

DATA168T

Operation Manual

V1.04



JNC technology

銘祥科技實業股份有限公司

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1. Preface and precautions

□Preface

Thank you very much for purchasing the Touch Network Data Collection System (DATA 168T). In order to ensure that you use this product correctly, please read this operation manual carefully.

This product has up to 24 sets of general-purpose AI inputs, TFT color LCD, touch screen and high resolution, 100 ms sampling rate and data access speed, I/O cards (AI, AO, DI, DO) can be easily expanded, SD card and USB flash drive can be connected for data storage, standard Ethernet communication interface, RS-232/422/485 communication interface can also be selected, 2 USB ports for data download or connection to a printer, IP65 waterproof protection grade.

□ Safety Notes and Precautions

Precautions for use	
	Do not use in areas with high vibration or strong electromagnetic interference, so as not to cause product damage, ERROR, and measurement errors.
	Before any repair or maintenance, please remove the power cord to prevent personal injury or product damage due to accidental contact with the power supply.
	When installed in a polluted environment with conductive substances (such as metal dust, water, etc.), proper ventilation, filtration or sealing measures should be taken.
	Do not operate the product if any components or modules have been removed or disassembled, and contact the dealer as soon as possible.
	The company is not responsible for compensation for the influence and damage caused to the reliability of the product due to failure to follow the correct use method in this operation manual or exceeding the application mode or environmental conditions described in the product specification.
Installation Precautions	
	Avoid installing electrical appliances that generate heat within 1 meter below the product, as this will affect the accuracy of the temperature and humidity of the product.
	Avoid installing the product within 1 meter of human activities, as it will affect humidity.

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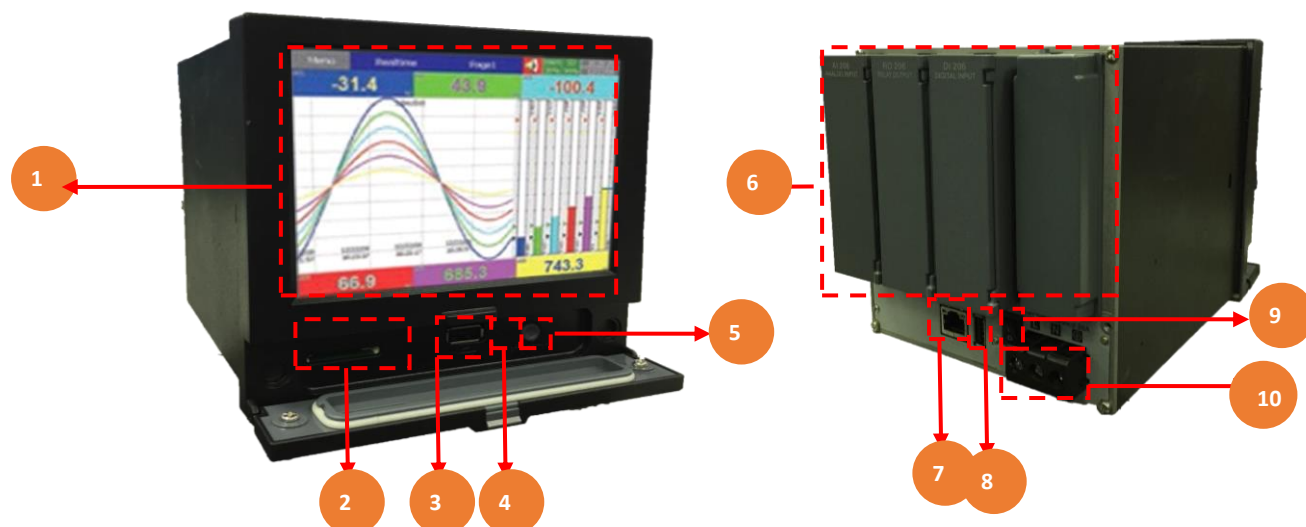
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2.Product description

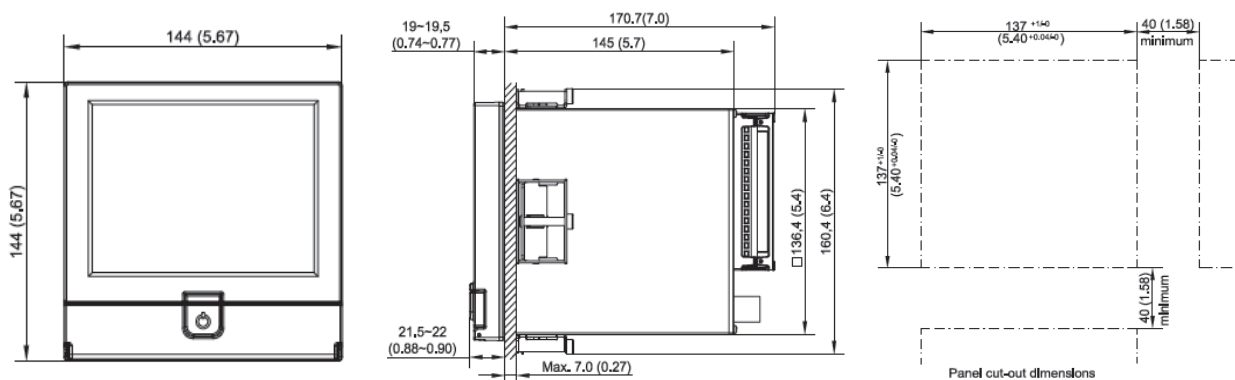
2.1 Specifications

Model	DATA – 168T	
Power	90~250 VAC ♦Power consumption : 26W	
Display	5.6" TFT LCD touch screen	
Memory	Build-in 256M · Available SD card or USB	
Communication module	Communication port	RJ-45
	Protocol	Modbus TCP/IP
	Interface	RS-232 / 422 / 485 and Ethernet interface (optional)
Signal input	Analog input card	1 card with 6 contact points (Thermocouple · RTD JPT100 · RTD RTD 1 · Milli-Volts · Volts · Current)
	Digital input card	1 card with 6 contact points
Signal output	Analog output card	1 card with 6 contact points (0-20mA · 4-20mA · 0-5V · 1-5V · 0-10VDC)
	Digital output card	1 card with 6 contact points
Physical conditions	Operating temp	0° C ~ 50° C
	Storage temp	-30° C ~ 70° C
	Humidity	20%~80% PH (non-condensing)
Certificate	CE · cULus · RoHS	

2.2 Device name and function description

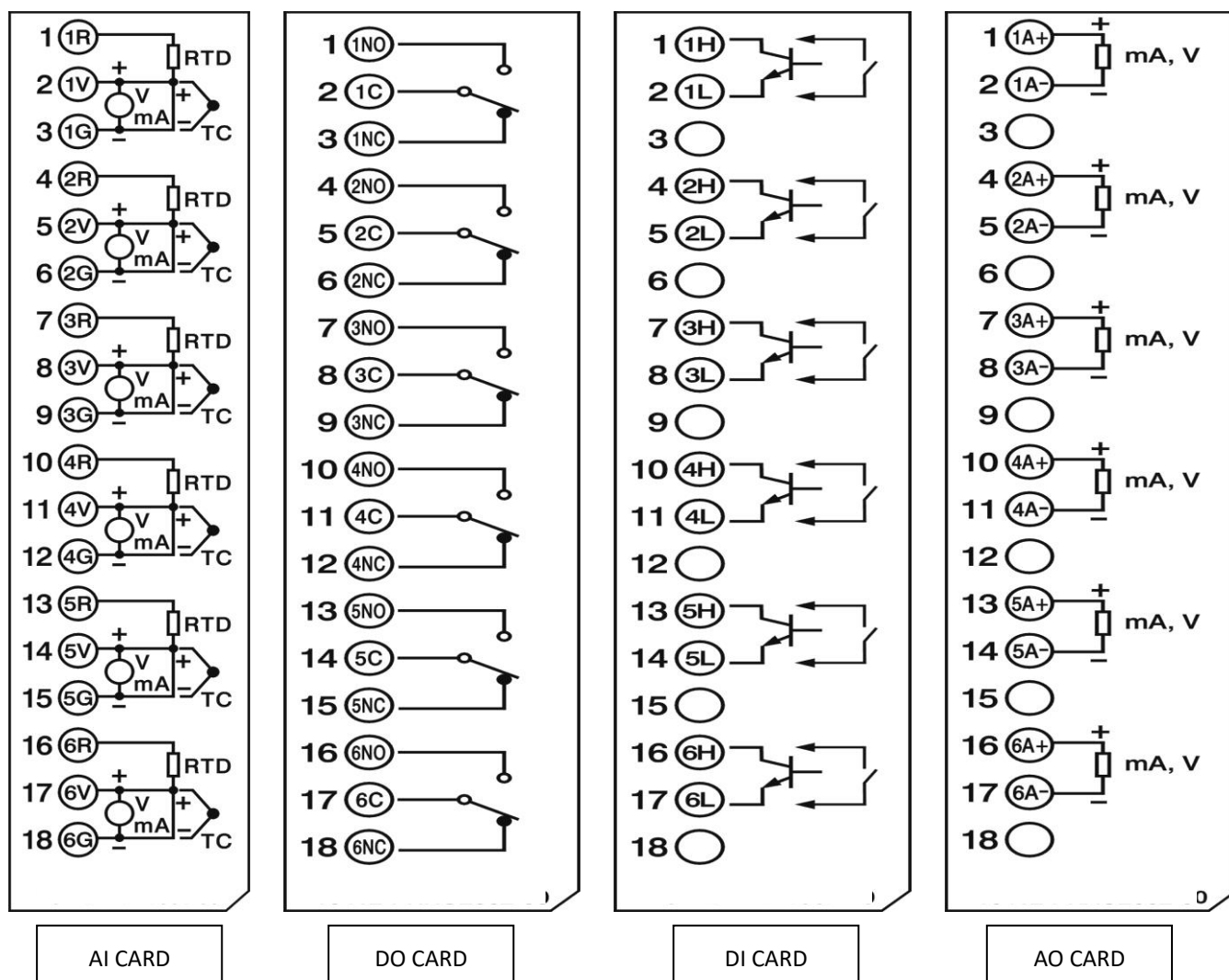


Code	Name	Fuction description
1	Screen	Touch screen
2	SD slot	SD access device
3	USB slot	USB access device -1
4	Reset	RESET
5	Action button	Start/Stop
6	I/O Module	I/O module Slot location
7	Port	Ethernet
8	USB slot	USB access device -1
9	Switch	Switch
10	Terminal	Power terminal



