



ABDT-FTV

Multi-parameter Smart Energy valve



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I. Product Overview

Multi-parameter smart energy valve is used to regulate the flow and energy regulation of water systems, such as heating and air conditioning systems, by regulating, maintaining the flow required by the user for heating or cooling, solving the unevenness of heat and cold, and improving the room temperature qualification rate of heating and air conditioning.

1.1 Product composition

The Multi-parameter smart energy valve consists of a built-in detection meter and a regulating valve.

1) Built-in detection instruments include:

a) Flow rate: 1 way flow rate (ultrasonic flow meter);

b) Temperature: 1 way supply temperature, 1 way return temperature;

c) Pressure: 1 way supply pressure, 1 way return pressure (special customization required);

2) Adjustment valve:

Adjustment valve using eccentric hemisphere adjustment valve.

1.2 Adjustment method

Multi-parameter smart energy valve is used for water systems with flow regulation or energy regulation, such as heating and air conditioning systems, which can be adjusted according to different working conditions by choosing flow regulation, energy regulation or manual adjustment to keep the room temperature around the appropriate temperature for human body.

Note: If the Multi-parameter smart energy valve is installed on the supply or return side, the change caused by the adjustment will be different.

1.2.1 Flow rate adjustment

The use of ultrasonic sensors for flow measurement, by changing the valve overflow area to control the flow. for conventional control valves, heating and air conditioning network is a closed-circuit network, the flow pattern of water is mostly in the resistance

squared area, The resistance along the path is proportional to the square of the velocity. Conventional products in accordance with this principle using differential pressure adjustment method there are problems of control and measurement error. This product controls the valve acting by real-time detection of the actual flow inside the pipeline, which can obtain a very accurate control effect, which is difficult to be implemented by traditional control valves.

1.2.2 Energy adjustment

Energy adjustment is divided into heat adjustment and cold adjustment, heating using heat adjustment, while air conditioning cooling using cold adjustment. According to the setting of the temperature difference ΔT (ΔT = water supply temperature - return water temperature), adjust the size of the opening of the integrated energy intelligent control valve to reach the user side of the flow changes. So as to adjust the indoor temperature, so that the actual temperature difference ΔT will maintain the setting of the temperature difference ΔT , energy regulation is essentially temperature difference adjustment.

1.2.3 Manual adjustment

According to the actual working conditions and experience, the valve opening is manually entered and the flow rate V is then changed so that the flow rate reaching the user side changes, thus adjusting the room temperature.

1.3 Product features

- 1) Adjusting the automatic balance of the water system to maintain the setting flow or setting energy;
- 2) Eliminate hydraulic disorders in the water system, maintain the flow required by users for heating and cooling, solve the unevenness of heat and cold, and improve the room temperature qualification rate of heating and air conditioning;
- 3) Solve the poor operation mode of "large flow rate and small temperature difference", improve energy efficiency ratio and achieve energy-saving operation;
- 4) Multi-parameter smart energy valve has excellent electric adjustment function, its adjustment is stable and the adjustment performance is good;

II. Technical Specifications

Multi-parameter smart energy valve follows the following technical specifications:

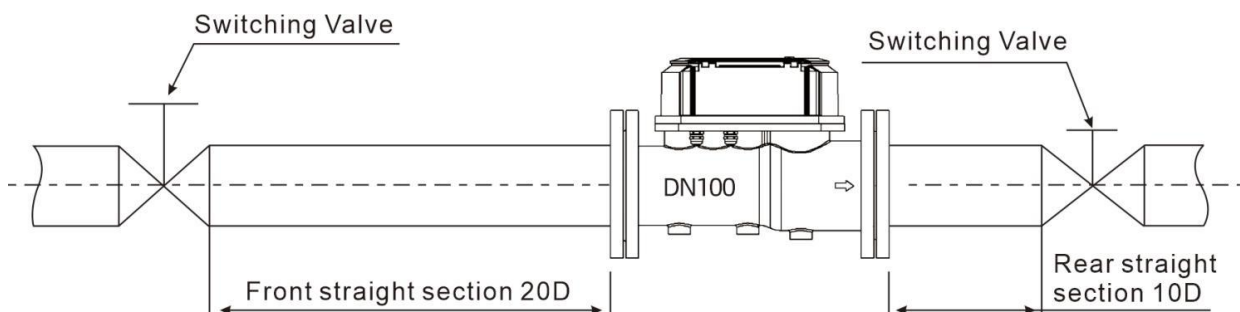
- Nominal diameter: DN50-DN100
- Maximum working pressure: 1.6MPa
- Measurement accuracy: 2.0
- Control accuracy: 5.0%
- Temperature sensor: Pt1000, Class B
- Communication interface: MBus, RS485, NBIOT, 4G
- Display: 192*96 resolution, English language
- Power supply: DC24V, AC220V, DC12V
- Maximum working current: 1.5A, standby current <0.1A
- Medium temperature: 0~80℃
- Ambient temperature: -20~60℃, relative humidity: ≤95%
- Protection grade: IP65, IP68

III. Installation Size

Warning!

