4-1-3 Numeric Tag

1) Display numeric data on PMU screen.

In this example, display the current value of counter which addressed %mw101.



(1) Click 12 icon on icon collection or Tag > Numeric on menu bar.



② General Tap

Numeric 🔀
General Display Range
Description
Display Address
Data Size ● 16 Bit ● 32 Bit ● DEC ● HEX ● BCD
Display Format No, of Display 3 💌 Decimal Digits, Places 0 💌
Exteneded.,
Operator Operand Item1 NA 🔽 🗖 C S 📾
Item2 NA 🔽 🗖 C S 📾
ltem3 NA 🔽 🗖 C S 📾
☑ Use Scaling
Real Value Display Value Max, 100 -> 100 Min, 0 -> 0
Ok Cancel Help

- Click input tool () after select 'd' to use PLC memory address and type MW0010.
- Data Size and Data Type Available display data range is limited by data size and data type.

Code +/- is available only data type is selected as DEC. If it is checked data is consumed as signed decimal.

	DEC			505	
	Signed	Unsigned	HEX	BCD	
16 bit	-2 ¹⁵ ~ 2 ¹⁵ -1	0 ~ 2 ¹⁶ -1	0 ~ FFFF	0 ~ 9999	
32 bit	-2 ³¹ ~ 2 ³¹ -1	$0 \sim 2^{32}$ - 1	0 ~ FFFFFFFF	0 ~ 99999999	

- Display Format Assigns the poison of floating point
 No. of Display digits Total digits of displaying data.
 Decimal Places Digits of floating number.
 - Ex) No. of Display digits is 3, Decimal Places is 1, and current data is 123 then 12.3 is displayed on PMU screen.
- Extended Add numerical calculation to data read from PLC and display the result.

Available calculation : Addition(+), Subtraction(-), Multiply(×), Divide(÷), Mod(%), AND(&), OR(|), Power(^), Shift Left (<<), Shift Right (>>).

- d : Use PLC memory data as operand.
- C : Use constant data as operand.
- S : Use system buffer data as operand.
- ▷ Use Scaling Convert the range of real data to the range of display data.

Ex) Real data's Min. is 0, Max. is 100, and Display data's Min. is 0, Max is 1000, and current real value is 30, then 300 is displayed on PMU screen.

③ Display Tap

Numeric
General Display Range
Font Pixel © 16X16 © 32X32 © 8X8
Character Size
Color Text Color Plate Color
Alignment C Left C Right C 'O'filled
Ok Cancel Help

▷ Font Pixel, Character Size – The character size of 1 digit character.

Ex) If Font Pixel is set to 16X16 and Character Size is set to 2X2 then total size of character is 32X32

Color – Assigns display color



- Alignment Assigns display direction.
- Ex) No. of Display digits is 3 and current data is 12 then data is displayed on PMU screen.



④ Range Tap

Numerical data can be displayed with different color according to data range. When range is used, Text Color and Plate Color assigned in Display tap is

ignored.

Numeric			×
General Display	/ Range		
🔽 Range Use			
No, Of Ranges	8 💌		
Range Value :	and Color Setting]	Tout Plata
Min,		Max,	Color Color
0	<= Range1 <=	15 🔜	
🖬 🗖 16	<= Range2 <=	30 🔜	
🖬 🗖 <u>31</u>	<= Range3 <=	45 🔜	
💼 <u>46</u>	<= Range4 <=	60 🔜	
61	<= Range5 <=	75 🔜	
76	<= Range6 <=	90 🔜	
91	<= Range7 <=	105 🔜	
106	<= Range8 <=	120 🔜	
	Ok	Cancel	Help

4-1-4 Keydisplay Tag

Change a data of PLC variable , for example setting value of counter, using PMU. To change a data touch Keydisplay Tag, input data and touch ENT key of tenkey.



① Library Load – To change data, tenkey library is need.



② Click icon on icon collection or Tag > Keydisplay on menu bar.

