1 YEAR WARRANTY

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User's Guide

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RDA760
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WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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M0000/0619

MODEL COVERED

RDA520-TC **Description: 5 inch TFT Display, 2 T/C Inputs Paperless Recorder**
Supply Power: 100~240VAC,50/60Hz

RDA520-RTD **Description: 5 inch TFT Display, 2 RTD Inputs Paperless Recorder**
Supply Power: 100~240VAC,50/60Hz

RDA740-TC **Description: 7 inch TFT Display, 4 T/C Inputs Paperless Recorder**
Supply Power: 100~240VAC,50/60Hz

RDA740-RTD **Description: 7 inch TFT Display, 4 RTD Inputs Paperless Recorder**
Supply Power: 100~240VAC,50/60Hz

RDA760-TC **Description: 7 inch TFT Display, 6 T/C Inputs Paperless Recorder**
Supply Power: 100~240VAC,50/60Hz

RDA760-RTD **Description: 7 inch TFT Display, 6 RTD Inputs Paperless Recorder**
Supply Power: 100~240VAC,50/60Hz

INTRODUCTION

The RDA Paperless Recorder integrates measurement, display, alarm, data logging into one slim instrument. It provides multi-channel recording with a touch screen display as well as alarm generating capability. Depending on the model, the RDA Paperless Recorder provides 2, 4, or 6 inputs. There are two different size panels, 5-inch, 7-inch. The RDA-740 and RDA-760 models are only 40mm thick which allows it to be installed in machinery or equipment where space is limited. The main parameters are set in one single interface through the industrial grade touch screen.

1. **All-in-one**
Input, display, monitoring, recording and output are all integrated in one paperless recorder. There is no external HMI required and the Recorder is simple and easy to install.

2. **Touch Screen Interface**
All the configuration and operation is done on the industrial graded touch screen without any hardware PIN setting.

3. **Durable Components**
Low power consumption. 12 months warranty on quality. HMI graphics and datalogging are processed by one ARM processor in dual CPU mode. EMC testings complied (±4KV/5KHz according to IEC61000-4-4 (Electrical Fast Transient); 4KVaccording to IEC61000-4-5 (Electrical Surge).

4. Outstanding anti-interence
Ultra performance hardware greatly reduce the temperature drift and the interference among the input channels. The measurement accuracy of multi-channel reaches that of single channel.

5. Abundant Recording Function
Real-time trend graph, bar graph and history trend graph are provided. Measured data and alarm record can be shown on screen as a report table. Storage size is 150MB. Data stored can be viewed as graph or table and exported to external USB storage deivce.

The RDA Paperless Recorder does not have a sealed housing. The device should not be exposed to excessive dust, moisture, or shock during installation. Only professionally trained personnel should operate and maintain this device.

TECHNICAL SPECIFICATION

Dimensions
*** RDA-520-RTD / RDA-520-TC**
Diagonal Display Size: 5 inches
External Size: 145*105*100mm (Width*Height*Depth)
Installation Opening Size: 135*96*96mm (Width*Height*Depth)

*** RDA-740-RTD / RDA-740-TC/ RDA-760-RTD / RDA-760-TC**
Diagonal Display Size: 7 inches
External Size: 203*155*40mm (Width*Height*Depth)
Installation Opening Size: 192*139*34mm (Width*Height*Depth)

Display
Color: TFT True Color
Resolution: 800*480
Backlit: Long-life LED
Input Method: Touch Screen
Touch Screen: Resistive

Memory
Storage: 150MB
Recording Interval (seconds): 1, 2 3, 4, etc. User Defined

Recorder Input

Input Type:

RDA-520-RTD: Two 2-wire RTD. Pt100, Cu50, 0-80ohm, 0-400ohm, etc. (Every two inputs share one common port)

RDA-520-TC: Two thermocouples. K, S, R, E, J, T, B, N, WRe5-WRe26

RDA-740-RTD: Four 2-wire RTD. Pt100, Cu50, 0-80ohm, 0-400ohm, etc. (Every two inputs share one common port)

RDA-740-TC: Four thermocouples. K, S, R, E, J, T, B, N, WRe5-WRe26

RDA-760-RTD: Six 2-wire RTD. Pt100, Cu50, 0-80ohm, 0-400ohm, etc. (Every two inputs share one common port)

RDA-760-TC: Six thermocouples. K, S, R, E, J, T, B, N, WRe5-WRe26

Measurement Accuracy:

RDA-520-RTD/ RDA-740-RTD/ RDA-760-RTD: ±0.2%FS ±1 digit / ±0.3%FS ±1 digit (only for Cu50)

RDA-520-TC/ RDA-740-TC/ RDA-760-TC: ±0.2%FS ± 1 digit. Internal cold junction compensation (CJC) will be effective for thermocouple input. Therefore additional 1℃ CJC error should be taken into consideration. The stated accuracy is not reached for type B thermocouple measuring between 60~ 600℃ but only guaranteed between 600~ 1800℃.