To ensure safe operation of the equipment, all instructions regarding installation, operation and operating environment must be followed.

3.1 Installation method



1) Multi-parameter smart energy valve can be installed on the water supply side or the return side, whereas the general system is recommended to be installed on the return side;

2) Multi-parameter smart energy valve does not have a shut-off function, and a shut-off valve should be set separately;

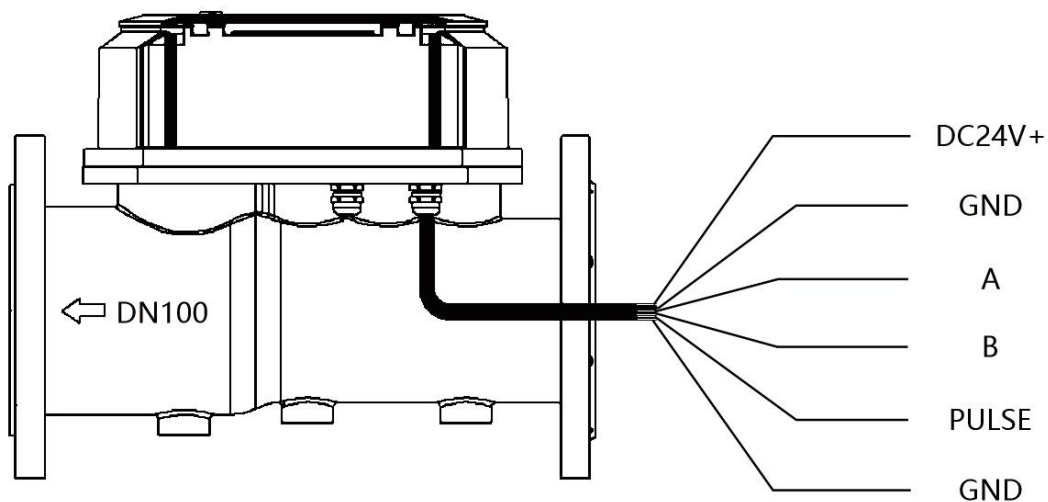
3) Differential pressure range: 20 to 300KPa, when the working differential pressure of the system is greater than 300Kpa, in order to prevent noise, measures should be taken to reduce the differential pressure;

4) Maximum operating temperature: 80°C;

5) Pressure resistance level PN (MPa): 1.6MPa.

3.2 Wiring method

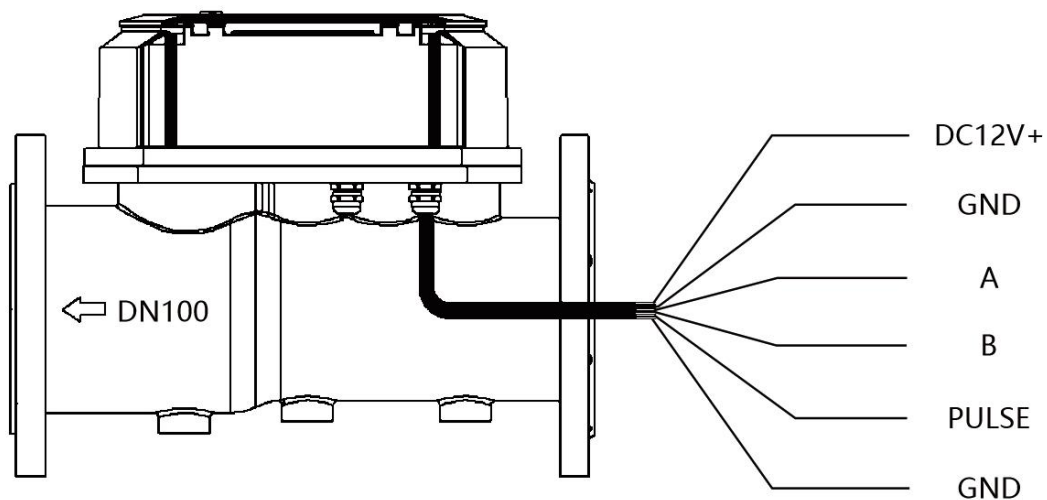
3.2.1 Wiring method for DC24V power



See the following table for wiring of the instrument's six-core wire:

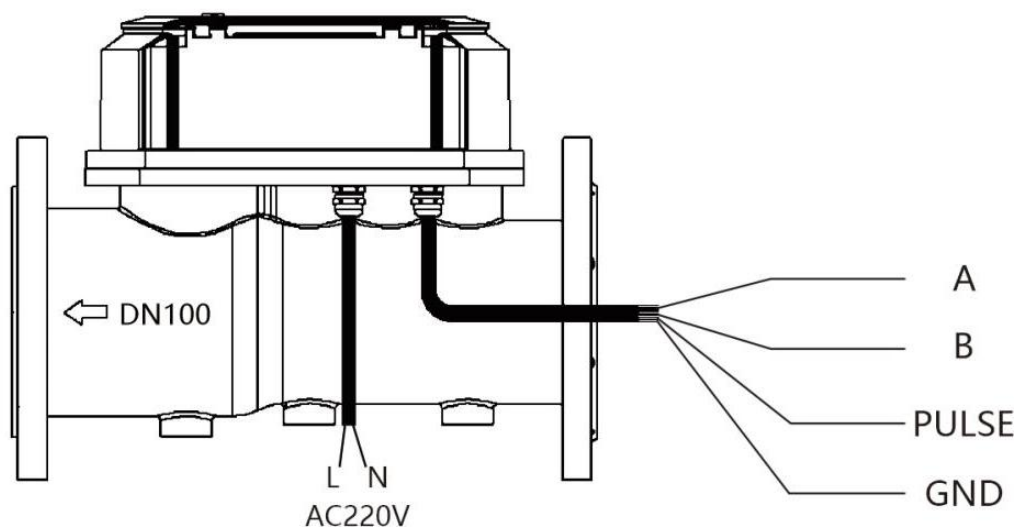
Wire no.	Definition	Wiring method
DC24V+	DC 24V positive	DC 24V External power supply interface
GND	DC 24V negative	
A	485 Communication A	External 485 communication interface
B	485 Communication B	
PULSE	Pulse output positive	Pulse output interface (Only for calibration use)
GND	Pulse output negative	

3.2.2 Wiring method for DC12V power



Wire no.	Definition	Wiring method
DC12V+	DC 12V positive	DC 12V external power supply interface
GND	DC 12V negative	
A	485 Communication A	External 485 communication interface
B	485 Communication B	
PULSE	Pulse output positive	Pulse output interface (Only for calibration use)
GND	Pulse output negative	

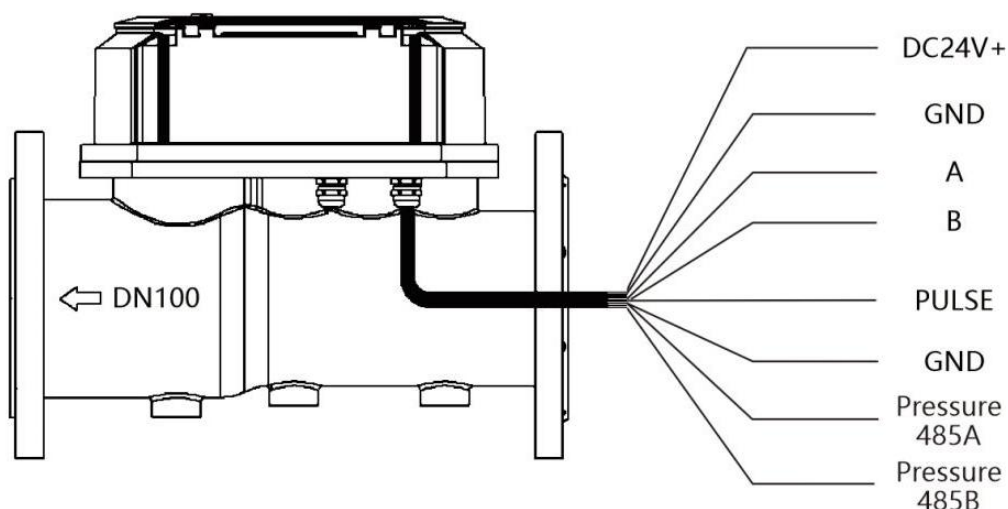
3.2.2 Wiring method for AC220V power



See the following table for wiring of the instrument's six-core wire:

Wire no.	Definition	Wiring method
L	AC 220V positive	AC 220V external power supply interface
N	AC 220V negative	
A	485 Communication A	External 485 communication interface
B	485 Communication B	
PULSE	Pulse output positive	Pulse output interface (Only for calibration use)
GND	Pulse output negative	