<u>D</u> raw	<u>Tag</u> <u>L</u> ibrary <u>W</u> indow
	12 Numeric
	_շ ի _უ <u>T</u> ouch
	🗿 <u>L</u> amp
	1531 Cl <u>o</u> ck
	<mark>,,,,</mark> <u>S</u> tring
	<u>と</u> 界 <u>M</u> essage
	olom <u>A</u> larm
	💼 KeyDisplay(V) 📡
	Mg <u>G</u> raph1
	i Graph2(⊠)

③ General Tap of Keydisplay Tag

KeyDisplay	×
General Operation Display	
Description	
Operation Condition	
⊙ On 'Touch' C On Selection Bit 'ON'	
Selction Bit	
🔲 🖬 🖬 MW0000 0 🔽	
KeyPad Type Numeric	
Ok Cancel Help	

Operation Condition

On Touch – New data is transferred to PLC when ENT key is touched.

On Selection Bit ON – New data is transferred to PLC when designated bit is ON

▷ KeyPad Type

Numeric – Change Numeric data

Text - change Character data

④ Operation Tap of Keydisplay Tag

KeyDisplay
General Operation Display
Output Address Image: Size Image: Data Size Image: Size
Data Type
Display Format No, of Display Digits, 3 Decimal Places 0
Use input limit Limitation Upper 150 Lower 0
Ok Cancel Help

- Click input tool () after select 'd' to use PLC memory address and type MW0010.
- Data Size and Data Type Available display data range is limited by data size and data type.

Code +/- is available only data type is selected as DEC. If it is checked data is consumed as signed decimal.

	DE	EC		BCD	
	Signed	Unsigned	HEX		
16 bit	-2 ¹⁵ ~ 2 ¹⁵ -1	0 ~ 2 ¹⁶ -1	0 ~ FFFF	0 ~ 9999	
32 bit	$-2^{31} \sim 2^{31} - 1$	$0 \sim 2^{32}$ - 1	0 ~ FFFFFFFF	0 ~ 99999999	

Display Format – Assigns the poison of floating point

No. of Display digits – Total digits of displaying data. Decimal Places – Digits of floating number.

- Use input limit Limits the range of input data. If new data is greater than
 Upper or less than Lower, than new data cannot be transferred to PLC.
- ⑤ Display Tap of Keydisplay Tag

KeyDisplay	×
General Operation Display	
Font Pixel (15X15) (2X32) (8X8)	
Character Size	
KeyPad Color	
Text Color 📃 🔽 🔲 Use as Password	
Plate Color	
Color On Touch	
Alignment	
C Left C Right C O'filled	
Ok Cancel Help	

- ▷ Font Pixel and Character Size Decide the size of character.
- KeyPad Color



- ▷ Use as Password Not numeric data but '* ' mark is displayed.
- Display Previous Data When Selected Keydisplay tag should be touched when input new data. When touched, old data is displayed until ENT key is touched.

Remark How to use tenkey library and keydisplay tag when input more than two data Use 1 tenkey library and keydisplay tag as many as you want, and when input data touch keydisplay tag you want to input data.

4-1-5 Graph1 Tag(Bar graph/Meta graph

1) Bar graph - Set Maximum value and Minimum, and display the rate of current value to Maximum value.

In this example, the current value of counter is displayed as bar graph under th condition maximum value is 10 and minimum value is 0.



① Click icon on icon collection or Tag > Graph1 on menu bar.

<u>D</u> raw	<u>Tag</u> Library <u>W</u> indow
	12 Numeric
	<u> Հիտ T</u> ouch
	o Lamp
	1531 Cl <u>o</u> ck
	🛼 <u>S</u> tring
	<u>날위 M</u> essage
	_{alam A} larm
	📼 KeyDisplay(⊻)
	🛃 <u>G</u> raph1
	אַ Graph2(אַ) אין אין Graph2
	🗠 X/Y Chart(Histogram)

② General Tap of Graph1 Tag

Graph1	×
General Display	
· ·	
Description	
Graph type	
💿 Bar 🔿 Meter	
Address to Read Scan Period	
Tais The MW0101 The state of th	
Data Type	
C Unsigned DEC 💿 Signed DEC 🔿 BCD	
Data Range	
Type Of Max./Min.	
💿 Constant 🔿 System Buffer	
Max Value 10	
Min, Value 0 🚔	
Display Direction	
O Up O Down O Left O Right	
Ok Cancel Help	

▷ Graph type – Select the shape of graph.



