국제공인교정기관
(액체,기체 유량분야)

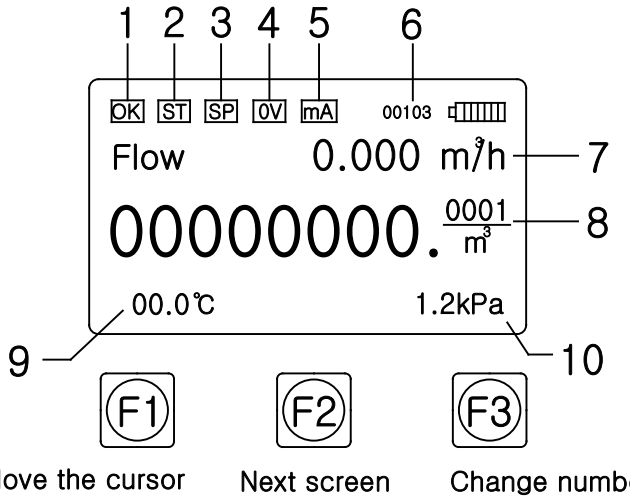
Instruction Manual

Vortex Flow Meters

KTVP, KTV Series

- Contents -

*. System Alarm



1: The running status of meter. If the system of meter is working well, it displays "OK". Otherwise it displays "ERR".

2: Indicator of temperature. If the system of meter is abnormal or the temperature is manually set, it displays "ST". If they are temperature sensors and the temperature sensors are working well, it will be blank. (The temperature range is -50℃ ~ +300℃)

3: Indicator of pressure. If the system of meter is abnormal or the pressure is manually set, it displays "SP". If it is pressure sensor and the pressure sensor is working well, it will be blank. (The absolute pressure range is 50KPa – 20000KPa)

4: Indicator of operation parameters overflow. If the operation parameters overflow, it displays "OV". If the system of meter is working well, it will be blank. (Overflow includes the parameters which can't be negative are negative, the parameters which can't be zero are zero, and parameters beyond the indication range.)

5: Indicator of current output overflow. If the current output overflow, it displays "mA". If the current output is normal, it will be blank.

6: Indicator of running modes. It displays the battery voltage in battery mode, displays "=" in two-wire current mode, and displays "≡" in three-wire mode.

7: Flow rate. The maximum value is 9999 999.

8: Total flow. The maximum value is in 8 bits, and if total flow is more than 8 bits, it will display 9999 9999.

9: Temperature. If the internal setting is manually set, it displays the setting temperature. Otherwise it displays the temperatures which are collected by the temperature sensors on-the-spot.

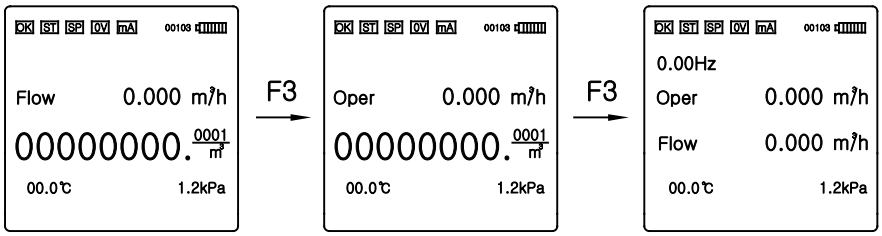
10: Pressure. If the meter is set in manual mode, it displays the setting pressure. Otherwise it displays the pressure which is collected by pressure sensor on-the-spot.

Main menu

```
-- Main menu --

1. Self-test
2. Display unit
3. Total reset
4. Setup
5. Calibration
6. Password
```

Introduction to flow screen



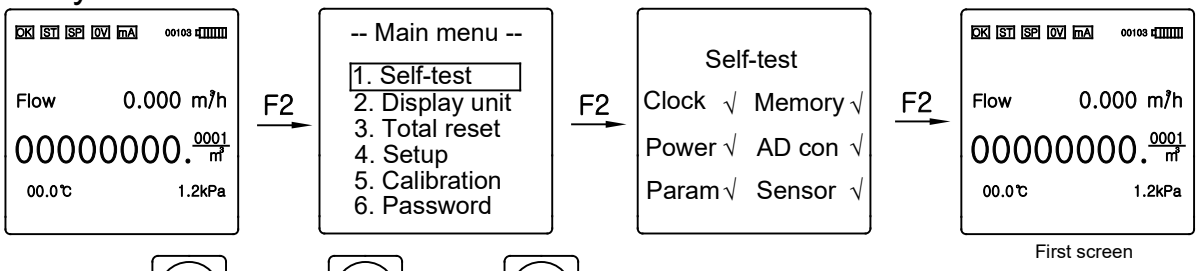
Flow : Temperature Pressure Calibrated Flow

