

WEINTEK LABS., INC.

Trend Display-

Dynamic X Axis Time Range & Time Stamp Output

Demo Project

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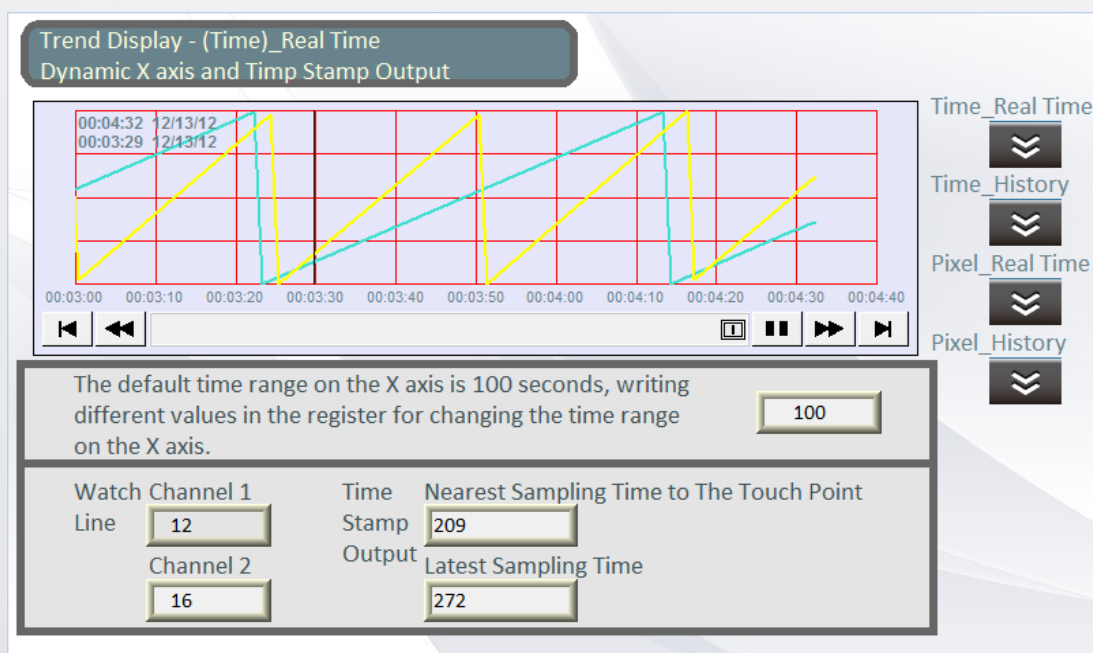
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1. Overview and Operation

Overview

This demo project introduces how to use [Dynamic X axis time range] to adjust the time range displayed on X axis. The time can be counted from the first sampling point, and the elapsed time (in second) of the latest sampling point is output to the designated register.



Operation

There are 4 Function Keys at the right side of the screen for switching between 4 modes:

