DIGI-60R   Rs485

■ 1. NOTICE

1. Please check the packaging and appearance after you received the product.

2.Please check the mode and specification of the product. Keep correct electrical connection and mounting method.

3.Please installation WITHOUT power.

4.During using, please notice the technical and operation conditions: the temperature of medium, burst pressure, power supply.

5. This product is a precision device, DO NOT use hard objects to touch the diaphragm or disassemble.

6. During installation, do not install or disassemble strongly, especially the installation of thread.

7. Please install or disassemble with a suitable wrench, Otherwise, the damage is not in the scope of warranty.

8. After starting the gauge, it is a normal phenomenon to take a few minutes to keep it stable and work normally.

9.If the product is out of order, please contact our after-sale technical staff.

10.During installation, the gauge will be affected by installation stress. After installation, please zero clearing.

   (!!)The product damage caused by non-professional operation according to the operation regulation is not the scope by the warranty.

■ 2. WARNING

1.When operation temperature is above 60 degree, please use forced fans or cooling machines, but do not let the cooling air blow to the switch directly.

2.The installation, commissioning and maintenance of this product shall be conducted by qualified engineers or technicians member.

3.If the malfunction or exception of this product is likely to result in a major system accident, please set up an appropriate protective circuit outside to prevent accidents.

4.The company does not undertake any direct or indirect loss other than the product itself.

5.The company reserves the right to change the manual of the product without notice.

■ 3. DESCRIPTION

   This digital communication pressure gauge is a high-precision intelligent digital remote pressure gauge based on MODBUS protocol RS485 output.

   The digital communication pressure gauge adopts a 4 digit LCD screen, which can display real-time pressure on the spot. At the same time, the pressure signal is transmitted remotely, and the transmission distance is better than 1000 meters.

   Built-in pressure sensor, powerful function, users can change pressure unit, calibrate zero deviation, correct filter constant, etc.

   This digital communication pressure gauge adopts SS 304 housing and connection, waterproof cable outlet, waterproof rating of IP65, and a wide range of media suitability.

☆ With RS485 signal output
☆ Adopt standard MODBUS RTU communication protocol
☆ Adopt all 304 stainless steel shell, strong and durable
☆ High precision, long transmission distance, stable performance
☆ Compact appearance, diameter 60mm
☆ Compact appearance, diameter 60mm
☆High degree of intelligence, users can set the address, baud rate, filter constant, re-check, etc.

■ 4. TECHNICAL SPECIFICATIONS

Pressure range
  Vacuum range: (0~-100)kPa
  Compound range: -0.1~0.1...0.25 0.6 1.0 1.6 2.5MPa
  Micro pressure range: -100...-25...-5~2...5...25...100kPa
  Normal range: 0~0.16 ...0.4...1.0...10...25...60MPa

Connection: M20*1.5, G1/4, G1/2, 1/4NPT, 1/2NPT
Accuracy: 0.5%FS, 0.25%FS
Display Digits: 4 digits LCD
Dimension: diameter 60mm thickness 38mm
Power: 12~28VDC(recommend 24VDC)
Output signal: Rs485
Output protocol: standard MODBUS RTU
Communication message: N81/N82/E81/O81
Sampling rate: 10 times/second
Output accuracy:±0.2%FS
Communication rate: 2400/4800/9600/19200/38400/57600bps
Power: ＜0.4W
Measurement medium: water, oil, air etc (non-corrosive medium for SS)
Transmission distance: 1000 meters
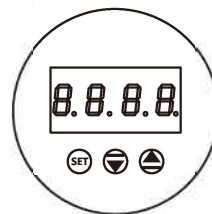IP Rating: IP 65
OPERATION ENVIRONMENT:
Operation temperature:-20-80℃
Storage temperature:-40-125℃
Environment humidity: 0-95%RH

■ 5. KEY DESCRIPTION

5.1 KEY DESCRIPTION

| Key	Definition	Description
(SET)	Set button	Long press to enter the parameter setting state
(▲)	Increase button	Short press increase When changing the password, long press to move the location
(▼)	Decrease button	Short press to reduce When changing the password, long press to move the location

5.2 SCREEN DISPLAY

BAR Kgf/cm² PSI MPa kPa

5.3 MODE DESCRIPTION

Status	Description
Operation status	Show current pressure and unit
Zero Calibration	Short press the (SET) first, then long press (▼)for 3 seconds until the screen displays C–L, the zero clearing is finished (clearing must be performed without pressing) **Note: When the display pressure is higher than 10% of the range, it cannot be cleared**
Setting status	See the 8th item for the general setting operation method. See the 9th item for how to set the communication system .