Oper : Standard Flow

Flow : Temperature Pressure Calibrated Flow

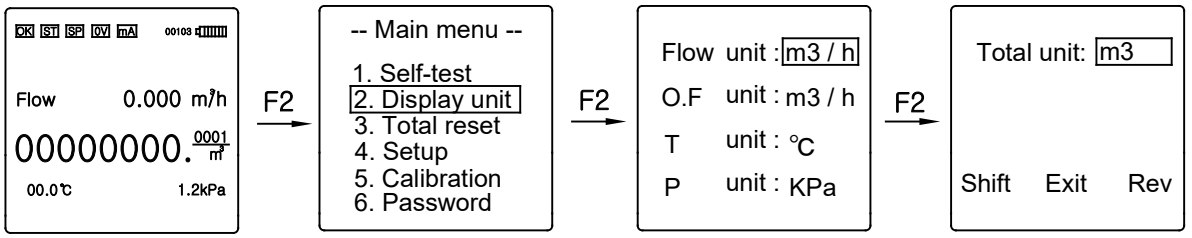
Oper : Standard Flow

1. System check



Move the cursor Next screen Change numbers and settings

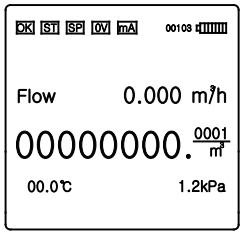
2. Flow rate/totalizer flow Unit setting



Unit setting

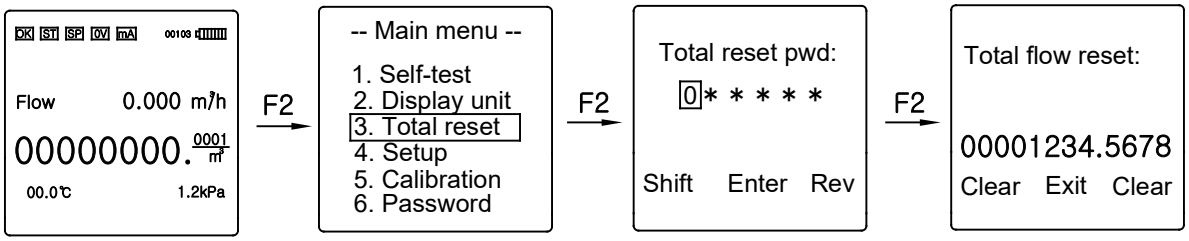
Flow unit: Temperature Pressure Calibrated Instantaneous Flow Rate Unit Setting
Oper unit: Standard Flow unite
T: Temperature unit(℃,°F)
P: Pressure unit(kPa,mPa)

F2



First screen

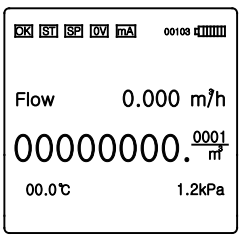
3. Reset totalizer



Password : 000000

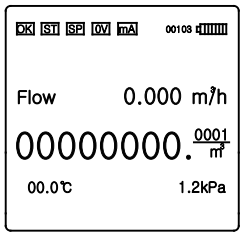
F1,F3 simultaneous input

F2

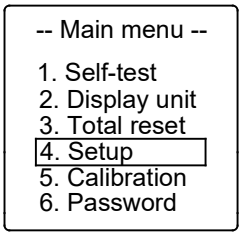


First screen

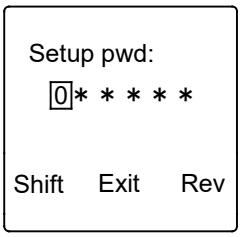
4.1 Setup (Water)



