宜准 INSTRUE

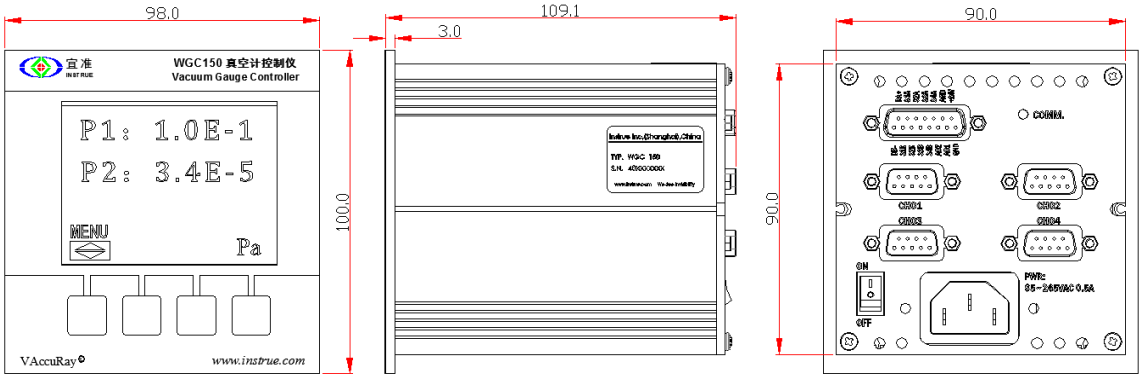
WGC150

Vacuum Gauge Controller. Operation Manual

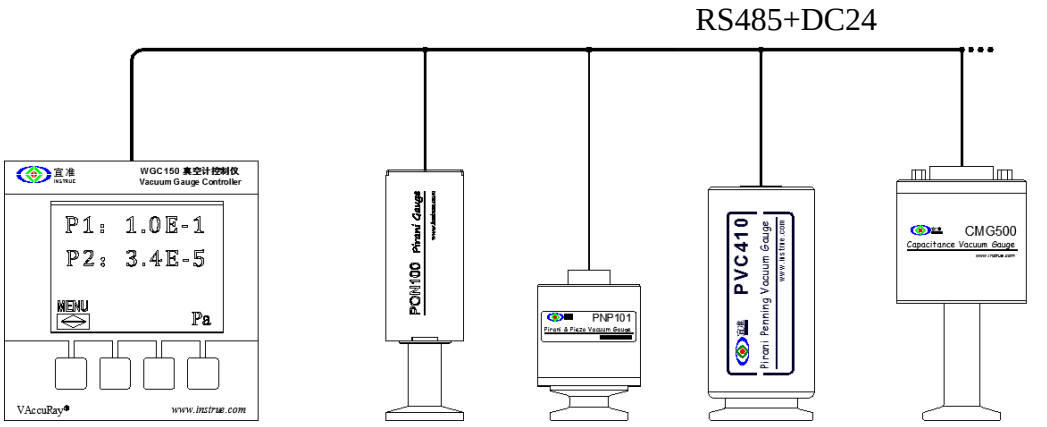
1. Parameters

Items	Descriptions
Accuracy	Controller accuracy: 0.1%; Transmitter accuracy depends on the type of gauges.
Repeatability	±1%
Applicable Gauge	● All INSTRUE vacuum gauges ● Other brands of vacuum gauges with analog output
Input Channel	Four input channels can be connected to one, two, three or four vacuum gauges
Display	3.5 " TFT-320x240 LCD, up to four lines of vacuum measurement information at the same time
Operation Key	Four membrane buttons for multiple intelligent operations
Communication	RS485 communication, transmission distance up to200 meters. Protocol: 9600, 1, 8, 1, none
Control Setpoint	Four solid state relay, each with a maximum load of 60VDC/500mA.
Analog Output	Two 12bit analog voltage outputs from 0 to + 10.0vdc. The voltage output equation can be customized according to the needs of users.
Power Supply	85 ~ 265vac 0.5A, power consumption less than 30W
Environment	Storage: - 25 ºC ~ +55 ºC; Operating : + 5 ºC ~ +45 ºC; Relative humidity 35% - 85%
Weight	620g (without cable)
Dimensions	98mm X 98mm X 110mm， Cutting hole for installation: 92mm X 92mm

WGC150 Dimensions (mm)



