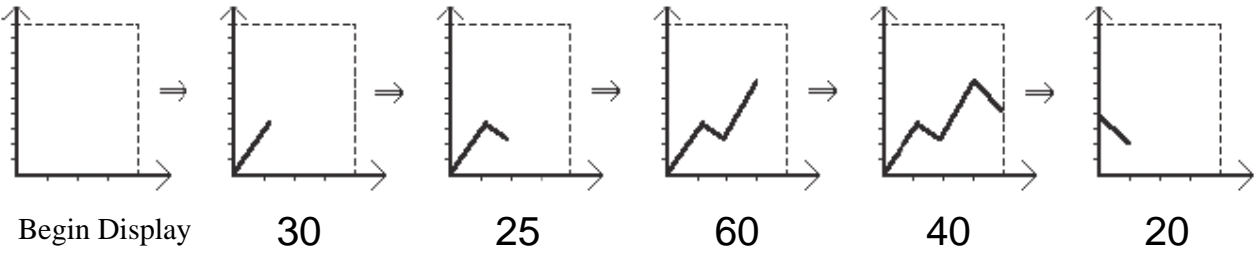
(\* This function is effective for GP2000 series only and only when the graph display is [Normal] and [Pen Recorder].)



★ Point

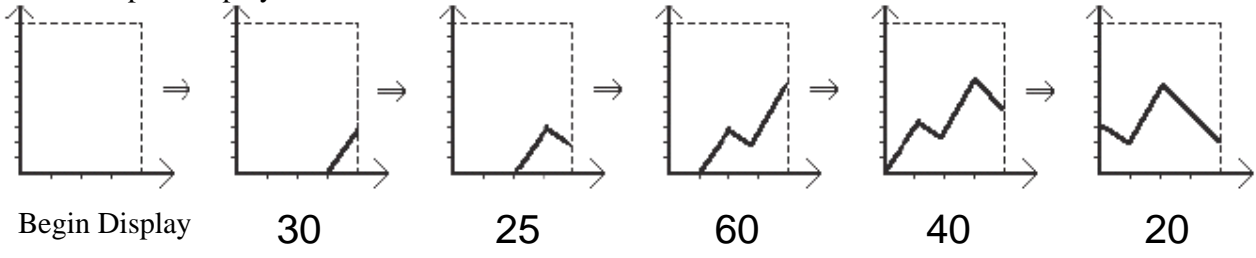
• Normal

As each (time) sampling period elapses, the latest data is added in the specified display direction. When the graph's poly(gonal) line reaches the limit of the Trend Graph, the graph is shifted in the display direction for the number units specified in "Scroll".



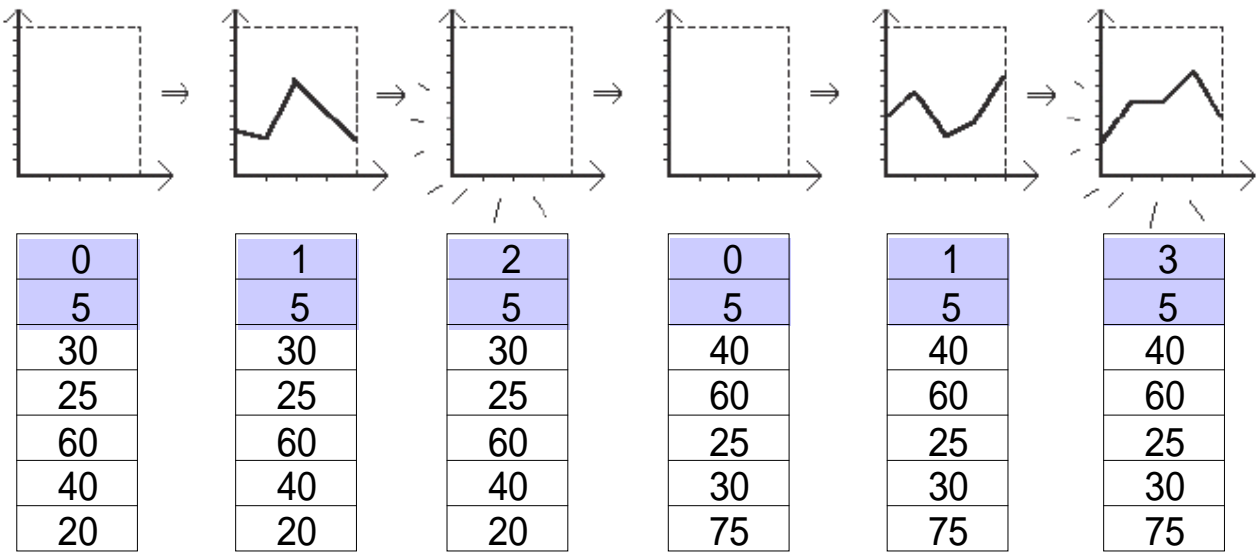
• Pen Recorder

As each sampling period elapses, the graph's poly(gonal) line is shifted one division opposite the specified display direction. The latest data is always displayed at the very limit (in this example, the right side) of the Trend Graph's display area.