■ 6.DIMENSIONS

UNIT: mm
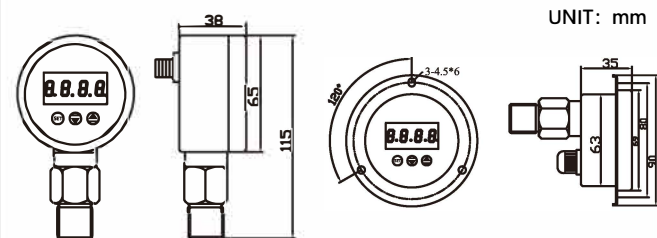
Radial installation Axial installation

■ 7.WIRING METHORDS

RS 485 Digital communication type

Digital communication pressure gauge	red/brown in + blue in - 24V black A white B RS 485

Note: The definition of the outlet is subject to the actual label of the product.

■ 8. FUNCTION SETTING

【First set of parameter settings】

1).Press and hold the (SET) button for 2 seconds without releasing until the Loc parameter is displayed.

2.Click (▲) or (▼) to get the parameter value, modify the bit flashing, long press (▲) or (▼) to move the modified bit, press (▲) or (▼) to modify the parameter value, press (SET) key to save.

3.Change the password lock to 1111 and click the (SET) button to display the next parameter of this group.

4.Click the set button to browse the parameter names in sequence, and follow step ② to set the parameters that need to be modified. When reviewing or setting the last parameter of the first set of parameters, click the set button to exit the setting.

【The first parameter setting codes】

Symbol	Name	Content	Inner add.	Display content	Read & write data corresponding value
Loc	Loc	Password key	00H	0000~9999	0000 H~271FH
Addr	Addr	Mailing address	01H	1~25	1H~FFH
bAud	bAud	Communication rate option	02H	Note1	0H~5H Note2
rdAt	rdAt	Communication data message forma	03H	Note3	0H~3H Note4
Fltr	Fltr	Filter constant	04H	0~20 Note5	0H~14H

b lt	blt	Decimal max display digit	05H	0~4 Note6	0H~4H
un lt	unlt	Unit switching	06H	Note7	0H~4H Note8

Note1: 24/48/96/192/384/57600 corresponds 2400/4800/9600/19200/38400/57600bps

Note2: correspondence:0-2400; 1-4800; 2-9600; 3-19200; 4-38400; 5-57600

Note3: N81/N82/E81/O81

Note4: correspondence:0-N81; 1-N82; 2-E81; 3-O81

Note5:0~20 the larger the number, the stronger the filtering and the more stable the displayed data.

Note6: 0~4 Decimal display digits,0-0; 1-0.0; 2-0.00; 3-0.000; 4-0.0000

Note7: Screen switching display PSI, MPa, Kgf/cm2, Bar,kPa

Note8: 0-kPa;1-PSI; 2-MPa; 3-Kgf/cm2, 4-Bar; 5-Pa

■ 9.COMMUNICATION INSTRUCTIONS

Read the pressure
Command: 01 04 00 00 00 01 31 CA *Note1

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x04
02~03	Starting channel	2 byte	0x00 0x00
04~05	Channel No	2 byte	0x00 0x01
06~07	Checking code	2 byte	CRC_H CRC_L

Response: 01 04 02 00 00 B9 30

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x04
02	Data byte	1 byte	0x02
03~04	Pressure data	2 byte	High byte, low byte note7
05~06	Checking code	2 byte	CRC_H CRC_L

Error response

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x84
02	Additional code	1 byte	0x01
03~04	Checking code	2 byte	CRC_H CRC_L

Note1: Reading command, 01 03 00 00 00 02 C4 0B can also be used as a read pressure command.