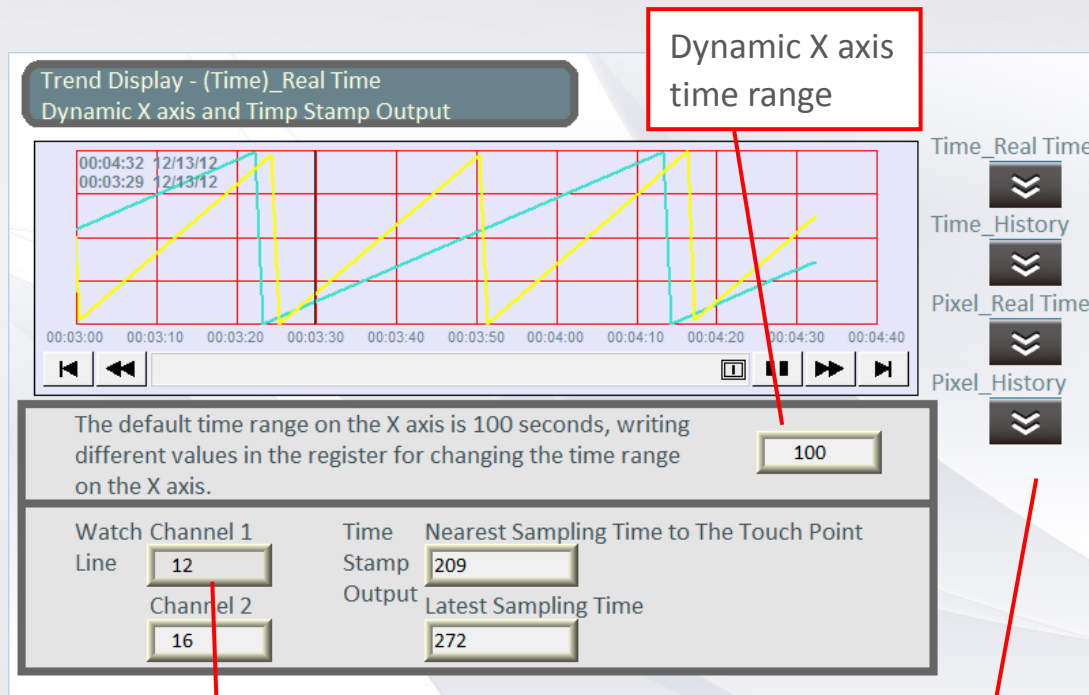
1. Time + Real-time Mode, the time format is HH:MM:SS
2. Time + History Mode, the time format is HH:MM
3. Pixel + Real-time Mode, the time format is SSSSS
4. Pixel + History Mode, the time format is SSSSS (leading zero)

The four modes are used to adjust the time range on the X axis.

Dynamic X Axis Time Range & Time Stamp Output



The system starts counting time from the first sampling point and output the elapsed time counted at the latest sampling point to the designated address in [Time stamp output].



Switch between four modes

When pressing a point on the trend curve, the elapsed time of the nearest data sample to the touch point is displayed in the designated register.

2. Setting up the Screen

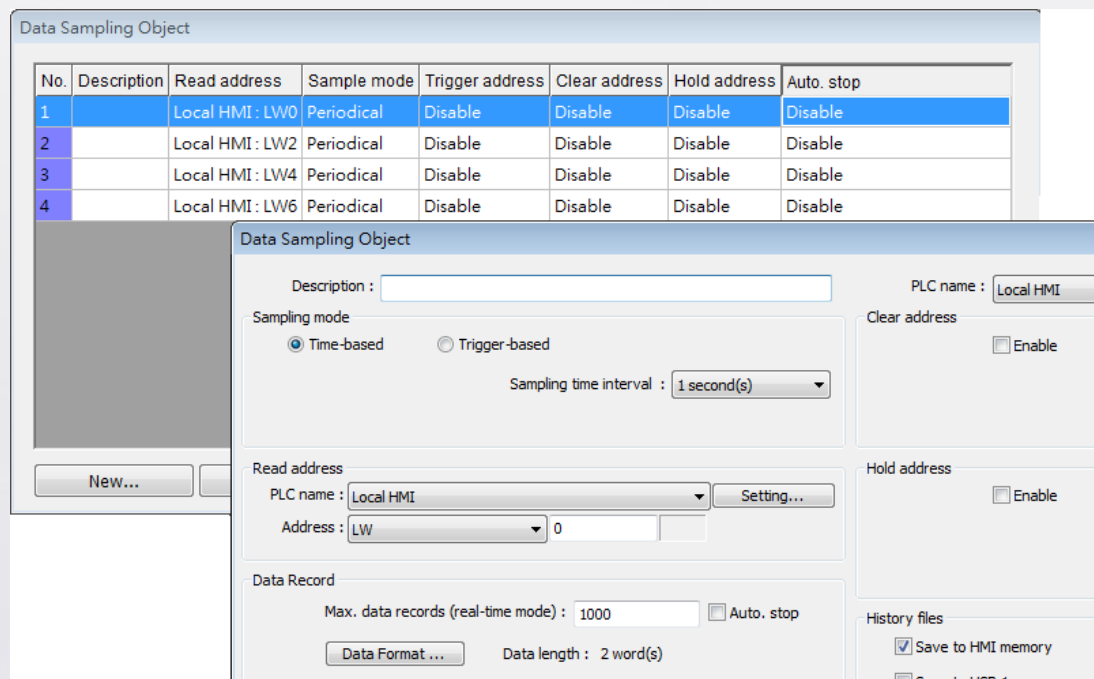
Step 1. Create 4 Data Sampling Objects following the setting below:

No. 1: Read data in LW-0 and LW-1

No. 2: Read data in LW-2 and LW-3

No. 3: Read data in LW-4 and LW-5

No. 4: Read data in LW-6 and LW-7



No.	Description	Read address	Sample mode	Trigger address	Clear address	Hold address	Auto. stop
1		Local HMI : LW0	Periodical	Disable	Disable	Disable	Disable
2		Local HMI : LW2	Periodical	Disable	Disable	Disable	Disable
3		Local HMI : LW4	Periodical	Disable	Disable	Disable	Disable
4		Local HMI : LW6	Periodical	Disable	Disable	Disable	Disable

Data Sampling Object

Description :

Sampling mode
☒ Time-based ☐ Trigger-based
Sampling time interval : 1 second(s)

Read address
PLC name : Local HMI Setting...
Address : LW 0

Data Record
Max. data records (real-time mode) : 1000 ☐ Auto. stop
Data Format ... Data length : 2 word(s)

PLC name : Local HMI

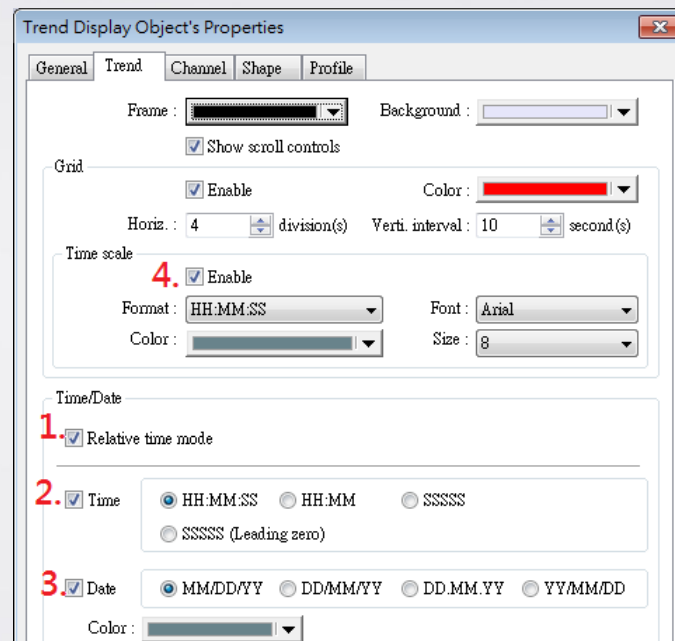
Clear address ☐ Enable

Hold address ☐ Enable

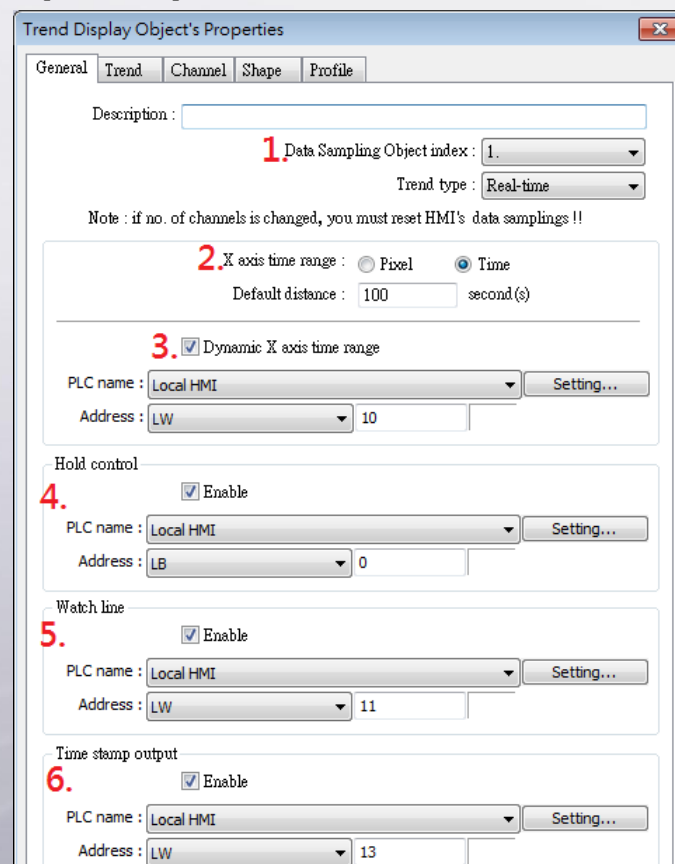
History files
☒ Save to HMI memory
☐ Save to USB 1