Response Time: ≤1.5 seconds (digital filter parameter dL is set as 0 or 1)

Temperature Drift: ≤0.01%FS/℃ (Typical 50ppm/℃)

Measuring Range:

RDA-520-RTD/ RDA-740-RTD/ RDA-760-RTD : Pt100(-200 ~ +800℃), Cu50(-50~ +150℃)

RDA-520-TC/ RDA-740-TC/ RDA-760-TC: K(-50 ~ +1300℃), S(-50 ~ +1700℃), R(-50 ~ +1700℃), T(-200 ~ + 350℃), E(0 ~ +800℃), J(0 ~ +1000℃), B(+200 ~ 1800℃), N(0~ +1300℃), WRe3~WRe5(0 ~ +2300℃), WRe5~WRe26(0~+2300℃)

General Specification

Electromagnetic Compatibility (EMC): ±4KV/5KHz according to IEC61000-4-4 (Electrical Fast Transient); 4KVaccording to IEC61000-4-5 (Electrical Surge).
Isolation Withstanding Voltage: Among power, relay contact or signal terminals ≥2300VDC. Among isolated electroweak terminals ≥600V
Power Supply: 100~240VAC, -15%, +10% / 50~60Hz
Power Consumption: ≤5W
Operating Environment: Temperature -10~+60℃ Humidity ≤ 90%RH
Storage Temperature: -20 ~ +80℃
Unit Weight: 0.55kg (5-inches), 0.7kg (7-inches)
Cooling Method: Natural Air Cooling

INSTALLATION

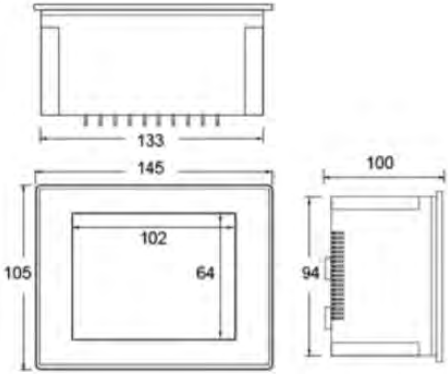
Appearance

Front

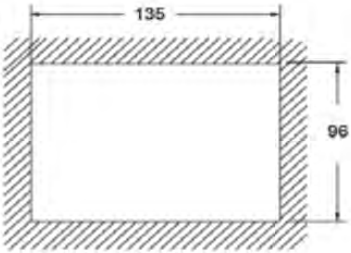
Back (5-inch)

Back (7-inch)

Installation Dimension (RDA-520)

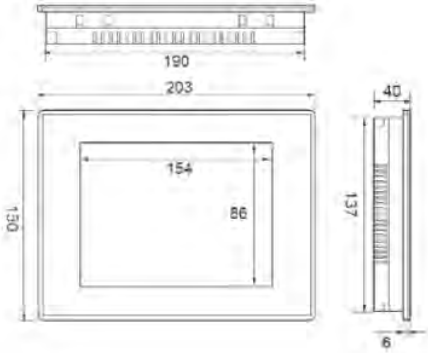


Outer Dimension

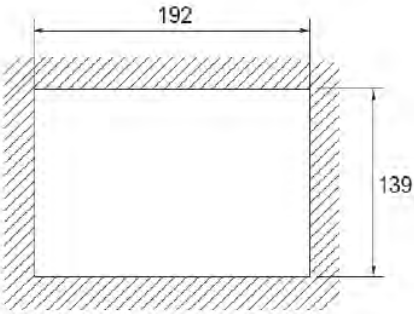


Installation Hole Opening Dimension

Installation Dimension (RDA-740 / RDA-760)

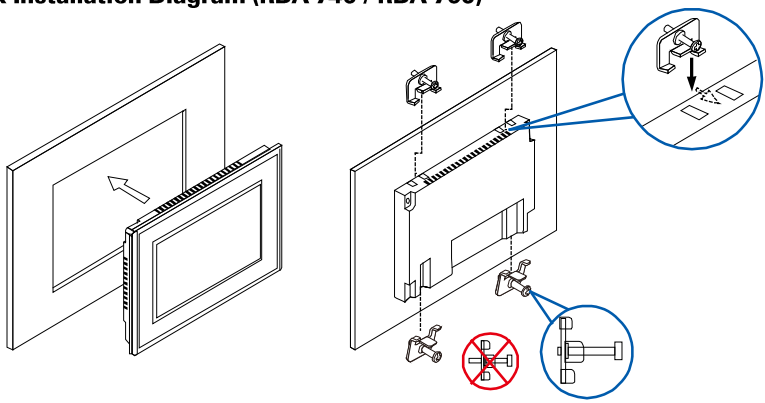


Outer Dimension



Installation Hole Opening Dimension

Hook Installation Diagram (RDA-740 / RDA-760)



Before installation, ensure the screws are slightly drilled into the hooks only.

Wire Diagram (RDA-520)

Back Terminals

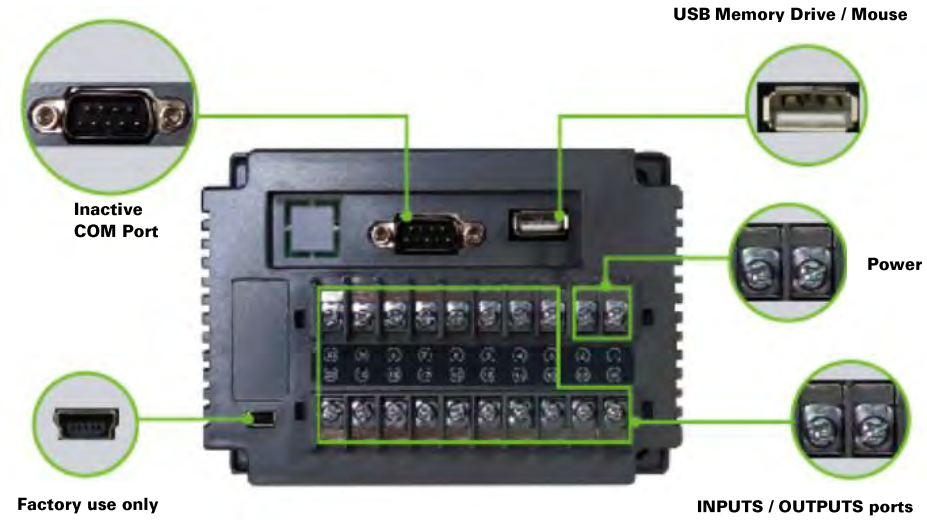
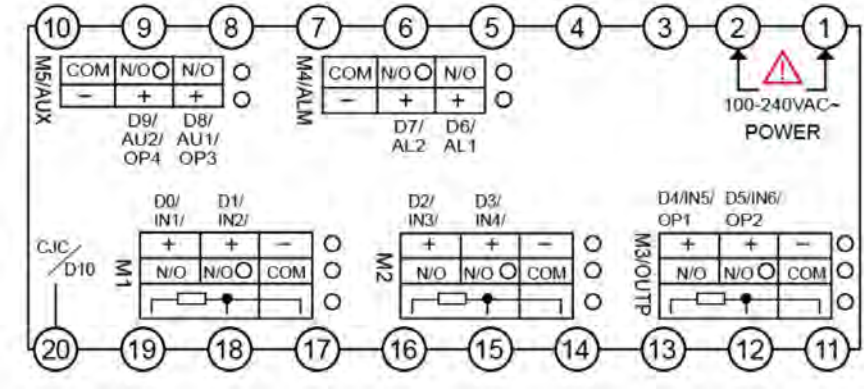


