PS1016 Intelligent Pressure Gauge

Operation Manual

ChengDu Sand Electronics Co., Ltd.

Welcome for choosing and using our PS1016 intelligent pressure gauge. This manual enunciates the functions and methods for use of intelligent pressure gauge in detail. Before using this intelligent pressure gauge, please refer to this manual for your correct use.

Functions and Purpose of Use

Researched and manufactured by our company, PS1016 intelligent pressure gauge is a control instrument, first of it's kind produced in China. Not only does it assimilate the strongpoint of the similar foreign products, but also it boasts its own characteristics, especially applicable for measuring and controlling temperature and pressure at an identical point for high-temperature melting articles. This instrument features fine appearance and complete functions with excellent anti-jamming performance, which ensures reliable operation of the system.

This instrument adopts two-level four-bit led, respectively displaying actual pressure value and setting value. Annunciate or be possessed of pressure upper limit or lower limit, which can be output via relay contact, voltage pulse, bi-directional silicon-controlled trigger, and two-circuit constant current (or constant pressure). Programs can be debugged fully automatically through panel operation and what you should do for system calibration is just to push down buttons lightly. This instrument employs three kinds of anti-jamming methods to ensure reliable functioning of the instrument: firstly, separate input from microprocessor via photoelectric isolation circuit; secondly, adopt anti-jamming methods by applying of software to ensure steady operation of software; and lastly, apply hardware program to monitor the system and to enable automatic recovery of system program to normal operation after being jammed. It has been proved through practice that high reliability can be ensured of system software by using the above anti-jamming methods. System can thus function steadily and reliably.

This instrument is widely used for measuring and controlling of pressure of high-temperature melting articles in industries such as petroleum, chemical fibers and plastics.

Main Technical Specifications and Performance

1). Digital display: two-level four-bit display;

2). Internal resolution: 32000;

3).External resolution: pressure, 0.01Mpa, 0.02Mpa, 0.05Mpa

panel switch (power-off protection installation≥40 years);

4). Nonlinearity:

0.5%±1 word, 0.2%±1 word, 0.1%±1 word, 0.05%±1 word;

5). Two-circuit alarm setup: pressure upper limit: 0~99.99Mpa, lower limit: 0~99.99Mpa;

6). Rated value of relay: 250VAC, 5A;

7). Operation environment:-10~+50℃, 80%RH;

8). Power supply: 85~265VAC;

9). Continuous working time: long period;

10). Aperture size: 90×90×110(mm).

Outside and structural dimensions

Display Window

Upper display window: displays measured value of actual pressure as well as parameter codes when modifying internal parameters.

Lower display window: displays measured value of actual pressure as well as parameter amended when modifying internal parameters.

Function **Keyboard**

AC: `Reset zero` key: (if pressed with switch key simultaneously, reset; press AC key for more than 5 seconds and zero, i.e. zero in calibration, can be recovered;

Cal: Calibration key: if pressed with switch key simultaneously, calibration can be done automatically.
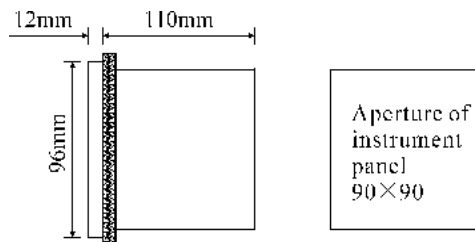
⟳ Conversion key

◀ Shift key

▼ Down key

▲ Up key

Signal Lamp

AL1: Alarm signal lamp for pressure upper limit

AL2: Alarm signal lamp for pressure lower limit

Cal: Signal lamp for calibration state (if calibration done automatically, the lamp flashes)
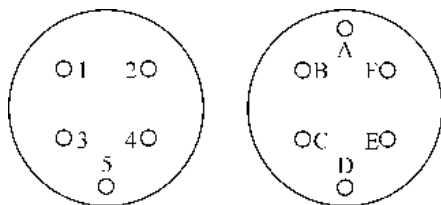
Diagram of installation dimensions

