

0/4-20mA Current Signal Generator

User Manual

V202306



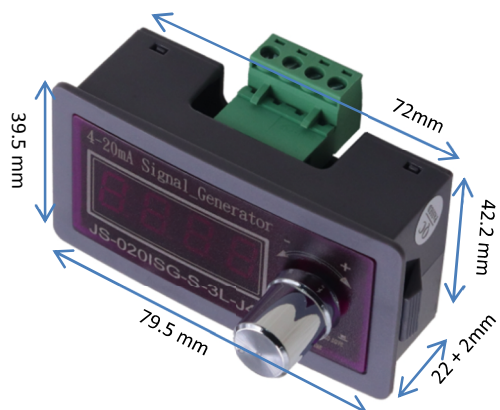
1 Features:

- 1.1 Adjustable output of 0-24mA, and the output range can be set arbitrarily within 0-24.00mA;
- 1.2 Display -1999 to 9999, and decimal point position can be set arbitrarily;
- 1.3 4-bit Highlight the nixie tube display, digital encoder knob tuning (the number of turns can be set);
- 1.4 Manual tuning or programmable automatic output, can dynamically output continuous curve (set with encoder knob with key combination);
- 1.5 Can set fast switching coarse tuning and fine tuning mode, fixed startup value mode, fast return to zero and other modes;
- 1.6 The output can be calibrated and the error can be corrected linearly;
- 1.7 Output short circuit protection, power supply reverse connection protection, etc.;
- 1.8 Special chip for current loop ,Industrial grade circuit design, can work without power for a long time;
- 1.9 The current loop signal generator is an active connection method, and the commonly used PLC inverter servo valves can be connected;

2 Technical Indicators:

- 2.1 Power supply DC 15-28V/1W (**24V is recommended**);
- 2.2 Output range: 0-24mA(output range can be set arbitrarily);
- 2.3 Tuning display accuracy: 0.01 mA,Actual error < 0.05mA
- 2.4 Sample resistance: <500 Ω
- 2.5 Encoder knob pulse number of 20, 0.4 inch digital tube;
- 2.6 Working environment:-20-60°C , relative humidity < 80%;

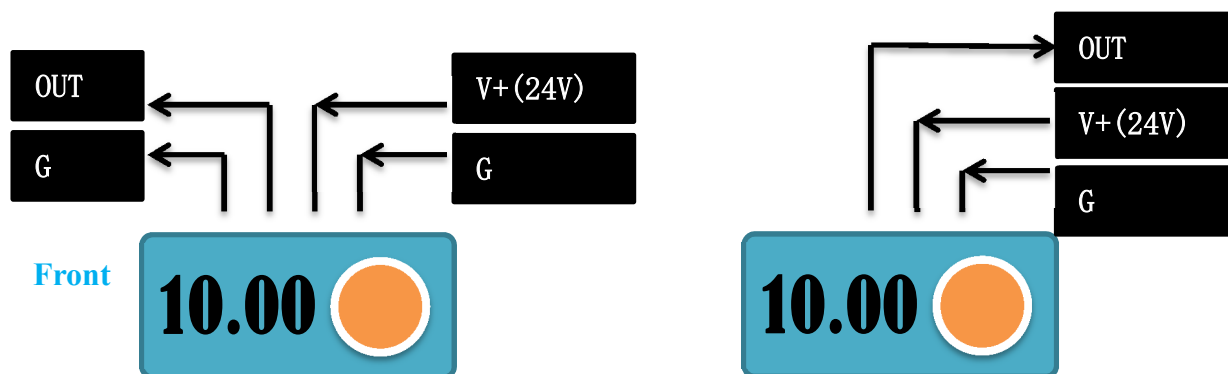
3 Dimension Drawing:



Attention for the installation of cabinet/electric box:

The panel must be stuck to the ears on both sides to fix it, so the thickness of the panel must be greater than 1.4 mm, The opening size should consider the width of the ear, and should not be too small, otherwise it will not fit in. The recommended opening size is 77X40mm

4 Wiring Diagram:



G : Power -
V +: Power + (15-28VDC)
OUT: signal +
G : signal -
 Wherein the power supply ground and the output ground are connected internally Can only pick up one

5 Parameter Settings:

(Press the knob to confirm ("OK"), rotated **clockwise** is "+", and **counterclockwise** is "-"):

- 5.1 Press the knob for 2 seconds to enter the parameter setting state, "F001", then press the knob to set the value, and press again to save after modification;
- 5.2 For the parameters after F002, you need to enter the password. After entering the setting display F001, display 4 horizontal bars clockwise, and then enter:
- 5.3 To enter F002 ...**enter the password "+-+" first**;
- 5.4 To enter F200 ...**enter the password "-+-+"** (automatic curve output setting);
- 5.5 Rotate the knob directly to the last parameter number, press the "OK", and enter the normal operation screen after setting;

5.6 After the parameter setting screen has no operation for more than 10s, it exits the setting state and enter the normal operation screen;

6 Parameter Table and Description:

No.	Description	Remarks	Default
F001	Coarse or fine tuning	0: Coarse tuning mode, "F002" to modify the addition and subtraction multiples 1: Fine tuning mode, "F003" to modify addition and subtraction multiples 2: Automatic curve output (parameter F200 > 0 should be set first) (for aging test products)	0
F002	Coarse tuning of addition and subtraction multiples	1-100 (x 10)	1
F003	Fine tuning of addition and subtraction multiples	1-100	1
F004	Press function	0: Manually store the output value (fixed startup value); 1. Quickly switch coarse tuning and fine tuning; 2: Output OFF/ON; 3. Quick return to zero (minimum value); (Function 1-3 is automatic storage of output value: 3 seconds after knob tuning)	1
F005	Output range(mA)	0:0-20 1:4-20 2:0-22 3:0-24 -1:user-defined	
F006	user-defined out low side	0-24.00	0
F007	user-defined out high side	0-24.00	20.00
F008	Display mode	0:Real Current 1: 0-100.0% 2:0-50.0Hz -1:user-defined	
F009	user-defined disp low side	Ignore the decimal point from 1999 to 9999. Set in F011	0
F010	user-defined disp high side	Ignore the decimal point from 1999 to 9999. Set in F011	1000
F011	Decimal point position	0-4 0/1: None 2: 999.9 3: 99.99 4: 9.999	3
F012	Nixie luminance	0—7(bright)	
F013	4mA calibration value	-999--+999 for internal reference only, please be careful when modifying	
F014	12mA calibration value	-999--+999 for internal reference only, please be careful when modifying	
F015	20mA calibration value	-999--+999 for internal reference only, please be careful when modifying	
F200	Curve number	0: Automatic curve output mode does not need; 1-9: number of sections	0
Ft01	Section 1 curve time	0-999 seconds Set as many values as there are sections of "F200"	
FA01	Section 1 starting voltage	0.00-24mA	
Fb01	Section 1 end voltage	0.00-24mA	
Ft02	Section 2 curve time	0-999 seconds	

...	
Fb09	Section 9 end voltage	0.00-24mA	

6.1 Examples of setting and calculation of knob turns:

Press the knob for 2 seconds, enter the setting, display F001, and then press it to set its value to 0 (coarse tuning) or 1 (fine tuning), which can quickly switch the tuning speed, and the multiples of coarse tuning and fine tuning are set in F002 and F003;