• Block Display

All the data in consecutive word addresses is displayed in a single trend graph. In order to control the ON/OFF display of the graph, create an address for it.



\*Address for controlling display

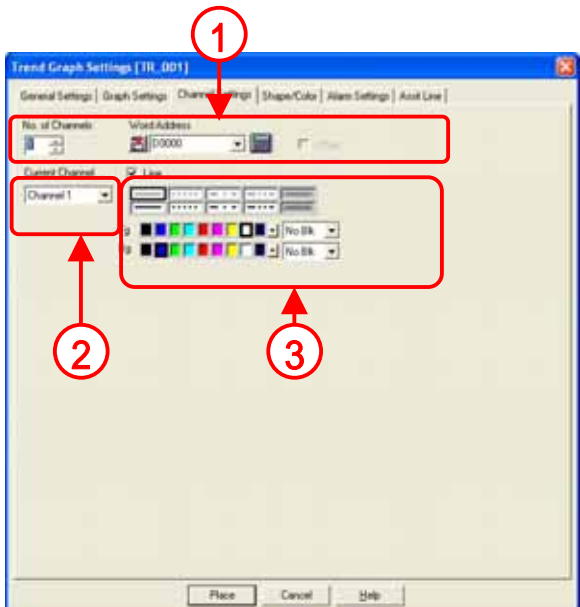
**(4) Channel Settings**

**No. of Channels:** Set the number of trend graphs. Up to 20 graphs can be set in one display area and up to 20 can be set in a whole project file. For ST/GP2000 series, up to 40 can be set in a whole project file.

**Word Address:** Set the address where the data to display in the selected channel is stored.

It's possible to select the number , the channel setup in [No. of Channels]. Select the channel for setting.

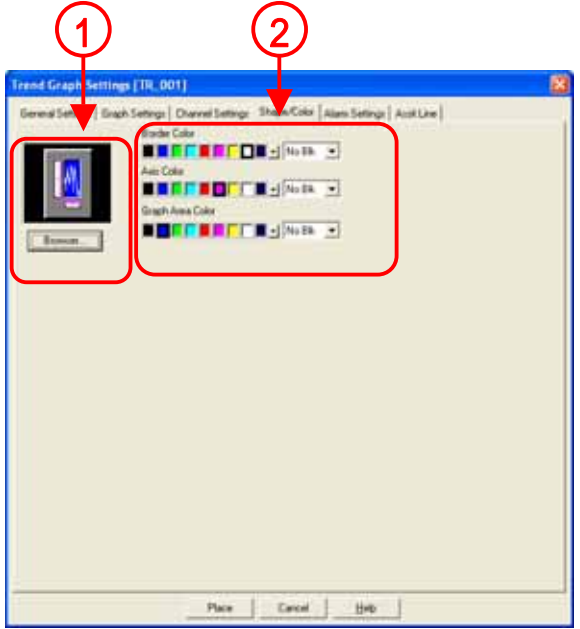
Set a line type and a color of the trend graph to display in the currently selected channel.



**(5) Shape/Color Settings**

Clicking the Browser enables you to select a graph picture.

Set a color for the graph.



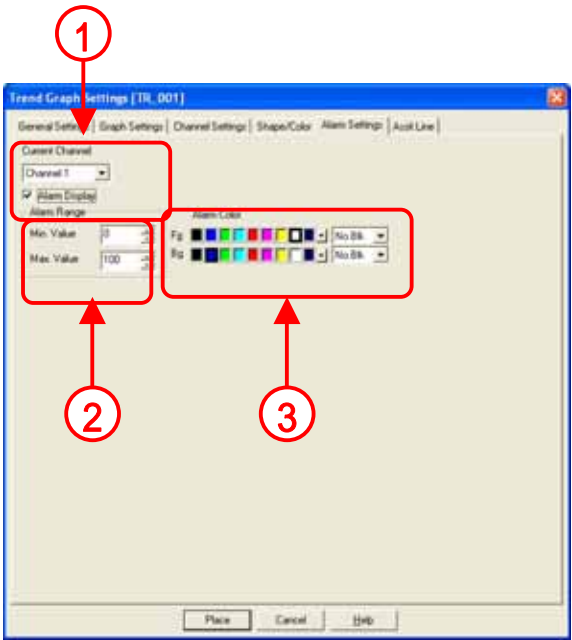
**(6) Alarm Settings**

**Alarm Display:**When the displayed data is in the already setup alarm range, it can be displayed by numeric in a different color.