Step 2. Create a Trend Display object on Window No. 10

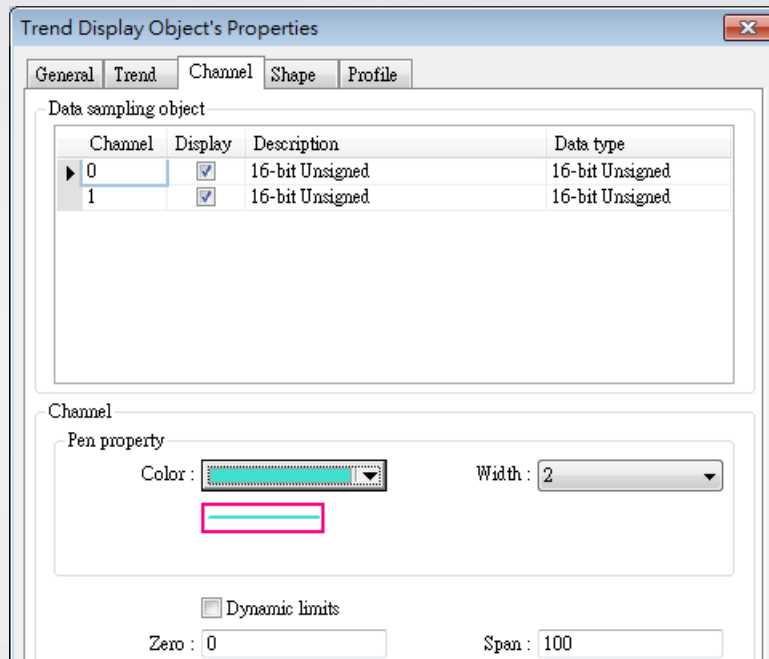
In [Trend] tab, select [Relative time mode] and select the check boxes in the order shown below.



Step 3. Set the [General] tab as shown below.



Step 4. Set the [Channel] tab as shown below.

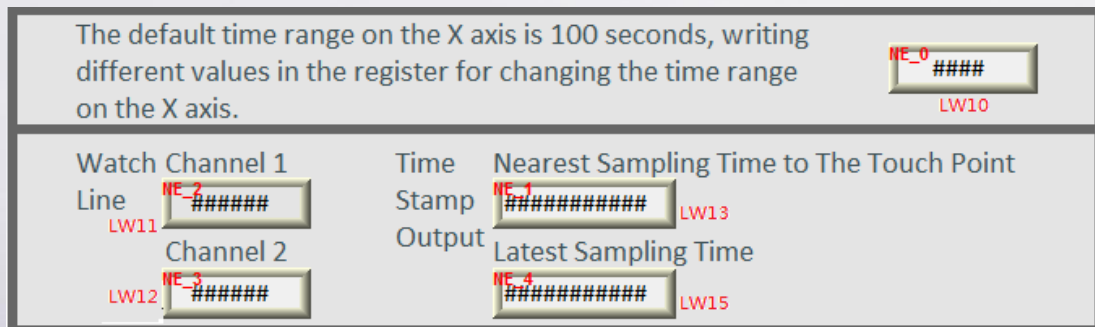


Click [OK] to finish setting Trend Display object.

Step 5. Create several [Numeric Input] objects.

Set the data format of LW-10 ~ LW-12 to 16-bit Unsigned.

Set the data format of LW-13 ~ LW-15 to 32-bit Unsigned.



Step 6. The following introduces the settings of Windows No. 11, 13, 14. The settings of these three windows are similar to Window No. 10, but for Trend Display Object there are several differences.