2.3 Wiring of the cards

2.3.1 I/O card contact



Wiring Precautions

1. Before wiring, please make sure that the (maximum) power used does not exceed the power rating marked on the power terminal.
2. When installing a disk recorder, it is recommended that you install an additional fuse (2A/250VAC) and a power switch (2A/250VAC) at the power end of the recorder.
3. Be careful not to over-tighten the screws of the terminal blocks. The torque of the locking screws should not exceed 0.4 N-m (3.6 Lb-in or 4.0 Kg F-cm).
4. Except for the thermocouple that needs to be equipped with special wires, please use copper wires below 18AWG for other wiring
5. Before using the recorder, please make sure to connect the grounding wire (wire diameter above 1.6 mm) for grounding protection.

2.3.2 AI card signal type

J		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
K		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
T		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
E		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
B		$\pm 2^{\circ}\text{C}(200 \sim 1820^{\circ}\text{C})$	$3.12\text{M}\Omega$
R		$\pm 2^{\circ}\text{C}$	$3.12\text{M}\Omega$
S		$\pm 2^{\circ}\text{C}$	$3.12\text{M}\Omega$
N		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
L		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
U		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
P		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
W5		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
W3		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
LR		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
A1		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
A2		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
A3		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
M		$\pm 1^{\circ}\text{C}$	$3.12\text{M}\Omega$
PT50($\alpha = 0.00385$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
PT100($\alpha = 0.00385$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
PT200($\alpha = 0.00385$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
PT500($\alpha = 0.00385$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
PT1000($\alpha = 0.00385$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
PT50($\alpha = 0.00391$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
PT100($\alpha = 0.00391$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
JPT50($\alpha = 0.003916$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
JPT100($\alpha = 0.003916$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
JPT200($\alpha = 0.003916$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
JPT500($\alpha = 0.003916$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
JPT1000($\alpha = 0.003916$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Cu50($\alpha = 0.00426$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Cu50($\alpha = 0.00426$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Cu50($\alpha = 0.00428$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Cu50($\alpha = 0.00428$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Ni100($\alpha = 0.00617$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Ni200($\alpha = 0.00617$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Ni500($\alpha = 0.00617$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Ni1000($\alpha = 0.00617$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
Cu10($\alpha = 0.00427$)		$\pm 0.4^{\circ}\text{C}$	$2.0\text{K}\Omega$
$\pm 20\text{mA}$	$-26 \sim 26\text{mA}$	$\pm 0.05\%$	75Ω
$\pm 60\text{mV}$	$-122 \sim 122\text{mV}$	$\pm 0.05\%$	$3.12\text{M}\Omega$
$\pm 200\text{mV}$	$-243 \sim 243\text{mV}$	$\pm 0.05\%$	$3.12\text{M}\Omega$
$\pm 1\text{V}$	$3.16 \sim 3.16\text{V}$	$\pm 0.05\%$	$3.12\text{M}\Omega$
$\pm 6\text{V}$	$-6.32 \sim 6.32\text{V}$	$\pm 0.05\%$	$3.12\text{M}\Omega$
$\pm 20\text{V}$	$-25.3 \sim 25.3\text{V}$	$\pm 0.05\%$	$3.12\text{M}\Omega$
$\pm 50\text{V}$	$-50.6 \sim 50.6\text{V}$	$\pm 0.05\%$	$3.12\text{M}\Omega$
$0.4 \sim 2\text{V}$	$-3.16 \sim 3.16\text{V}$	$\pm 0.05\%$	$3.12\text{M}\Omega$
$1 \sim 5\text{V}$	$-6.32 \sim 6.32\text{V}$	$\pm 0.05\%$	$3.12\text{M}\Omega$

2.3.3 Digital Input Card

This card contains 6 groups of event channels (Event 1, 2, 3, 4, 5 & 6). Insert the input card into the expansion slot and turn on the power, the recorder will automatically detect the type of input card and display the input card in the system information type and expansion slot location.

To set the digital input card, please enter the DI setting screen in the configuration setting, "Type" can set the input as logic level or pulse counter signal.

Channels	6 per card
Logic Low:	-5V minimum, 0.8V maximum
Logic High	3.5V minimum, 24V maximum
External pull-down Resistance	1K Ω maximum
External pull-down Resistance	1.5M Ω minimum

2.3.4 Digital Output Card

The DO output card contains 6 sets of relay contacts with a rated value of 5A/240VAC. Insert the output card into the expansion slot and turn on the power, the recorder will automatically detect the type of output card and display the type of output card and the location of the expansion slot in the system information.

To set the output card, please enter the DO setting screen in the configuration setting, and you can set the reverse output to be on or off.

Channels	6 per card
Contact Form	N.O. & N.C. (form C)
Relay Rating	2A/240 VAC, life cycles 200,000 for resistive load

2.3.5 Analog Output Card

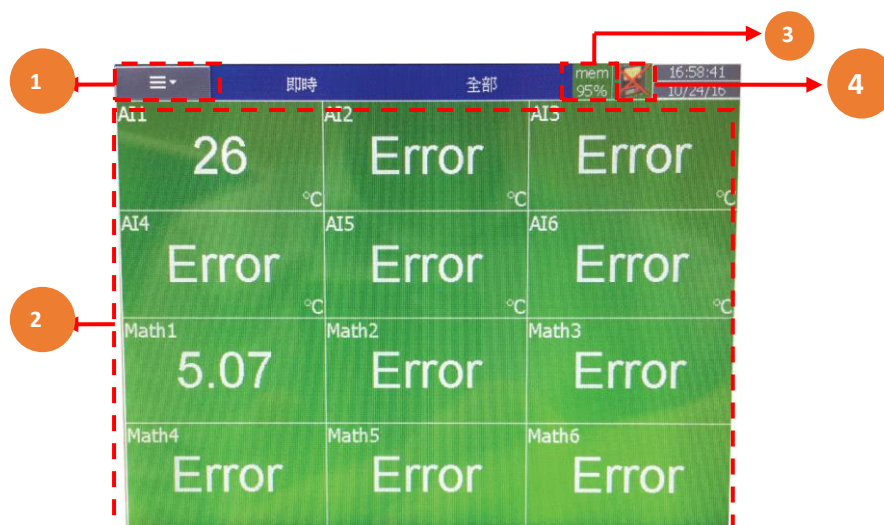
This card is a current/voltage signal output card with 6 channels, which can be used for PV value retransmission, and can be set as current or voltage signal output in configuration settings.

Channels	6 per card	Output Regulation	0.01% for full load change
Output signal	4-20mA, 0-20mA, 0-5V, 1-5V, 0-10V	Output Setting Time	0.1 second (stable to 99.9%)
Resolution	16 bits	Isolation Breakdown Voltage	1500VAC at 50/60Hz for 1 minute
Accuracy	$\pm 0.05\%$ of Span $\pm 0.0025\%$ / $^{\circ}\text{C}$	Minute Integral Linearity Error	$\pm 0.005\%$ of Span
Load Resistance	500 ohms (current), 10K ohms minimum (voltage)	Temperature Effect	$\pm 0.0025\%$ of Span / $^{\circ}\text{C}$

※When the power is turned on, please do not insert or pull out the IO card arbitrarily, please turn off the power first before performing this action, so as not to crash the machine.