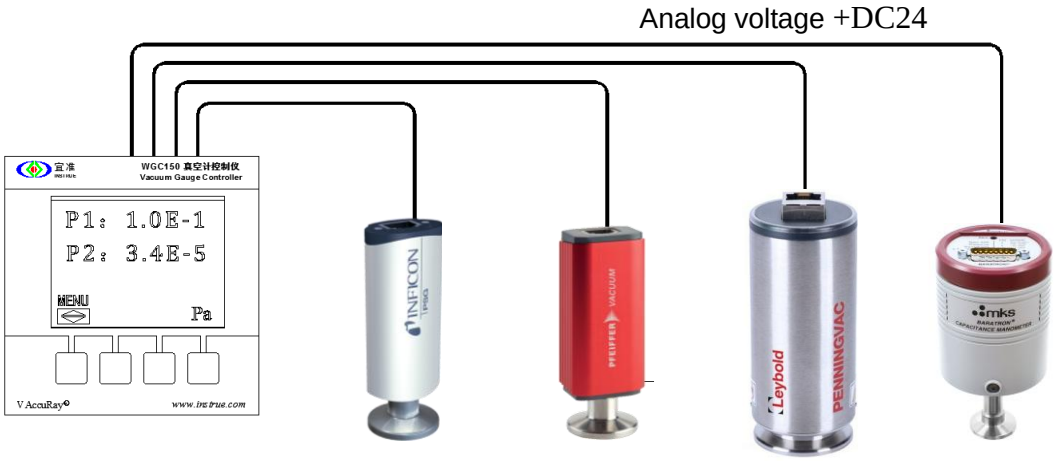
4.4 WGC150 for INSTRUE gauges



When WGC150 carries INSTRUE vacuum gauges, different gauges are usually connected to the same RS485 bus, and real-time communication is realized by allocating different addresses on the bus. Theoretically, WGC150 can be configured with unlimited INSTRUE vacuum guages. However, limited by the load capacity of power supply, time-sharing speed of bus and size of display screen, it is recommended to configure up to four vacuum gauges.

4.5 WGC150 for gauges of other brands

（The analog voltage input mode is adopted, and the algorithm formula is determined by the specific model）

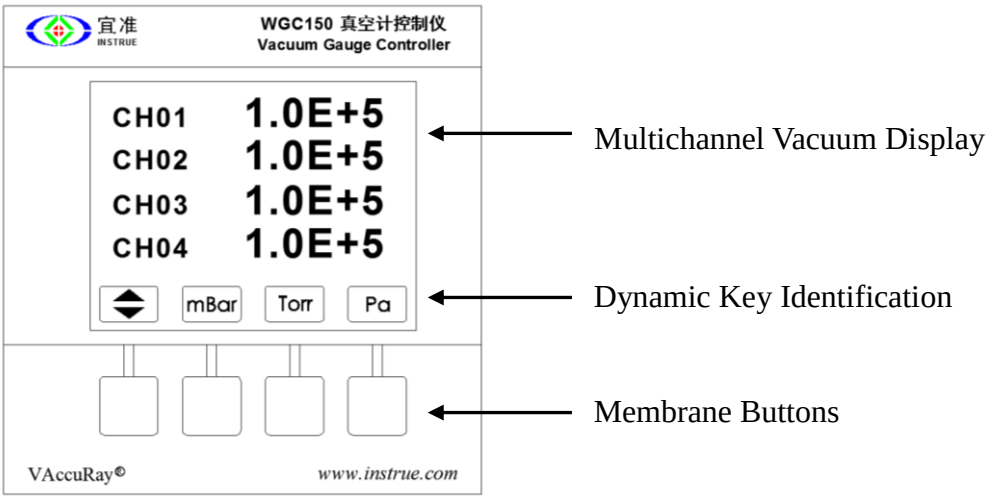


When WGC150 carries gauges of other brands, different gauges are connected with different DB9 connecters, and analog voltage is independently output to WGC150 to realize real-time reading.

5. Front Panel

The front panel includes an LCD color display and four membrane buttons. According to wgc150 input channel, there are single line, double line, three line and four line vacuum display.