F2

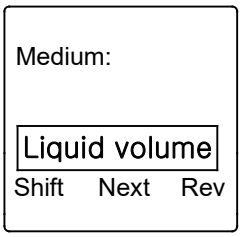


F2



Password : 000000

F2



Medium Sub menu
1. Steam T Cmp (Saturated steam temperature compensation)
2. Steam P Cmp (saturation vapor pressure correction)
3. Super Heat (underwater vapor correction)
4. Steam Auto (Automatic steam correction)
5. Compress Gas
6. Gas Mass
7. Liquid Mass
8. Liquid Volume

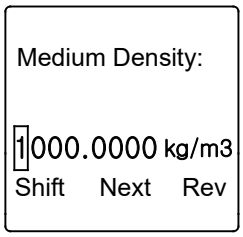
F1 Move the cursor

F2 Next screen

F3 Change numbers and settings

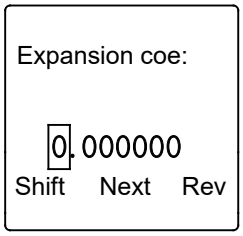
F2

liquid density setting

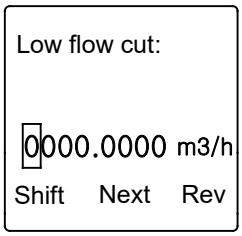


F2

Do not set

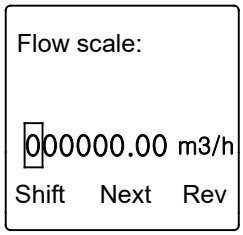


F2



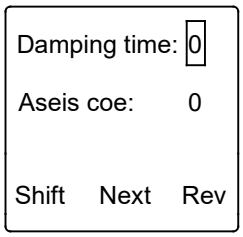
Cut-off

F2



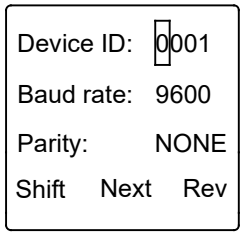
DC 4~20mA Maximum value

F2



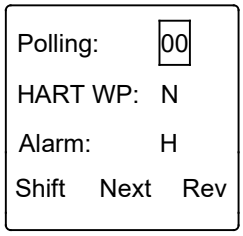
(Sec)

F2



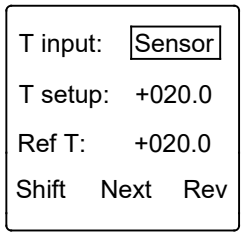
RS 485

F2



HART

F2

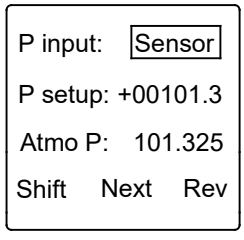


T input: Sensor: Gauge temperature
Setup: Absolute temperature input condition

T setup: Absolute temperature compensation during setup

Ref T: Standard temperature

F2

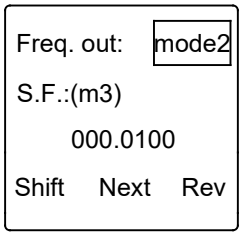


P input: Sensor: Gauge pressure
Setup: Absolute pressure input condition

P setup: Absolute pressure corrected at set

Ref T: Standard pressure

F2

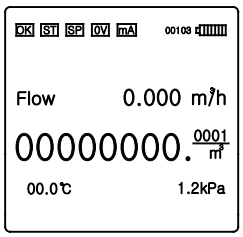


mode1:No condition

mode2:Pulse per unit

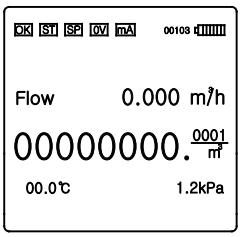
mode3:Hz for the flow rate

F2

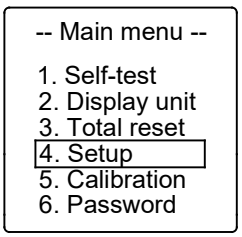


First screen

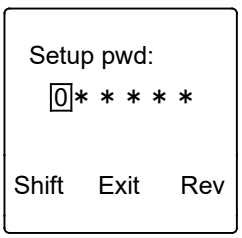
4.2 Setup (Steam)



