Product model: HDM-5200 dual-loop digital display controller

Manufacturer: Nanjing Hangjia Electronic Technology Co., LTD

Product Introduction

HDM-5200 Series dual-loop digital display controller with automatic SMD packaging technology has a strong anti-jamming capability. It can be used in conjunction with various sensors、transmitters to display temperature, pressure, liquid level, speed, force and other physical parameters, and to output alarm control, analog transmission, RS-485/232 communication etc. Designed with dual-screen LED display, you can set the displaying contents of upper and lower screen, and through mathematic function you can make addition, subtraction, multiplication, and division to the two input loop input signals, and it has a very good applicability.

Specifications

Input				
Input signals	Current	Voltage	Resistance	Thermocouple
Input Impedance	≤250Ω	≥500KΩ		
Maximum input current	≤30mA			
Maximum input voltage		≤6V		
Output				
Output signals	Current	Voltage	Relay	24V Distribution or feeder
Output load capability	≤500Ω	≥250 KΩ (Note: Please replace the module for higher load capacity)	AC220V/0.6（small） DC24V/0.6A （small） AC220V/3A（big）	≤30mA

			DC24V/3A（big） According to Remarks	
Comprehensive parameter				
Accuracy	0.2%FS±1word			
Setting model	Panel touch key parameter setting values locking; store the setting values permanently			
Display style	-1999 ~ 9999 display range 0 ~ 100% measured value lightness bargraph display; LBD display for working state			
Working environment	Ambient temperature: 0 ~ 50 ℃; Relative humidity: ≤ 85% RH; Far from strong corrosive gas			
Power supply	AC 100 ~ 240V, (50/60HZ); DC 20 ~ 29V			
Power	≤5W			
Frame	Standard snap-on			
Communication	Standard MODBUS communication protocol, RS-485, communication distance up to 1 km, RS-232, communication distance up to 15 meters Note: While with communication function, the communication converter should be a active one.			

Note: The output load capacity of external dimensions D, E,H instrument relay is the AC220V/0.6A, DC24V/0.6A

Display panel and function keys

1 Instrument dimension and hole size:

Dimensions	Hole Size
160*80mm (Horizontal / beam)	152*76mm
80*160mm (Vertical / beam)	76*152mm
96*96mm (quadrate)	92*92mm

96*48mm (Horizontal)	92*45mm
48*96mm (Vertical)	45*92mm
72*72mm (quadrate)	68*68mm

2 Digital display window:

PV display window: display the value of Loop 1 signals; you can set the displaying content as your choice. In the state of parameters setting, display parameter symbols.
SV display window: display the value of Loop 2 signals; you can set the displaying content as your choice. In the state of parameters setting, display parameter symbols.

3 Buttons

	**Enter key**: conformation for parameters update Page Down: Page down for parameter settings Exit key: Return to measurement screen pressed for 2 seconds
	**Shift key**: Shift to the left one bit every press; Return key: Return to a the upper parameters pressed for 2 seconds
	**Minus key**: used to reduce the value; display time, under print function
	**Plus key**: increase the value; display time under print function

4 Indicators

1AL1: Alarm 1 indicator for Loop 1

1AL2: Alarm 2 indicator for Loop 1

2AL1: Alarm 1 indicator for Loop 2

2AL2: Alarm 2 indicator for Loop 2

5 Standard wiring

You should pay attention to the following items when wire the instruments

PV input (process signal input)

1. To reduce electrical interference, the low-voltage DC signal and sensor input wire should stay away from strong electrical wire. If not, you should use shielded wire, and ground it at one point.

2.Any device between the sensor and terminal, maybe affects the measurement accuracy

due to resistance or leakage current

Thermocouple or pyrometer input

You should use the compensation wires corresponding for the thermocouple as extension wire, and it's the best if the wire is shielding.

RTD (platinum resistance) input

The resistance for the 3 wire must be the same, and each wire must not exceed 15Ω resistor

6 Power settings

As soon as instrumentation is powered on, it enters into the self-testing status (seen in the right), and when self- testing is completed, it automatically transfers to the working state.

In the working state, press the button and it displays LOC, LOC parameter settings are listed in the following:

1. 1) You can enter into Level 1 menu whatever the Loc is (LOC = 00、132, no locking function);

2) when Loc is 132, press button for 4 seconds to enter Level 2 menu;

3) when Loc is 130, press button for 4 seconds to enter the time setting menu, only for the instruments with printing capability.

4) when Loc is others, press the button for 4 seconds to return to the measuring state.

2. If Loc is 577, in the Loc menu, press the key and for 4 seconds at the same time, you can restore all the parameters to factory default settings.