▷ Type of Max./Min.

Constant – Use constant as maximum value and minimum value.

System Buffer - The data of designated system buffer is used as maximum

	value and minimum Display Direction	value.			
	Max.	Min. Max.	Max. Min.	Min. Max.	
	Up	Down	Left	Right	
③ Disp	olay tap of Graph1 T	ag Select a s	shape that you want	t 🔀	
	Graph1 General Display	Fran Rec	neless Recta tangle	ngle	
	– Display Cold	ır	Ok Ca	ncel	
▷ (▷	Frame Col Bg,Color Filled Cold Filled Cold Click Opt and select Display Color Bg. Cold	or On Normal or On Exceed Cancel a shape of graph	Help n frame		
	Filled Color C	On Normal set	lled Color On Ex in general Tap.	ceed appears wh	en data is greater
④ To i	nsert Scale Click	icon on icon	collection.		
	Scale Direction C Horizontal Vertical	Small divisions pos C Right C Left	sition – Color	×	

-- Num of line -

4-1-5 Graph2 Tag (Trend graph)

Read a data of PLC variable periodically and display the data as historical trend graph. In this example, monitor %mw102 every 500ms and display the data as historical trend graph







② Library Edit



③ General Tap of Graph2 Tag

Graph2
General Display Range
Description
Scan Period
│
Data Type
Display Format
No. Of X-axis Division 10 🕂
Scroll Size
Display Direction
C Left @ Right
Ok Cancel Help

- ▷ Scan Period Decide data read period.
- Display Format

No of X-axis Division – Determine number of divisions of X axis(time axis). Scroll Size – After trend graph is drawn to the end of X axis on screen, and then X axis shifts to the opposite side of graph's running direction. Determine the shift size. (Scroll No. should be smaller than X axis division No.)

- Graph direction : Running direction of graph.
 Right (left to Right) or Left(Right to Left)
- ④ Display Tap of Graph2 Tag

	Select a shape that you want 📃
General Display Range	Frameless Rectangle Rectangle
Color-	Ok Cancel
Bg. Color	Click 'Opt.' Button and select the shape of
Frame Color	
Ok Can	cel Help

▷ Color

Bg. Color – Background color of graph plate Frame Color – Frame Color of graph plate. ⑤ Range Tap og Graph2 Tag

Graph2					×
General Display	Range				
Addr	ess To Rea	ad	Data Range- Max, Value Min, Value Add Del	50 0 Mod	
Device	Max	Min	Color	Pattern	
D:MW0102	50	0			
		_			
	Ok		Cancel	Help	

- ▷ Address to Read Determine device address to display
- ▷ Range (Min & Max) Determine Min & Max value of data to be displayed.
- Line Color Determine line color of trend
- ▷ Pattern Determine one among 8kinds of line pattern

Remark How many data can be displayed on 1 graph2 tag. One trend graph tag is capable of displaying maximum 10 address data with different line and with different color and with different Min/Max limits.

After modifying next properties in 'Range' tab and click 'Add' button. It is registered.

4-1-6 Message Tag

Displays a message registered 'Message' file on determined condition. Message Tag can be used different two method. The first method is monitor 1 bit variable and message is displayed when the designated bit variable turn on, and disappeared when turn off. The second method is monitor 1 word variable and displays message corresponding to variable's value.

In this example, explain the second method.



- Group Decide group of message. Available group is A ~ Z
- ▷ No. Decide number of message.

LGIS

- Contents Character to be displayed when condition of message tag is satisfied.
- ② Click icon on icon collection or Tag > Message.