**Current Channel:** It's possible to select the number and the channel setup in [No. of Channels]. Select the channel for Alarm Settings.

Set Alarm Range.

Set a color for Alarm Display.



**(7) Assistant Line Settings**

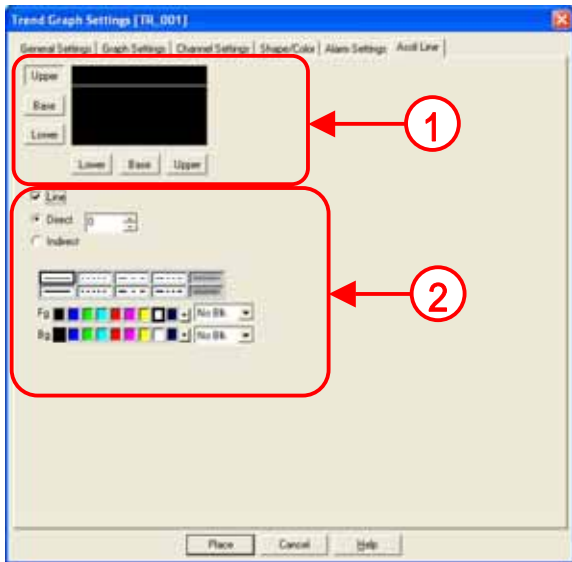
It's possible to set here only when Graph Settings is [Block] or [Scale]. An assistant line can be displayed on a graph.

Select an assistant line to set.  
The setup assistant line can be displayed in Image, but it's different from the actual display screen.

**Draw Line:** Check "Line" when displaying the assistant line. A display position, a type, and a color of the assistant line can be set.

**Direct:** Set a display position of the assistant line directly. The display position is fixed.

**Indirect:** Store data in the setup word address and designate a display position of the assistant line. The display position is changeable by changing the data.



# 2.6

## Product Name Display

Here, it will be described how to display text data stored in a PLC on a screen.



解説

## Various methods to display product names

- Character string data stored in a word address is displayed.

Various kinds of characters like product names, model number, a name of person in charge can be displayed.

**Methods: There are 2 kinds.**

Using Parts	Setting Value Display Devices	If the setting is Character String using Setting Value Display, PLC data is read out as string data. At that time, if the input start is set to Bit, input is not received and there's only display as long as the trigger bit is not ON. Even when a keyboard hasn't been placed on the screen, if the trigger bit is ON, a cursor is displayed, the currently displayed string is fixed, and waiting state is there.
Using Tags	Character String Display (S tag)	Normally, data stored in PLC addresses is read out by changes of a trigger bit and its display is updated. But if Indirect is set, the display is updated automatically by data changes without setting the trigger bit. Up to 100 characters can be displayed.

\*In S Tag's items, there are suggestions for order of characters when string data is stored in PLC addresses. For details, refer to P2-38.

### ★ Point

- PLC internal storage order of character string data varies depending on a PLC. Set Character String Data Mode in GP's [System Surroundings Setup] menu. The order of characters might go wrong.

Data Device Storage Order	Internal Word, Byte LH/HL Storage Order	Double-word Internal Word LH/HL Storage Order	Character String Data Mode
Storage from Initial data	LH order	LH order	4
		HL order	2
	HL order	LH order	5
		HL order	1
Storage from End data	LH order	LH order	6
		HL order	7
	HL order	LH order	8
		HL order	3

### ★ Point

- Using Setting Value Display Devices enables you to display string data. In this case, assign a bit address that is not ON as a trigger bit.

\* For details of Setting Value Display Devices, refer to P6-6.





## How to display product names (S tag Settings)

• S tag reads string data (ASCII code, Shift JIS code) which is stored in a PLC and displays it on a display unit.

Normally string data stored in a word address is read by trigger bit changes and its display is updated. However, if Indirect is set, the display is automatically updated by data changes without the specified trigger bit. Up to 100 characters can be displayed.

### (1) How to select Stag

Select Stag from [Parts] of the menu bar.



Or click the [STag] icon.



#### • Menu Bar



#### • Tag Tool Bar



### (2) Display Mode Settings

Set a timing to update the display of strings.

