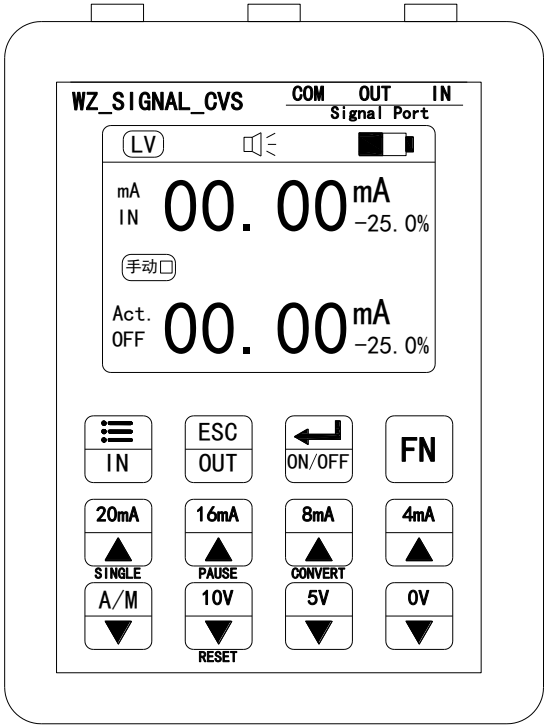
WZ_SIGNAL_CVS Signal Generator

（User Manual）



Vanvell Electronic Studio

WZ_SIGNAL_CVS Signal Generator

WZ_SIGNAL signal generator is mainly used for debugging of industrial field PLC, process instrumentation, electric valve and so forth. It's easy to use with a friendly Chinese character operation interface. The signal generator is small and light but has a long standby time and high precision.

1 . Technical Parameters:

- Active current output: range: 0-24 mA; resolution: 0.01 mA; maximum load: 750Ω
- Passive current output: range: 0-24 mA; resolution: 0.01 mA; external power supply up to 30V
- Voltage output: range: 0-12 V; resolution: 0.01v; maximum current 30mA
- 24V voltage output: drive current: 24mA.
- Current input measurement: range: 0-24 mA; resolution: 0.01 mA; input impedance:100Ω
- Voltage input measurement: range: 0-30 V; resolution: 0.01 V; input impedance: 2.5 MΩ
- A sngle 3.7V lithium battery power supply; the using time varies, based on the usage(It can be 8-10 hours with 20mA continuous output)
- Operating environment: 0 ℃ - 50 ℃.
- USB powered and charged.
- Internal reverse and overcurrent protection; protection voltage:30V
- output automatically
- Size: 90mm*70mm*29mm

2.Operation Panel

（1）panel indication

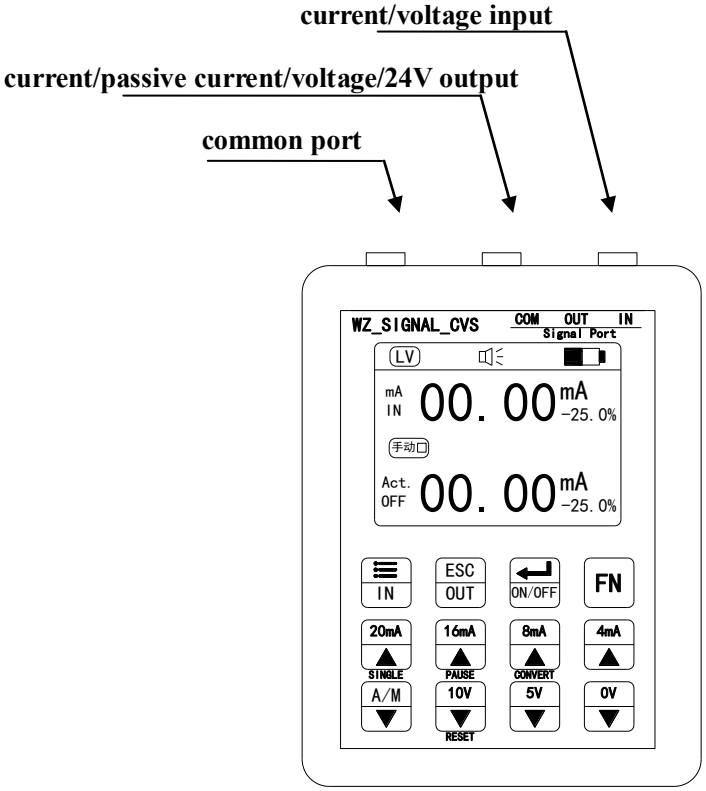


Figure 1

（2）Key Function

IN parameter setting/cursor movement (valid in the setting parameter interface)/input signal switching

ESC OUT cancellation(valid in the setting parameter interface)/output signal switching

ON/OFF confirmation(valid in the setting parameter interface)/output switch

FN shift key, using for combination keys

▲ increase the value ▼ decrease the value

SINGLE: single time; PAUSE: pause; CONVERT: convert; RESET: reset

（3）How to use the shift key (FN)

combination keys will bring a lot of convenience to the user when debugging. Here's how to use combination keys.