3.2.4 Wiring method for pressure with RS485 interface(customizable)



See the following table for wiring of the instrument's six-core wire:

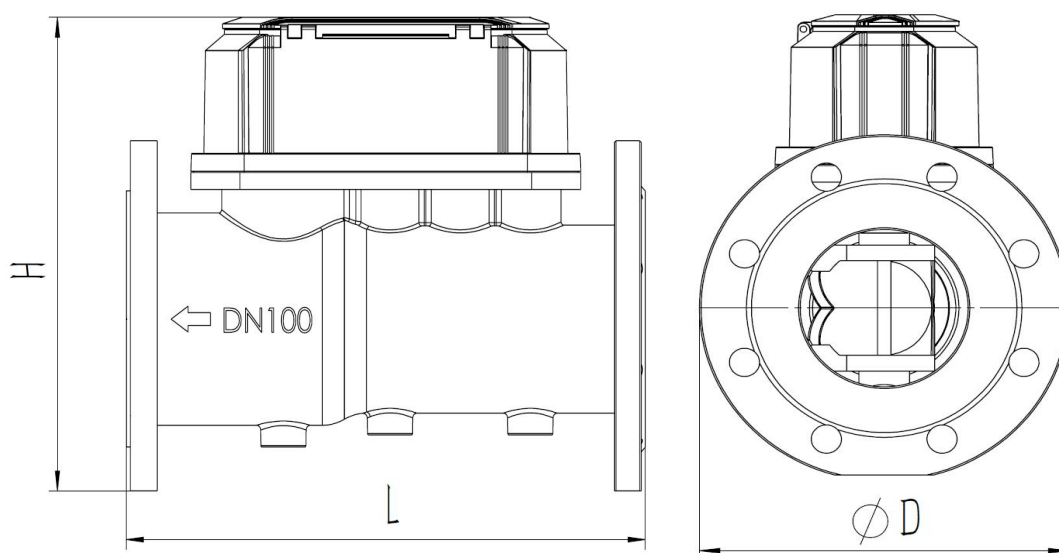
Wire no.	Definition	Wiring method
DC24V+	DC 24V positive	DC 24V external power supply interface
GND	DC 24V negative	
A	485 Communication A	External 485 communication interface
B	485 Communication B	
PULSE	Pulse output positive	Pulse output interface (Only for calibration use)
GND	Pulse output negative	
Pressure 485A	Pressure input 485A	Connect pressure transmitters with 485 output to the 485 terminals. Both supply pressure and return pressure transducers share this set of 485

Pressure 485B	Pressure input 485B	interfaces. That is, both the supply pressure and return pressure 485 interfaces are connected to this set of 485 interfaces.
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3.3 Equipment size

The Multi-parameter smart energy valve is available in the following sizes: length (L), height (H), depth (D)

DN	50	65	80	100
D	165	185	200	220
L	370	370	370	370
H	244	261	276	306

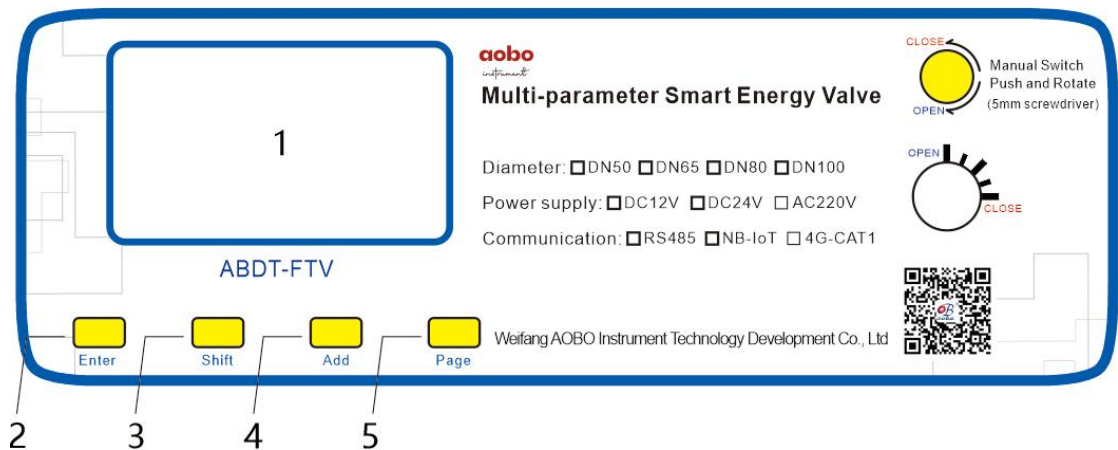


IV. Panel Description

Warning!