Dynamic X Axis Time Range & Time Stamp Output



Set Window No. 11 as shown below:

Set [Trend Type] to “History”, and set address to LW-17~LW-21.

Trend Display Object's Properties

General Trend Channel Shape Profile

Description :

Data Sampling Object index : 2

Trend type : History

Note : if no. of channels is changed, you must reset HMI's data samplings !!

X axis time range : ☐ Pixel ☒ Time

Default distance : 100 second(s)

☒ Dynamic X axis time range

PLC name : Local HMI Setting...

Address : LW 17

History control

PLC name : Local HMI Setting...

Address : LW 18 16-bit Unsigned

Watch line

☒ Enable

PLC name : Local HMI Setting...

Address : LW 19

Time stamp output

☒ Enable

PLC name : Local HMI Setting...

Address : LW 21

Set [Time] to HH:MM.

Trend Display Object's Properties

General Trend Channel Shape Profile

Frame : Black Background : White

☒ Show scroll controls

Grid

☒ Enable Color : Red

Horiz. : 4 division(s) Verti. interval : 10 second(s)

Time scale

☒ Enable

Format : HH:MM Font : Arial

Color : Yellow Size : 8

Time/Date

☒ Relative time mode

☒ Time ☐ HH:MM:SS ☒ HH:MM ☐ SSSSS

☐ SSSSS (Leading zero)

☒ Date ☒ MM/DD/YY ☐ DD/MM/YY ☐ DD.MM.YY ☐ YY/MM/DD

Color : Yellow

According to Trend Display settings, the Numeric Input objects are set as below.

The data format of LW-17~LW-20 is 16-bit Unsigned.

The data format of LW-21 is 32-bit Unsigned.

The default time range on the X axis is 100 seconds, writing different values in the register for changing the time range on the X axis.

Watch Channel 1
Line NE_2 #####
LW19

Channel 2
NE_3 #####
LW20

Time Stamp Output
NE_1 #####
LW21

History Control
NE_4 #####
LW18

NE_0 #####
LW17

Set Window No. 13 as shown below:

Set [Trend Type] to “Real-time”, set [Distance between data samples] to “Pixel”, and set address to LW-23~LW-28.

Trend Display Object's Properties

General | Trend | Channel | Shape | Profile

Description :

Data Sampling Object index : 3

Trend type : Real-time

Note : if no. of channels is changed, you must reset HMI's data samplings !!

Distance between data samples : ☒ Pixel ☐ Time

Default distance : 2 pixel(s)

☒ Dynamic distance between data samples

PLC name : Local HMI Setting...

Address : LW 23

Hold control

☒ Enable

PLC name : Local HMI Setting...

Address : LB 1

Watch line

☒ Enable

PLC name : Local HMI Setting...

Address : LW 24

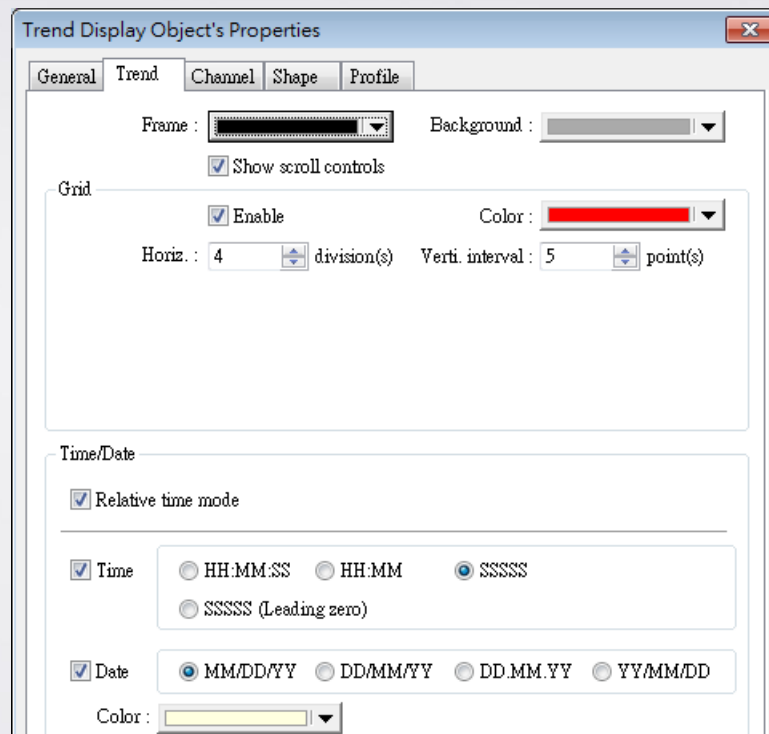
Time stamp output

☒ Enable

PLC name : Local HMI Setting...

