

Manual

Signal generator



S218.02-ZX-XH3.1

Signal Calibrator

Foreword:

Thank you for buying our portable signal calibrator. This manual will show you its function, wiring, and the way to use it .please read this manual carefully before using our product.

1. Copying or publishing this manual is not allowed.
2. This portable signal calibrator is changing rapidly. All specification supplied here are subject to change without notice at any time.
3. We strive to make an accurate and all-sided manual. If there're errors, omissions, please contact us.

Editon: U-S2-CN1 2017-04 First editon.

Confirm package contents:

1. signal calibrator*1
2. signal cable*3
3. usb cable*1
4. bag*1
5. manual*1
6. qualification*1

1.Summary

1.1 Abstract

This signal calibrator can measure or output multiple signals including voltage, current, TC, with LCD screen, silicone keyboard, simple operation, longer standby time, higher accuracy and programmable output. Its widely used in lab, industry local, PLC, process instrument, electric valve and many other area's debugging.

1.2Main function

Voltage signal: 0-30 V、 0-25mV 、 0-100mV output and measurement.

Current signal: Active current 0-25mA, 4-20mA, output and measurement.

TC (thermal couple): K, E, J, T, R, B, S ,N output and measurement.

Resistance/Thermal resistor: 0-400 Ω 、 -200-650 $^{\circ}\text{C}$ Output and measurement (The output resistance starts at 15 Ω)

1.3 Technical parameters

Item	Signal	Range	Accuracy	Resolution	Remark
DC voltage	20mv	0.00-24.00mV	±0.2%	0.01mV	
	100mv	0.00-100.mV	±0.2%	0.1mV	
	V	output0.00-15.00V	±0.2%	0.01V	
		measure0.00-30.00V	±0.2%	0.01V	
DC current	mA	0.00-24.00mA	±0.2%	0.01V	Output : max load 750Ω measure: input impedance 100Ω
	4-20mA	4/8/12/16/20mA	±0.2%	0.01mA	
Passive current	mA	0.00-24.00mA	10%	0.1V	Output: external power 16-30V
Power output	24VLOOP	24V/16V	±1%	1°C	Drive current 24mA
Thermocouple	K	0-1372°C	±1%	1°C	Output : start from 0°C
	E	0-1000°C	±1%	1°C	
	J	0-1200°C	±1%	1°C	
	T	0-400°C	±1%	1°C	
	R	0-1768°C	±1%	1°C	
	B	40-1820°C	±1%	1°C	
	S	0-1768°C	±1%	1°C	
	N	0-1300°C	±1%	1°C	
resistance	Ω	15.0-400.0 Ω	±0.2%	0.1 Ω	
		0.0-400.0 Ω	±0.2%	0.1 Ω	
The thermal resistance	PT100	-199.9-650.0°C	±0.2%	0.1°C	