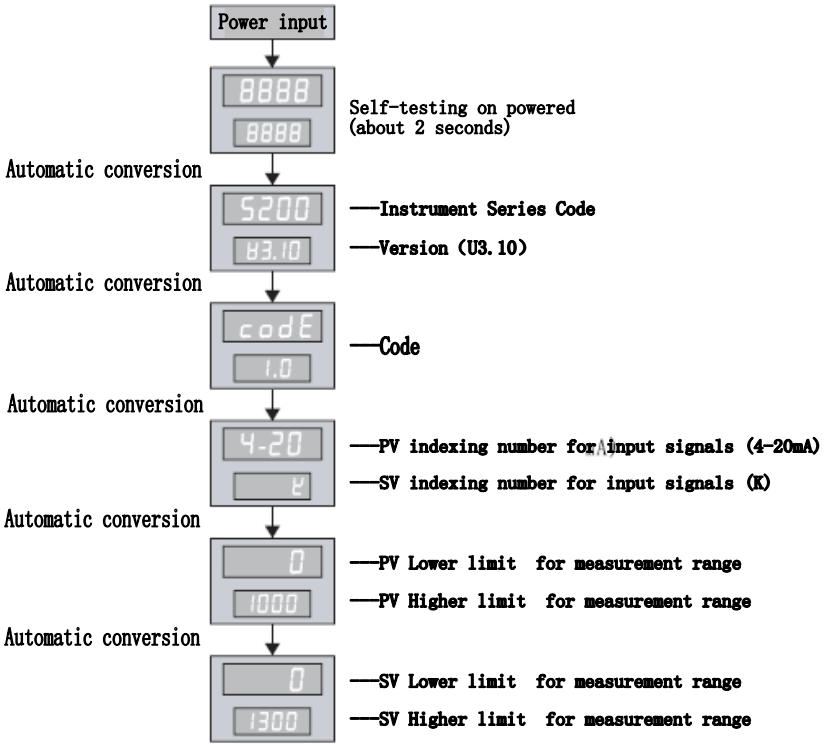
3. In any other menu, press the button for 4 seconds to exit to the measuring screen.

4. When thermocouple signal as input and channel decimal dP is 0, the temperature resolution is 1 ℃; when dP is 1, the temperature resolution is 0.1 ℃, (resolution automatically changed to 1 ℃ when the temperature is over 1000 ℃).

7 Time setting

In the state of PV displaying measured values, press the button to enter parameters setting, set LOC as 130; In the state of PV displaying LOC and SV displaying 130, press button

for 4 seconds to enter into the time parameter settings. When PV displays "dATE " and SV displays the current date (for example :090720-July 20, 2009) set the current date in the same way as parameters settings. In the state of current time, press the key, PV displays "TlnE" and SV displays the current time (for example, 183047-18:30:47), set the current time in the same way as parameters settings. In the state of current time, press the button again to exit time setting to PV measuring screen.



★ Back to working status

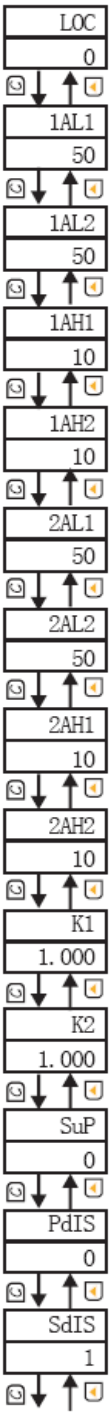
1.Manual way: In the state of parameters setting, press the button for 4 seconds, the instrument will automatically return to real-time measurement state.

2 Auto way: In the state of parameters setting, do not press any button. After 30 seconds the instrument will automatically return to real-time measurement state.

8 Parameter settings

8.1 Level 1 parameters setting

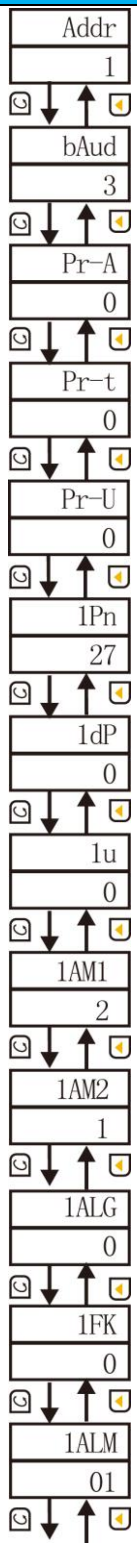
In the working state, press button and PV displays LOC, SV displays the parameter values: Press or to set parameters. Press button for 2 seconds to return to upper lever parameter, when Loc is any value. You can enter into Level 1 parameter setting.

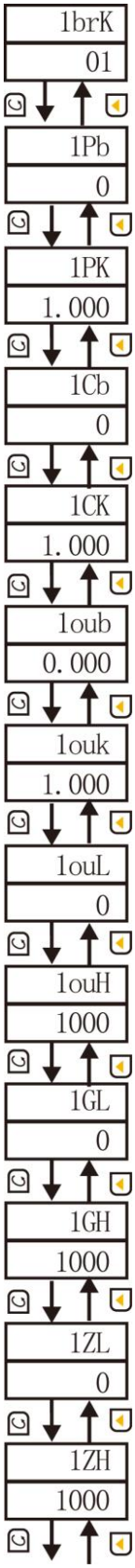
Default setting	Parameters	Setting range	Description
 Return to the original screen LOC	Loc Parameters locking	0～999	LOC=00: No locking (Level 1 parameters can be modified) LOC≠00、132: Locking(Level 1 parameters can not be modified) LOC=132: No locking, into Level 2 parameters setting(Level 1 parameters can be modified)
	1AL1 Set point of Alarm 1 for Loop 1	-1999～9999	Set point of Alarm 1 for Loop 1
	1AL2 Set point of Alarm 2 for Loop 1	-1999～9999	Set point of Alarm 2 for Loop 1
	1AH1 Difference of Alarm 1 for Loop 1	0～9999	Difference of Alarm 1 for Loop 1
	1AH2 Difference of Alarm 2 for Loop 1	0～9999	Difference of Alarm 2 for Loop 1
	2AL1 Set point of Alarm 1 for Loop 2	-1999～9999	Set point of Alarm 1 for Loop 2
	2AL2 Set point of Alarm 2 for Loop 2	-1999～9999	Set point of Alarm 2 for Loop 2
	2AH1 Difference of Alarm 1 for Loop 2	0～9999	Difference of Alarm 1 for Loop 2
	2AH2 Difference of Alarm 2 for Loop 2	0～9999	Difference of Alarm 2 for Loop 2
	K1 Input signal coefficient of Loop 1	-1.999～9.999	Input signal coefficient of Loop 1
	K2 Input signal coefficient of Loop 2	-1.999～9.999	Input signal coefficient of Loop 2
	Mathematic symbols	0～2	0: multiplication 1:division 2:addtion
	PIdS PV displaying style	0～3	0:PV displays the measured value of Loop1 1: PV displays the measured value of Loop2 2:PV displays the mathematic functions of the two loops 3:PV displays the measured values and the mathematic functions of the two loops circularly
	SdIS SV screen displaying contents	0～3	0:PV displays the measured value of Loop1 1: PV displays the measured value of Loop2 2:PV displays the mathematic functions of the two loops 3:PV displays the measured values and the mathematic functions of the two loops circularly