3. Equipment instructions

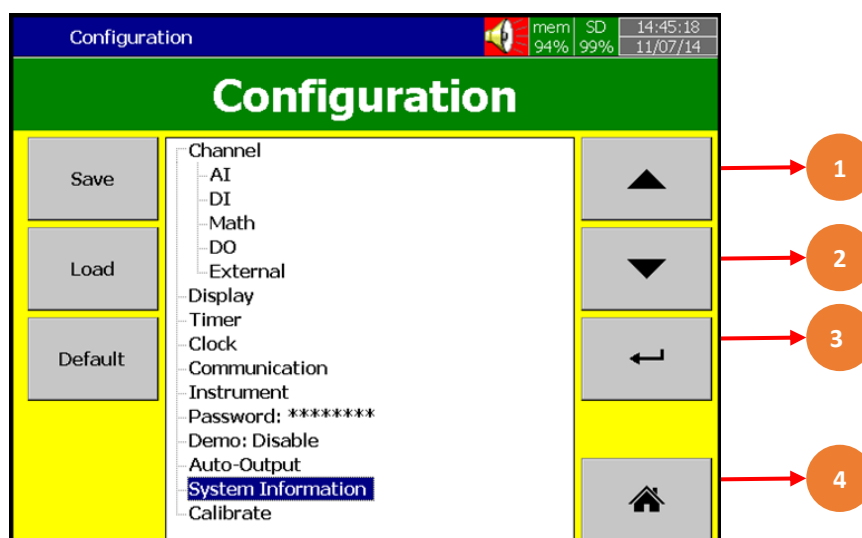
3.1 Main screen-overview



Code	Name	Fuction description
1	Application key	Menu
2	Display screen	Display current real-time value and situation
3	Internal memory	Display the current remaining capacity of internal memory
4	External memory	Display the current remaining capacity of external memory

3.2 Configuration SCREEN SETTINGS

Press  (“Menu”) · then the “ More” -> “ Configuration” enter configuration settings ·

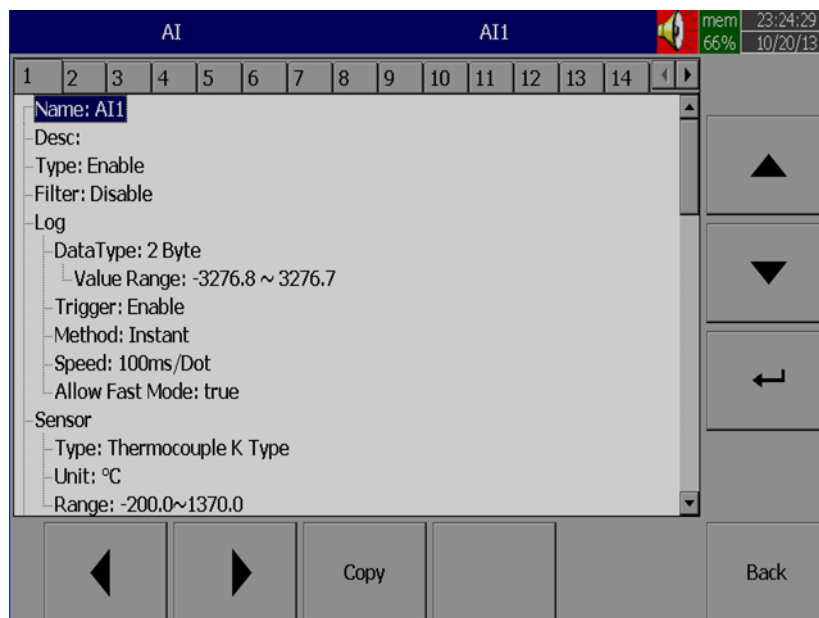


Code	Name	Fuction description
1	Up directional key	Move forward
2	Down directional key	Move e back
3	Enter key	Confirm
4	Home key	Back to homepage

3.3 Main Screen

Path:  (Menu)-More-Config-Channel

This section is to configure different type of channels. Analog Input (AI), Digital Input (DI), Math, Analog Output (AO), Digital Output and External device channels.



3.3.1 Analog Input (AI)

After entering the AI project, the first display is the setting screen of the first analog input channel AI1. Use the < > selection key at the bottom to switch other channels. After the configuration setting is completed, you need to press the "Back" button, and then press the "Main Screen" to return to the main screen, and then the set configuration will be saved.

Copy: Copy configuration settings to other channels. Press "Copy" first, then switch to another channel and press "Paste".

Name: Enables the User to define the name for each channel with a maximum of 18 characters.

Select "Name", then Press "Enter", soft button, a keyboard with several keys appear. Press "Shift" to select special characters. Press "Caps" to select capital letters. Press soft key "OK" after entering a new channel name.

Note: This field can be used for additional channel comments.

Category: You can choose to open or close the channel.

Filter: Can be used to reduce noise interference.

Moving average: The number of seconds can be set from 1 to 16 seconds, indicating that the measured value is the average value within the last set number of seconds.

Difference: It can filter out the measurement values with too large time difference.

Log:

Data Type: 2 byte

Set Notes: Annotations can be defined for channels

Reverse: Set to enable or disable the reverse output.

Value range: -32767 to +32767

Trigger:

a) Off: stop recording data

b) On: start recording data

Method: Set the method of data value, you can choose "Instantaneous Value", "Average", "Minimum value", "maximum value" and other value methods.

Instantaneous value: Record the last value in the sampling interval.

Average: Records the average of all sampled values within the sampling interval.

Minimum value: Record the minimum sampling value in the sampling interval.

Maximum value: Record the maximum sampled value within the sampling interval.

Speed: Set the recording speed of the measured value, which can be selected in the recorder 100ms/point, 1 second/point, 2 seconds/point, 5 seconds/point, 10 seconds/point, 20 seconds/point 30 seconds/point, 1 minute/point, 2 minutes/point

Sensor Category: Optionally select the perceptron input category.

Units: Engineering units.

Range: Select the input range according to the perceptron class.

Scale: Appears only when linear signal is input.

Compensation value: Corrects the measured value of the sensor.

Multiplier: Correct the measured value of the sensor with a multiplier.

Correction value = (actual value x multiplication value) + compensation value

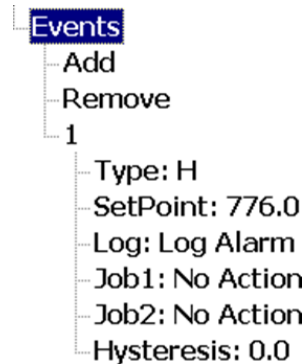
Events

Events are usually used as alarm functions, and can also be used as DO, start counters, accumulators, timers or reports, etc.

Each analog channel can set up to five groups of events.

Press "Add" to add a new event.

Press "Remove" to remove the selected event.



Category: H, L, HH, LL, Dev+, Dev-, Error and other categories can be selected.

H: High point, start an alarm or work when the actual value is higher than the set value.

L : Low point, start an alarm or work when the actual value is lower than the set value.

HH: The second high point, the second set of set values higher than the H high point can be set to provide double warning functions.

LL: The second low point, you can set the second set of set values lower than the L low point, providing a double warning function.

Dev+: When the measured value is higher than the measured value of the previous point and the gap exceeds the set value, an alarm or work will be activated.

Dev-: When the measured value is lower than the measured value of the previous point, and the gap exceeds the set value, an alarm or work is started.

Error: When the channel is disconnected, activate an alarm or work.

Event setting value: Set the value to start job 1 and job 2.

alarm

Logging Alerts: Logging as Alerts.

Registered alert (auto-acknowledgement): Logged as an alert and automatically acknowledged.

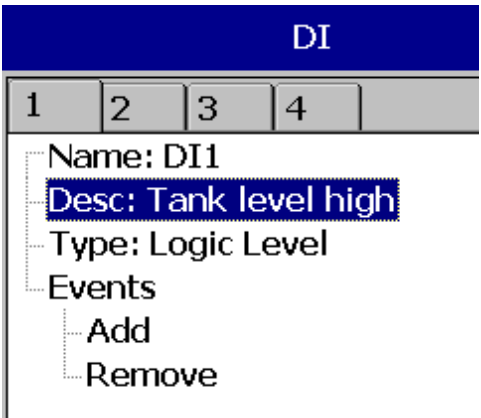
Login Event: Logged as an event.

Job 1/Job 2: The action that the recorder starts when the set condition occurs. Five events can be set for each channel, and two jobs can be set for each event. It should be noted that the work set under the event is different from the work performed by pressing the "operation" button. The former must be started by the occurrence of an event, while the latter is directly controlled manually.

Hysteresis: In order to avoid too frequent actions, you can set the delay response range of the digital output Relay in this field.

3.3.2 Digital Input (DI)

Path:  (Menu)-Config-DI



1	2	3	4
Name: DI1			
Desc: Tank level high			
Type: Logic Level			
Events			
Add			
Remove			

Name: used to define the name of each channel, up to 18 characters can be entered.

Description: You can set the comment of this channel. .

Category: Logic Level: Set to a digital logic value of 1 or 0, and the frequency is lower than 1Hz.

Pulse counter: It can input high-frequency pulse wave, up to 100Hz.

Event: Each digital input channel can support up to 2 groups of events, and each group of events can be set up to 2 groups of work.

Note: If the category is selected as pulse counter, there will be no event option.

Add: Press "Add" to add a new event.