Address : LW 26

Set [Time] to SSSSS.



According to Trend Display settings, the Numeric Input objects are set as below.

The data format of LW-23~LW-25 is 16-bit Unsigned.

The data format of LW-26~LW-28 is 32-bit Unsigned.

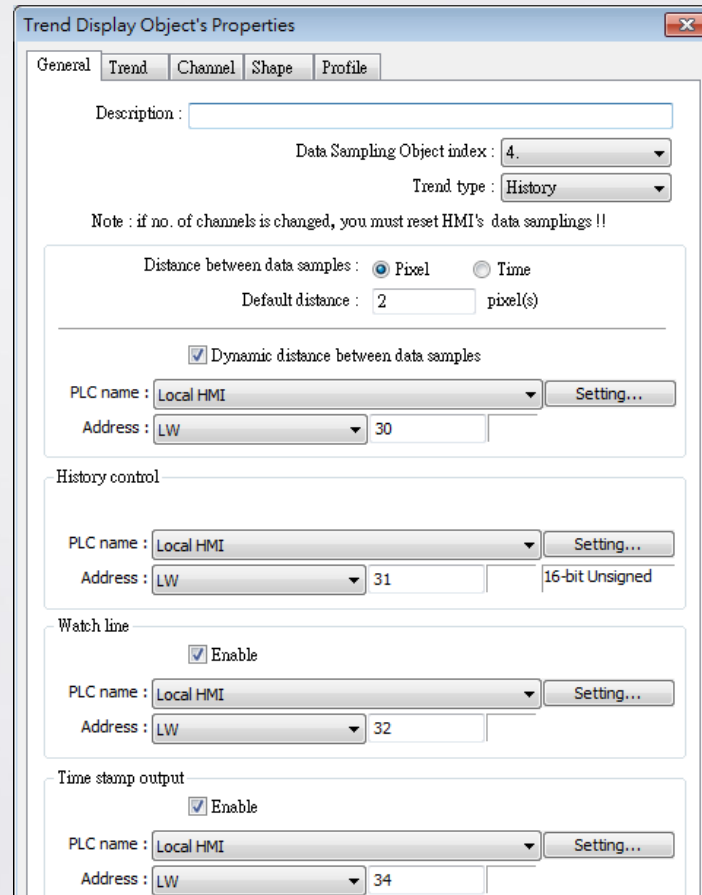
The default distance range on the X axis is 2 pixels, writing different values in the register will change the distance range on the X axis.

<p>Watch Channel 1</p> <p>Line NE_2 ##### LW24</p> <p>Channel 2</p> <p>NE_3 ##### LW25</p>	<p>Time Stamp Output</p> <p>Nearest Sampling Time to The Touch Point</p> <p>NE_1 ##### LW26</p> <p>Latest Sampling Time</p> <p>NE_4 ##### LW28</p>
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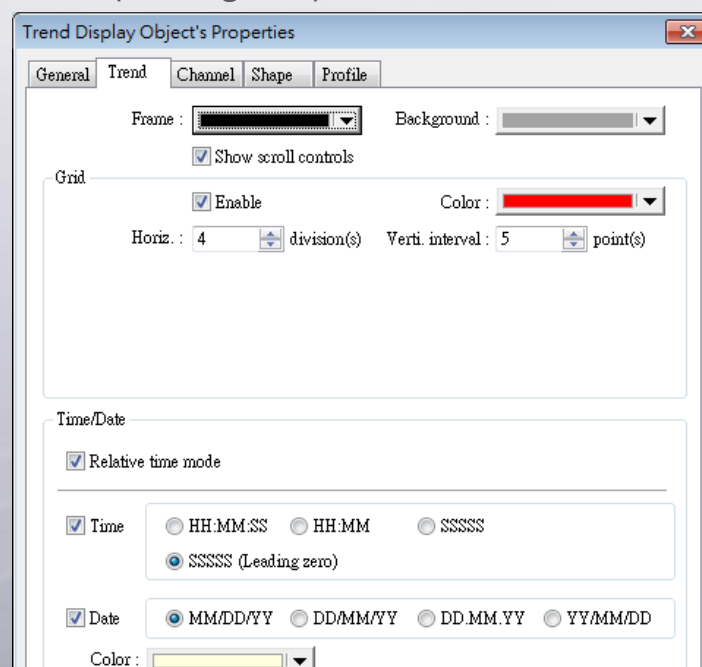
NE_0 #### LW23