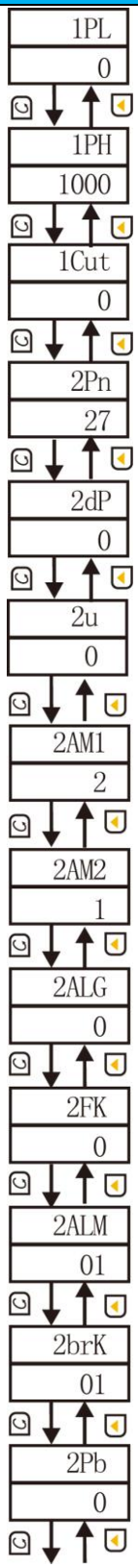
8.2 Level 2 parameters setting

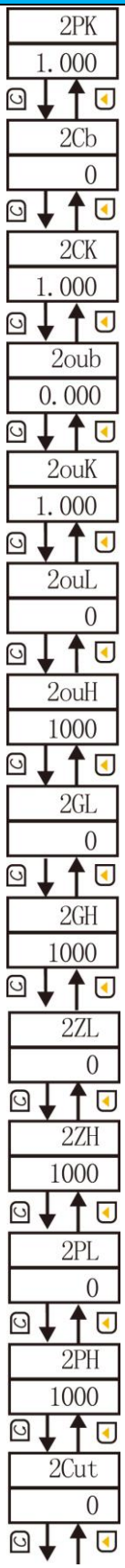
In the working state, press button and PV displays LOC, SV displays parameter values; Press or to set parameters. Press the button for 2 seconds to back to the upper

parameters setting; when Loc is 132, press button for 4 seconds, you can enter into Level 2 parameters setting.

Default setting	Parameters	Setting rang(word)	Description
	Addr Device ID	0～250	Set the ID of the instrument in communication
	bAud Communication baud rate	0～3	Baud = 0: Communication baud is 1200bps; Baud = 1: Communication baud is 2400bps Baud = 2: Communication baud is 4800bps; Baud = 3: Communication baud is 9600bps
	Pr-A Alarm printing function	0～1	0: no alarm printing function (no this parameter when no this function) 1: Alarm printing function (no this parameter when no this function)
	Pr-t Interval of printing	10～2400 minutes	Set the interval of printing(when interval is less than 10, no printing) (no this parameter when no this function)
	Pr-u Printing unit	0～25	Details seen in unit setting function code Table (no this parameter when no this function)
	1Pn Indexing number of Loop 1	0～35	Type of indexing number of Loop1 (Details seen in Selection Table)
	1dP Decimal point of Loop 1	0~3	dP=0: No decimal point dP=1：Decimal point in the ten (Displaying XXX.X) dP=2: Decimal point in the hundred (Displaying XX.XX) dP=3:Decimal point in the thousand (Displaying X.XXX)
	1u Unit of Loop 1	0~45	Details seen in Unit setting Function Code Table
	1AM1 First limited alarming mode	0~2	X = 0: following the first alarm X = 1: following the second alarm X = 2: following the calculation result alarm Y = 0: no alarm Y = 1: lower limit alarm Y = 2: upper limit alarm
	1AM2 Second limited alarming mode	0~2	X = 0: following the first alarm X = 1: following the second alarm X = 2: following the calculation result alarm Y = 0: no alarm Y = 1: lower limit alarm Y = 2: upper limit alarm
	1ALG Ficker alarm of Loop 1	0~1	1ALG=0: no flicker alarming 1ALG=1: flicker alarming
	1FK Filtrate coefficient	0~19	Setting filter coefficients to prevent value flicking(seen in instrument parameters description 2)
	1ALM Alarm function of Loop 1	0~19	one = 0: No alarm delay function one = 1-9: delay (0.5 × value set) seconds and then output alarm signals ten = 0: Alarm when off-line(relay contact alarm output) ten = 1: No alarm when off-line (Note: When ALM4 is 3, this function is invalid)