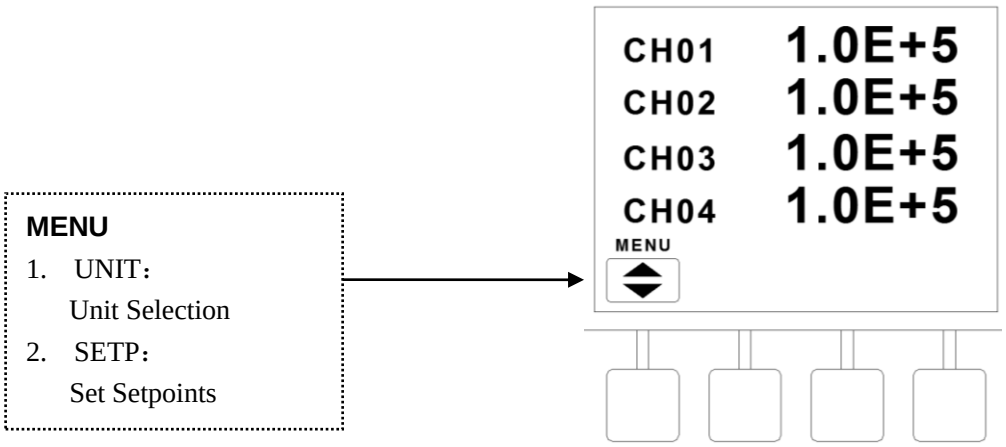
The function operation content of the intelligent key is dynamically marked at the corresponding position of the display screen.



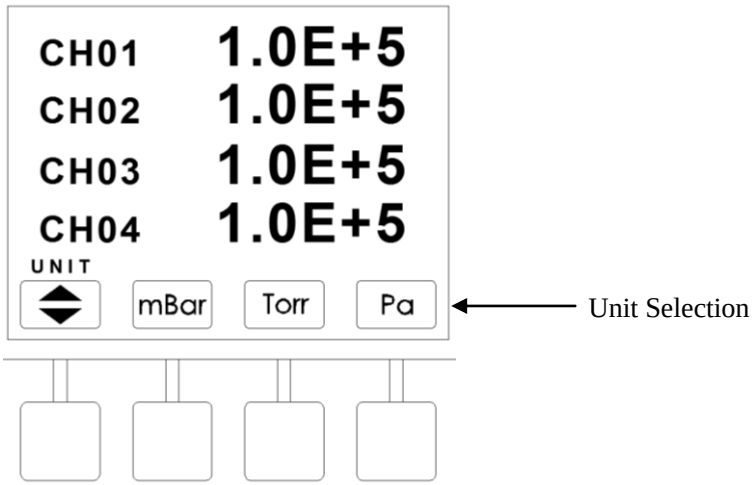
5.1 Main Interface

After power on self-test, the controller enters the main interface and displays one to four lines of vacuum readings according to different configuration. The readings are displayed by scientific method. The bottom area shows the function menu key "menu", and the menu circulates between the selection of "unit" and the setting of control point "setp".

Notice：In other operation interfaces except the main interface, the controller does not sample the data of the sensor, and the analog output of IO port also stops real-time signal output until the display area returns to the main interface.

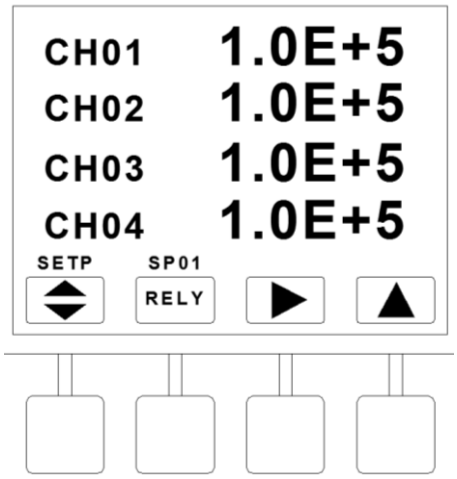


5.2 Vacuum Pressure Unit Selection



WGC150 has mBar、Torr、Pa for selection. Press the corresponding unit button on the bottom to set the system as the selected display unit.

5.3 Control Switch Setting



CH01~CH04 Corresponding to four gauges

RELY Cycle four relay switches

0~9 digit or +/- symbol cycle selection

WGC150 is equipped with four vacuum reading channels and four control switches. Each control switch can be set to operate in the corresponding measurement range of different gauge input channels.

RELY：Cycle select four relay switches SP01、SP02、SP03、SP04.

▶ Shift to move the flashing number cursor, and cycle from left to right and from top to bottom to select the number position to be changed in the vacuum data on the screen. The input channel in which the numerical value is updated by flashing the digital cursor is the input channel in which the control point is added to the corresponding switch of rely.

