Pressure & DP transmitter (RS485)

Instructions for use

Silver Automation Instruments Ltd.

Button operation

1. Backlight time setting

Press and hold the "M" key to enter the password input state, press the "Z" key to move the cursor, and the "S" key to change the value at the cursor. Enter the password "00001" to enter the setting state.

Parameter settings are divided into viewing state and modification state. In the viewing state, press the "S" and "Z" keys to turn the menu, and press the "M" key to enter the modification state. In the modification state, the cursor flashes. If only one cursor flashes, the "Z" key moves the cursor and the "S" key changes the value at the cursor. If the whole cursor flashes, both the "S" and "Z" keys are used to modify the parameter value. In the modification state, press the "M" key to return to the viewing state.

BKLIT: Backlight time setting, (OFF: turn off the backlight, 15:15 seconds, 30:30 seconds, 60:60 seconds, ON: always on)

SAVE: Exit, YES to save the settings, “No” not to save

Note: If no button is pressed for 60 seconds, the instrument will automatically exit the primary user setting.

2. Beginner User Settings

Press and hold the "M" key to enter the password input state, press the "Z" key to move the cursor, and use the "S" key to change the value at the cursor. Enter the password "00016" to enter the primary user setting state.

The setting method is the same as above.

Contains backlight time setting items

ADDR: Address setting, range (1~247)

BAUD: baud rate setting, range (1200, 2400, 4800, 9600, 19200, 38400)

PAR: Check bit setting, range (0: no check, 1: odd check, 2: even check)

SAVE: Exit, YES to save the settings, No not to save

Note: If no button is pressed for 60 seconds, the instrument will automatically exit the primary user setting.

3. Advanced User Settings

Press and hold the "M" key to enter the password input state, press the "Z" key to move the cursor, and use the "S" key to change the value at the cursor. Enter the password "00026" to enter the advanced user setting state.

The setting method is the same as above.

Contains entry-level user settings

COL-P: Collection cycle setting, in seconds (0 means continuous collection, collection frequency is 10Hz or 40Hz, related to ADC-S). If it is greater than or equal to 43200, it is triggered collection. Writing a value greater than 0 in the trigger collection register triggers collection. Waiting for the trigger collection register to be cleared to indicate that the collection is completed, and then the latest collection data can be read.

ADC-S: ADC rate, unit Hz, 10 means 10Hz, the conversion rate is slow, the characteristic is that the data is stable, but the power consumption will increase, 40 means 40Hz , the conversion rate is fast, the characteristic is that it saves power, but the data is not as stable as 10Hz

PUNIT: Pressure unit setting, range (0:Pa, 1:KPa, 2:MPa, 3:mmH2O, 4:mH2O, 5:bar, 6:psi, 7:atm, 8:kgf/cm2, 9:mm, 10:m), only temperature and pressure integration and single pressure have this menu

P-DOT: Pressure decimal places setting, range (0~4), only temperature and pressure integration and single pressure have this menu

PK: Pressure gain value setting, only temperature and pressure integration and single pressure have this menu, (V0.10 and above versions have this function)

PBASE: Pressure base value setting, the unit is PUNIT, only temperature and pressure integration and single pressure have this menu, (V0.06 and above versions have this function)

PK: Pressure gain value setting, only temperature and pressure integration and single pressure have this menu, (V0.10 and above versions have this function)

DENSI: Density setting, unit is g/cm3, (V0.10 and above versions have this function)

G: Gravity acceleration setting (this function is available in V0.10 and above)

TUNIT: Temperature unit setting, range (11:℃, 12:℉), only temperature and pressure integration and separate temperature have this menu

T-DOT: Temperature decimal place setting, range (0~4), only temperature and pressure integration and separate temperature have this menu

PTTIM: Temperature and pressure display switching time, unit: second, range (1~60), only the temperature and pressure integration has this menu

SAVE: Exit, YES to save the settings, No not to save

Note: If no button is pressed for 60 seconds, the meter will automatically exit the high user setting.

4. Clear Operation

Press and hold the "M" key to enter the password input state, press the "Z" key to move the cursor, and the "S" key to change the value at the cursor. Enter the password "00036" to enter the zeroing state (only pressure can be cleared).

Press the "S" and "Z" keys to select "YES (confirm zeroing)", "No (do not clear zeroing)", "RST (reverse zeroing)", and press the "M" key to exit.

Note: If no button is pressed for 60 seconds, the meter will automatically exit the zeroing mode.

5. Restore to factory settings (this function is available in V0.07 and above)

Press and hold the "M" key to enter the password input state, press the "Z" key to move the cursor, and use the "S" key to change the value at the cursor. Enter the password "00056" to enter the factory restore state.

Press the "S" and "Z" keys to select "YES (confirm factory restore)" or "No (do not restore factory restore)", and press the "M" key to exit.

Note: If no button is pressed for 60 seconds, the meter will automatically exit zeroing mode.

Modbus Communication Protocol

1. Hardware Interface

   Using RS485 serial interface

   Serial port parameters: Baud rate: (1200, 2400, 4800, 9600 , 19200, 38400) bps

   Data bit: 8bit

   Stop bit: 1 bit

   Parity bit: None, Odd, Even

2. Protocol

   All message formats comply with "GBZ 19582.1-2004 Industrial Automation Network Specification Based on Modbus Protocol Part 1: Modbus Application Protocol" .

   According to the device function, the MODBUS-RTU protocol function codes currently supported by the device are: 03H, 04H, 06H, and 10H.