Default setting	Parameters	Setting rang(word)	Description
	brU Display value when off-line	0～3	Brk = 0: Displaying 0 when off-line Brk = 1: Displaying maximum indexing number value when off-line Brk = 2: Displaying maximum value before when off-line Brk = 3: Displaying then value before off-line
	IPb Zero shift of Loop 1 display value	Full range	Set the zero shift range of input signals (seen in instrument parameters Description 3)
	IPU Proportion of the input range of Loop 1	0~1.999	Set the proportion of input range (seen in the instrument parameters Description 3)
	ICb Zero shift of Loop 1 cold-junction compensation	Full range	Set the zero shift range of cold-junction compensation(only for thermocouple signals)
	ICU Proportion of the input range of Loop 1	0~1.999	Set amplification of cold-junction compensation (only for thermocouple signals)
	Ioub Zero shift of Loop 1 transmission output	0～1.2	Setting the zero shift range of transmission output 1 (seen in the instrument parameters Description 4)
	IouU Amplification of Loop 1transmission output	0～1.2	Set the amplification of transmission output 1(seen in the instrument parameters Description 4
	IouL lower limit of Loop 1 transmission output range	Full range	Set the lower limit of the transmission output range
	IouH upper limit of Loop 1 transmission output range	Full range	Set the upper limit of the transmission output range
	IGL Lower limit of Loop 1 flicker alarm	Full range	Set the lower limit of flicker alarm range (when measured value is lower than set value, the measured value flickers ; this function exists when ALG=1)
	IGH Upper limit of Loop 1 flicker alarm	Full range	Set the upper limit of flicker alarm range (when measured value is higher than set value, the measured value flickers ; this function exists when ALG=1)
	IEL Lower limit of PV Bargraph	Full range	Set the lower limit of bargraph (only for bargraph) (Seen in Instrument Parameter Description 5)
	IEH Upper limit of PV Bargraph	Full range	Set the upper limit of bargraph (only for bargraph) (Seen in Instrument Parameter Description 5)

Default setting	Parameters	Setting rang(word)	Description
	1PL Lower limit of Loop 1 measurement range	Full range	Set the lower limit of input signal
	1PH Upper limit of Loop 1 measurement range	Full range	Set the upper limit of input signal
	1Cut Loop 1 small input signal excision	0~100%	Set small input signal excision range (When input signal is lower than set point , it displays 0. This function only for voltage or current signals)
	2Pn Indexing number of Loop 2	0～35	Type of indexing number of Loop2 (Details seen in Selection Table)
	2dP Decimal point of Loop 2	0~3	dP=0: No decimal point dP=1：Decimal point in the ten (Displaying XXX.X) dP=2: Decimal point in the hundred (Displaying XX.XX) dP=3:Decimal point in the thousand (Displaying X.XXX)
	2u Unit of Loop 2	0~45	Details seen in Unit setting Function Code Table
	2AM1 Third limited alarming mode	0~2	X = 0: following the first alarm X = 1: following the second alarm X = 2: following the calculation result alarm Y = 0: no alarm Y = 1: lower limit alarm Y = 2: upper limit alarm
	2AM2 Fourth limited alarming mode	0~2	X = 0: following the first alarm X = 1: following the second alarm X = 2: following the calculation result alarm Y = 0: no alarm Y = 1: lower limit alarm Y = 2: upper limit alarm
	2ALG Ficker alarm of Loop 2	0~1	2ALG=0: no flicker alarming 2ALG=1: flicker alarming
	2FK Filtrate coefficient	0~19	Setting filter coefficients to prevent value flicking(seen in instrument parameters description 2)
	2ALM Alarm function of Loop 2	0~19	one = 0: No alarm delay function one = 1-9: delay (0.5 × value set) seconds and then output alarm signals ten = 0: Alarm when off-line(relay contact alarm output) ten = 1: No alarm when off-line (Note: When ALM4 is 3, this function is invalid)
	2brK Loop 2 display value when off-line	0～3	Brk = 0: Displaying 0 when off-line Brk = 1: Displaying maximum indexing number value when off-line Brk = 2: Displaying maximum value before when off-line Brk = 3: Displaying then value before off-line
	2Pb Zero shift of Loop 2display value	Full range	Set the zero shift range of input signals (seen in instrument parameters Description 3)

Default setting	Parameters	Setting rang(word)	Description
	2PY Proportion of the input range of Loop 2	0~1.999	Set the proportion of input range (seen in the instrument parameters Description 3)
	2Cb Zero shift of Loop 2 cold-junction compensation	Full range	Set the zero shift range of cold-junction compensation(only for thermocouple signals)
	2CY Amplification of Loop 2 cold-junction compensation	Full range	Set the amplification of cold-junction compensation(only for thermocouple signals)
	2oub Zero shift of Loop 2 transmission output	0～1.2	Setting the zero shift range of transmission output (seen in the instrument parameters Description 4)
	2ouY Amplification of Loop 2 transmission output	0～1.2	Set the amplification of transmission output (seen in the instrument parameters Description 4
	2ouL lower limit of Loop 2 transmission output range	Full range	Set the lower limit of the transmission output range
	douH upper limit of Loop 2 transmission output range	Full range	Set the upper limit of the transmission output range
	2GL Lower limit of Loop 2 flicker alarm	Full range	Set the lower limit of flicker alarm range (when measured value is lower than set value, the measured value flickers ; this function exists when ALG=1)
	2GH Upper limit of Loop 2 flicker alarm	Full range	Set the upper limit of flicker alarm range (when measured value is higher than set value, the measured value flickers ; this function exists when ALG=1)
	2ΞL Lower limit of PV Bargraph	Full range	Set the lower limit of bargraph (only for bargraph) (Seen in Instrument Parameter Description 5)
	2ΞH Upper limit of PV Bargraph	Full range	Set the upper limit of bargraph (only for bargraph) (Seen in Instrument Parameter Description 5)
	2PL Lower limit of Loop 2 measurement range	Full range	Set the lower limit of input signal
	2PH Upper limit of Loop 2 measurement range	Full range	Set the upper limit of input signal
Return to the original screen Addr	2Cut Loop 2 small input signal excision	0~100%	Set small input signal excision range (When input signal is lower than set point , it displays 0. This function only for voltage or current signals)