Press the “FN” button on the keyboard and the “Shift” on the right side of the screen will light up;

FN + X X X: indicates that press “FN” once and then release it, and then press other key buttons.

FN & X X X: indicates that press and hold "FN" while holding down other key buttons

◆ FN + "4mA / 8mA / 16mA / 20mA" button: the shortcut key for outputting active current 4mA/8mA/16mA/20mA.

◆ FN + "0V/5V/10V" button : the shortcut key for outputting voltage 0V/5V/10V.

◆ FN t+ “A/M” button: manual/automatic switching.

◆ FN + "20mA" button: indicates a single run in the automatic function (run only once)

◆ FN + “16mA” button: indicates output pause in the automatic function

◆ FN + "10V" button: indicates output reset in the automatic function

◆ FN + “Parameter Setting” button: in the system settings, you can set the parameters in the menu.

◆ FN & “Output Switch” button: switch between single and dual interfaces.

◆ FN & “8mA” button: switch VC

3. work interface and operation instructions

（1）work interface

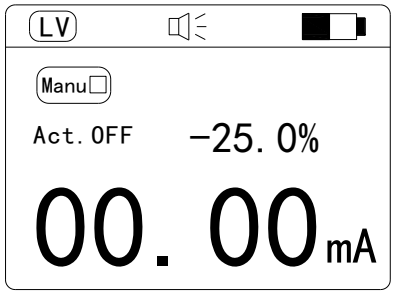


Figure 2

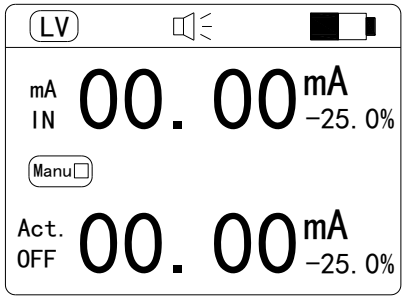


Figure 3

◆ LV/HV:indicates low voltage/ high voltage; LV means low voltage and HV is high voltage. This function can be switched in the “Voltage HL Settings” menu in the “System Settings” interface.

◆ : Buzzer Indication; the buzzer is on when this icon lights up.This functioncan be switched in the “Buzzer Settings” menu in the “System Settings” interface.

◆ : Battery Indicator

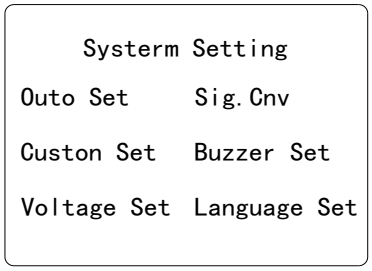


Figure 4

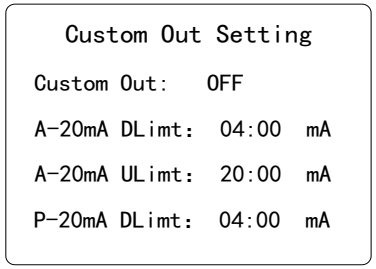


Figure 5

◆ System Settings: Figure 4 shows the main menu of system setting. Press the “FN” button in the single/dual interface, the “Shift” will light up, and then press the “Set” button to enter into Figure 4. In the main menu, you can set the related functions. When you need to move the cursor, press the “Set” button; When the cursor moves to the corresponding position, press the “Confirm” button to enter into the setting.

Take "custom parameter settings" as an example (Figure 5):

Enter into “Custom Settings”, press “Confirm” button, move the setting item, press “plus/minus” button to modify the parameters. After the modification is completed, press “Cancel” or “Confirm” button, “Do you confirm to change?” will appear on the screen. And then press the "Setting" button to move the cursor, select "Yes" or "No", and then press the "Confirm" button to save or not save the settings.

（2）output/input interface

◆ Signal Output Interface: Turn on the output switch to output the setted output value.

There are four prompts on the output interface, which are “Manual/Auto”, “VCA/VCP/CV Transform”, “Custom”, “FN”; when the corresponding function is valid, it is highlighted, otherwise it is gray.

◆ Signal Input Interface: It is highlighted when the meter detects a current or voltage input, otherwise it is gray,indicating there’s no input signal.

（3） single/dual interface

For the convenience of users, it can be switched between the single and dual interface.

◆ single interface

Only one input or output interface (as shown in Figure 2) can be displayed. The purpose is to increase the font size for user debugging.

◆dual interface

Simultaneous display of the input and output interfaces (as shown in Figure 3), suitable for applications where input and output are required, such as regulating valves and some special applications.