3. Register address allocation and detailed description

   Because some MODBUS registers of this instrument can be configured by users, which is also one of the features of this product, this description only provides the factory default register addresses .

Register Name	type of data	Number of registers	Register offset address	Supported *MODBUS-RTU* function codes	illustrate
Pressure floating point lower 16 bits	Floating point	2	0000H	03H, 04H	Floating point output value, format: CDAB
Pressure floating point high 16 bits			0001H	03H, 04H	
Temperature floating point lower 16 bits	Floating point	2	0002H	03H, 04H	Floating point output value, format: CDAB
Temperature floating point high 16 bits			0003H	03H, 04H	
Pressure Integer	Signed integer	1	0004H	03H, 04H	Range: -32768~32767, indicating that the value is related to the decimal place of pressure. For example, if the register value is 1000 and the decimal place is 2, the pressure value is 10.00.
Temperature Integer	Signed integer	1	0005H	03H, 04H	Range: -32768~32767, indicating that the value is related to the decimal place of the temperature. For example, if the register value is 1000 and the decimal place is 2, the temperature value is 10.00.
battery voltage	Unsigned integer	1	0006H	03H, 04H	Two decimal places, for example, the register value is 360, which means the battery voltage is 3.6V
battery power	Unsigned	1	0007H	03H, 04H	Range: 0~100

	integer				
address	Unsigned integer	1	0008H	03H, 04H, 06H, 10H	Range: 1~247
Baud rate	Unsigned integer	1	0009H	03H, 04H, 06H, 10H	0:1200, 1:2400, 2:4800, 3:9600, 4:19200, 5:38400
Check Digit	Unsigned integer	1	000AH	03H, 04H, 06H, 10H	0 : No check 1: Odd check 2: Even check
Pressure decimal places	Unsigned integer	1	000BH	03H, 04H, 06H, 10H	Range: 0~4
Pressure Unit	Unsigned integer	1	000CH	03H, 04H, 06H, 10H	0: Pa, 1: KPa, 2: MPa, 3: mmH2O, 4: mH2O, 5: bar, 6: psi, 7: atm, 8: kgf /cm2, 9: mm, 10: m, 13: KN
Temperature decimal places	Unsigned integer	1	000DH	03H, 04H, 06H, 10H	Range: 0~4
Temperature Units	Unsigned integer	1	000EH	03H, 04H, 06H, 10H	11:℃, 12:℉
Pressure gain coefficient lower 16 bits	Floating point	2	000FH	03H, 04H, 06H, 10H	Format: CDAB
Pressure gain coefficient high 16 bits			0010H		
Pressure offset value lower 16 bits	Floating point	2	0011H	03H, 04H, 06H, 10H	Format: CDAB
Pressure offset value high 16 bits			0012H		
Density low 16 bits	Floating point	2	0013H	03H, 04H, 06H, 10H	Format: CDAB
Density high 16 bits			0014H		
Gravity acceleration lower 16 bits	Floating point	2	0015H	03H, 04H, 06H, 10H	Format: CDAB
Gravity acceleration high 16 bits			0016H		
The lower 16 bits of the original pressure value	Floating point	2	0017H	03H, 04H	Format: CDAB
High 16 bits of the original pressure value			0018H		
Pressure range zero position low 16 bits	Floating point	2	0019H	03H, 04H	Format: CDAB
Pressure range zero position high 16 bits			001AH		
Pressure range full	Floating	2	001BH	03H, 04H	Format: CDAB

scale lower 16 bits	point				
Pressure range full scale high 16 bits			001CH		
Temperature range zero position low 16 bits	Floating point	2	001DH	03H, 04H	Format: CDAB
Temperature range zero position high 16 bits			001EH		
Temperature range full scale lower 16 bits	Floating point	2	001FH	03H, 04H	Format: CDAB
Temperature range full scale high 16 bits			0020H		
Pressure offset value integer	Signed integer	1	0021H	03H, 04H, 06H, 10H	Range: -32768~32767, indicating that the value is related to the decimal place of pressure. For example, if the register value is 1000 and the decimal place is 2, it means 10.00
Pressure range zero position integral	Signed integer	1	0022H	03H, 04H	Range: -32768~32767, indicating that the value is related to the decimal place of pressure. For example, if the register value is 1000 and the decimal place is 2, it means 10.00
Pressure range full scale integer	Signed integer	1	0022H	03H, 04H	Range: -32768~32767, indicating that the value is related to the decimal place of pressure. For example, if the register value is 1000 and the decimal place is 2, it means 10.00
Temperature range zero position integer	Signed integer	1	0022H	03H, 04H	Range: -32768~32767, indicating that the value is related to the decimal place of the temperature. For example, if the register value is 1000 and the decimal place is 2, it means 10.00
Temperature range full scale integer	Signed integer	1	0022H	03H, 04H	Range: -32768~32767, indicating that the value is related to the decimal place of the temperature. For example, if the register value is 1000 and the decimal place is 2, it

					means 10.00
Trigger acquisition	Unsigned integer	1	0023H	03H, 04H, 06H, 10H	Writing a value greater than 0 triggers the acquisition. After the trigger acquisition register is cleared, it indicates that the acquisition is complete. Then you can read the latest acquisition data.
Clear	Unsigned integer	1	0023H	03H, 04H, 06H, 10H	Write 1000 to clear, write 1001 to cancel clearing

Note: All writable registers will have their written data saved immediately and will take effect immediately after being saved.

Wiring Instructions