To ensure safe operation of the equipment, all instructions regarding installation, operation and operating environment must be followed.

Panel



Panel Description

No.	Item	Description
1	Display	Display valve control status; working condition status; data transmission status; alarm information, etc.
2	OK key	Long press to enter the programming screen while in the working condition screen; To confirm the changed setting value; When changing the setting, it is used to enter the current setting item.
3	Shift key	When the working condition is displayed, long press is used to display the valve control mode interface; When changing the setting, long press is used to change the item to a new line; When changing numbers, short press to move the setting cursor position.
4	Increase key	When working condition is displayed, long press is used to view historical data and real time working condition; When changing numbers, it is used to increase the value.
5	Flip key	Short press to flip the page; Long press to return to the previous page.

Note: The keys are photoelectric induction keys, each key operation is collected from the reflected light of the finger, so you need to move your finger away from the reflective area after each key press, and do not block other keys when moving your finger.

Display Function Item Overview

No.	Item	Sub-Item		Scope	Unit
1	Valve	Control mode	Manual		
2			Setting opening	Opening set-value	0-100.00 %

3			Flow rate	Flow rate set-value	0-9999.9	m³/h
4			Heat	Heat set-value	0-9999.9	GJ/h
5			Supply temperature	Target value of supply temperature	0-150	℃
6			Return temperature	Target value of return temperature	0-150	℃
7			Supply pressure	Target value of supply pressure	0-9.999	MPa
8			Return pressure	Target value of return pressure	0-9.999	MPa
9			Temperature difference	Target value of temperature difference	0-99.99	℃
10			Pressure difference	Target value of pressure difference	0-9.999	MPa
11			Flow rate	Installation position		
12	Metering mode			Flow rate/Heat/Cooling rate		
13	Diameter			DN50-100(optional)		
14	Flow rate unit			m³/h,L/h,t/h,kg/h(optional)		
15	Heat unit			GJ/h,MJ/h,MW/h,KW/h		
16	Flow factor			0-99.9999		
17	Cut-off flow rate			0-9.999	m/s	
18	Hydro-static time difference			-9999 ~ +9999	ps	
19	Factor correction	Flow rate 1		Factor of flow rate 1	Flow rate:0-9.999 Factor:0-99.9999	m/s
20		Flow rate 2		Factor of flow rate 2		
21		Flow rate 3		Factor of flow rate 3		
22		Flow rate 4		Factor of flow rate 4		
23	Temperature	Supply temperature	Type		Pt1000-1/Pt1000-2/Temperature 1/ Temperature 2/485/Setting value	

24			Setting	0-99.99	℃
25			Address	0-999	
26			Error	Setting/Average/0	
27			Metered supply temperature	0-99.99	℃
28		Return temperature	Type	Pt1000-1/ Pt1000-2/ Temperature 1/ Temperature 2/ 485/Setting value	
29			Setting	0-99.99	℃
30			Address	0-999	
31			Error	0-99.99	℃
32	Pressure	Supply pressure	Type	Pressure 1/ Pressure 2/ Setting value	
33			Setting	0-99.999	MPa
34			Address	0-9999	
35		Return pressure	Type	Pressure 1/ Pressure 2/ Setting value	
36			Setting	0-99.999	MPa
37			Address	0-9999	
38	Communication	Modbus address		0-999	
39		Baud rate		1200/2400/4800/9600	
40		Server IP	Server	***.***.***.***	
41		Port	Nb port	0-99999	
42		Nb transmission interval		0-999	min
43	Output	Pulse mode		Flow rate/Heat	
44		Pulse equivalent		0-9999.999	L/MJ
45		Pulse test		0-5000	P/s
46		Pulse switch		Off/On	P/s
47	System	Year, Month, Day, Hour, Minute, Second			
48		Backlight time		0-99	min

49		Contrast ratio	0	%
50	Calibration	For encoder and platinum resistor zero and full scale calibration		
51	Reset	Accumulated flow, accumulated heat, history record, power failure record clear; restore factory settings		

V. Service

The Three Guarantees of our company's products are strictly implemented in accordance with national regulations. Even if the warranty period is exceeded or it is not within the scope of the warranty, we will still provide you with good service wholeheartedly. If you are dissatisfied with sales, maintenance, charges, service attitude, spare parts supply, etc., please contact our sales representatives or contact our company directly by email, telephone, etc. The company will ensure that your opinions are dealt with reasonably and perfectly.

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