Examples of number of turns calculated: Knob encoder 20 grids per turn

Setting example	F001	F002	F003	Description
0-20mA shows 0-20.00, and the knob is adjusted for 1 turn	0	10	x	Set coarse tuning 10, with a grid change of 1mA
0-20mA shows 0-20.00, and the knob is adjusted for 10 turns	0	1	x	Set coarse tuning 1, with a grid change of 0.1mA
4-20mA shows 4-20.00, and the knob is adjusted for 80 turns	1	x	1	Set fine tuning 1, with a grid change of 0.01mA
4-20 shows 4-20.00, and the knob is adjusted for 8 turns	0	1	x	Set coarse tuning 1, with a grid change of 0.1mA

6.2 Save the power-on value when it is powered down. Press the knob to set other functions:

F004=0: After adjusting the knob, press the knob to save it, and save as much as you turn it on;

F004=1: Press the knob to switch the manual tuning speed, which is equal to setting F001=0 or 1;

F004=2: Short press knob, switch output, OFF state output is 0mA;

F004=3: Press the knob, and the screen display value is directly adjusted to 0;

6.3 Examples of output range and display scale settings:

Setting example	F005	F006	F007	F008	F009	F010	F011
4-20mA shows 4-20.00 (mA value)	1	X	X	0	X	X	X
4-20mA 显示 0-100.0 (%)	1	X	X	1	X	X	X
4-20mA 显示 0-50.0 (HZ)	1	X	X	2	X	X	X
0-20mA 显示 0-20.00 (mA value)	0	X	X	0	X	X	X
0-20mA 显示 0-100.0 (%)	0	X	X	1	X	X	X
0-20mA 显示 0-50.0 (HZ)	0	X	X	2	X	X	X
4-20mA 显示 0-5000 (rpm)	1	X	X	-1	0	5000	0
4-20mA 显示 -40 至 80 (°C)	1	X	X	-1	-40	80	0
4-20mA 显示 0-250 (A Welder current)	1	X	X	-1	0	250	0
4-20mA 显示 0-90.0 (° valve opening)	1	X	X	-1	0	900	2
4-20mA 显示 0-1.600 (MPa)	1	X	X	-1	0	1600	4

6.4 Output error calibration method:

When there is an error between the meter display value and the multimeter measurement value, you can calibrate 4mA、12mA、20mA and make the meter display consistent with the multimeter through linear correction;

Enter separately the parameter F013 F014 F015 setting, adjust its value, so that the multimeter measurement shows 4mA、12mA、20mA, press the knob to save, and the calibration is completed (the calibration value is an internal correction value regardless of the size);

6.5 Examples of automatic curve loop output setting steps: (For aging test products, enter the F200 password "-+-")

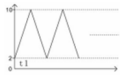
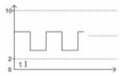

Step 1. Set F200 = number of sections, with a maximum of 9 sections, and automatically change the cycle output

for aging TEST products. . ;

Step 2, setting each section: FtXX= time 1-999 sec/FAXX= start voltage/FbXX= end voltage;

3, finally setting F001=2, switching from manual tuning mode to automatic curve output mode;

Turn off automatic loop output mode: F001=0 or 1;

Example of waveform	Number of sections	Section 1	Section 2	Section 3	Section 4	...	
Triangular wave 	F200 = 2	Ft01 = 10 FA01 = 2.00 Fb01=9.00	Ft02=10 FA02=9.00 Fb02=2.00				
Square wave 	F200 = 2	Ft01 = 10 FA01 = 6.00 Fb01=6.00	Ft02=10 FA02=3.00 Fb02=3.00				
Sine wave 	F200 = 6	Ft01 = 4 FA01 = 3.00 Fb01=5.00	Ft02=3 FA02=5.00 Fb02=6.00	Ft03=3 FA03=6.00 Fb03=5.00	Ft01 = 4 FA01 = 5.00 Fb01=3.00	Ft01=3 FA01 = 3.00 Fb01=2.00	Ft01=3 FA01 = 2.00 Fb01=3.00

7 Attention

7.1 Turn off the power supply before wiring;

7.2 Exceeding the range shown in the technical index, it may cause the instrument to work abnormally or even be damaged;