F2

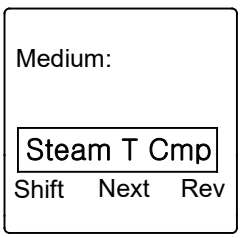


F2



Password : 000000

F2



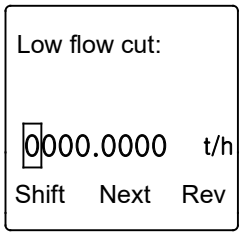
Medium Sub menu
1. Steam T Cmp (Saturated steam temperature compensation)
2. Steam P Cmp (saturation vapor pressure correction)
3. Super Heat (underwater vapor correction)
4. Steam Auto (Automatic steam correction)
5. Compress Gas
6. Gas Mass
7. Liquid Mass
8. Liquid Volume

F1 Move the cursor

F2 Next screen

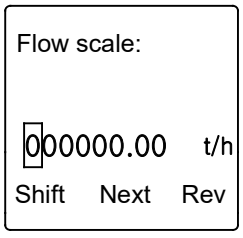
F3 Change numbers and settings

F2



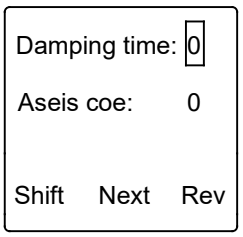
Cut-off

F2



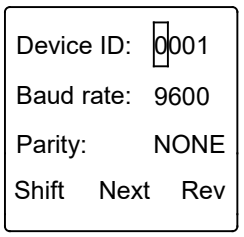
DC 4~20mA Maximum value

F2



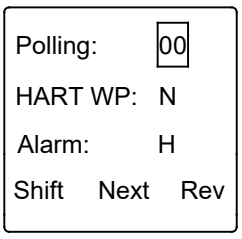
(Sec)