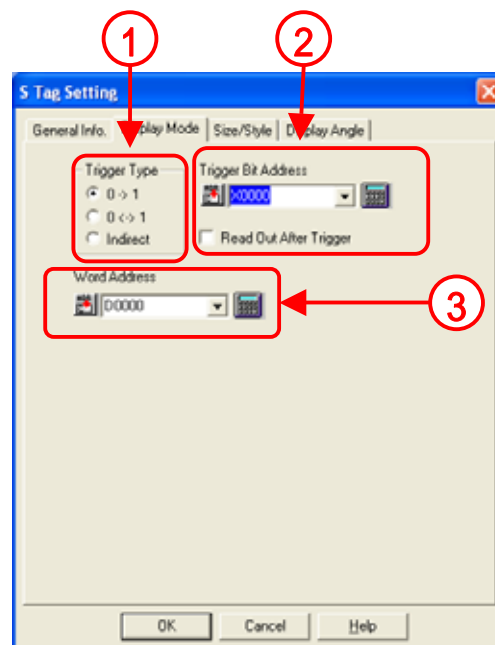
**0->1** : When the bit setup in [Trigger Bit Address] changes like [OFF->ON], the display is updated.

**0<->1** : When the bit setup in [Trigger Bit Address] changes like either [OFF->ON] or [ON->OFF], the display is updated.

**Indirect**: Storing data in a word address without designating a trigger bit updates the display.

Set a bit address as a trigger to update string display.

Set a start address where string data to display is stored.



### (3) Size/Style Settings

**Display Size:** Set a size of characters to display.

**No. of Display Char.:** Set the number of characters to display.

Set colors of characters and a background to display.

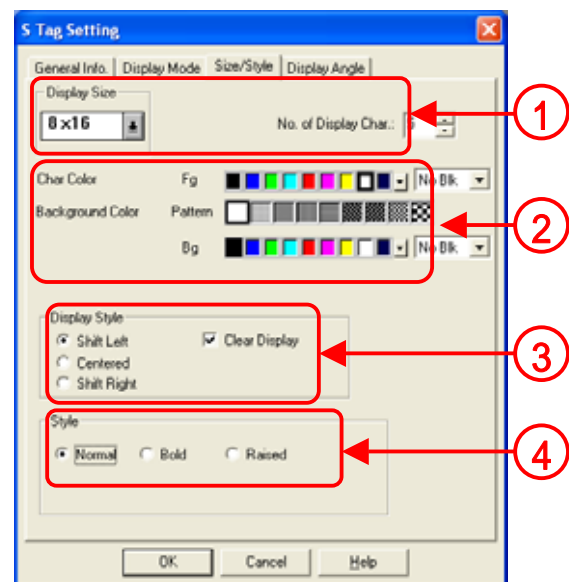
**Shift Left, Centered, Shift Right:** Set a display position of strings in a display area.

**Clear Display:** When checked, the next string is displayed after clearing the previously displayed string.

When not checked, the next string is overwritten without clearing the previously displayed string.

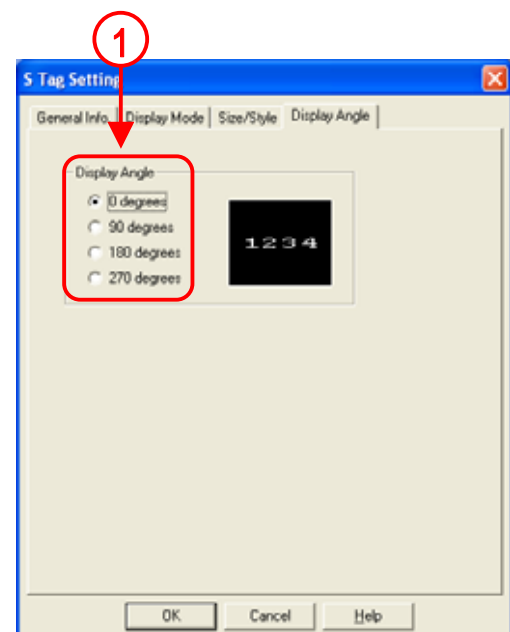
Select a character style.

\*Effective for GP2000 series, ST series only.



### (4) Display Angle Settings

Set a display angle of strings to display.





## Place S Tag to display a product name.

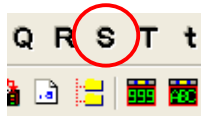
A drawing method of character string display (S tag) to display a product name will be described.