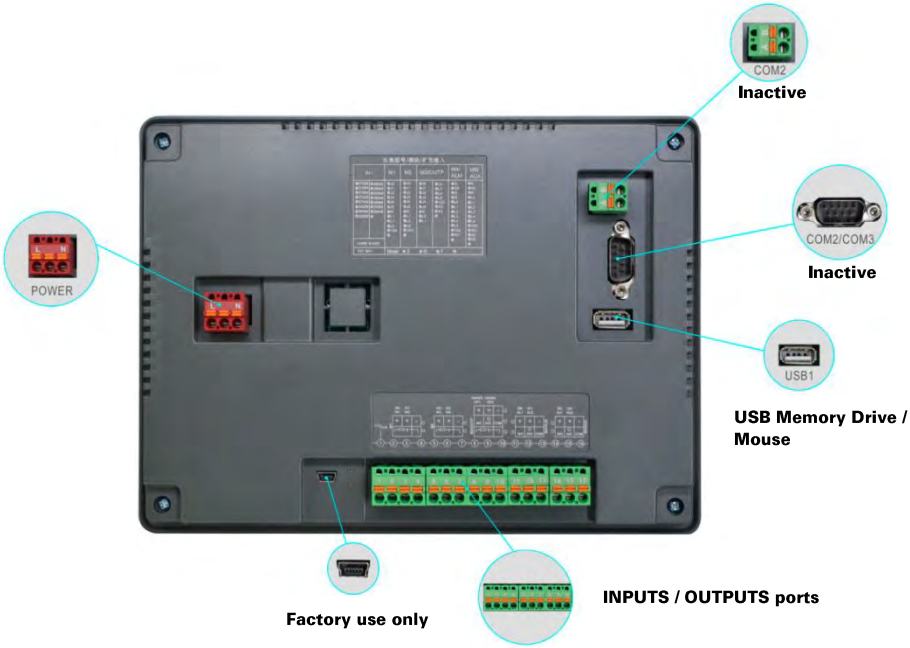
Diagram of Inputs and Outputs



Inputs Description (RDA-520)
COM Port: Inactive.
USB Port: USB 2.0 standard is supported. The volume of USB memory drive is recommended to not more than 8GB. The file format must be FAT32. With external powered USB hub, both USB memory drive and mouse is possible.
3, 4: No function in RDA.
5~16: Inactive.
17-,18+: IN2, second input.
17-,19+: IN1, first input.
17,20: Internal cold junction compensation. No wiring is required.

Wire Diagram (RDA-740 / RDA-760)

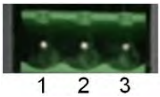
Back Terminals



Connection Method

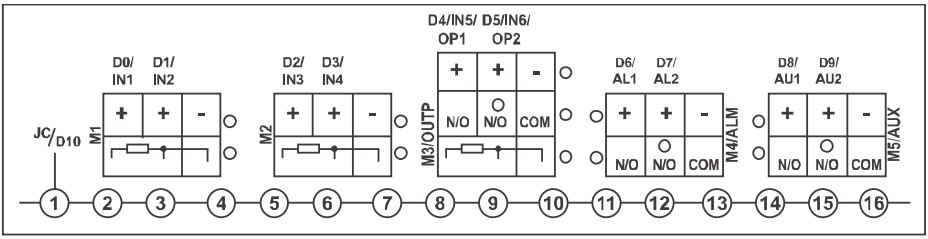
The wire terminals support quick wire locking. A soft wire can be directly locked by using a flat screw driver to push the orange spring lever. This connection mechanism is fast and easy. No other assisting tools are required.

Power Wires



	POWER		
PIN	1	2	3
PIN Definition	L	Blank	N

Diagram of Inputs and Outputs



Inputs Description (RDA-740 / RDA-760)
COM2: Inactive.
COM2/COM3: Inactive.
USB Port: USB 2.0 standard is supported. The volume of USB memory drive is recommended to not more than 8GB. The file format must be FAT32. With external powered USB hub, both USB memory drive and mouse is possible.
2+,4-: IN1, first input.
3+,4-: IN2, second input.
5+,7-: IN3, third input.
6+,7-: IN4, forth input.
8+,10-: IN5, fifth input. This one is active in RDA-760 but no function in RDA-740.
9+,10-: IN6, same function as IN5.
11~16: Inactive.