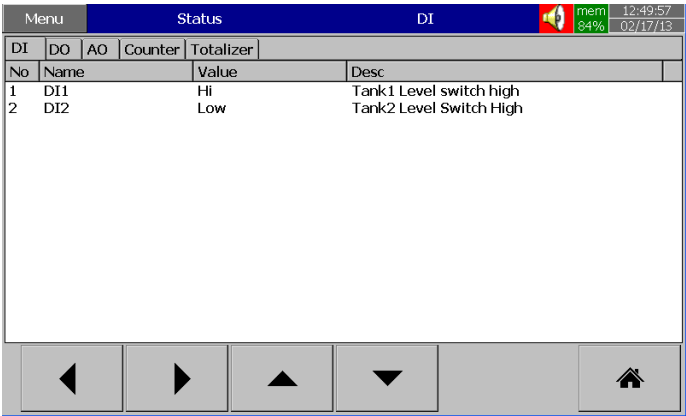
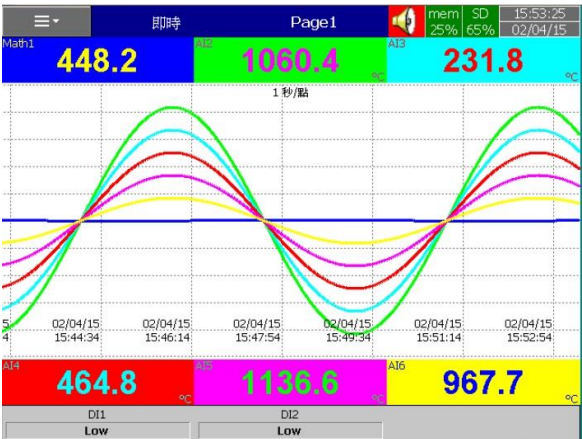
Remove: Press "Remove" to remove the selected event.

Category: Available in H or L

Job 1/Job 2: The action that the recorder starts when the set condition occurs.

Note: The number of digital input channels that can be set is based on the number of rear digital input cards.

The digital input status bar can be set to be displayed at the bottom of the screen. To configure the status bar, please refer to the "Screen" chapter.

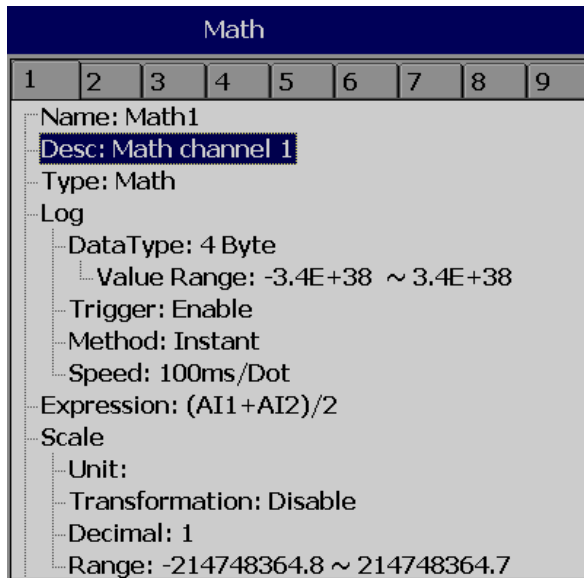
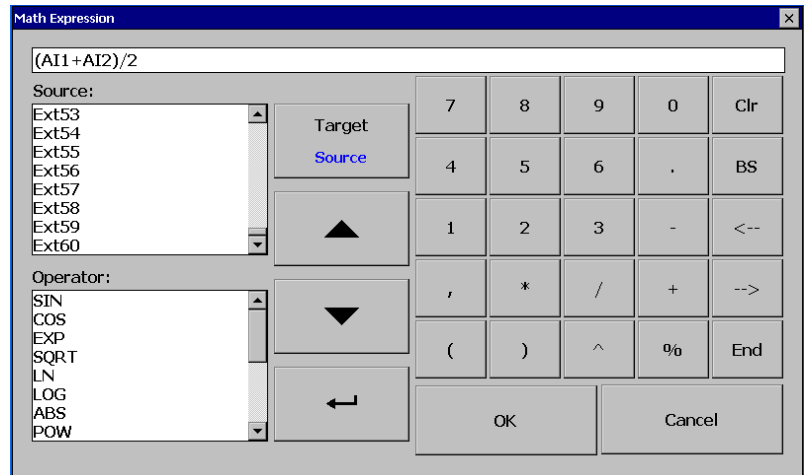


Menu		Status		DI	
DI	DO	AO	Counter	Totalizer	Desc
No	Name			Value	
1	DI1			Hi	Tank1 Level switch high
2	DI2			Low	Tank2 Level Switch High

Digital Input status can also monitored from the  (Menu). Press "Status" and then select "DI", it will show the Digital Input Status as follow.

3.3.3 Math Channel

Path:  (Menu)-More-Config-Math

Name: Defines the math channel name

Description: Additional annotations can be defined for math channels

Class: Defines the math channel class as, Math, Counter or Accumulator

Note: Depending on the selected category, different configurable items will appear.

Data type, trigger, method, speed: the function is the same as the analog input. After setting, press "Back" and then press the "Main Screen" button to save the changed settings.

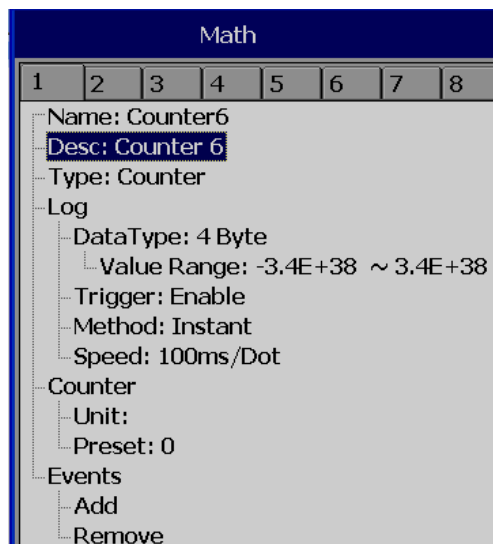
Enter the column of "Equation" to set the mathematical operation expression.

Expression	Function Description	Expression	Function Description
+	Addition	POW (x,y)	x^y
-	Subtraction	ROUND(x)	the integer value closest to x
*	Multiplication	HI(x,y)	The maximum of the two values of x and y
/	Division	INV(x)	$1/x$
SIN(x)	$\sin(x)$	TG(x)	$\tan(x)$
COS(x)	$\cos(x)$	CTG(x)	$1/\tan(x)$
EXP(x)	e^x	ASIN(x)	$\sin^{-1}(x)$
SQRT(x)	square root of x	ACOS(x)	$\cos^{-1}(x)$
LN(x)	$\log_e(x)$	ATG(x)	$\tan^{-1}(x)$
LOG(x)	$\log_{10}(x)$	$x\%y$	The remainder of dividing X by y
ABS(x)	absolute value of x	x^y	x^y

3.3.4 Counter

Path:  (Menu)-More-Config/Math

Select *Type* = *Counter*



Name: Define the name of the counter channel, up to 18 characters

Description: Additional annotations can be defined for counter channels

Category: Select Counter

counter

unit: defines the unit of the counter

Default Value: Defines the default value of the counter

event:

Category: Optional: H, L, HH, LL, Dev+, Dev-, Error

Setting value: Set the value of starting work 1 and work 2

Logging: Option to log alerts, log alerts (auto-acknowledgement) or log events.

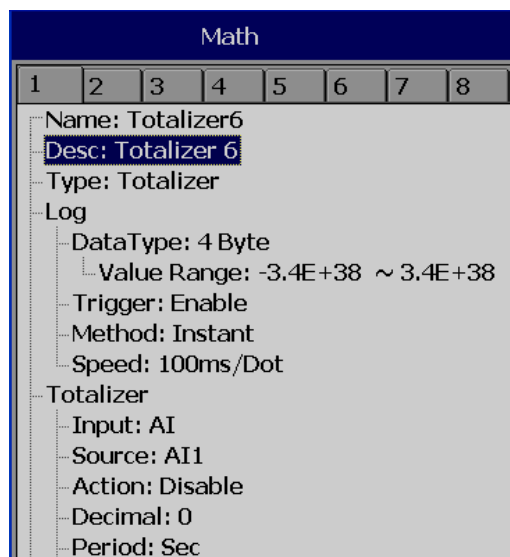
Job 1/Job 2: 2 groups of jobs can be set for each group of events.

Hysteresis: In order to avoid too frequent triggering of jobs, a hysteresis of the setpoint can be defined.

3.3.5 Totalizer

Configuration Path:  (Menu)-More-Config-Math

Select *Type* = *Totalizer*



The screenshot shows a configuration window titled 'Math' with a tabbed interface. The 'Totalizer6' configuration is selected, showing the following settings:

- Name: Totalizer6
- Desc: Totalizer 6
- Type: Totalizer
- Log
 - DataType: 4 Byte
 - Value Range: -3.4E+38 ~ 3.4E+38
 - Trigger: Enable
 - Method: Instant
 - Speed: 100ms/Dot
- Totalizer
 - Input: AI
 - Source: AI1
 - Action: Disable
 - Decimal: 0
 - Period: Sec

Name: Define the accumulator channel name, up to 18 characters

Description: Additional annotations can be defined for the accumulator channel

Category: Select Accumulator

Record: Similar input settings

Accumulator:

Input: Analog Input (AI) or Pulse Counter (DI)

Source: Selectable analog input/math/counter or totalizer

Function: Turn the accumulator on or off

Decimal point: Set the number of decimal places for the accumulator

Duration: Select seconds, minutes or hours

Units: Set accumulator units

Default: Set the totalizer default value

Low Value Mask: Sets the minimum value for the accumulator

Event: 5 groups of events can be set

3.3.6 Analog Output (AO)

AO						AO1
1	2	3	4	5	6	
Desc: Type: Current Output: 4-20mA Expression: $4 + (20 - 4) * (AI1 - (-120)) / (1000 - (-120))$						

Desc: Define detail description for the channel name

Type: Current, Voltage

Output: Select either disable, 0 to 20mA , 4-20mA, 0-5V, 1-5V, 0-10VDC

Expression: This is similar to Math channel.