Unit Setting Function Code Table:

Code	0	1	2	3	4	5	6	7	8	9
Unit	kgf	Pa	KPa	MPa	mmHg	mmH_2O	bar	℃	%	Hz
Code	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Unit	m	t	l	m^3	kg	J	MJ	GJ	Nm^3	m/h
Code	20	21	22	23	24	25	26	27	28	29
Unit	t/h	l/h	m^3/h	Kg/h	J/h	MJ/h	GJ/h	Nm^3/h	m/m	t/m
Code	30	31	32	33	34	35	36	37	38	39
Unit	l/m	m^3/m	Kg/m	J/m	MJ/M	GJ/m	Nm^3/m	m/s	t/s	l/s
Code	40	41	42	43	44	45				
Unit	m^3/s	Kg/s	J/s	MJ/s	GJ/s	Nm^3/s				

9 Level 2 parameters setting

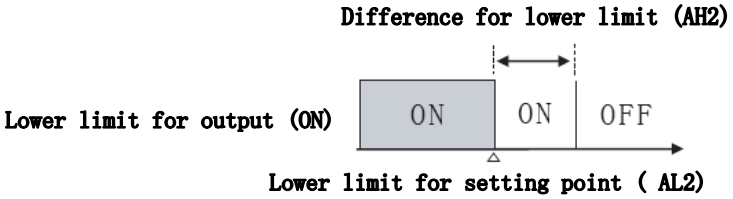
9.1 Alarm output (AL1, AL2, AH1, AH2)

★ About difference:

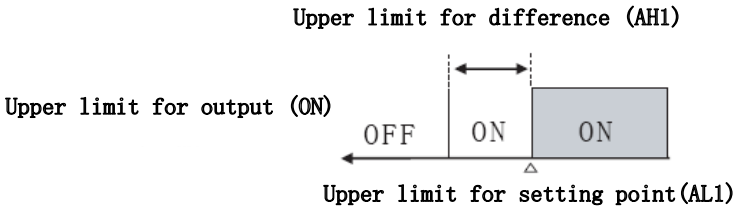
This instrument uses alarm output with difference to prevent the frequent action when output relay or alarm output value is near the setting point.

Specific output state is listed as follows:

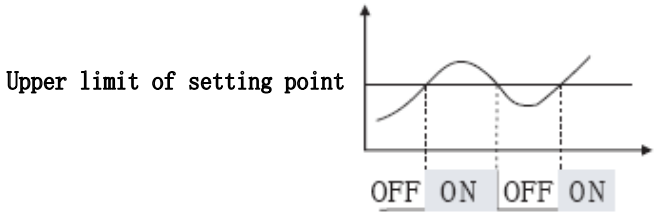
★ measured values arises:



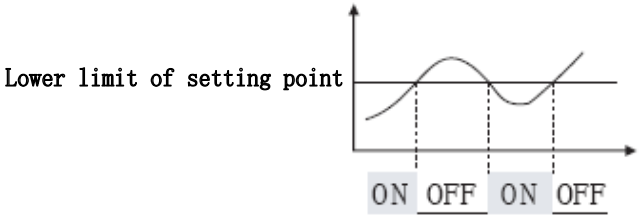
★ measured values decreases:



★Upper limit of position alarm output:



★Lower limit of position alarm output:



9.2 Filter coefficient

The times of sampling, used to prevent the flicking of measured values;

Sampling period – analog signals as input, the interval of each data acquisition is 0.5 seconds. The relation of PV displaying value, filter coefficient and sampling period is listed as followed:

Example: Analog signals as input, supposing the filter coefficient equals 6 (time), then the instrument will automatically average the input signals during(6 × 0.5) 3 seconds, and refresh PV display value. (Namely displaying the average value of the input signals during front 3 seconds)

9.3 Display shift and amplification of input signals:

In regular modification, you can adjust the value of Pb and Pk to change the display error of measured valuel.

The formula of Pb and Pk:

Pk = the setting display range ÷ real display range× original Pk

Pb = the lower limit of setting display range – the lower limit of real display range × Pk + original Pb

Example:

4 ~ 20mA DC current as input signal, measured range = 200 ~ 1000 KPa, and then we make regular modification and find that when input is 4 mA, it displays -202; when input is 20 mA, it displays 1008. (Original Pb = 0, original Pk = 1.000)

According to the formula :

Pk = setting display range ÷ real display range X original KK1

= [1000-(-200)] ÷ (1008-(-202))X1=1200÷1210X1≈ 0.992

Pb = the lower limit of setting display range – the lower limit of real display range × Pk + original

Pb = -200 - (-202 × 0.992) +0 = 0.384

Supposing: Pb = 0.384, Pk = 0.992

9.4 Zero shift of transmission output 10ub, 10uK, 20ub, 20uK

Please base 0 ~ 20mA or 0 ~ 5V to make modification to this instrument. If you want make a change to output range or output error, you can refer to the following formula:

$$\text{New Oub} = \text{Current Oub} - \frac{\text{Current output lower limit} - \text{Set output lower limit}}{\text{Full scale}}$$

$$\text{New OuK} = \text{Current OuK} - \frac{\text{Current output Upper limit} - \text{Set output Upper limit}}{\text{Full scale}}$$

In this formula, when the output is current signal, full scale = 20mA; when the output is voltage signal, full scale = 5V.