<u>D</u> raw	<u>Tag</u> Library <u>W</u> indow
	12 Numeric
	_Հ ի <u>տ T</u> ouch
	🗿 Lamp
	1531 Cl <u>o</u> ck
	, String
	말광 Message 💦
	dom <u>A</u> larm
	📼 KeyDisplay(<u>V</u>)

 $\ensuremath{\mathfrak{I}}$ General Tap of Message Tag

.

Message		×
General Display		
Description Group A Device Type C Bit Word Address Type Address Type	Display Format	
Address	No, Of Chars/Line No, Of Lines	
Limit Of Message Range		
Max, Message No, 6		
Ok	Cancel	Help

- ▷ Group Decide the group of message to be displayed.
- Display Format Decide the number of line and character to be displayed per line.
- ▷ Device Type Variable type to be monitored.
- Address type

Range – Displays different message for different range of the device's value.

For example, if device's value is between '0' and 100, it displays message #1. And if the value is between '101' and '150', it displays message #2. And it is also possible to display different color for each range. Max. number of range is 8.

- Variable Displays message corresponding to the device's value. If the device's value is not between Max. message number and Min. message number or if message number does not exist or if the device's value is NULL(0), no message is displayed.
- ▷ Limit of Message Range

On 'Word' condition, maximum available message number is '999', and minimum '1'.

④ Display Tap of Message Tag

Message
General Display
Font Pixel Font Type
Character Size Align
2 ▼ X 2 ▼ C Left C Middle
Message Color
Message Color 🔽 💌
Message Color
Ok Cancel Help

- Font Pixel and Character Size Decide Total size of character to be displayed
- ▶ Message Decide character color and plate color.

4-1-7 Bitmap Functions.

1) Insert BMP file into Project

Project Window Base 1-Touch, Lamp 2-Trend 3-Msg Window Sub Message Edit Alarm Export Symbol Click right Button of Mouse Global
Bitmap load(Image,Symbol)
Load Path D:#2002#XF료#PMU#IMG#on_lamp.bmp No, Description Click and choose BMP file to be ins
Attributes Colors D Size 70x68
Ok Cancel Help

2) Background Bitmap –Use BMP file with the same size of screen as background.







4-1-8 Data Logging

'Logging' is to save external device's data or PMU's data semi-permanently in PMU's memory(SRAM) at regular time-interval.

At the same time, logging time(YY/MM/DD/hh/mm) is also saved.

Logged data in PMU can be uploaded to PC anytime.

Logged data is preserved unless user downloads new project file, or O/S data.

On the condition that PMU's power is off over 4days, to preserve the logged data, there should be backup battery. When power is off over 4days without backup battery, logged data and special buffer related to logging are deleted.

① Memory Assignment

Before setting Logging and Recipe, assign memory,

Usage

<u>File</u> Project <u>E</u> dit <u>V</u> iew <u>D</u> raw		
➡ New screen ➡ Delete screen	Ctrl+N	
Print Print Setup(<u>B</u>)	Ctrl+P	
M <u>e</u> ssage	Ctrl+M	
A <u>l</u> arm	Ctrl+A	
<u>B</u> itmap Load		
Logging, Recipe	•	Allocate memory
Load Logging/Recipe/Alarm统		Logging-1 🤟
Fnet setup		Logging-2
		Recipe
Memory Allocation	28k word	<u>×</u>

🔽 Logging1 🗖 Logging2 🔽 Recipe

- ▷ Usage Determine what to use among 'logging 1', 'logging2' and 'recipe'
- ▷ Memory allocation Assign Memory for each items.
- ② General Tap of Logging

Project Window	X
Base Base 1-Touch, Lamp 2-Trend	
i indow	General Operation
C Sub	
🦰 Message	Start Condition
Alarm	Bit O Word C Periodic
□ Image □ 1/70⊻00\ →	
	Station No. 0
Global	Cond. Address
Logging1	
Logging23	
Recipe	Condition
📲 🛱 Project	⊙ 'ON' O 'OFF' O Reverse
	Ok Cancel Help

▷ Bit (condition)

On : As device's address changes from 'off' to 'On' , it starts logging.