Set Window No. 14 as shown below:

Set [Trend Type] to “History”, set [Distance between data samples] to “Pixel”, and set address to LW-30~LW-34.



Set [Time] to SSSSS (Leading zero).



Dynamic X Axis Time Range & Time Stamp Output



According to Trend Display settings, the Numeric Input objects are set as below.

The data format of LW-30~LW-33 is 16-bit Unsigned.

The data format of LW-34 is 32-bit Unsigned.

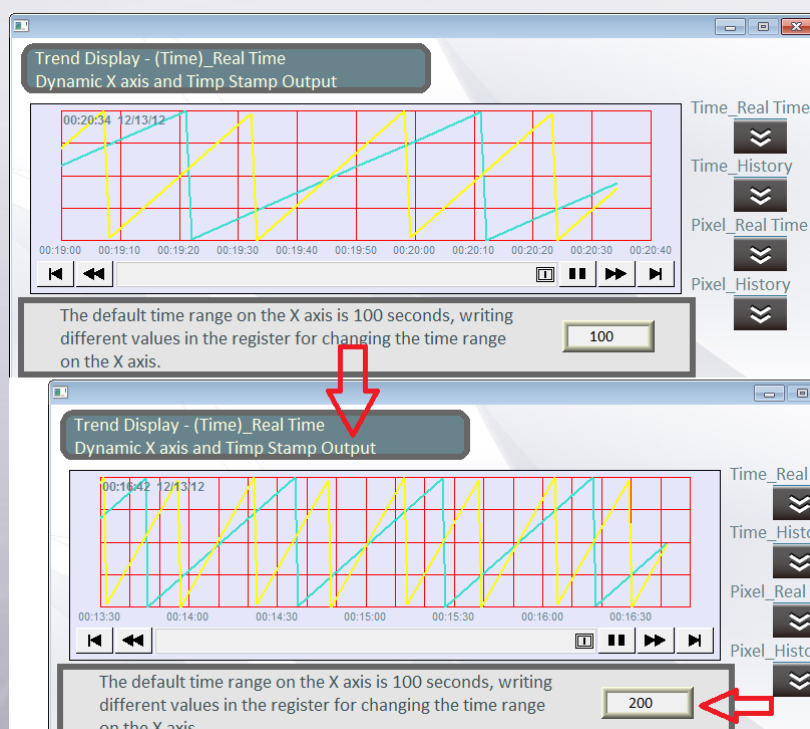
The default distance range on the X axis is 2 pixels, writing different values in the register will change the distance range on the X axis.			NE_0 #### LW30
Watch Channel 1	Time	Nearest Sampling Time to The Touch Point	
Line NE_2 #### LW32	Stamp NE_1 ##### LW34		
Channel 2	Output	History Control	
NE_3 #### LW33	NE_4 #### LW31		

Step 7. Set Window No. 4 as shown below:

Create [Set Word] objects, set address to LW-0 ~ LW-7, to change the way the trend curve is displayed.

Create [Function Key] object to switch between Window No. 10, 11, 13, and 14.