Example 1:

Transmission current 0 ~ 20mA as output, and we want to change it to 4 ~ 20mA. We measure that when output zero is 0 mA, if the input is full scale, that output is 20 mA. Current Oub = 0, and current OuK = 1.

$$\text{New Oub} = 0 - \frac{0-4}{20} = 0.2$$

$$\text{New OuK} = 1 - \frac{20-20}{20} = 1$$

Therefore, set Oub as 0,2, and keep OuK unchanged, we have changed the output from 0 ~ 20mA to 4 ~ 20mA.

9.5 Bargraph display:

Bargraph display: If measurement range is 0 ~ 100 and the current measured value is 50, then the light beam lights from 0 to 50.

Bargraph display range: bargraph display range is the percentage ZL, ZH.

For example:

1) Set the range as 0 ~ 100, if the current measured value is 50, then the light beam displays 50%.

2) Set the range as 0 ~ 1000, if the current measured value is 500, then the light beam displays 50%.

3) Set the range as 0 ~ 2000, if the current measured value is 1000, then the light beam displays 50%.

10 Instrument models and wiring diagram

10.1 Instrument models

HDM-5200 □-□/□-□/□/□/□/□ ( ) -□- ( )

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①Specification size	
Code	width*height*depth
A	160*80*110mm(Horizontal)
B	80*160*110mm(Vertical)
C	96*96*110mm(Quadrate)
D	96*48*110mm(Horizontal)
E	48*96*110mm(Vertical)
F	72*72*110mm(Quadrate)
K	160*80*110mm (Horizontal / light beam)
L	80*160*110mm (Vertical / light beam)
④Transmission output of Loop 1 (OUT1)	
Code	output type (Load resistance RL)
X	No
0	4～20mA (RL≤600Ω)
1	1～5V (RL≥250KΩ)
2	0～10mA (RL≤1.2KΩ)
3	0～5V (RL≥250KΩ)
4	0～20mA (RL≤600Ω)
5	0～10V (RL≥4KΩ)
⑤Transmission output of Loop 2 (OUT2)	
Code	output type (Load resistance RL)
X	No
0	4～20mA (RL≤600Ω)
1	1～5V (RL≥250KΩ)
2	0～10mA (RL≤1.2KΩ)
3	0～5V (RL≥250KΩ)
4	0～20mA (RL≤600Ω)
5	0～10V (RL≥4KΩ)
⑥The number of alarm points (relay contact	

②Indexing number of Loop 1 ③Indexing number of Loop 2	
Code	Indexing type (measuring range)
00	Thermocouple B (400～1800℃)
01	Thermocouple S (0～1600℃)
02	Thermocouple K (0～1300℃)
03	Thermocouple E indexing numbe (0～1000℃)
04	Thermocouple T indexing numbe (-200.0～400.0℃)
05	Thermocouple J indexing numbe (0～1200℃)
06	Thermocouple R indexing numbe (0～1600℃)
07	Thermocouple N indexing numbe (0～1300℃)
08	Thermocouple F2 indexing numbe (700～2000℃)
09	Thermocouple Wre3-25 indexing numbe (0～2300℃)
10	Thermocouple Wre5-26 indexing numbe (0～2300℃)
11	RTD Cu50 (-50.0～150.0℃)
12	RTD Cu53 (-50.0～150.0℃)
13	RTD Cu100 (-50.0～150.0℃)
14	RTD Pt100 (-200.0～600.0℃)
15	RTD BA1 (-200.0～600.0℃)
16	RTD BA2 (-200.0～600.0℃)
17	Linear resistance 0～400Ω (-1999～9999)
18	Remote Resistance 0～350Ω (-1999～9999)
19	Remote Resistance 30～350Ω (-1999～9999)
20	0～20mV (-1999～9999)
21	0～40mV (-1999～9999)
22	0～100mV (-1999～9999)
23	-20～20mV (-1999～9999)
24	-100～100mV (-1999～9999)
25	0～20mA (-1999～9999)
26	0～10mA (-1999～9999)
27	4～20mA (-1999～9999)
28	0～5V (-1999～9999)

output)		29	1～5V (-1999～9999)
Code	The number of alarm limits	30	-5～5V (-1999～9999)
X	No	31	0～10V (-1999～9999)
1	1 alarm limit	32	0～10mA square (-1999～9999)
2	2 alarm limits	33	4～20mA square (-1999～9999)
3	3 alarm limits	34	0～5V square (-1999～9999)
4	4 alarm limits	35	1～5V square (-1999～9999)
		55	Full switch
		56	Special specifications

⑦Communication output	
Code	Communication Interface (communication protocol)
X	No
D1	RS-485 communication Interface (Modbus)
D2	RS-232 communication Interface (Modbus)
D3	RS-232C printer interface