Methods of Use

● Connection of instrument with pressure transducer:

Connection for transducer plugs is as follows: (numerically marked plugs are of Type I alphabetically marked plugs are of Type II. Please give clear indication if order)


1. A··············S＋Positive signal(blue)
2. B·············E＋Negative bridge pressure(red)
3. C·············S－Negative signal(yellow)
4. D.E···········E－Negative bridge pressure(white)
5. F·············C Calibration (green)

Connect all leads with the connection terminal at the back of temperature and pressure gauge (there are signs on connection terminal) and earth the shielded wire.

● **Connection signs on rear panel of temperature pressure gauge are as follows;**

● **Switch on;**

Switch on power supply and the instrument goes through power-on self-test (POST). Meanwhile, value of pressure measurement range is displayed on upper display window; Value of temperature measurement range is displayed on lower display window. Two seconds later, pressure division value is displayed on upper display window; temperature division value and the code of transducer are displayed on lower display window
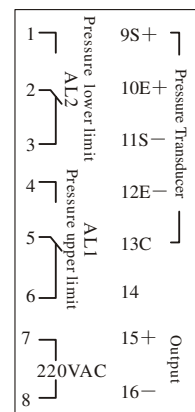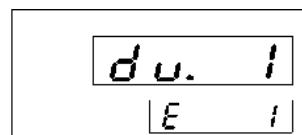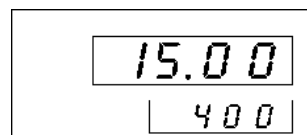
● **Measuring working state**

Measured values for pressure on upper and lower display windows respectively. If time drift exists after being switched on, press AC Clear key consistently and meanwhile, press inconsistently Shift key to clear current zero. If malfunctioned in zeroing, press AC key for more than 5 seconds and return to zero before calibration.

● **Adjustment state of internal parameters:**

a)、Press Shift key for more than 5 seconds in measuring and the system enters into adjustment state of internal parameters;

b)、Each time the Shift key is pressed, internal parameters are output sequentially. Symbols of internal parameters are displayed on upper display window and currently set parameter values, lower display window;

c)、Use Shift key, Up key and Down key to modify currently set parameter values;

d)、Press Shift key to confirm and store newly set values and call the next parameter;

e)、Press Shift key for more than 5 seconds or no key is pressed for more than one minute, the system will automatically return from the adjustment state of internal parameters back to measuring state;

f)、Press AC key and meanwhile, point press Shift key, pressure zero can be cleared. Press AC key for more than 5 seconds and the actual pressure zero of last calibration can be recovered;

g)、Press Calibration key and point press Shift key simultaneously, the system goes to automatic calibration. Please refer to related section on calibration for system pressure.

Interior parameter list

Symbol	name	Enactment range	explain	Ex-factory initial value
⌐⌐	measurement range	10.00MPa~100.0MPa	Pressure measurement rating	supplementary transducer measurement range
du	Pressure division value	0.01MPa 0.02MPa 0.05MPa	The least solution Of Pressure Measurement Rating recommended: 0-20Mpadv setup 0.01	0.02MPa
AL1	Pressure upper limit	00.00~99.99MPa	Set up the alarm value of pressure upper limit	REN80%
PLd	Pressure alarm difference	0~2.00MPa	Setup for Pressure alarm difference	0.00MPa
AL2	Temperature upper limit	Temperature 0~ measurement range	Set up the alarm value of temperature upper limit	80% of temperature measurement range
LCY	Digital lock	0000: can modify parameter. The panel keys are available. 0001: can modify parameter. The panel keys are unavailable but conversion key.	The panel keys and all parameters can be locked up through the setup of digital lock	0000