1.4Standard

1.4.1

Operating temperature and humidity:-10~55℃, 20~80% RH

1.4.2

Storage temperature:-20~70℃

1.4.3

Size(mm): 115*70*26

1.4.4

Weight: 300g

1.4.5

Power: 3.7V lithium battery or 5V/1A power adapter

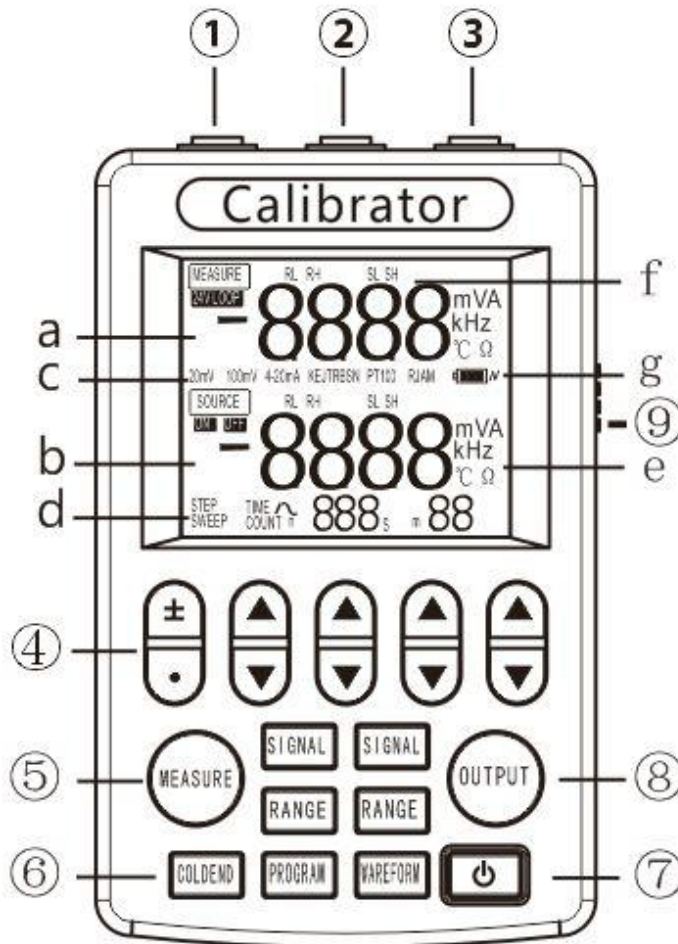
1.4.6

Power dissipation:300mA, 7~10hour

1.4.7

OCP:30V

2. Each part and function



2.1

- ①. common (black) ②.output(yellow) ③.measure(red)

2.2

Button

④modify button:

▲ ▼ Increase and reduce the value

◻ Switch the decimal point

± Toggle the value plus or minus

⑤measure function button: (blue)

【Signal】 : select the type of the signal

【Range】 : select the measuring range

【Measure】 : open/exit the output function

⑥cold end and program function button

【Cold end】 : show/modify cold end(only when measuring TC)

【Program】 : enable the program function

【Waveform】 : change the programmable output wave

⑦power

Turn on/off

⑧output function(yellow)

【Signal】 : select the type of output signal

【Range】 : select the range of output signal

【Output】 : open/exit the output function

⑨switch(factory default off)

1. auto power off: auto power off if there's not any operation
2. manual cold end: manual setting when measuring the TC
3. passive output: output the passive current signal
4. Low power mode: output the 16v voltage to transmitter when Input the passive current.In order to reducing the power dissipation and lengthen the working time.

2.3LCD display

a:measurement:4 number with unit

b:output value:4number with unit

c:signal and cold end mode: 20mV/100mV/4~20mA/K/E/J/T/R/B/S/N/PT100。

RJA: auto cold end M: manual set up cold end

d: program function: n/m is segmentation output; output=Main setup point*(n/m)

“sweep”: line output output

“Step”: step output

“time”: time of every step 0~999S

“count”: output cycles 0~999. 0 is infinite loop

e: unit: mA/mV/°C

f:range and change function:

RL: show the lower limit of range

RH: show the high limit of range

SL: show the lower limit of signal



SH: show the high limit of signal

g:battery: “” flash when charging

3.Signal output



The instrument can output voltage, active current, passive current and TC signal

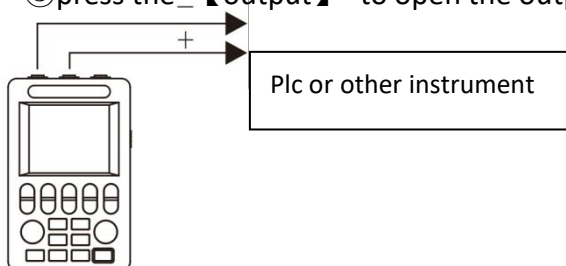
3.1 voltage, active current output:

- ①connect the black wire to the common end, yellow wire to the output end.
- ②press the **【signal】** change the type of signal
- ③press   change the value of output
- ④press the **【output】** ,the “source” will change Off → on and open the output function.

3.2 4~20mA output

4-20mA signal is increasing/decreasing by 4mA each time.

- ①choose the signal type “4~20mA”
- ②press the opposite   you can choose 4 → 8 → 12 → 16 → 20 or press the normal** to adjust
- ③press the **【output】** to open the output function





Case 1

output active current/voltage to instrument or PLC

3.3 TC output

Output thermocouple temperature minus the cold junction temperature corresponding to the voltage value.

- ①press the **【signal】** to select the signal type K/E/J/T/R/B/S/N
- ②press   to set the output value of temperature
- ③press the **【output】** to open the function

3.4 Resistance/Thermal resistor output

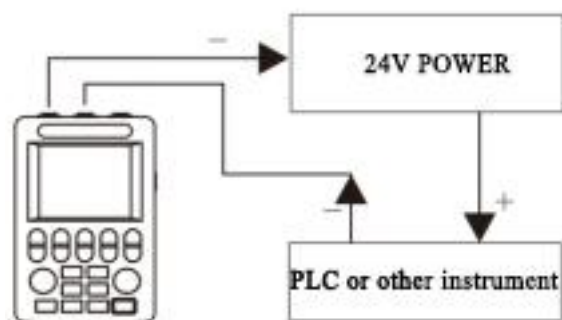
Output resistance/Thermal resistor temperature

- ① Press yellow **【signal】** to switch signal type to PT100.
- ② Press blue **▲▼** and the display of the measurement part disappears in the LCD screen.
- ③ Press **【measure】** to adjust the output temperature value.
- ④ Press yellow **【output】**, In the LCD screen, **【SOURCE】** changes from OFF to ON, and starts the output.