3.3.7 Digital Output (DO)

DO		DO1
1	2	
Desc: Reverse: Disable		▲ ▼ ↶
◀ ▶ Copy		Back

Set Notes: Annotations can be defined for channels

Reverse: Set to enable or disable the reverse output.

3.3.8 Job

Various types of jobs can be selected as follows.

No Action: Do nothing

Send Email: Send Email directly from Recorder

Pause: Stop logging data.

Start: Start logging data.

Sound Buzzer: Sound the buzzer. It stops once any key is pressed.

Dump Data: To dump data from internal memory to external memory.

DO Latch On: Set digital output / relay on, and then select Target, let's say from one of DO 1 to DO 6.

The relay is latched when it is activated.

DO Latch Off: Set digital output / relay off, and then select Target, let's say from one of DO 1 to DO 6.

The relay is un-latched when it is activated.

DO Process: When the set event H, L, R and other conditions occur, the digital output is turned ON, and the digital output is OFF when the condition recovers.

TimerStart: Start a timer, optionally target timer

Timer off: close timer, optionally target timer

Accumulator preset value: Start accumulating based on the preset value, and the target accumulator can be selected

Accumulator reset to zero: Start accumulating with "0" as the base, and the target accumulator can be selected

Totalizer Start: Start the totalizer function, selectable target totalizer

Totalizer Off: Turns totalization off, selectable target totalizer

Counter preset value: start counting based on the preset value, and the target counter can be selected

Counter reset: Start counting with "0" as the base, and the target counter can be selected

Add one to the counter: add one to the counter value, the target counter can be selected

Counter minus one: The counter value minus one, the target counter can be selected

Log Report: Reports can be imported into the report list, including counters, accumulators, analog input max/min/avg, math channel max/min/avg, all channels max/min/avg

Reset Max/Min/Avg: Updates the Max/Min/Avg in the report

Printing: If the printer is connected via USB or ethernet, the following tasks can be set to be performed

Print history data, print event list, print report list, print snapshot

The printing time range and data interval can be set in the configuration

Notice: The sampling rate of the recorder is fixed at 100ms, that is, sampling ten times per second.

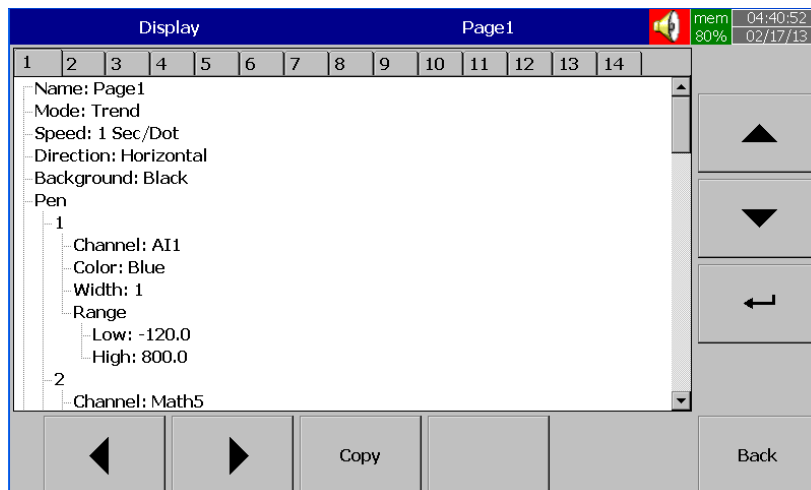
Example: If the recording method is set to "instantaneous value" and the recording speed is set to "1 second/point", the value measured by the recorder is the tenth value among the ten values sampled within one second. If the sampling method is set to average, the recorder will first average the ten values sampled within one second and then record the averaged value

Sampling rate	Record (historical curve)	Show (live connection)
Instantaneous value 100mS	Last measured value	Last of 10 measured values
Average 100mS	Average of measured values	Last of 10 measured values
Maximum value 100mS	The maximum value of the measured value	The last of the 10 measured values
Minimum value 100mS	The minimum value of the measured value	The last of the 10 measured values

Press "**Main Screen**" to return to the real-time screen, and the set parameters can be saved.

3.4 Display

Path:  (Menu)-More-Config-Display



Name: Defines the name of the display page

Mode: Defines the default method of displaying data for the page.

Options are: Trend, Bar, Digital, Mix, and Disable modes.

* Circular Trends are only available in the PR30 model. For Circular Trends

Speed: The data display speed on this page does not refer to the data recording speed.

Direction: Sets the trend direction to be horizontal or vertical.

Background: Sets the background color of Trend mode to black or white

Pen: For a specific channel, this defines the drawing pen, its color, width, Range Low and Range High for the display.

Channel: Selects a specific analog input, Math, Counter, Totalizer, External channels. Select Disable if a specific channel is not required to be displayed.

Color: Selects the color for each pen.

Width: Selects the width of trend

Low: Defines the low scale for a pen on the display.

High: Defines the high scale for a pen on the display.

Note:

- ◆ To illustrate the difference between Display Hi, Display Lo, Scale Hi, and Scale Low, here is a typical example, with input 0-10V, Scale Low=0.00, Scale Hi=100.00, to have better resolution and vision on Bar, set the Display Lo=0.00 and Display Hi=50.00 so that the Bar displays from value 0.00 to 50.00.
- ◆ The decimal point is defined by Scale Hi and Scale Low, and not by Display Hi, or Display Lo.

3.4.1 Status Bar

Status Bar: For convenient monitoring of digital input/output, math, accumulator, counter and analog input channels, the status display settings can be made in the status column. The status bar will be displayed at the bottom of the screen, and a maximum of 6 data can be displayed.

Note: The status bar can be set separately on different pages according to the needs.

Status Bar

- Type: Enable
- 1: DI1
- 2: DI2
- 3: DO1
- 4: Math2
- 5: Disable
- 6: Disable

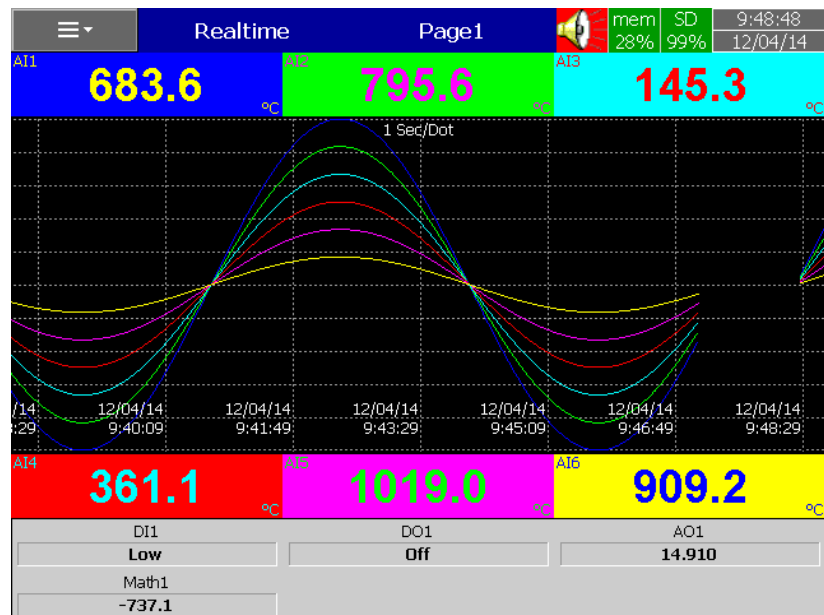
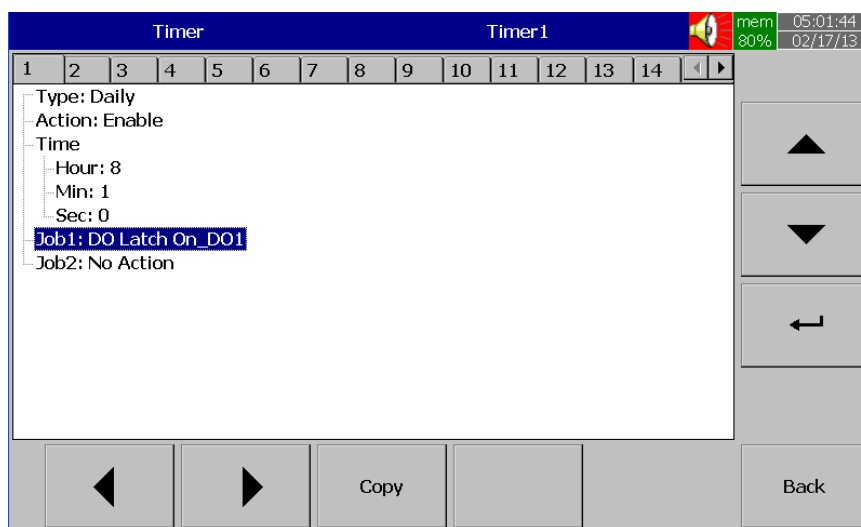


Fig: Status bar display in Real time

3.4.2 Timer

Path:  (Menu)-More-Config-Timer



Type: Countdown, Repeat Countdown, Daily, Weekly or Monthly.

