0	Read transmitter information	Transmitter information	None
1	Read transmitter main variable	Flow unit + flow value	None
2	Read output current and percentage	Output current + flow percentage	None
3	Read output current and dynamic variable	Current + instantaneous flow + frequency + cumulative low + cumulative high	After four dimensions have units
11	Read transmitter information	Transmitter information	None
12	Read transmitter information	Read transmitter information（MESSAGE）	Custom content can be written by command number 17
13	Read transmitter information	Transmitter Information（TAG+DESCRIPTION +DATE）	Custom content can be written by command number 18
14	Read transmitter information	transmitter information	None
15	Read upper and lower limits and damping	Flow unit + full flow + cut flow + damping	None
16	Read transmitter information	Transmitter information（FAN）	can be customized by command number 19
17	Write Transmitter Information .	Transmitter Information（MESSAGE）	After written, it can be read and verified by the 12th command

18	Write Transmitter Information .	Transmitter Information （TAG+DESCRIPTION +DATE）	can be read and verified by command 13 after writing.
19	Write Transmitter Information .	Transmitter Information . （FAN）	it can be read and verified by command No. 16. after writing
34	Modify Damping	Damping	None
35	Modify upper and lower limits and units	Unit + full flow + cut flow	None
40	Output Current	Output Current Value （4~20mA Range）	Execute this command, the transmitter will immediately output the specified current value.
44	Modifying Units	Flow Units	None
45	Calibrate the 4mA current	The current value of the transmitter output measured by the precision ammeter	First use the 40 command, output 4mA current, then measure the actual output value, use this command to calibrate
46	Calibrate the 20mA current The current value of the transmitter output measured by the ammeter	First use the 40 command, output 20mA current，	Then measure the actual output value and use this command to calibrate
110	Read extended dynamic variables	Transmitter extended dynamic variable (temperature + pressure)	The first variable is temperature; the second variable is pressure

Table 5 Transmitter HART Command

See HART SPEC V5 and above for details and definitions of HART commands.

Attachment: Troubleshooting

1) **Conventional volume flow and conventional gas mass flow in algorithm selection:**

The conventional volumetric flow rate in the algorithm refers to the flow rate of the working condition indicating that the flow rate is not compensated, and is used for liquid or uncompensated working condition gas. The standard gas volume flow rate is calculated according to the gas equation, and the conventional gas mass flow rate is calculated by multiplying the standard volume by the standard density.

2) Flow correction factor:

In the flow calculation, the flow rate is corrected by calculating the flow rate according to the basic formula. The correction factor is usually set to the percentage point of the calibration point relative to the full-scale flow rate; the correction factor C = standard flow rate / measured flow value when not corrected. Linear interpolation between points. When not corrected, C=1, and the corrected value is limited to the range of 0.8-1.2.

3) Pulse output type and usage:

The signal pulse in the pulse output type is the output that tracks the original signal pulse and is typically used for initial calibration. The correction frequency is used for the frequency output after multi-segment polyline correction. The frequency output is an instantaneous flow linear output of 0-1000 Hz, and the output frequency is 1000 Hz at full flow. The correction factor C value linear correction and compensation calculation are valid for the frequency output, and are usually used for the corrected output. The pulse output is calculated as the cumulative flow rate. There is a maximum and minimum limit for the output value of each calculation cycle. The appropriate pulse equivalent must be selected so that the number of pulses per cycle is lower than the limit of the upper limit of 1000 pulses.

4) Pulse equivalent:

The pulse equivalent is the output factor and its value is the flow unit/pulse. That is, how many unit flows per pulse represents, and the value must be such that the pulse output is controlled within 1000 pulses per measurement period.

5) Temperature and pressure calibration during production and maintenance:

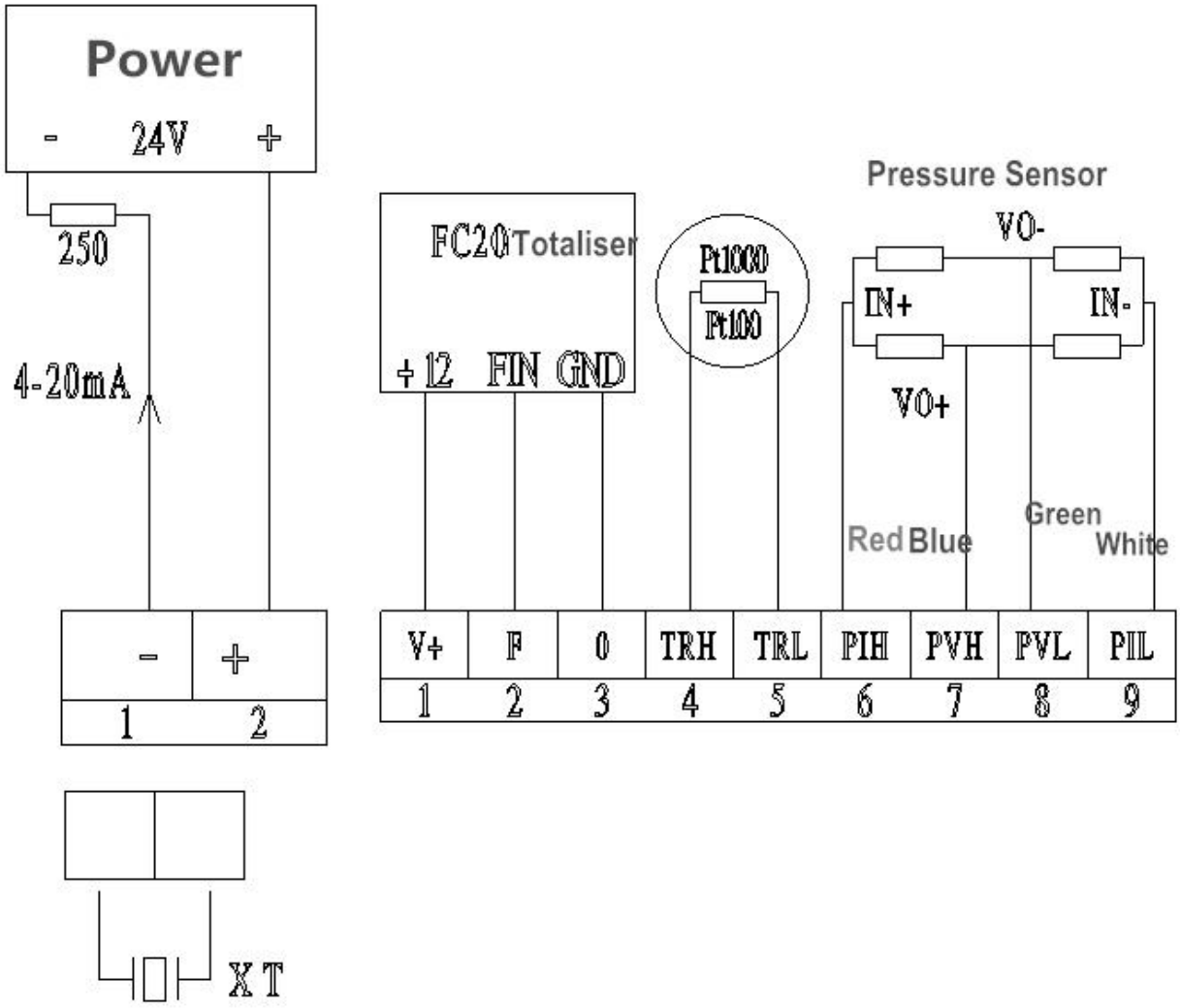
The temperature calibration should have a standard resistance box or a standard resistance corresponding to the calibration value. After connecting the resistors in the corresponding menu, press the “E” key to confirm. If the value is normal, confirm the save again. If you modify it, press “+” to change the confirmation prompt to modified and press “E” to save the value. At Pt100, the temperature double jumper should be shorted. At Pt1000, the temperature double jumper should be disconnected.

6) Calibration of output current:

For the calibration of the output current, connect the standard ammeter to the current loop. After confirming the 4/12/20mA item, press the “E” key to confirm that there should be an approximate current output. At this time, the actual display value of the ammeter is entered and confirmed. calibration. Usually three points per calibration should be performed.

7) Use of HART:

The use of HART should connect the Communicator to both ends of the 250 ohm sampling resistor in the current loop. A resistance deviation of more than 20% or a zero current of less than 3.9 mA may cause HART communication to fail. Pay special attention to the current when the current is not enough to make the zero current less than 3.9mA.



VT2W Two-wire System Wiring Diagram