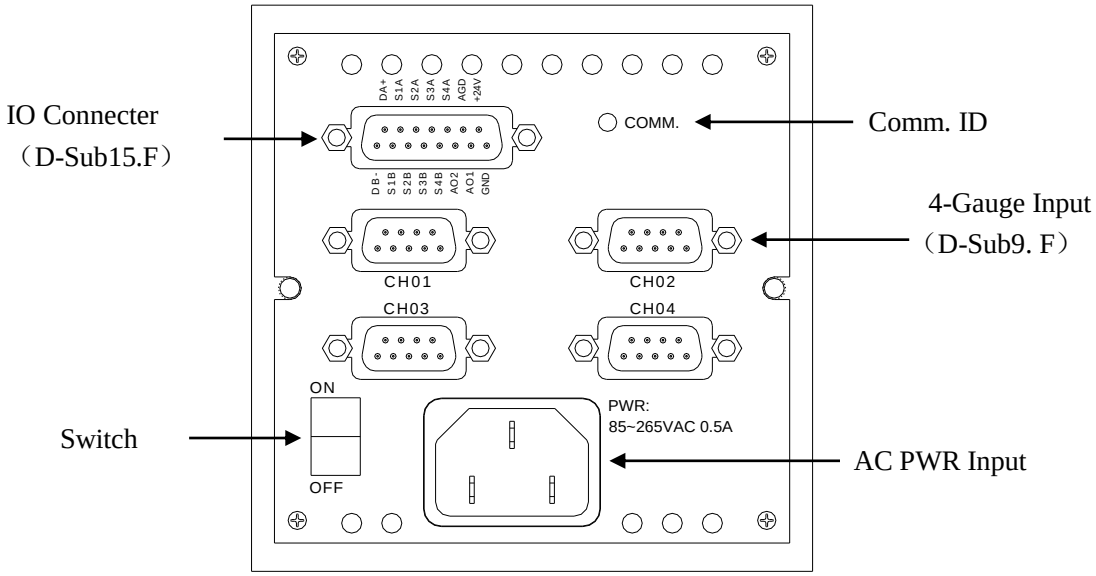
▲ When the flashing number cursor is fixed, JUMP changes the set number between 0 and 9 in turn.

When the setting is completed, all the set values are saved in the memory of the controller itself. The four switches will operate according to the target gauge and set control point.

Remind: after setting, you need to return to the main interface before the controller can perform the measurement and control function!

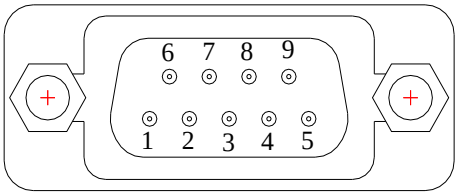
6. Rear Panel

The rear panel includes four gauge access sockets, an IO control IO socket, and an AC power input socket.



6.1 Vacuum Gauge Access Socket DB9 (female)

WGC150 provides four vacuum gauge access sockets corresponding to channels CH01, CH02, CH03 and CH04 respectively. The pin definition of four DB9 (female) socket is the same

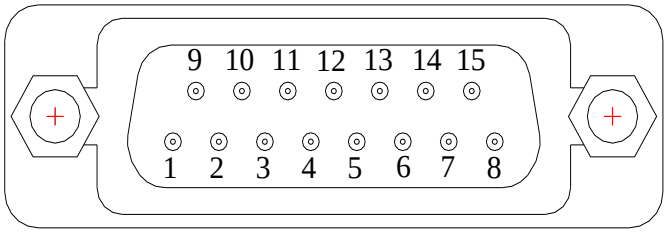


Definition of DB9 Gauge Access Pins

Pin 1 Power GND
Pin 2 Model ID identification, please refer to the corresponding manufacturer's model manual for relevant information
Pin 3 NC
Pin 4 Analog voltage input 0.0 ~ + 10.0vdc (if there is type identification ID, the calculation formula will be automatically identified by software; Otherwise, the user shall specify the model of the vacuum gauge or customize the calculation formula before purchasing
Pin 5 RS485-1 DATA- (B) is used for digital communication of gauge
Pin 6 + 24 V power supply, four channel total load not more than 30 W
Pin 7 NC
Pin 8 Analog voltage input GNDA
Pin 9 RS485-1 DATA+ (A) is used for digital communication of gauge