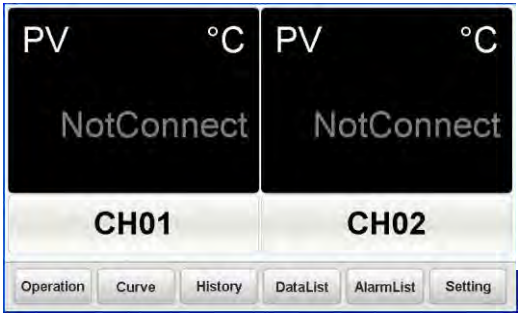
Thermocouple Wiring (RDA-520-TC/ RDA-740-TC/ RDA-760-TC)
RDA-TC: Qualified compensation wires of thermocouple should be directly connected to the back of the instrument. Do not connect the incorrect polarity of compensation wires. Cold junction compensation error will occur if the above requirements are not met. Cu50 copper resistor can be connected terminal JC and negative of thermocouple (RDA-520: terminal 17 and 20; RDA-740/RDA-760: terminal 1 and 4) as thermocouple cold junction compensation temperature. Short-connection will have ice-point compensation.

Two-wire & Three-wire RTD Wiring (RDA-520-RTD/ RDA-740-RTD/ RDA-760-RTD)
RTD connection can be applied either two-wire or three-wire method by setting the "B" digit in "AF" parameter. Two-wire method saves quantity of wire connections and allows more number of input channels. However resistance of lead wire is required to be measured to eliminate error. Three-wire method is the traditional wiring method. If the resistance of each lead wire is equal, the resistance value is not required to be measured. However the number of channels possible is half of that of two-wire method. The instrument applies a number of policies to leverage the error brought by the lead wire resistance. In applications requiring higher accuracy, three-wire method is recommended. The resistance of each lead wire should be less than 2Ω.

Lead wire resistance in two-wire method can be saved to parameter "Sc" to compensate during measurement. However, the lead wire resistance (copper or aluminum material) changes with temperature. The instrument can compensate the change of lead wire resistance according to room temperature sensor. However this kind of compensation is not suitable in the application that the change of lead wire resistance does not synchronize the change of instrument temperature. Three-wire method is recommended in this situation.

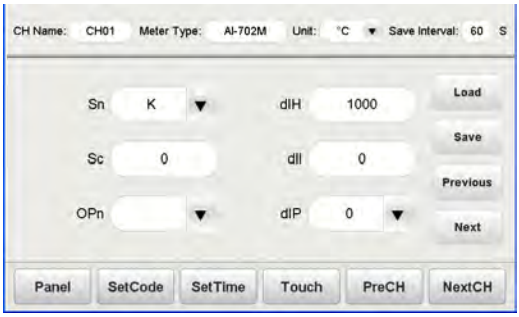
OPERATION DESCRIPTION

1. Initial Setup



Once the instrument is power on, the main screen will be displayed. Press “Setting” to go to instrument configuration. The default password is “111”.

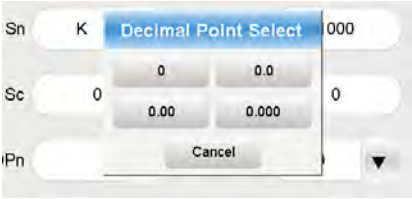
1.1 Parameters of Current Channel Checking



The instrument automatically loads parameters once this page is loaded. Press “Previous” to go back to the previous page. Press “Next” to go to the next page.

1.2 Parameters of Current Channel Editing

Press the white space of “Sn” input and the dialogue screen will pop up to change the values. Choose the input specification from the dialogue. Press “Cancel” button in the bottom right to close the box.



Press “DiP” decimal place to select the corresponding decimal place. Only parameters “Sn” and “dIP” are automatically saved instantly. Other parameters will turn to red if the values are changed. Press “Save” at the rightmost column will save all the unsaved parameters. Those parameters in red will return to black again.

1.3 Parameters of Other Channels Editing

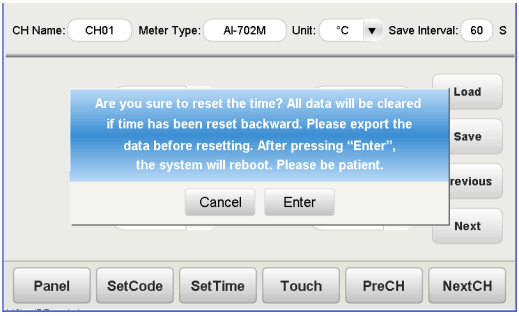
RDA is a multi-channel recorder. After setting one channel, please press “NextCH” to go to the parameter setting page of next channel or “PreCH” to go to that of previous channel. Please repeat the above steps until all channels are configured.

1.4 Record Time Interval Editing

Press “Save Interval” to edit the time interval of data recording. The unit is in second.

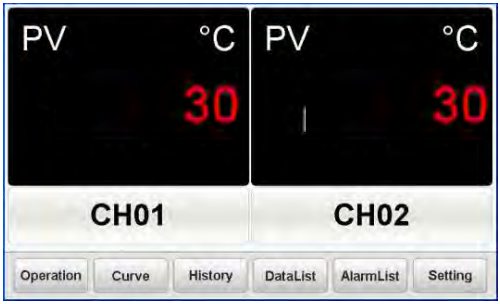
1.5 System Clock

Press “SetTime” to edit the system time. Please set the correct time to match with local time. Press “Enter” will reset the time. Any saved data later than the time reset will be erased.



2. Panel Screen Descriptions

2.1 Main Screen

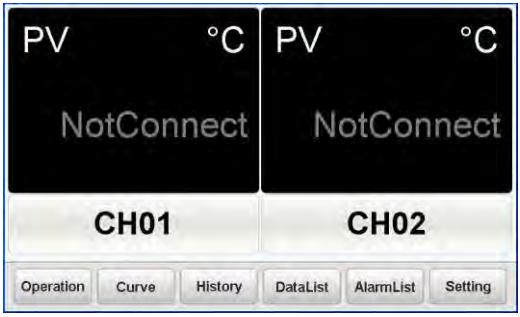


When the power is on, or press "Panel" button in interfaces of "History", "Alarm", "Report" and "Setting", it will go to back to main panel screen.

2.2 Interface Content

PV is the measured value. The unit is shown on top. The title of channel is shown below the PV values.