4、Function Introduction

（1） custom

In order to facilitate on-site debugging, the upper and lower limits of the output signal can be set according to the requirements of the equipment. The active 4-20mA output upper and lower limits, passive 4-20mA output upper and lower limits, and 0-12V output upper and lower limits can be set separately, and this function can be freely put on and off for field application.

Refer to the previous operation to enter into the custom settings menu to set the relevant parameters. The meaning of each parameter is as follows:

- ustom Output: turn on or off the function
- ctive 4-20mA lower limit: the allowable output lower limit value
- ctive 4-20mA upper limit: the allowable output upper limit value
- assive 4-20mA lower limit: the allowable output lower limit value
- Passive 4-20mA upper limit: the allowable output upper limit value
- 0-12V lower limit: the allowable output lower limit value
- 0-12V upper limit: the allowable output upper limit value

（2） Automatic Output

This function can automatically change the output mode according to the program. It can be automatically output only by setting the parameters, which is used for aging and automatic testing of valves and other equipments.

This function consists of the following parts: automatic mode, cycle number, initial value, incremental value, decrement value, incremental time, decrement time, starting point delay, endpoint delay, and end value. For active current, passive current, and voltage output, there are separate setting parameters to facilitate the setting of various output signals.

According to the Refer to the previous operation to enter into the automatic setting menu, which can set the active current, passive current and voltage output respectively. The meaning of each parameter is as follows:

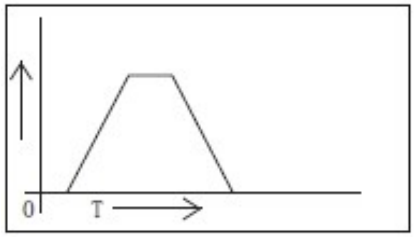
- Automatic mode: There are three modes: cycling, rising and descent modes
- Cycle Number: The number of cycles to test (when the number is 0, it output s unlimitedly)
- Initial Value: the starting value of the test output
- Incremental Value: automatic incremental step value
- Decrement Value: automatic decrement step value

- Incremental Time: interval between increments
- Decrease Time: the interval between reductions
- Starting point Delay: starting point output dwell time
- Endpoint Delay: endpoint output dwell time
- Endpoint Value: the end value of the test output

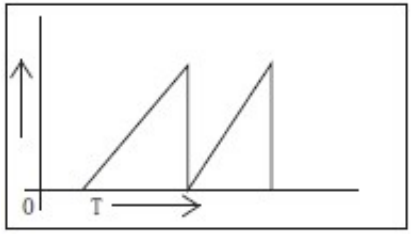
After the setting is completed, return to the main interface, light up the “FN” button, press the “Auto” button to enter the automatic mode, press the “Switch” button to turn on the automatic output.

- FN+ “20mA” button: single run (run only once)
- FN+ “16mA” button: output pause
- FN+ “10V” button: output reset

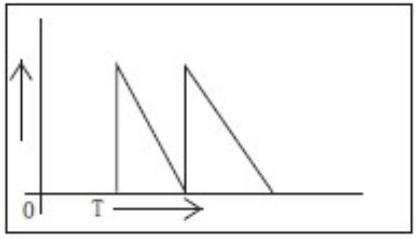
Special output waveform time series can be obtained by parameters.



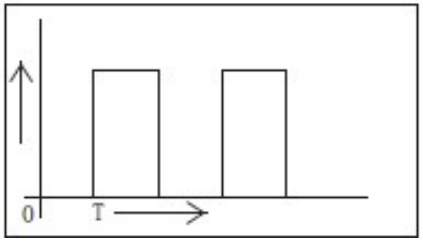
Normal Output Time Series



Rising Sawtooth



Descent Sawtooth Wave



Square Wave Output Time Series

Take the rising sawtooth wave as an example:

Simply set the decrement value and endpoint value to the same value. For example, the starting value is 4mA and the endpoint value is 20mA. In this case, you only need to set the decrement value to 16, so that the program can be reduced to 0 to get this effect.

If you need other waveforms, you can set them yourself by referring to the sawtooth setting method.

（3）VC Conversion

This function is mainly used for some temporary voltage and current conversion, such as converting 0-10V input to 4-20mA output.

VC active conversion: converts the voltage signal input into an active current signal output

VC passive conversion: converts the voltage signal input into a passive current signal output

CV conversion: converts the current input signal into a voltage signal output

The function rules consist of several parts: VC conversion switch, conversion mode, voltage upper limit, voltage lower limit, current upper limit, current lower limit, and overrange.