6.2 I / O Interface Socket DB15 (female)

WGC150 提供一个 DB15（母）座作为外部控制 I/O 接口 Wgc150 provides a DB15 (female) as an external control I / O interface

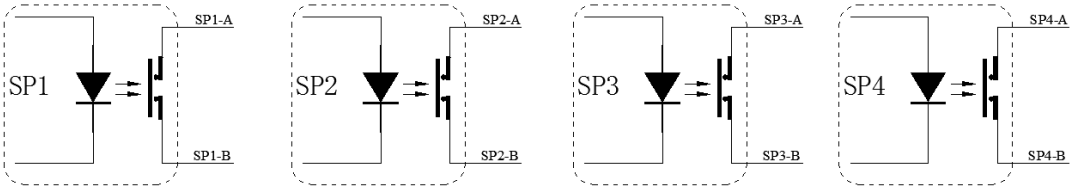


IO Pin definition:

Pin 1 RS485-2 DATA- (B) to upper computer.
Pin 2 Control switch SP1B (corresponding to SP1A, less than 60VDC 500mA)
Pin 3 Control switch SP2B (corresponding to SP2A, less than 60VDC 500mA)
Pin 4 Control switch SP3B (corresponding to SP3A, less than 60VDC 500mA)
Pin 5 Control switch SP4B (corresponding to SP4A, less than 60VDC 500mA)
Pin 6 Analog output channel 02, range 0.0~+10.0vdc, accuracy 12bit, output formula and corresponding relationship specified by the user during purchasing
Pin 7 Analog output channel 01, range 0.0~+10.0vdc, accuracy 12bit, output formula and corresponding relationship specified by the user during purchasing
Pin 8 Power GND
Pin 9 RS485-2 DATA+ (A) to upper computer.
Pin 10 Control switch SP1A
Pin 11 Control switch SP2A
Pin 12 Control switch SP3A
Pin 13 Control switch SP4A
Pin 14 Analog GNDA
Pin 15 +24VDC, The total power output of four channel gauges shall not be greater than 30W.

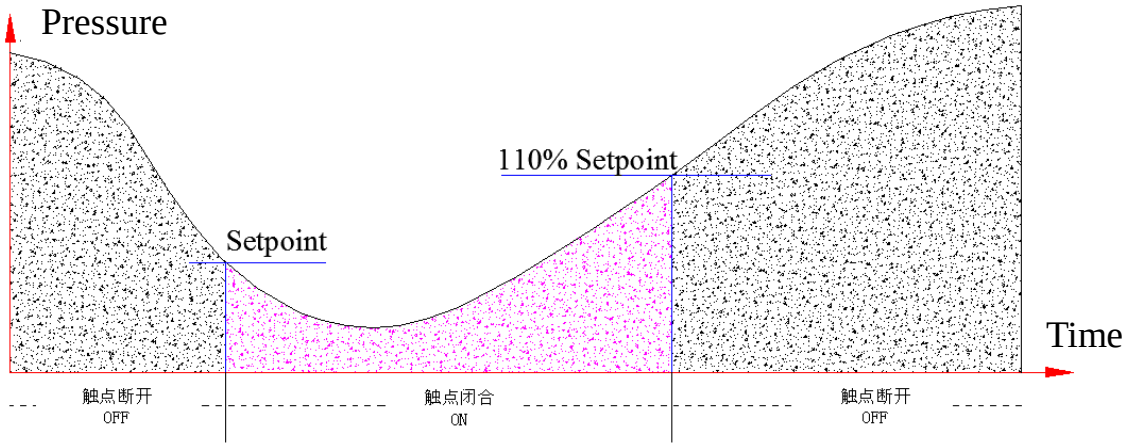
Note: the switch of control point, analog voltage output and RS485 interface of upper computer are options. If not specified, all the IO pins are suspended.

6.3 Control Switch Setting



WGC150 is equipped with four independent and settable control point switches, using SCR solid state relay contacts, with contact capacity of 60VDC 500mA. It can be set through the front panel membrane buttons.

The control point is normally open, and the activation of the switching point is defined as the relay switching to the on state. When the vacuum pressure is lower than the set value, "on" is output, and when the vacuum pressure rises to 110% of the set value, "off" is output.



In addition, for the user who requires that the pressure is higher than the set point start switch or lower than the set point start switch, it is advisable to provide the upper computer application software interface for users to choose the settings according to the requirements.