2.3 Recorder Status



When an alarm is activated, the background color of channel title will turn red from light grey. Enter "AlarmList" will see the details of alarm. PV shows "NotConnect" when the specific channel is not connected to the internal hardware. PV shows a value when it is connected. When input is out of range, PV blinks a warning message "OrAL" (abbreviation of over-range-alarm).

2.4 Leaving Panel Screen

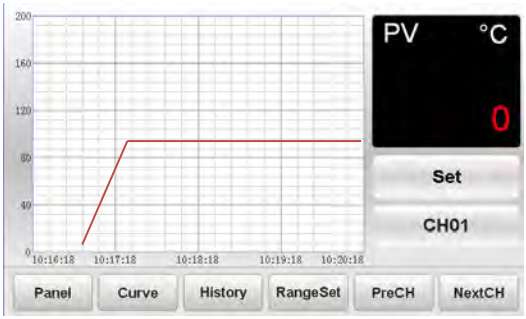
Pressing corresponding button "Curve" (Real time curve), "History" (History Trend Graph), "DataList" (Data Report), "AlarmList" (Alarm Report), and "Setting" (System Setting) will to go particular function screen. Press the channel title will go the corresponding operation interface of that channel. For example, pressing "CH01" will go to interface screen of channel number 1.

3 Interface Screen

3.1 Enter Interface Screen

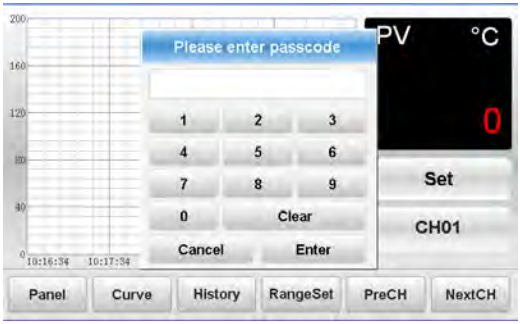
In the main panel screen, press the channel title will go the corresponding operation interface of that channel.

3.2 Interface Screen Explanation

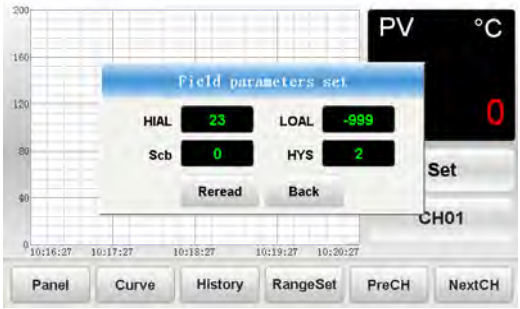


The PV measure values, unit and channel title are shown on right column. The corresponding curve of PV values is shown on left.

3.3 Field Parameters Setting

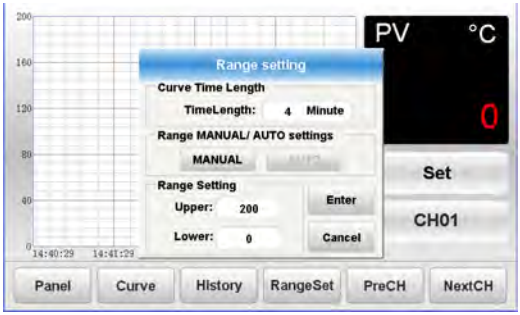


Press “Set” button the open the “Field Parameter Set” dialog screen. It is password protected.



It will automatically show the current HIAL (High limit alarm), LoAL (Low limit alarm), Scb (Input shift correction) and HYS (alarm hysteresis). Press “Reread” to refresh these parameters.

3.4 Range Setting



Press “RangeSet” in the bottom the set the time range of curve and high limit and low limit of the curve.

Press “Manual” in the dialog box activate the manul setting mode. The range setting will abide to the values entered. Press “Auto” to activate the automatic fitting mode. The system will automatically fit the curve and the range setting will have no effect.

3.5 Leaving Interface Screen

Pressing the corresponding button “Panel” (Main Screen), “Curve” (Real time curve), “History” (History Trend Graph) will to go particular function screen.

4 Curve (Real time curve) Description

4.1 Enter Curve Screen

Press “Curve” button in the screen of “Panel”, “History”, “AlarmList” and “Setting” will go the real time curve screen.

4.2 Curve Screen Explanation

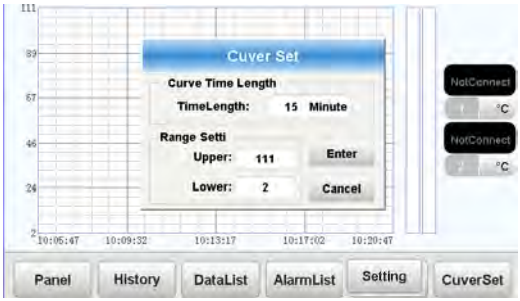
The PV values, unit and channel number of each channels are shown on right column. The channel number presenting is fixed in ascending order. When a channel is “NotConnect”(Not connected), no graph is shown.

4.3 Show/Hide Operation of a Particular Channel

Press the number tag on the right column to show or hide the particular channel.

Press the green tag (channel 1) will turn grey out the curve of channel 1. Pressing it again will make it reappear.

4.4 Curve Set



Curve Time length can be entered. The value supports decimal place. Unit is in minute.

4.5 Leaving Curve Screen

Pressing the corresponding button “Panel” (Main Screen), “History” (History Trend Graph), “DataList” (Data Report), “AlarmList” (Alarm Report), and “Setting” (System Setting) will to go particular function screen.

5 History Trend Interface

5.1 Enter History Trend Screen

Press “History” button in the screen of “Panel”, “Curve”, “AlarmList” and “Setting” will go the history trend graph screen.

5.2 History Trend Explanation

The PV values, unit and channel number of each channels are shown on right column. The channel number presenting is fixed in ascending order. When a channel is “notConnected”, no graph is shown.