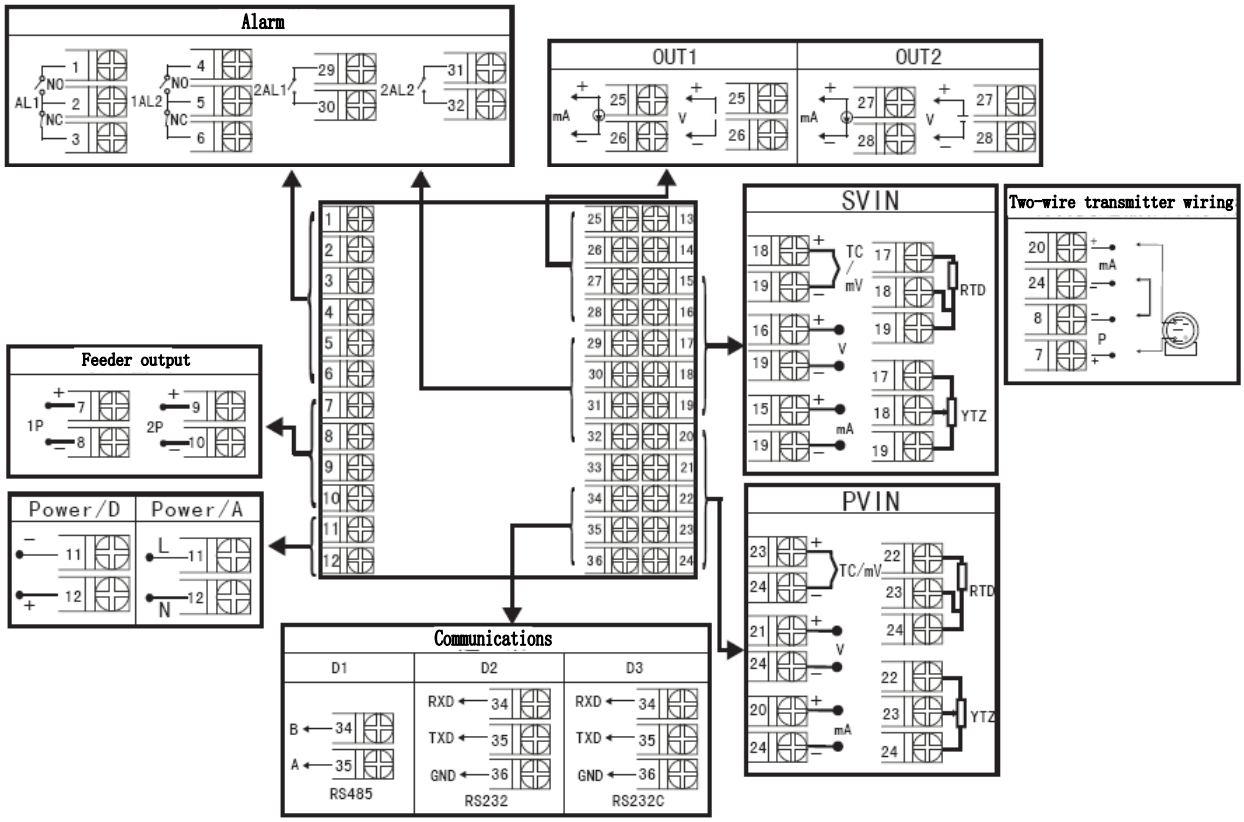
⑧Feeder output	
Code	Feeder output (output voltage)
X	No
1P	Feeder of Loop 1
2P	Feeder of Loop 2
	For example: "2P (12/24)" means Loop 1 is 12V, Loop 2 feeder output is 24V.

⑨Power supply	
Code	Voltage
A	AC/DC 100～240V (50/60Hz)
D	DC 20～29V

⑩Notes	
Code	Additional function (ignore if no the function)
Q	Addition (minus), multiplication and division mathematic function

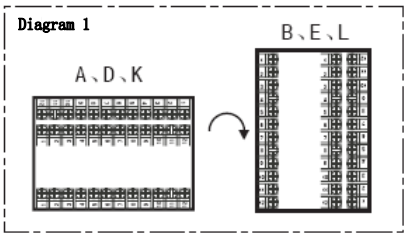
Note: No RS232C printer port for F-type instrument.