READING SPECIFICATION VALUE:
Command: 01 03 00 00 00 01 E5 C9

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x03
02~03	Parameter inner address	2 byte	0x00 0x00
04~05	Parameter address	2 byte	0x00 0x01
06~07	Checking code	2 byte	CRC_H CRC_L

Response: 01 03 02 00 00 79 84

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x03
02	Data byte	1 byte	0x02
03~04	Parameter value	2 byte	High byte, low byte
05~06	Checking code	2 byte	CRC_H CRC_L

Error response

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x83
02	Additional code	1 byte	0x01
03~04	Checking code	2 byte	CRC_H CRC_L

WRITING PARAMETER VALUE
Command: 01 06 00 00 00 01 48 0A

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x06
02~03	Parameter inner address	2 byte	0x00 0x00
04~05	Parameter value	2 byte	0x00 0x01
06~07	Checking code	2 byte	CRC_H CRC_L

Response: 01 06 00 00 00 01 48 0A

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x06
02~03	Parameter inner address	2 byte	0x00 0x00
04~05	Parameter value	2 byte	0x00 0x01
06~07	Checking code	2 byte	CRC_H CRC_L

Error response

Sequence	Description	Digital section	Value
00	Address	1 byte	1~247
01	Function code	1 byte	0x86
02	Additional code	1 byte	0x01
03~04	Checking code	2 byte	CRC_H CRC_L

Note2:

1).The pressure value is the value currently displayed on the screen, after the decimal point is ignored, it is converted into the data of the hexadecimal high and low bytes. For example, the current display shows 1.000MPa, the output pressure value is 1000 and then converted into hexadecimal high and low byte data is 03H E8H

2).The unit of pressure value and the position of the decimal point are the same as those displayed on the current screen.

Write parameter steps:

① Unlock the password, the unlock value is 457H, that is, send the command 1 06 00 00 04 57 CA F4

② Write the parameters that need to be modified, such as the command to modify the address of the transmitter board: 01 06 00 01 00 02 59 CB

③ Confirm the write, the unlock value is 8AEH, that is, send the command 01 06 00 00 08 AE0F B6

④ Currently only supports a single register write function, does not support multiple register modification

■ 10. PARAMETER LIST

Code	Definition	Function	Solution
E-P	Calibration system	The calibration system for this series is not open to customers.	If you accidentally enter the system, short press the RUN button to exit
0000	Password	When 0000 is displayed, it means that you need to enter a password to set it.	Up and Down key to modify value by the setting key
E--H	Overpressure	When E--H is displayed, the current pressure exceeds the product range.	Check if the system is overpressured and if the sensor is damaged.
18888	Overpressure	RS 485 outputs this number when the range is exceeded	Check if the system is overpressured and if the sensor is damaged.

■ 11.PROBLEM AND SOLUTIONS

No.	Problem	Cause	Solution
1	Display normal, no signal output	1. Confirm communication baud rate 2. Confirm message format 3. Confirm the wiring method	Check the above items
2	No pressure, but pressure shows	1. The installation pressure is high 2. Sensor drift	Clear clearing without pressure
3	Pressure does not change	1. The product range is wrong 2. Pressure hole blockage 3. The sensor is damaged	1. Replace the correct range 2. Check the pipeline condition 3. Return to factory for maintenance
4	Power is not bright	1. Connect the wrong power supply 2. Circuit burnout	Return to factory for maintenance
5	Screen does not display	1. The power supply voltage is incorrect 2. Wiring error	1. Check the power supply 2. Check the wiring definition
6	Frequent pressure shock	1. Easy to damage the sensor 2. Easy to cause leakage	Add a buffer tube, Replace the impact-resistant pressure sensor
7	High temperature on site	1. Easy to damage the controller 2. Cause pressure deviation	Increase heat pipe / heat sink

■ 12.DATE MONITORING SOFTWARE

RS 485 digital communication pressure gauge can use the data monitoring software to read data, save data, assist data analysis.

The software can visually display the corresponding pressure values and save the collected pressure data.

Users can also use the standard MODBUS protocol RS485 data reading software on the market for acquisition and analysis.

■ 13. AFTER-SALE SERVICE

The guarantee period of product begins from the data of delivery and lasts for 1year. During the guarantee period, if the product itself had quality problems, we would provide free maintenance, exchange and return service.

The content of specific quality guarantee：

1. The spare parts or components of the product are failure, but it can be operate normally after exchange. This is free to repair.

2. The spare parts or components of the product are failure, and it can't be repaired on time. We would exchange a new, same specification of qualified product.

3. The main functions of the product because of design or manufacture is not meet the requirement of the contract or the enterprise standard, the client need to return goods. We should recover the fault product and return the payment for the goods to the client.

***Disclaimer

During the guarantee period, the product failure caused by followed cases, it beyond the warranty:

1. The failure caused by the inappropriate use of product by user.

2. The client disassemble, repair, refit the product at own discretion