5.3 Show/Hide Operation of a Particular Channel

Press the number tag on the right column to show or hide the particular channel.

Press the green tag (channel 1) will turn grey out the curve of channel 1. Pressing it again will make it reappear.

5.4 Range of History Graph, Time Span and Start Time

Press "HisSet" button at the bottom to pop up the dialog box.

Curve Time length can be entered. The value supports decimal place. Unit is in minute.

5.5 Time Axis Operation

Press "Retreat" in the bottom to shift the time axis back for 3/4 time of the curve time. Press "Forward" in the bottom to shift the time axis forward for 3/4 time of the curve time. No time axis shift happens when the action of shift exceeds the current time.

5.6 Leaving History Screen

Pressing the corresponding button "Panel" (Main Screen), "Curve" (Real Time Curve), "DataList" (Data Report) will to go to particular function screen.

6 DataList (Data Report) Description

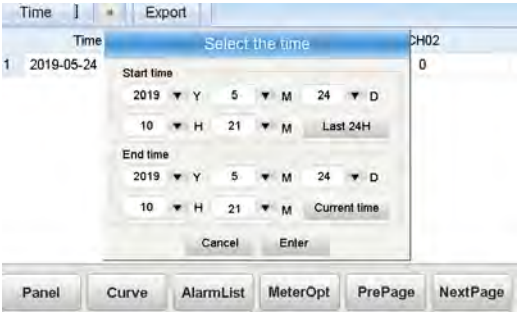
6.1 Enter DataList Screen

Press "DataList" button in the screen of "Panel", "Curve" "History", "AlarmList" and "Setting" will go the real time curve screen.

6.2 DataList Screen Explanation

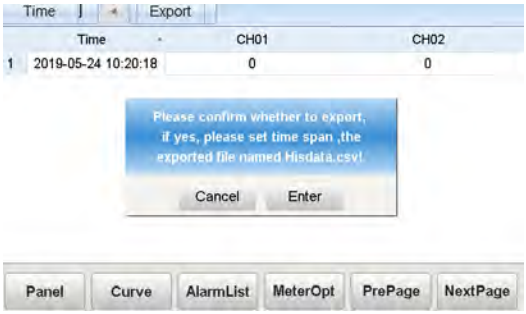
The PV measured values and time of each channel displayed.

6.3 Time Range



Press "Time" to pop out the time span setting dialog. Please "Last 24H" to retrieve the last 24 hours data without pressing "Enter". Please "Current Time" to retrieve the data from start time to current system time without pressing "Enter".

6.4 Data Export



Plug in a USB memory drive. Press "Export" on the top row. The recorded data within the time range enquired will be exported to the drive in a file named "Hisdata.csv".

6.5 Current Data Report

Press "NextPage" to scroll down and "PrePage" to scroll up the data report table.

6.6 Leaving DataList Screen

Pressing the corresponding button "Panel" (Main Screen), "Curve" (Real Time Curve), "AlarmList" (Alarm Report) and "Setting" will to go to particular function screen.

7 AlarmList Description

7.1 Enter AlarmList Screen

Press "AlarmList" button in the screen of "Panel", "Curve" "History", "DataList" and "Setting" will go the real time curve screen.

7.2 AlarmList Screen Explanation

The alarm details are displayed, if any. Filtering feature is provided.

7.3 Alarm Rows in Table

Press "NextPage" to scroll down and "PrePage" to scroll up the alarm report table.

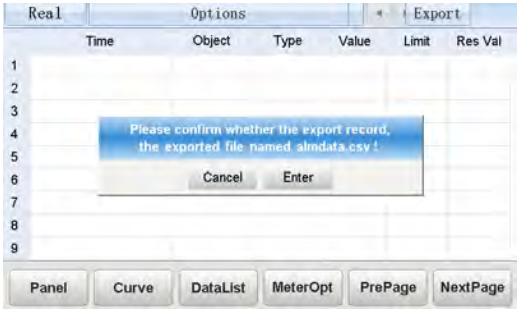
7.4 Switching Between Real-time and Historical Alarm

Every time going into AlarmList screen, by default the system shows real-time alarms. Press "Real" (Real-time) to switch "His." (Historical alarm). Press "His." to switch back to "Real".

7.5 Historical Alarm Filter

Press “OPTION” in the top row will pop out the filter option of alarms.

7.6 Alarm Export



Plug in a USB memory drive. Press “Export” on the top row. The alarm list enquired will be exported to the drive in a file named “almdata.csv”.

7.7 Leaving Alarm Screen

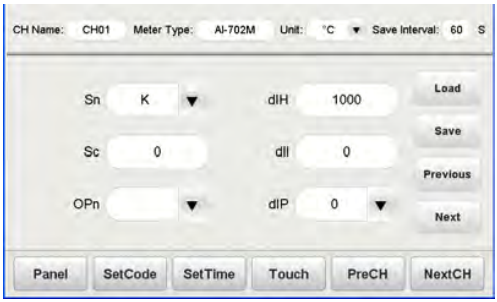
Pressing the corresponding button “Panel” (Main Screen), “Curve” (Real Time Curve), “DataList” (Data Report) and “Setting” will to go to particular function screen.

8 System Setting

8.1 Enter System Setting

Press “Setting” button in the screen of “Panel”, “Curve” “History”, “DataList” and “AlarmList” will go the system setting screen. This section is password protected. The initial password is “111”.

8.2 System Screen Explanation



The screen shows the current "CH Name" (title of channel), "Meter Type" (Internally Fixed), "Unit", "Save Interval" (Time interval of recording) and instrument parameters. All the values will be refreshed once this screen is entered. Switching channels will refresh too. Please make sure saving the parameters before switching channels.