Orders explain: please order according to the explain as follows

The basic product：Temperature pressure gauge   Type： PS1016

Function

Explain for functions	
1、double deck four-digit pipe display the actual value of pressure and temperature separately	4、choice for measurement range panel
2、relay output（pressure and temperature upper limit）	5、choice for least resolution
3、automatically calibration system	6、parameter setup and lockup function

Pressure measurement range

measurement range	number	measurement range	number
0～10MPa	010	0～40MPa	040
0～15MPa	015	0～50MPa	050
0～20MPa	020	0～60MPa	060
0～25MPa	025	0～70MPa	070
0～30MPa	030	0～80MPa	080
0～35MPa	035	0～100MPa	100

Pressure output：Direct ratio with temperature and pressure, and recorders and PID adjustors can use it.

Output format	number	Output format	number
No output	200	0~10mA（maximum 6V）	203
0~5V（maximum 20mV）	201	0~20mA（maximum 6V）	204
1~5V（maximum 20mV）	202	4~20mA（maximum 6V）	205

Alarm

figure	The first digit	The second digit	The third digit
0	No alarm	No alarm output	No alarm signal lamp
1	Pressure upper limit	Relay output	LBD signal lamp
2	Temperature upper limit	Controlled silicon output	
3	Pressure and temperature upper limit	Voltage pulse output	

Note: If the number of the item is 311, the first digit expresses the alarm of Pressure and temperature upper limit; the second digit expresses relay switch output; and the third digit expresses LBD signal lamp. Controlled silicon two-end output 600V/5∧

Order format：
PS1016 – [Pressure range code] – [Output signal code] – [Alarm parameters]

Example:
PS1016-050-205-311
Pressure range of 0 ~ 50 Mpa, the output signal to 4 ~ 20 mA, alarm parameters for 311.

Self-calibration for system zero pressure: connect high-temperature fusion pressure transducer with PS1016 intelligent temperature & pressure gauge according to operation manual. Properly connect 220 V AC power supply. Press 'cal' key and point press Shift key simultaneously after system POST, and then the system starts fully automatic self-calibration. Calibration lamp starts flashing. Press Shift key all the time during calibration until calibration is completed and the system returns automatically back to working state.

Caution: System must be unlocked before self-test, i.e. set LCK parameter in internal parameter list to zero. Otherwise there will be no response when pressing 'cal' key and Shift key. This function is to prevent on-the-spot operators from Misoperation. Parameter for measurement range RN can either be set before self-calibration or after that. Zero pressure must be ensured for induction head of transducer when self-calibrating.

Attentions:
1．Transducer head must be free from collision and properly screw its protection cap when being stored;
2．The instrument should be kept in humidity-free environment;
3．The instrument should work with rated voltage, otherwise it may result in unusual failures;
4．The instrument has functioned of temperature zero tracking. Generally, it can zero automatically. But if temperature drift is so wide that it exceeds the automatic tracking range, press AC key and point press Shift key simultaneously to calibrate zero pressure. If zeroing by accident, press AC key for more than 5 seconds and zero calibrated in normal temperature is recovered.

Maintenance:
1．Numerical display '88.88' or '--'indicates broken transducer leads or improper contact. Connect properly.
2．No numbers displayed: check if 220 V AC power is connected. If not, check if there is output from switch power supply.
3．Unstable numbers displayed: generally, it means that ground wire is improperly connected with ground. Connect shielded wire properly with ground.
4．If major failures occur due to misoperation in connecting wires by clients, please contact us for replacement of parts such as power board, CPU board, or display panel.
5．If repair work is beyond customers' capability, please directly send to us. We ensure one-year responsibility of repair and life-long maintenance.

Ex-factory supplementary components

Serial number	name	unit	Quantity	remark
1	PS1016 Intelligent Temperature Pressure Gauge	set	1	
2	Transducer	piece	1	In term of the customer's request
3	Cable wire	meter	3	One end with socket
4	Installation frame	piece	2	
5	Operation Manual	sheet	1	
6	Pass certificate	sheet	1	