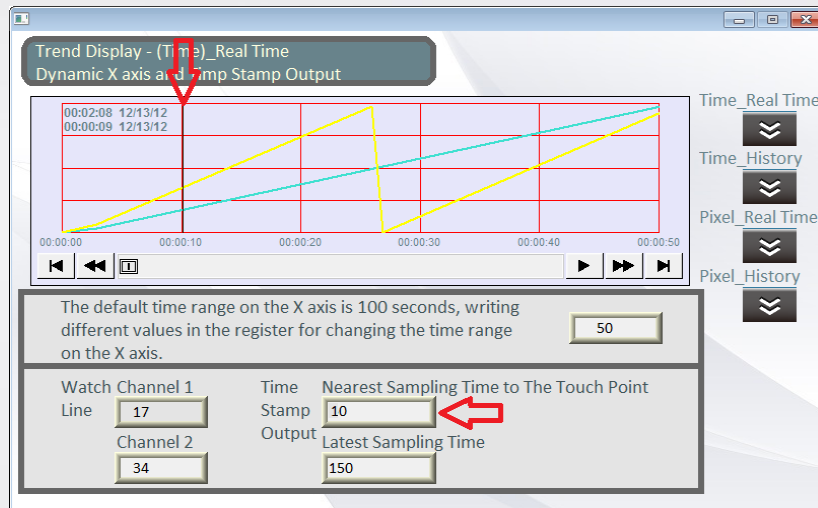
Step 8. When finished, the [Dynamic X axis time range] function is enabled. As shown below, the default value is 100, when changed to 200, the X axis time range turns wider.



Dynamic X Axis Time Range & Time Stamp Output



As shown below, when pressing the trend curve, since the touch point is around the position of 10 seconds, the nearest sampling time to the touch point displays 10. When the trend curve keeps on going to 150 seconds, the latest sampling time displays 150.



3. Addresses

The addresses of objects used in this demonstration are listed below, please set based on actual usage.

Object	Address	Object ID	Description
Window 4			
Function Key		FK_0	Switches to Window No. 10
Function Key		FK_1	Switches to Window No. 11
Function Key		FK_2	Switches to Window No. 13
Function Key		FK_3	Switches to Window No. 14
Set Word	LW-0	SW_0	Periodic step up (low to high...)
Set Word	LW-1	SW_1	Periodic step up (low to high...)
Set Word	LW-3	SW_2	Periodic step up (low to high...)
Set Word	LW-2	SW_3	Periodic step up (low to high...)
Set Word	LW-5	SW_4	Periodic step up (low to high...)
Set Word	LW-4	SW_5	Periodic step up (low to high...)
Set Word	LW-7	SW_6	Periodic step up (low to high...)
Set Word	LW-6	SW_7	Periodic step up (low to high...)
Window 10			
Numeric Input	LW-10	NE_0	Dynamic X axis time range
Numeric Input	LW-13	NE_1	Time stamp output - the nearest sampling time to the touch point
Numeric Input	LW-11	NE_2	View-channel 1
Numeric Input	LW-12	NE_3	View-channel 2
Numeric Input	LW-15	NE_4	Time stamp output – the latest sampling time
Trend Display		TD_0	Trend Display – time, real-time mode
Window 11			
Numeric Input	LW-17	NE_0	Dynamic X axis time range
Numeric Input	LW-21	NE_1	Time stamp output - the nearest sampling time to the touch point
Numeric Input	LW-19	NE_2	View-channel 1
Numeric Input	LW-20	NE_3	View-channel 2

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Numeric Input	LW-18	NE_4	History data control
Trend Display		TD_1	Trend Display – time, history mode
Window 13			
Numeric Input	LW-23	NE_0	Dynamic distance between data samples
Numeric Input	LW-26	NE_1	Time stamp output - the nearest sampling time to the touch point
Numeric Input	LW-24	NE_2	View-channel 1
Numeric Input	LW-25	NE_3	View-channel 2
Numeric Input	LW-28	NE_4	Time stamp output – the latest sampling time
Trend Display		TD_0	Trend Display – pixel, real-time mode
Window 14			
Numeric Input	LW-30	NE_0	Dynamic distance between data samples
Numeric Input	LW-34	NE_1	Time stamp output - the nearest sampling time to the touch point
Numeric Input	LW-32	NE_2	View-channel 1
Numeric Input	LW-33	NE_3	View-channel 2
Numeric Input	LW-31	NE_4	History data control
Trend Display		TD_3	Trend Display – pixel, history mode