8.3 Unit of Data Recording

Press the white editing space beside "Unit" to pop up the unit selection box.

8.4 Channel Title Editing

Press the white editing space beside "CH Name" to pop up the text input dialog box.

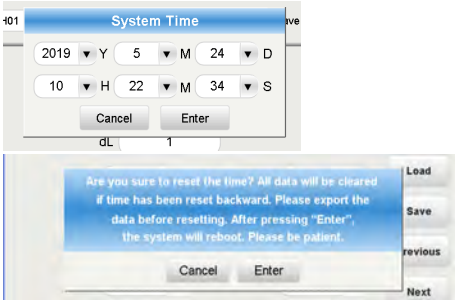
8.5 Time Interval of Records

Press the white editing space beside "Save Interval" to pop up the text input dialog box.

8.6 Password Reset

Press "SetCode" to pop up password resetting dialog box. Input the old password when it prompts. If it fails, the dialog box will disappear. If the password is correct, the dialog box will prompt to input a new 3-digit password. Press enter to confirm.

8.7 Clock Reset



Press "SetTime" to edit the system clock. Please set the correct time to match with local time. Press "Enter" will reset the time. Any saved data later than the time reset will be erased.

8.8 Parameters Loading

Entering this screen or switching channels will refresh the parameters. Any unsaved change in parameters will lost. “NotConnect” refers to the lost communication connection between the interface software and hardware. No action of “Load” or “Save” can be done. Please check for any communication interference at the back RS232/RS485 terminals.

8.9 Touch Screen Re-calibration

Press “Touch” to re-calibrate the touch screen. It is calibrated in the factory. Advanced operation and manufacturer support may be required for this operation.

8.10 Parameter Writing

Press the white edit space beside the parameter label can edit the values. Those with pull-down symbol ▼on the right will pop up a selection box. Those without the symbol will pop up a text input box. Press “Cancel” to quit the input operation.

Only parameters “Sn” (Input specification) and “dIP” (decimal place) are automatically saved instantly. Other parameters will turn to red if the values are changed. Press “Save” at the rightmost column will save all the unsaved parameters. Those parameters in red will return to black again.

Editing these two parameters, “Sn” and “diP” will ask the instrument to refresh all parameters. Please set these two parameters in the very beginning.

8.11 Channel Switching

Press “PreCH” at the bottom to switch to the parameter page of previous channel. If the current channel is already the first channel, no action will be taken.

Press “NextCH” at the bottom to switch to the parameter page of next channel. If the current channel is already the last channel, no action will be taken.

8.12 Leaving Setting Screen

Pressing the corresponding button “Panel” (Main Screen) will to go to main screen.

APPENDIX

System Parameter Description

The letter x in the parameter title refers to channel number. RDA-520 provides two channels recording feature thus H.ALx means HiAL1 and HiAL2. RDA-740 provides four channels recording feature thus H.ALx means HiAL1~4. RDA-760 provides six channels recording feature thus H.ALx means HiAL1~6.