Countdown: Defines the interval of time, e.g. days, hours, minutes and seconds. (Not the Actual Time)

Repeat Countdown: Repeats the previous countdown

Daily, Weekly or Monthly : The timer works in selected interval of Real Time.

Action: or enables the timer.

Action: Disables or enables the timer.

Job1, Job2: 2 jobs can be configured for each timer.

Timer Example

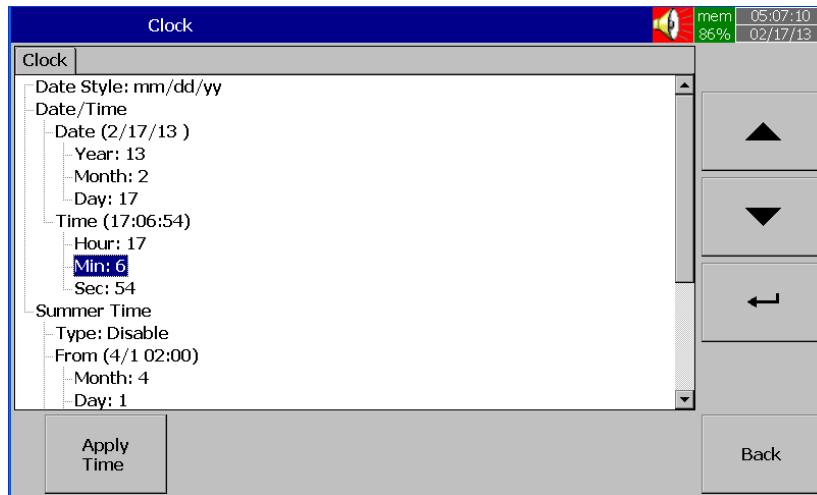
An employee wants to get the minimum/maximum/average number of recorded data every day, he needs to set the timer in the following way, and then he can view the data in the "Report" list in "Events" after completion.

Timer 1

Type: Daily	Action: Enable
Time – Hour: 17	Min: 01
Job1: Log Report	Target: ALL CH MinMaxAve Job2:
Reset Min/Max/Ave	Target: ALL CH

(Reset historical data in order to logging new data for the next day.)

3.4.3 Date/Time



Date format: MM/dd/yy or dd/MM/yy can be selected.

Date/Time: Set the local date and time, and press "Apply Time" after setting.

Daylight Saving Time: Set the local daylight saving time (Daylight Saving Time) to save energy.

3.4.4 Communication

Ethernet

IP: DHCP/Static

Select **DHCP** if the server on the network automatically allocates the IP address for the recorder.

Select **STATIC** to manually set a fixed address for the recorder.

IP Address: Defines the current address of the recorder on the network

Subnet Mask: Defines the current **Subnet**

Default Gateway: Set the default gateway.

DNS Server: This is required if the recorder is to be connected to Internet

Modbus Server:

Modbus TCP Port: The default value is 502

Serial port (RS232/485/422):

Communication protocol: Modbus Master/ Modbus Slave

Address: Set device address

Baud rate: 9600/14400/19200/38400/57600/115200

Data format: No, 8, 1 or Odd,8,1 or Even, 8, 1

Modbus Client/Master:

Sample Rate:

Ethernet:: 100 msec/dot, 1 sec/dot, 2 sec/Dot, 5 sec/dot, 10 sec/dot

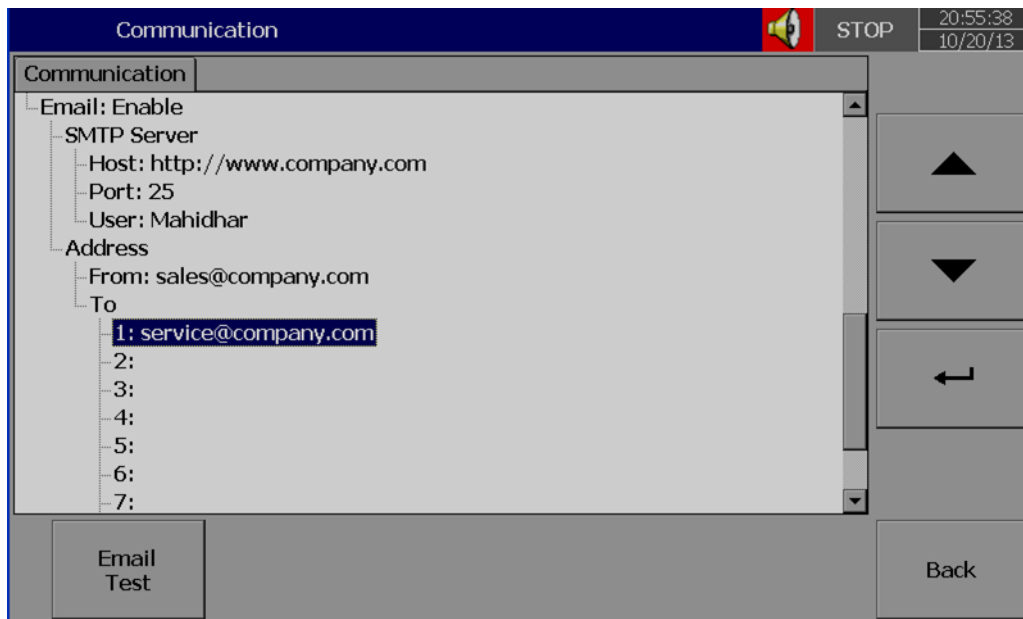
Timeout : The default timeout is 100ms

Serial:: 100 msec/dot, 1 sec/dot, 2 sec/Dot, 5 sec/dot, 10 sec/dot

Timeout : The default timeout is 100ms

Interval between 2 commands : The default timeout is 10m

3.4.5 Email



Press' "Email Test" and check mail function

3.4.6 Connections

Connections					
1	2	3	4	5	6
Name: Connect1 Type: Serial Slave ID: 1					

Connections				
1	2	3	4	5
Name: Connect2 Type: Ethernet IP: 192.168.0.1 Port: 502 Slave ID: 1				

A total of 16 groups of connections can be set, which can be selected as serial ports or Ethernet connections.

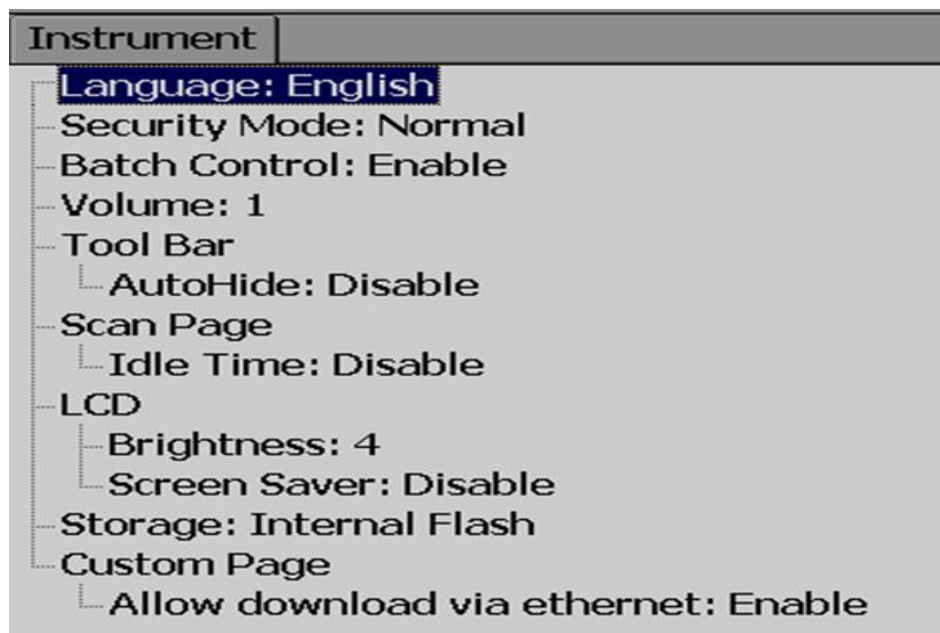
Name: Connection name

Category: Serial Port/Ethernet

Slave ID: Set the address of the device to be connected to the recorder

IP: If Ethernet connection is selected, IP address needs to be set.

3.4.7 Instrument



Language: 19 kinds of language interface can be selected.

Safety Mode: Normal or CFR-21 can be selected, please refer to the "Safety Mode" chapter for details

Batch Control: It can be set to on or off, please refer to the "Batch Control" chapter for details

Volume: Set the volume of the button or turn it off.

Toolbar: Refers to the menu on the left side of the screen, which can set the time of auto-hide or close it.
automatic page change

Idle time: You can set how long the screen starts to automatically change pages after being idle or turn off this function

Page change interval: After setting the idle time, you can set the interval between page changes

LCD:

Brightness: Set the brightness of the display

Screen saver: Set the screen saver time, the default value is 10 minutes.

Storage media: SD card or USB memory card can be selected

Custom page:

Allow Internet Downloads: On/Off

3.4.8 Security

Normal

When the normal mode is selected, the recorder can set a common password (up to 18 characters). When the password is set, the user needs to enter this password to perform configuration, download, clear or operation. If For ease of use, no password is required.