Off : As address changes from 'on' to 'Off', it starts logging.

Reverse : As address value reverse – 'from On to Off' or 'from Off to On', it starts logging.

\triangleright Word (condition)

Starts logging when device's value is within determined range. If address value is out of the range and back to the range, it restarts logging.

 \triangleright Time (condition)

Starts logging on every setting day/time (hour/minute)

③ Operation

Logging
General Operation
Logging Interval Every O I Day O I Hour 1 I Minute Logging Times
2 -
Logging Source Station No, Start Address No, Of Words 0 1 MW0101 2 1 3 1 3 1 1 3 1 1 3 1 1 1 1 1 1 1 1
Total Logging Times 10 🛨
Ok Cancel Help

- ▷ Logging Interval : Determine logging time interval.
- Logging Times : Determine number of times of logging
 For example, to log from 8:00 in the morning with 1hour interval till 17:00 of the same day, Logging interval is '0 Day 1 Hour 0 Minute' and Logging times is '10'.

<u>Caution</u> : On time condition, please set 'Logging Times' as more than 2.

- Logging Target : Determine external device's station number, address or TOP's system buffer, and word number to be logged at one time
- Total Logging Times : Determine total number of logging.
 Total Logging Times is multiple of 'Logging Times'.
 Total logging memory is not permitted to excess assigned memory volume.
 Total Logging memory = Total Logging Times * (Word Number+4)+2 ['4' is to save logging time]
- Display the latest at top

Checked : The last logged data is displayed on the top line. Not Checked : The last logged data is displayed on the bottom line

4-1-9 Recipe

Recipe is saving parameter data, which PMU or external device need, in PMU or transmitting data block to working area(controller's address or PMU's system buffer) on determined condition.

It is possible to upload data to PC or to print into printer.

PMU uses parameters in SRAM.

Parameter data in SRAM are preserved unless modifying parameters, downloading new project file or O/S.

On the condition that PMU's power is off over 4days, to preserve the logged data, there should be backup battery. When power is off over 4days without backup battery, logged data and related special buffer are deleted.

Likewise with logging, total word number is not permitted to exceed 'Assign memory' Total Word Number = Word Number * Block number + 2

As total memory exceed assigned memory, an error message appears.

ecipe						
-Paramo Bloc Word	eters ks ds/1 blo	10 <u>*</u> ck	5 *		Apply	
- Conditi	on of M	ovement	:			
• Bit			Addr	ess	(When u	se bit-condition, 0-order bit of
O Vai	riable 🖡	ds	МУ	/0000	specifie of the fi	d word address is used by movement rst block) [ex] 1-order bit to the second
-Target Static	address on No. 3 60	where 0 +	parame (Or n (St	ers mo ly usin art addr	ve g PLC ac ess whe	ldress by target) re one block will be transferred)
			u (,
Block1	₩0	W1	₩2	₩3	W4	
Block2						

▷ Parameter

Block : Write block numberWords / 1 block : Write word number per 1 blockClick 'Apply', blocks and words are formed as many as determined numbers.

▷ Transmission Condition

Bit : From '0'bit of selected address, parameter transmission condition bit and block number make a one-to-one correspondence.

As bit value changes from '0' to '1', the corresponding block's data are transmitted to working area. For example, bit '0' is changed from '0' to '1', block #1's data are transmitted to working area.

Caution :

In case that block number is not 16's multiple, should pay attention.

For example, if block number is 10, bit '10'~ '15' are not used.(0~9bit used) But, never use address bit, '10' ~ '15'.

Variable : The value of selected address becomes block's number.

If the value of address is '5', block #5's data are transmitted to working area.

And if the value of address is '0' or exceed 'total block number', the value is ignored. For example, when total block number is 10, if address value is '0' or '11' or '23' etc, no block data are transmitted.

▷ Target Address

Determine station number and working area address which parameter data are transmitted to.

 \triangleright Table : Column is block and row is word.