3.5 passive current output

The non current output can be used as a 2 wire transmitter simulator for loop testing.

- ① press the **【signal】** select the signal type “mA”
- ② switch the [passive output] into : “on”
- ③ press the **【output】** to open the function



Case 2
2 wires transmitter simulator


3.6 Voltage, current signal according to display output or measuring range (without range conversion)

- ① signal type must be voltage, current
- ② press **【range】** set the lower limit of range “RL” and also “RH” “SL” “SH”
- ③ when shows the “RL” press **▲▼** set the value

Press the  to set the decimal point, * to set the "+or-"

④setup the RL RH SL SH in turn.


OUTPUT

⑤press **【Range】** to exit the range setup. Press  change the output type: signal output or range output (without unit)

⑥press   change the value of output

⑦press **【output】** to open the function

MEASURE

⑤press **【range】** to exit the range setup. Press  change the signal value or range measure (without unit)

⑥It shows the measurement or conversion value according to the range

4. Measure:

Signal calibrator can measure voltage, active current passive current and TC signal, sample frequency "1s"

Please press the **【measure】** to turn off the measure mode and save the energy.

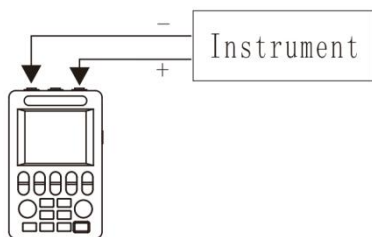
4.1 voltage, active current measurement

①connect the black wire to common end, red wire to the measure end.

②press **【measure】** open the measure function

③press blue **【signal】** to change the signal type

④show the value in the lcd screen

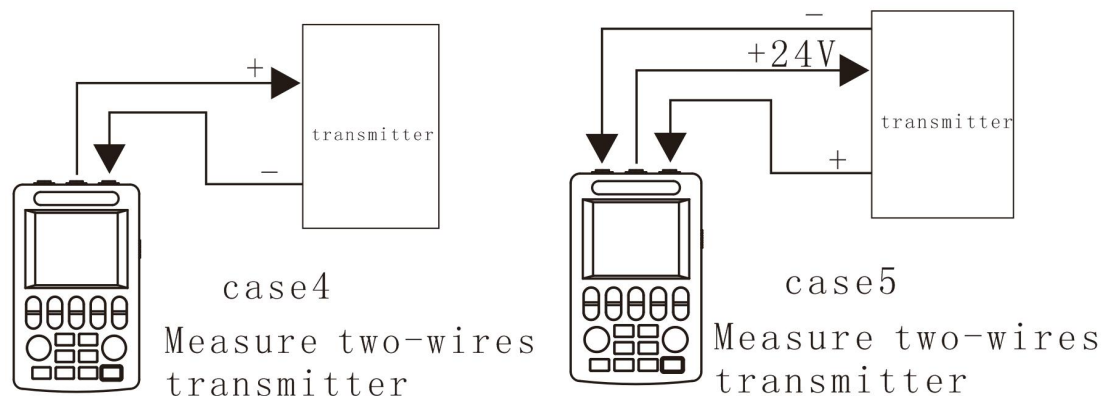


Case3

Measure voltage/active current signal

4.2 passive current measure:

- ①wiring as the two-wire system or three-wire system
- ②press blue **【signal】** set the signal type 24V loop
- ③calibrator is outputting 24V or 16V(when its low power mode)
- ④show the value in the lcd screen



4.3 Resistance/Thermal resistor measure

- ①connect the black wire to common end, red wire to the measure end.
- ②Press blue **【Signal】** open measurement function.
- ③Press blue **【measure】** switch signal type
- ④The actual measured values are displayed in the LCD measurement display area

4.4 TC measure

Be used for measure thermocouple temperature, with automatic or manual cold end compensation function.

- ①connect the black wire to common end, red wire to the measure end.
- ②press **【measure】** set the signal type K/Z/J/T/R/B/S/N
- ③show the value in the lcd screen.