Set password method:

 Menu)-More-Config, select Password, press "Enter" , then key-in the password

CFR-21

When CFR-21 mode is selected, the recorder will have stricter safety restrictions to comply with FDA 21 CFR Part 11 regulations. After a period of inactivity, the recorder will automatically log out according to the set idle time, and the user needs to log in again to continue using it. Operations with wrong passwords or insufficient permissions will be recorded in the event list.

```
Security Mode: CFR-21
├── Logout: Disable
├── Password validity: Unlimited
├── Security Level of Functions
│   ├── Login From PC: 9
│   ├── Dump: 9
│   ├── Clear: 9
│   ├── Operate: 9
│   ├── Config: 9
│   ├── Pause: 9
│   └── ShutDown: 9
```

Logout: Set the automatic logout time.

Password validity period: Set the password validity period, and the user will be required to enter a new password after the time expires.

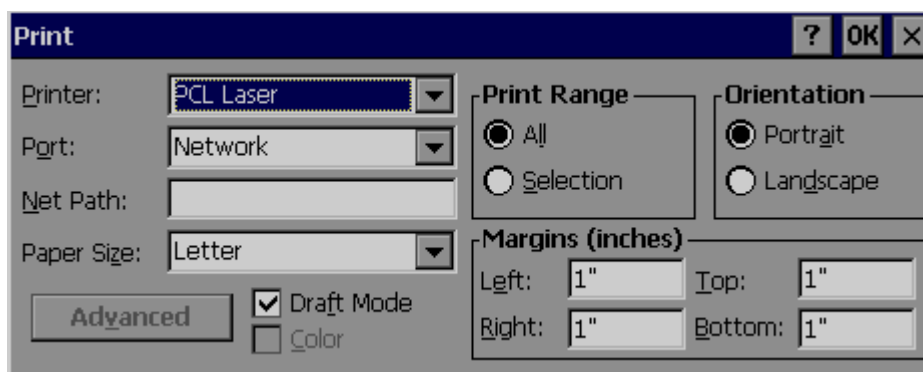
Functional Safety Level:

Levels from 0 to 9 can be set, with 0 being the lowest and 9 being the highest

3.4.9 Demo

Demo mode is a simulation program for recorder display, simulating analog input and math channels. When you want to start the Demo mode, you need to enable the option setting first, and then restart the recorder to take effect. To return to the normal mode, you need to turn off the Demo option first, and then turn on the recorder again.

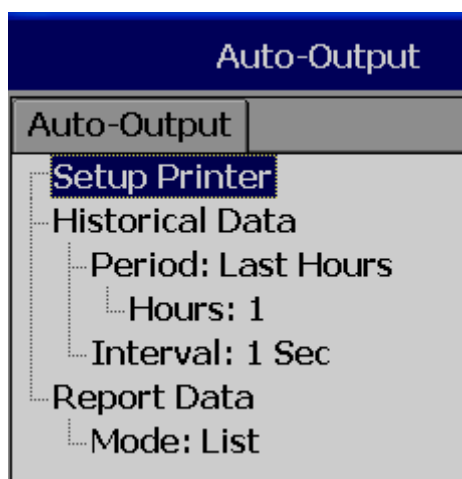
3.4.10 Auto-output



The recorder can support PCL Laser, PCL Inkjet, and ESCP printer, PCL series support PCL4, PCL5 and PCL6 protocols, please check with the manufacturer for details on supported models. The logger can be connected to a printer via USB and Ethernet ports. Supported functions: Printing of historical data, events and reports, and screen captures from loggers.

Print historical data

1. Please connect and set up the printer first
2. Set the period to be printed in the automatic output
Period: Select the historical data period to be printed, and then set the value of minutes/hours/days.
Interval: Select the printing interval of the data
3. Set the "print history data" trigger in the job options



3.4.11 System info



The system information includes System version, Internal and External memory, Ethernet IP address and Slots status

Version: The firmware version of the recorder.

Memory (remaining capacity / full capacity):

Internal: Displays the free space and total capacity of the internal flash memory of the recorder.

External: Displays the available space and total capacity of USB and SD card.

The small icon at the top right of the logger screen also shows the free space in percentage.

Address:

MAC: Displays the MAC address of Paperless Recorder

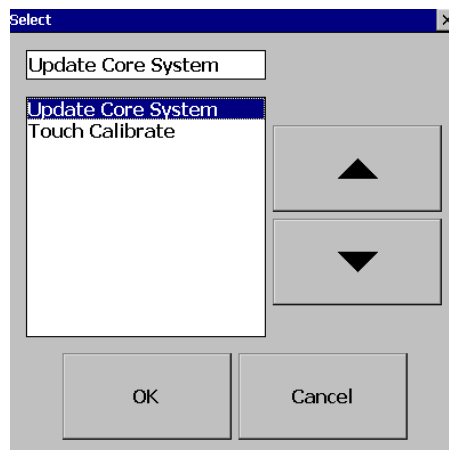
IP address: Displays the IP address for the Paperless Recorder

Slot 1..4: Displays the card status of the slot and the type of I/O card inserted.

Upgrade Firmware

Path:  (Menu)-More-Config-System Information-Maintain

Maintenance: Used to update the firmware and calibrate the touch screen.



Update system:

When updating, you need to save the new version of the firmware to the USB or SD card first, then insert the USB or SD card into the recorder, and then select "Update System". The system update will take some time, please wait patiently and do not turn off the power.

Calibrate Touch Screen:

Path:  (Menu)-More-Config-System Information-Maintain

To calibrate the touch screen, please touch the "+" sign on the screen according to the instructions.

Carefully press and briefly hold stylus on the center of the target.
Repeat as the target moves around the screen.



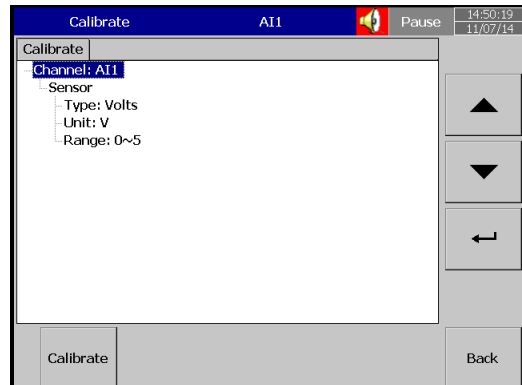
3.4.12 Calibrate

This function is used for calibrating Individual Analog channel.

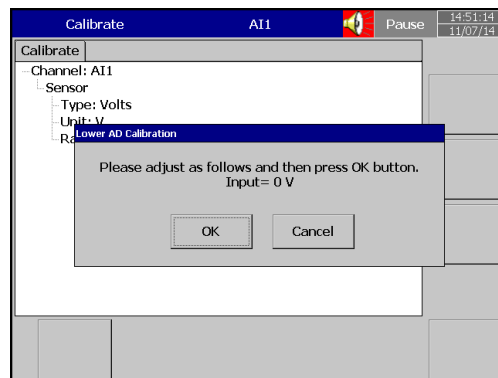
Example 1:

Calibrate an AI with 0-5V

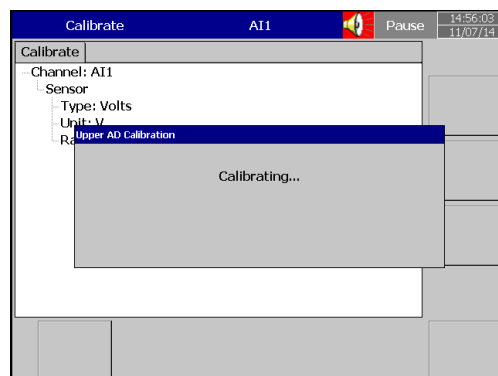
When you click Calibrate menu, the user can see the below screen. Please click calibrate as shown in the below screen



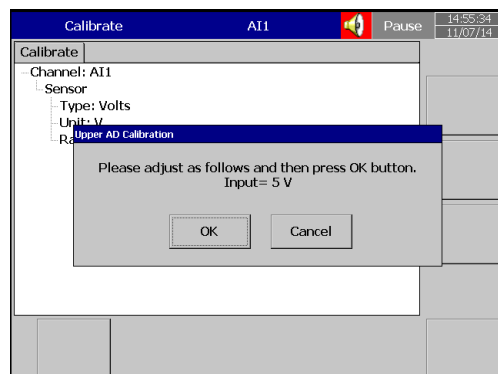
Please follow the instructions, input 0V signal, and then press ok



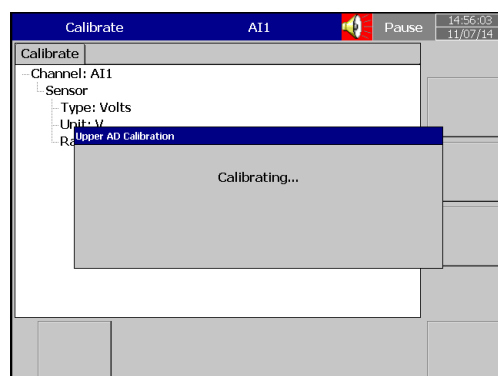
Then the following screen will appear



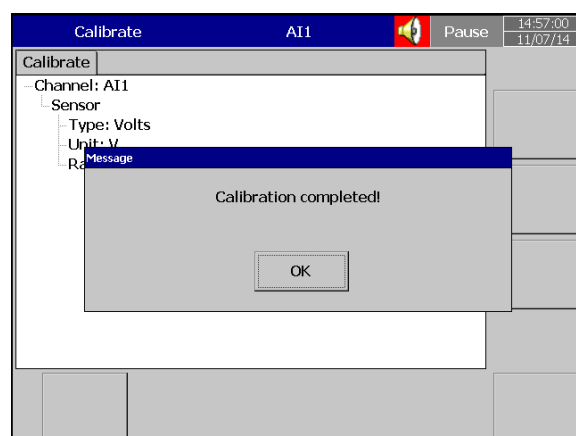
Please continue to follow the instructions, input 5V signal, and then press ok



Please wait until calibration is complete



When the calibration is finished, the following window will appear, press ok to complete the calibration.