Refer to the previous operation to enter into the VC conversion setting menu to set the relevant parameters. The meaning of each parameter is as follows:

◆ VC conversion switch: in the main interface , you can also use the shortcut to switch (FN & “8mA” button)

◆ Conversion Mode: there are three modes: VC active conversion, VC passive conversion and CV conversion;

◆ Upper Voltage Limit: the upper limit of the input voltage or the upper limit of the output voltage

◆ Lower Voltage Limit: lower limit of input voltage or lower limit of output voltage

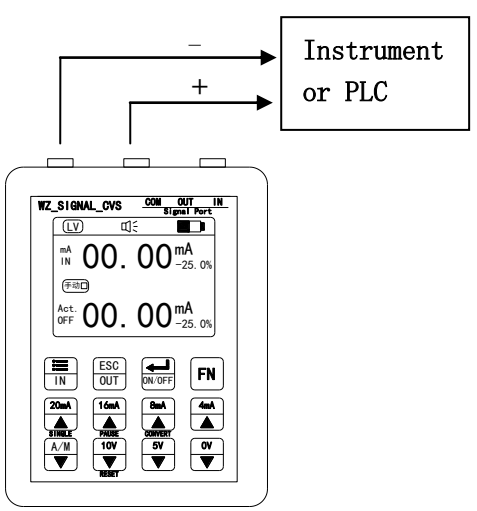
◆ Upper Current Limit: the upper limit of the input current or the upper limit of the output current

◆ Lower Current Llimit: lower limit of input current or lower limit of output current

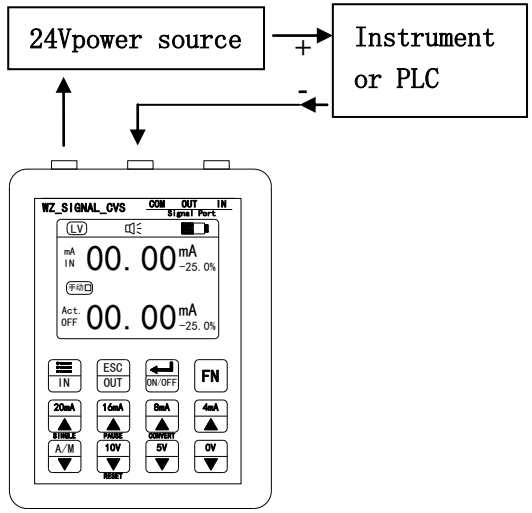
◆ Overrange: If the input signal is setted to be 4-20mA, the output signal is 1-5V, when the overrange is off and the input signal is less than 4mA, the output is still 1V; when the overrange is on, the output still varies with the input change. But it will not exceed the limit value of the output. For example, if the voltage output exceeds the limit by 12V, the output will still be 12V.

5、Instance

(1) active two-wire transmitter measurement method

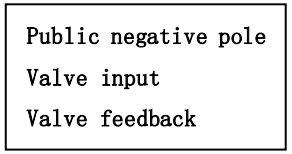


(2) Passive current output two-wire connection method

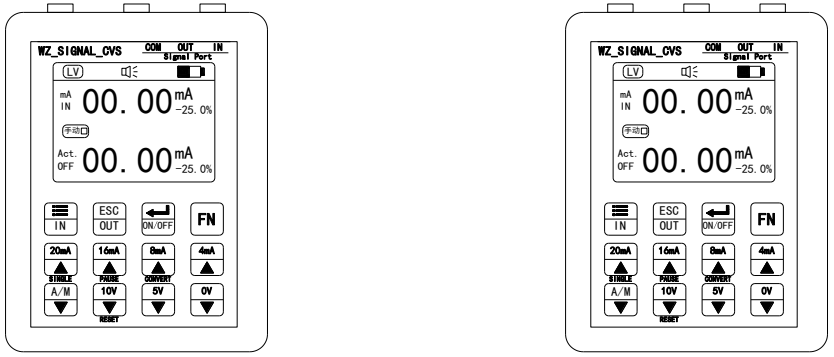


(3) adjusting valve connection method

(4) three-wire sensor test method



Regulator valve



The fourth method is to use the 24V output of the instrument to supply power to the sensor and simultaneously measure the signal output by the sensor. However, it should be noted that the operating current of the sensor cannot exceed 24 mA, otherwise the power will be insufficient.

6、charging notice

In the power-on state, plug in the 5v USB charger, the instrument is powered by the charger, can be used for a long time, and will charge the battery simultaneously. When the power is off, plug in the 5v USB charger and charge the battery. Make sure that the charger's output current is greater than or equal to 1000mA.

Warnings:

Keep away from high temperature during charging or use; do not use or charge for a long time without being guarded!

The instrument charging voltage is DC5v, please do not apply a voltage higher than 5.5v to the charging port of the instrument, which may cause instrument failure or accident!

This instrument is mainly developed with debugging test. It can be used for PLC signal debugging and calibration, process instrument debugging, valve positioning test calibration, and is not suitable for high-precision instrument calibration. Please use it in suitable occasions!

Any malfunctions or other problems caused by improper operation according to the instrument manual are not covered!