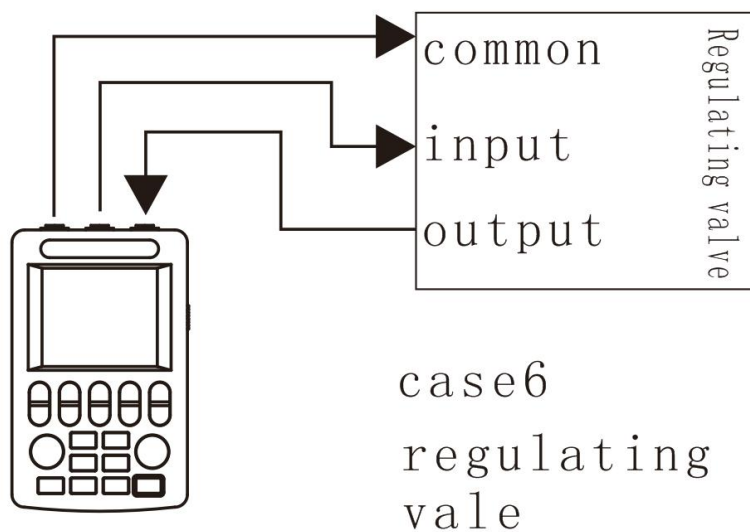
If you want to see or modify the cold end, do as follows

- ①press **【cold end】** the value in lcd will switch into cold end temperature
- ②LCD shows "RJA" means the cold end is collected by the inside sensor of calibrator and it's unchangeable
- ③If turn to the "manual cold end" mode, the lcd shows "M" then you can press **change the cold end value.

4.5 regulating valve

Output active voltage/current to the valve, measure the feedback signal to adjust the valve.

- ① wiring as the case6
- ② press blue **【signal】** set the measurement signal type → voltage/current
- ③ press yellow **【signal】** change the output signal type → voltage/current
- ④ press yellow **【output】** open the function
- ⑤ the measurement is show in the lcd screen



5. Programmable output

5.1 segmentation output(n/m)

Through segmentation you can sprite voltage, current, TC signal to n/m times output.
Output value=Main setpoint*(n/m)

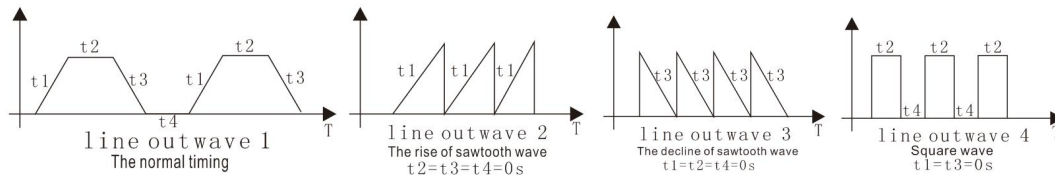
- ① press to change the Main setpoint
- ② press **【program】** open the segmentation output mode. Show the n/m manual
- ③ press **【program】** set the M:1-20
- ④ press set the N:0-m

- ⑤press **【output】** open/exit the output
- ⑥press **【program】** exit the program function.

5.2 Line out

The signal can be output linearly according to the time set by the user.

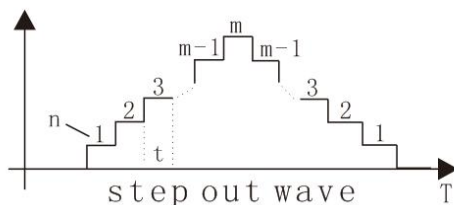
- ①press **▲▼** set the Main setpoint
- ②press **【waveform】** , “sweep” shows in screen, open the line out function
- ③press **【program】** , set the “time” 0-999s there’s 4 sections(rise time/hold time[top]/fall time/hold time[low])
- ④press **【program】** , set the “count”:0-999
- ⑤⑥the same to 5.1



5.3 Stepping out

The signal can be output by step according to the value set by the user.

- ①press **▲▼** set the Main setpoint
- ②press **【waveform】** , “step” shows in screen, open the step out function
- ③press **【program】** set “time”:0-999s
- ④press **【program】** again, set n/m
- ⑤⑥the same to 5.1



6 troubleshooting and instrument maintenance

6.1 troubleshooting

1. Press power button nothing shows in screen

A: confirm the battery is ok

B: confirm the power adapter output the current in 1000mA

2. Can't show the measurement:

Confirm the MESSURE is open

3. Output value or measurement is abnormal

A: Confirm the wire is ok

B: Confirm the signal type

6.2 instrument maintenance

Use the 3.7V rechargeable lithium battery and AC power adapter with 1000mA current output. The instrument is not waterproof, please keep it away from high humidity environment.

Thanks