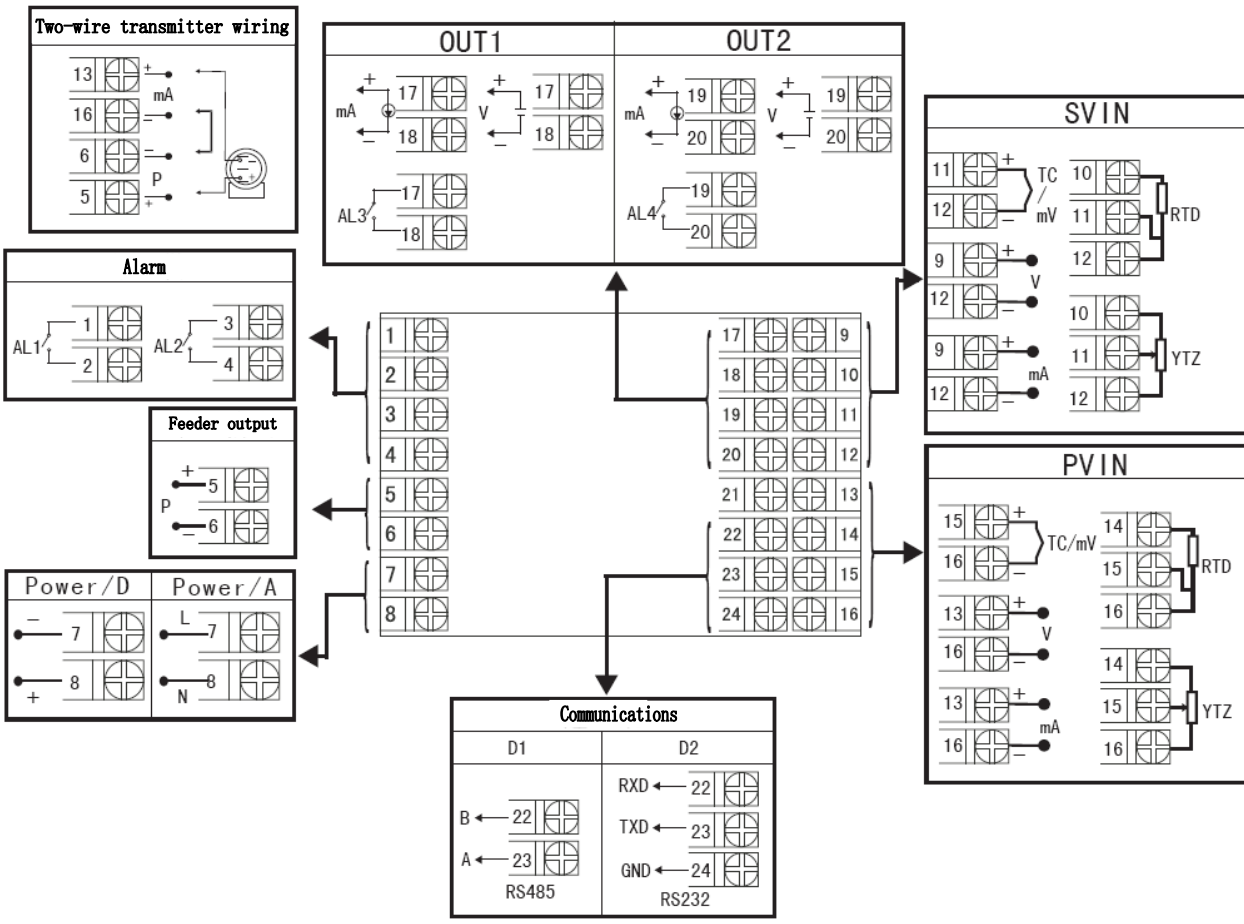
10.2 Wiring diagram



Wiring diagram of A, B, C, D, E, K, L, M-type

Note: The horizon and vertical device cover terminal block wirings are different, seen in diagram 1:





Wiring diagram for F-type

Note: With two-way feeder outputs, the ground terminals of input current signal terminal should be shorted (pin 19 and 24)

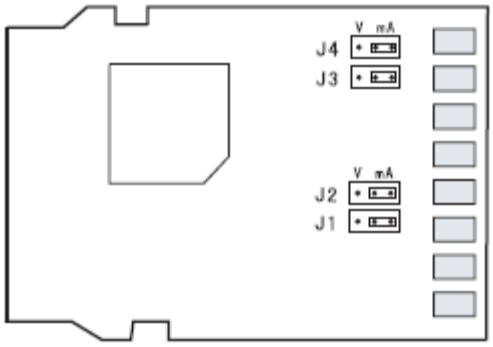
Note: Voltage and current signals of Type F must be switched through the short circuit ring

J1, J2 for Loop 1 input signal switch positions

J3, J4 for Loop 2 input signal switch positions

	DC voltage input	DC Current Input
Short-circuit-ring		

Diagram for Type F:



11 Print function

11.1 Manual print

In the state of measuring screen, press the button to print the current real-time measured values.

11.2 Regular print

Every interval time, the instrument will control the printer to print the current real-time measured values. Printing format as followed:

TIME PRINT

2009-05-16 ----------Date

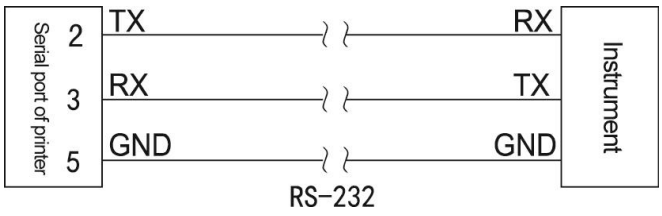
09：46：03 ----------Time

PV=-250℃ ----------Measured values of Loop 1

SV=-250℃ ---------- Measured values of Loop 2

ALM：○●○● ---------- Alarm Status

11.3 Wiring



12 Communication

This instrument has the ability to communicate with upper computer, and the upper computer can complete the automatic adjustment, parameters setting, data collection and watch of the lower instruments. With the corresponding software, you can finish dynamic picture displaying, parameters setting, diagram printing, logging and report printing and so on in Windows. You can communicate with RS-485, RS-232 in 1200~9600 bps. The data format is: one starting bit, eight data bits and one stopping bit.

★ Specific parameters seen in the "Instrument Communication Handbook"

This instrument can be used with a variety of equipment with serial input and output.