<table>
<tr><th>Parameter</th><th>Function Description</th><th>Setting Range</th></tr>
<tr><td>Input specification (Sn x)</td><td>Available input speciation:
K, S, R, T, E, J, B, N, WRe3-WRe25, WRe5-WRe26, F2 (High Temperature Radiation Thermometer), BA2 (JPt100), Cu50, Pt100, Pt100* (-100.00 ~ +300.00°C), 0~75mV, 0~80Ω, 0~400Ω, 0~20mV, 0~100mV, 0~5V[1], 0~20mA[2], 0~60mV, 0~1V, 0.2~1V, √0.2~1V, 1~5V[1], √1~5V[1], Addition[4], Subtraction[5], √4~20mA[2], √2 − wire transmitter[3], 2-wire transmitter[3], 4~20mA[2], Multiply[6], Extended
[1] Available only when optional J3 module card purchased.
[2] Available only when optional J4 module card purchased.
[3] Available only when optional J5 module card purchased.
Input specification should be compatible with input module, such as TC module for thermocouple and mV inputs while RTD module for two-wire RTD.
[4] Addition: Set Sn3, Sn4 or Sn5 = "Addition" (internal value 41), it becomes the sum of the inputs of previous channels. E.g. if Sn5=41, PV5=PV1+PV2+PV3+PV4.
[5] Subtraction: Set Sn3=42, then PV3=PV1-PV2
[6] Multiply: Set Sn3=40, PV3=PV1*PV2</td><td></td></tr>
<tr><td>Digital Input High Limit (dIH x)
Digital Input Low Limit (dIL x)</td><td>dIH/dIL define the corresponding scale of linear inputs such as mV, 0~5V, 1~5V, 0~10mA, 4~20mA, interpreting the measured physical unit. The range of signal shown is -1999 ~ +9999 with decimal place defined by parameter dIP. When the temperature input is retransmitted, dIH/dIL also define the high/low limit of temperature.
For example, a pressure transmitter transmits the pressure to a standard 1~5V signal to input channel 1. The input at 1V indicates the pressure=0MPa and 5V indicates the pressure=1MPa. The expected display resolution is 0.001MPa. The parameters recommended are Sn1=33, dIP1=3, dIL1=0.000, dIH1=1.000</td><td>-9990~+30000 linear units or 0.1°C</td></tr>
<tr><td>Input Shift Correction (Sc x)</td><td>Sc provides shift correction to the internal error of sensor or input signal or the error of cold junction compensation in the instrument. When 2-wire RTD is used, Sc corrects the error due to lead wires of RTD.
For thermocouple or three-wire RTD inputs, the units of Sc is 0.1°C. For example, when Sc=-100, the measured temperature will be 10°C lower.
For two-wire RTD inputs, the magnitude of correction = (Sc* signal unit). The signal unit of Pt100 or 0~400ohm input is 0.02Ω while that of Cu50 or 0~240 Ω input is 0.012 Ω. For example, when Sc=-50, input type is Pt100, the correction will be -50 * 0.02 Ω=-1 Ω. If the lead wire resistance is 1 Ω, this cancels out the lead wire resistance.</td><td>-1999~+4000 units or 0.1°C</td></tr>
<tr><td>Retransmission Number (OPn)</td><td>Available option (internal data value, description)
Alarm output (0, OUTP port as alarm)
Transmit CH1 (1, OUTP port as retransmission from channel 1)
Transmit CH2 (2, OUTP port as retransmission from channel 2)
Transmit CH3 (3, OUTP port as retransmission from channel 3)
Transmit CH4 (4, OUTP port as retransmission from channel 4)
Min (Re-transmit the minimum value among all channels (defined by Cn) to OUTP)
Max (Re-transmit the maximum value among all channels (defined by Cn) to OUTP)</td><td>0~8</td></tr>
<tr><td>Decimal Point of Input (dIP x)</td><td>dIPx is set to select decimal place and display resolution of channel x.
(1) Linear inputs: Display resolution corresponding to 0,1,2,3 are 0, 0.0, 0.00 and 0.000
(2) Thermocouple or RTD inputs: dIP sets the display resolution of temperature. dIP=0, display resolution is 1°C. dIP=1, display resolution is 0.1°C.
Note: dIP is only effective in display. The internal temperature resolution is fixed as 0.1°C or 1 linear unit. There is no effect on the communication and retransmission. When the temperature resolution is set as 0.1°C, the resolution becomes 1°C when it is over 1000°C.</td><td>0~3</td></tr>
<tr><td>High Limit of Retransmission Current (OPH)</td><td rowspan="2">When OUTP is used as re-transmission, OPL/OPH define the low/high limit of re-transmisson. The unit is 0.1mA.
For example, to transmit the channel 1 input 0~600°C into 4~20mA output, the parameters should be set as below:
dIL1=0, dIH1=600, OPn=1, OPL=40, OPH=200</td><td>0~220</td></tr>
<tr><td>Low limit of Retransmission Current (OPL)</td><td>0~110</td></tr>
<tr><td>Alarm Position (ALP x)</td><td>The two digit of ALP respectively indicates the alarm output allocation of LoAL and HIAL. 0 refers no alarm output. 1,2,3,4,5,6,7 respectively sends alarm output to OP1, OP2, AL1, AL2, AU1, AU2 and MIO. OP2, AL2 and AU2 only works on dual channel relay modules.
<table>
<tr><th></th><th>LoAL</th><th>HIAL</th></tr>
<tr><td>No alarm</td><td>0</td><td>0</td></tr>
<tr><td>OP1</td><td>1</td><td>1</td></tr>
<tr><td>OP2 (Dual channel relay module installed)</td><td>2</td><td>2</td></tr>
<tr><td>AL1</td><td>3</td><td>3</td></tr>
<tr><td>AL2 (Dual channel relay module installed)</td><td>4</td><td>4</td></tr>
</table></td><td>0~77</td></tr>
</table>

	AU1 5 5 **AU2 (Dual channel relay module installed)** 6 6 **MIO** 7 7 Example setting as below: ALP1=43, low limit alarm (L.AL) of channel 1 output to AL2, ALP2=53, low limit alarm (L.AL) of channel 2 output to AU1, and both high limit alarms(H.AL) of both channel are sent to AL1.	
High Limit Alarm (HIALx)	When PVx > HIALx, high limit alarm is activated. When PVx < (HIALx-dFx), the alarm is deactivated. Set HIALx to its maximum value will disable this alarm.	-1999~+9999 linear unit or 1°C
Low Limit Alarm (LoALx)	When PVx < LoALx, low limit alarm is activated. When PVx > (LoALx+dFx), the alarm is deactivated. Set LoALx to its minimum value will disable this alarm.	-1999~+9999 linear unit or 1°C
Dead Band (dFx)	dF is set to avoid high frequent alarm on/off actions caused by process input fluctuation. Dead band is also known as insensitive sector or lag.	0~999.9°C or 0~9999 linear unit
Advanced Function (AF)	The formula of AF value is: AF=B*2 + D*8 + E*16 + H*128 B=0, RTD input use two-wire wiring; B=1, RTD input use three-wire wiring (suitable module required); D=0, Normal; D=1, Low limit alarms of all channels are changed to high limit alarms. E=0, Normal; E=1, Set M2(MIO) and M3(OUPT) supporting single channel input only. H=0, Normal; H=1, For thermocouple or RTD input, the measured value PV=PV*dIH / 2000.0. Addition in input specification can be further applied. Example setting To make use of all alarms to high limit alarms, D=1, then AF = 1*8 = 8.	
Digital Filter (dL x)	The value of dF will determine the ability of noise filtering. 0: no filtering; 1: filtering with mean; 2~40: filtering with mean and integral. When a large value is set, the measurement input is stabilized but the response speed is slow. Under environment with great interference, increasing dF gradually will adjust the momentary fluctuation of measured value falling between 2 to 5 unit. When the instrument is being metrological verified, dF can be set to 0 or 1 to increase the response speed.	0~40
NO/NC Switch (nonc)	Single channel relay module provides both normal open and normal close output. Dual relay output module only provides NO output. This parameter can define the NO action to NC. nonc=0, L3 dual dual relay installed in MIO, OP1, OP2 AL1, AL2, AU1 and AU2 is normal open, NO. nonc=127, all module used as alarm turns to normal close, NC. Formula of nonc is as below: nonc = A*1 + B*2 + C*4 + D*8 + E*16 + F*32 + G*64 A,B,C,D,E,F,G respectively set NO/NC output of OP1, OP2, AL1, AL2, AU1, AU2 and MIO. 0 means the corresponding output is NO, and 1 means NC output.	0 ~63, 127