4. WEBSERVER

4.1 Requirements

4.1.1 Operating system

Windows based Operating systems, Windows XP, Windows 7, Windows 8 etc.. 32 bit and 64 bit operating systems are supported.

4.1.2 Browser Requirements

Internet Explorer 10 or higher.

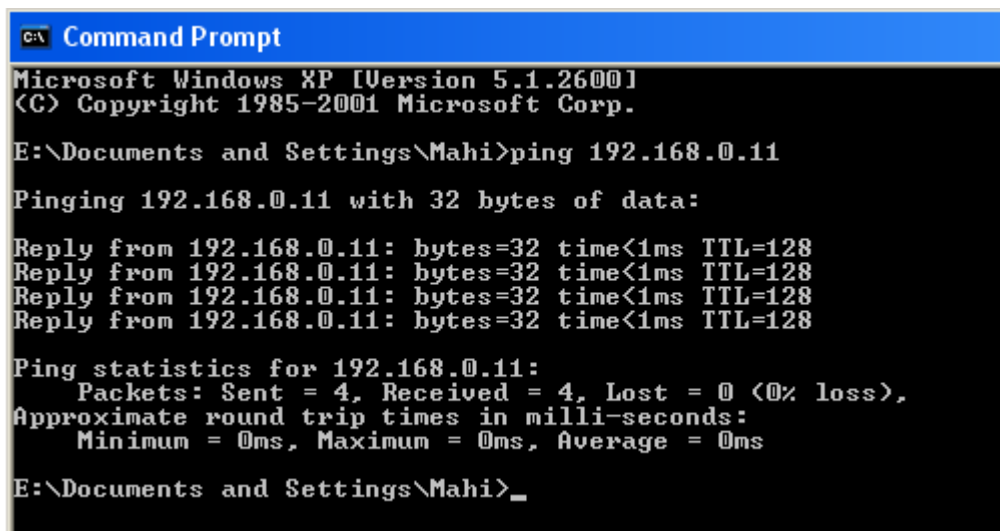
Google Chrome.

4.1.3 IP Address Requirements

A Static IP address is required for the recorder.

Obtain a Static IP address from your Internet service Provider (ISP). This IP address should be unique.

Once the IP address is configured in the Recorder, use a Ping Instruction from the DOS prompt first to verify there is successful communication between the Recorder and the PC via Internet.



```
Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

E:\Documents and Settings\Mahi>ping 192.168.0.11

Pinging 192.168.0.11 with 32 bytes of data:

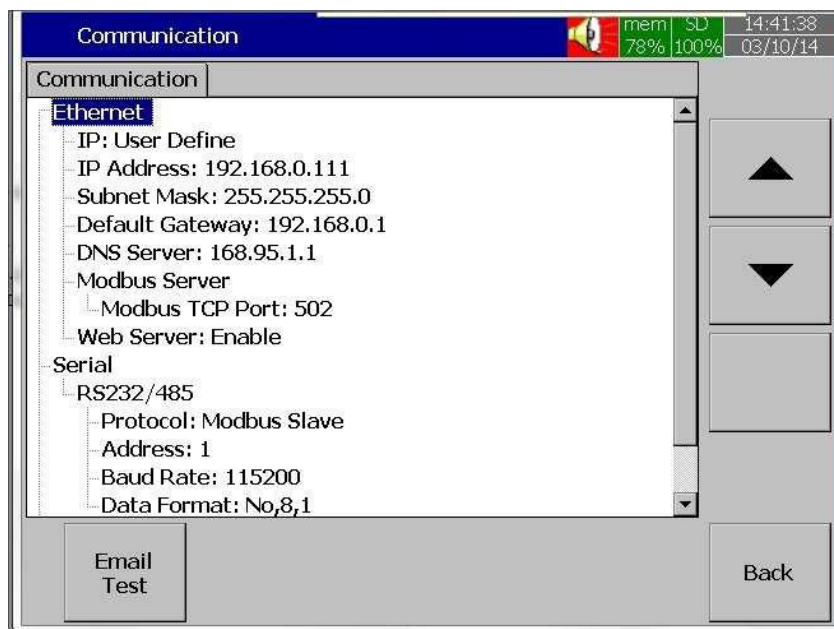
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128
Reply from 192.168.0.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

E:\Documents and Settings\Mahi>_
```

4.2 How to configure Web server Settings

To use the web server, you must first set the IP connection address and enable the web server function. In the configuration setting, select "Communication" and then click the Enter soft key.



1. Select the IP type as DHCP (obtained automatically) or Static (manually set). If it is Static, please set the correct IP address, subnet mask, default gateway, and DNS server.

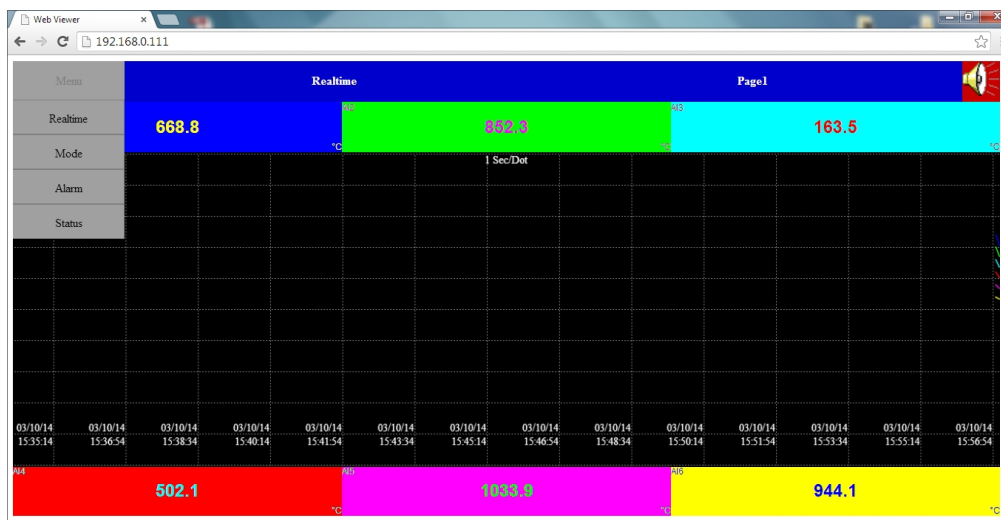
Note: If you connect to PR via external network, please confirm that the IP address of PR is the physical IP.

2. The web server option is set to ON.

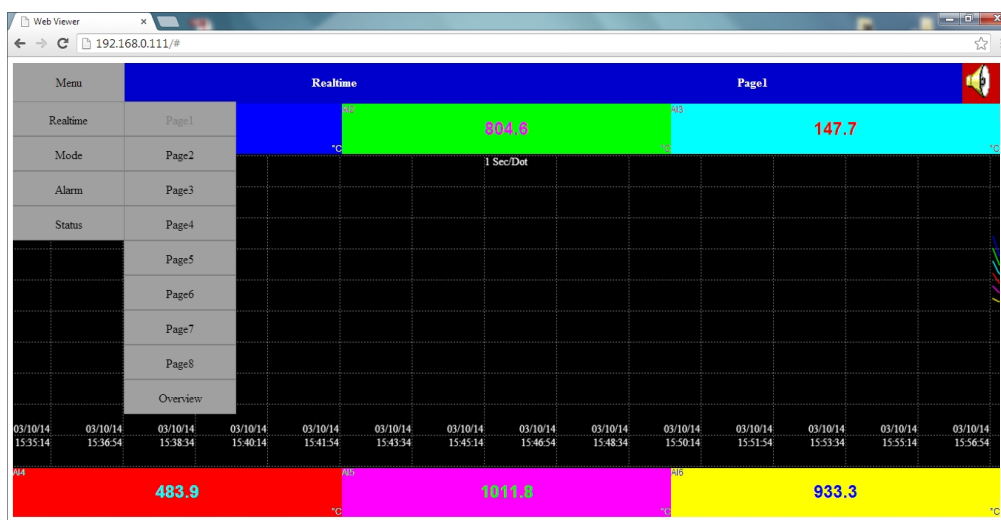
Please return to the main screen to save the configuration settings when finished.

4.3 How to View Recorder Data in PC via Webserver:

Enter the IP address of the Recorder in the address bar of the browser.



You can view real-time data, real-time alarms, historical alarms, etc. of all channels.





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