[Setup Flow]

1. Open the base screen, [B2].
2. Set and place S Tag.

### (1) Open S Tag.

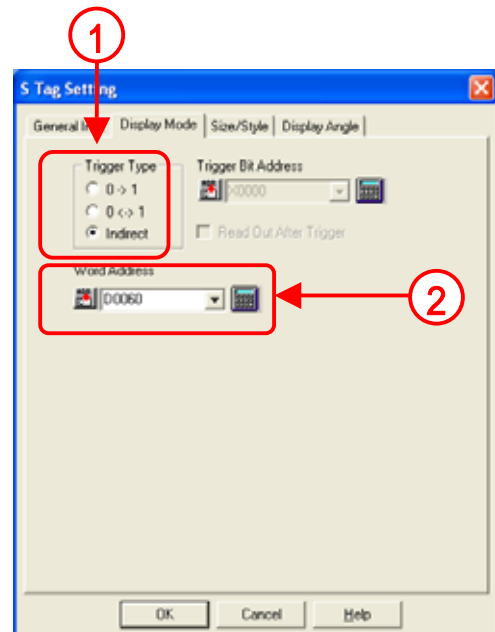
Click the [STag] icon from the Tag Tool Bar.



### (2) Set Display Mode.

Set [Indirect] for Trigger Type.

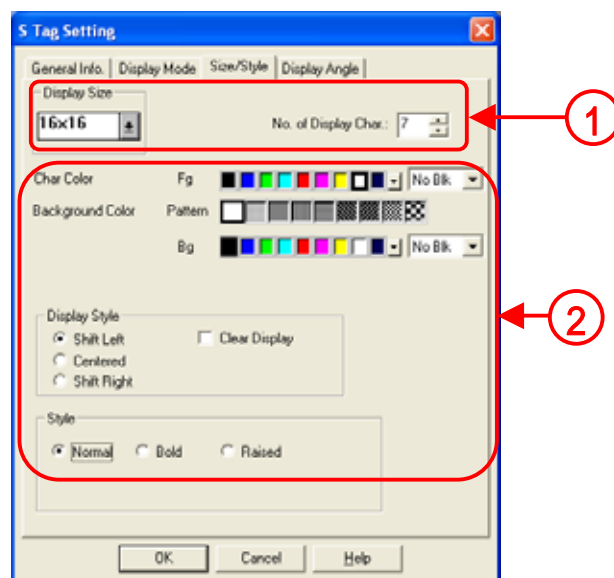
Set D60 for Word Address.



**(3) Set Display Size/Style.**

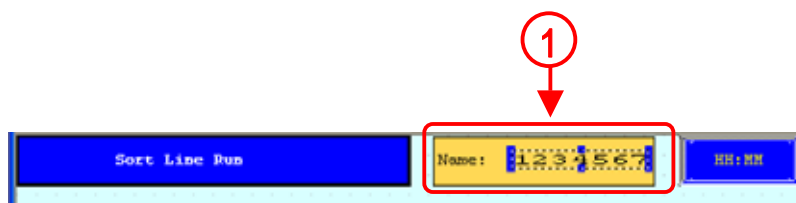
Set [2x1(f)] for Display Size, and [7] for No. of Display Char.

Set [Char. Color], [Background Color],[Display Style], and [Style] as you like.



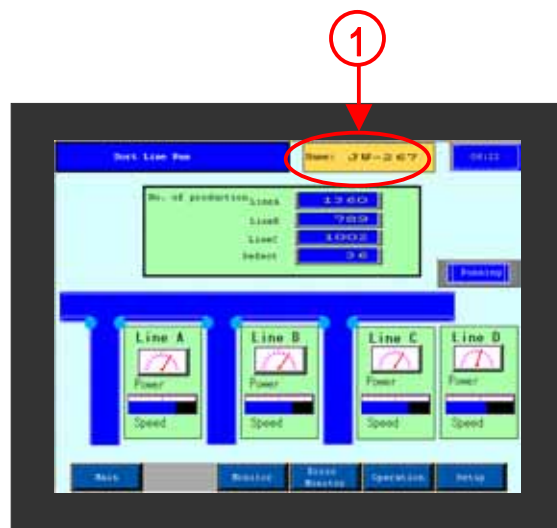
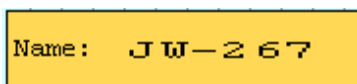
**(4) Place S Tag.**

Click OK, and then place S Tag on the screen.



**(5) Display character string data.**

When character string data is stored in the setup address, the character string is displayed.



**★ Point**

• For Character String Input, refer to P6-23.



Memo (Feel free to use this space)