F2



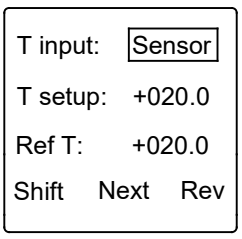
RS 485

F2



HART

F2

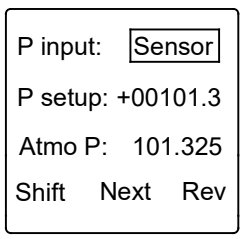


T input: Sensor: Gauge temperature
Setup: Absolute temperature input condition

T setup: Absolute temperature compensation during setup

Ref T: Standard temperature

F2

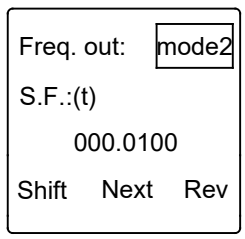


P input: Sensor: Gauge pressure
Setup: Absolute pressure input condition

P setup: Absolute pressure corrected at set

Ref T: Standard pressure

F2

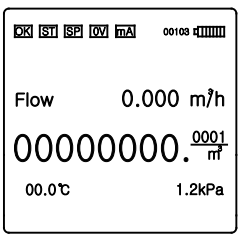


mode1:No condition

mode2:Pulse per unit

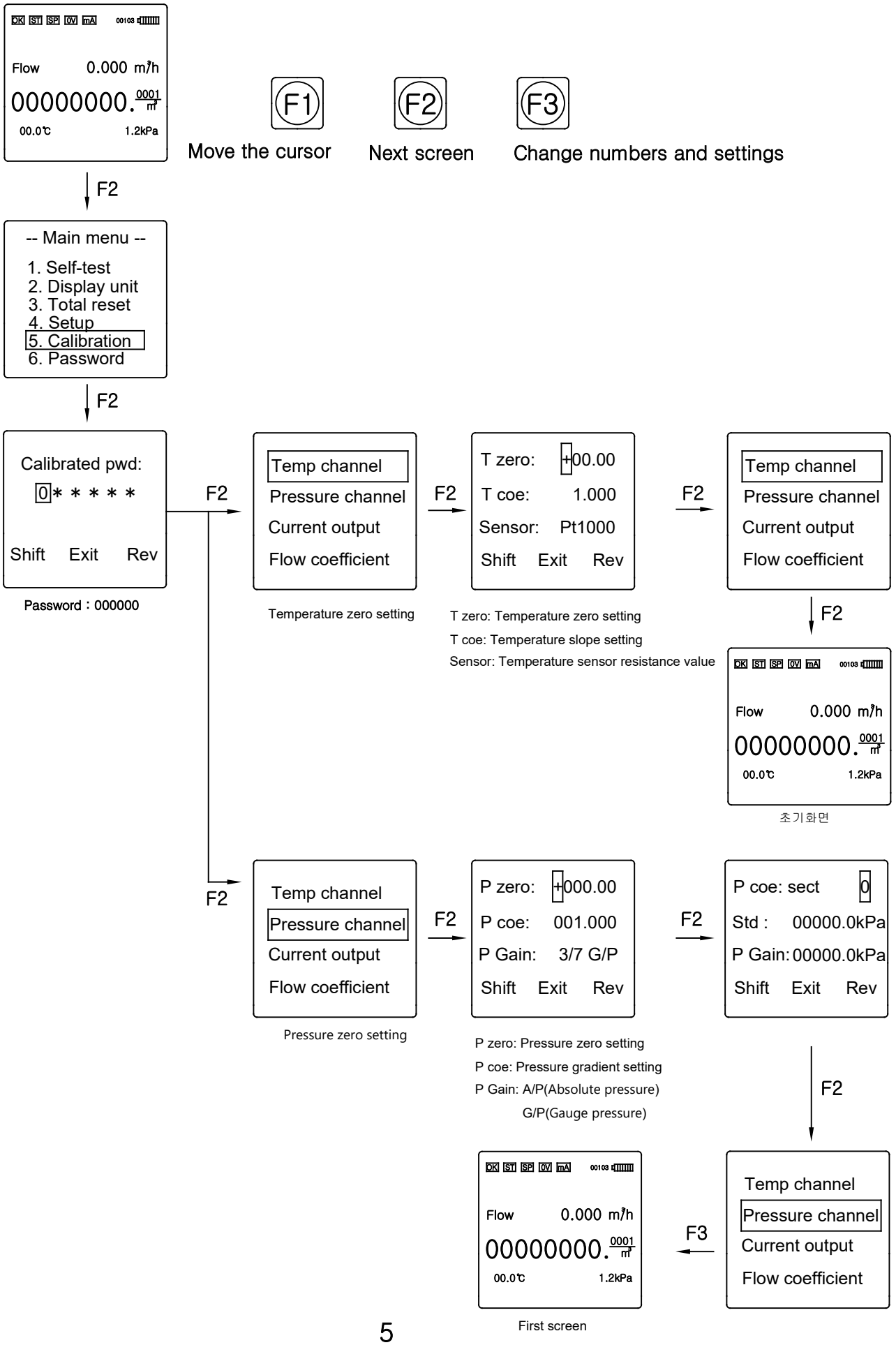
mode3:Hz for the flow rate

F2

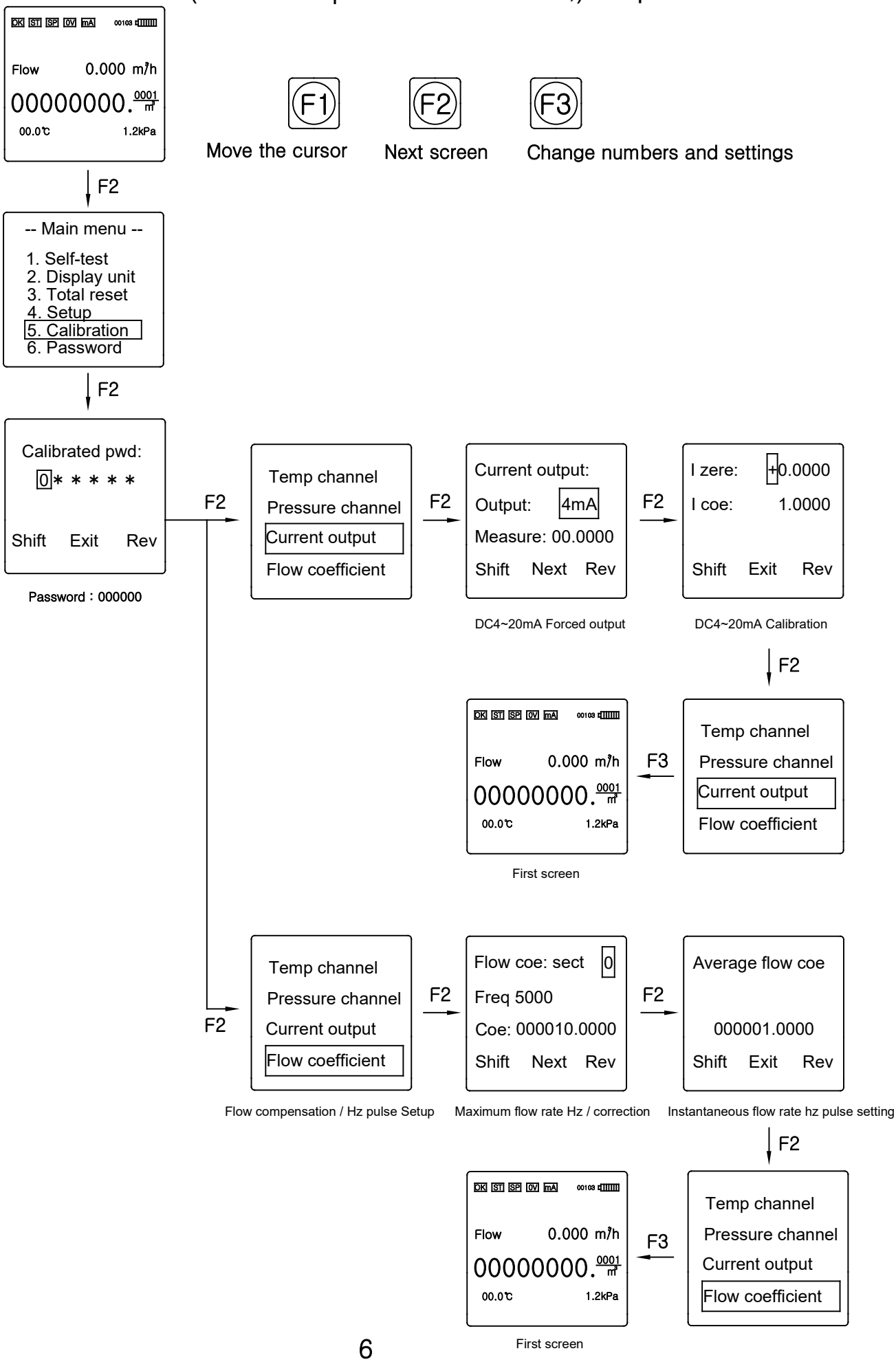


First screen

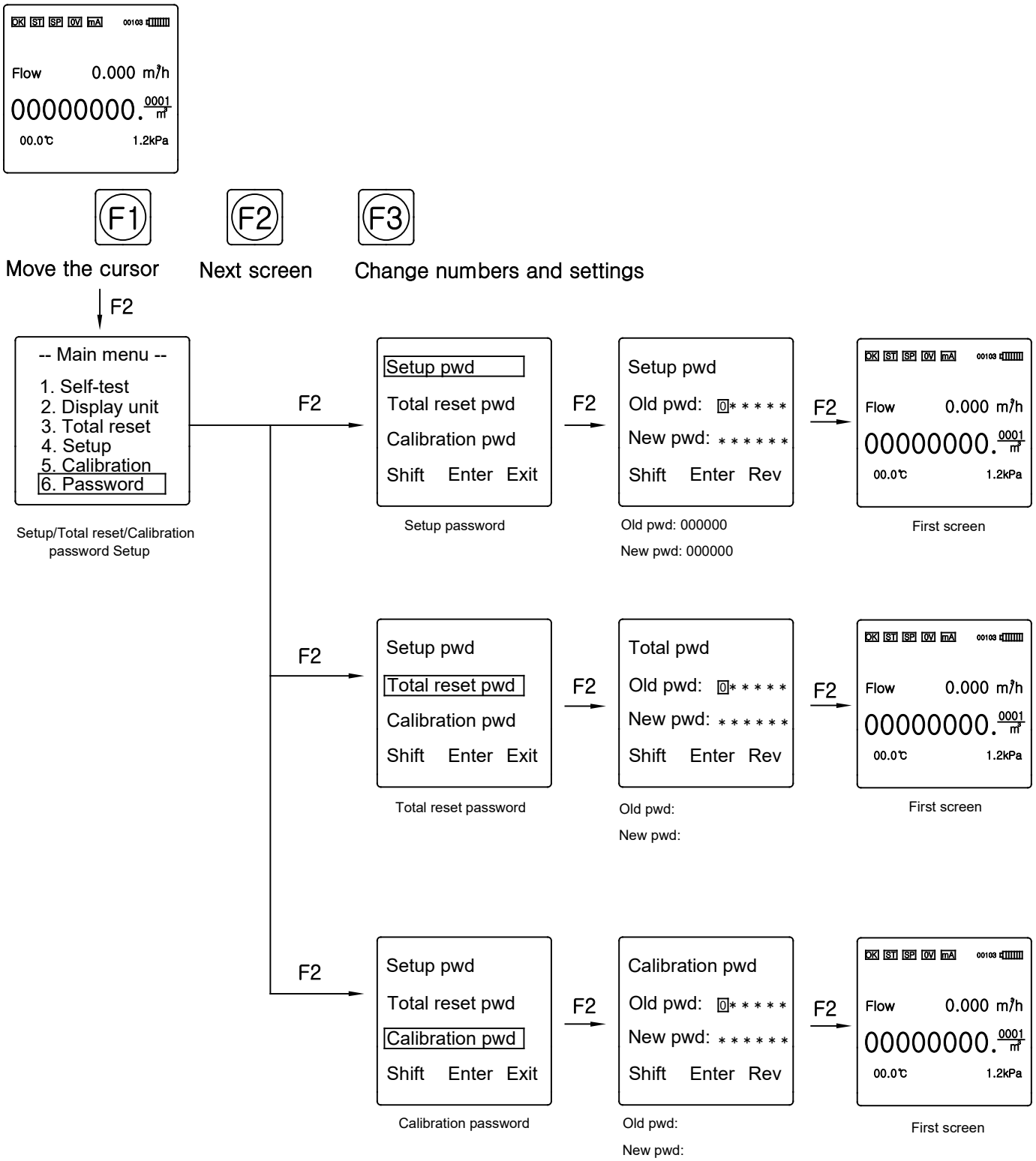
5.1 Calinbration (Temperature, pressure, Zero) Setup



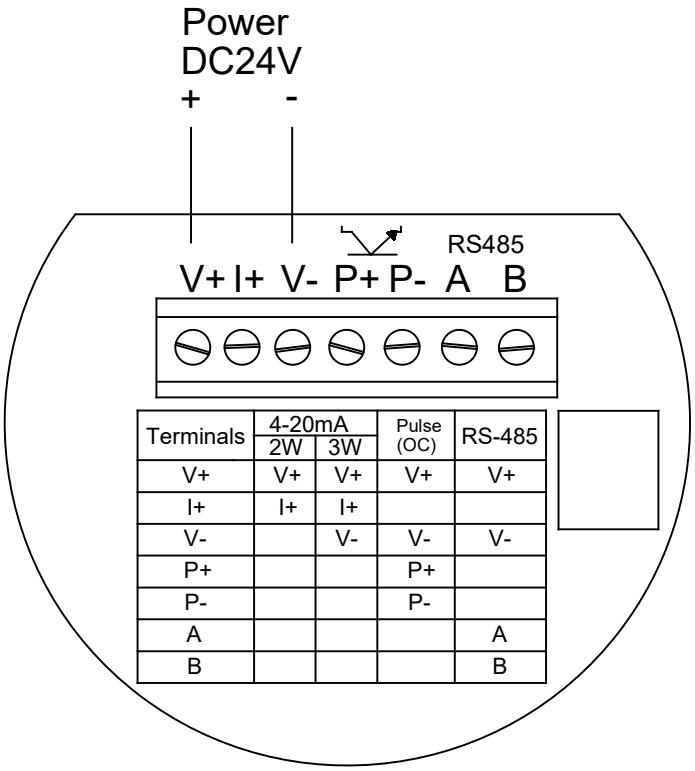
5.2 Calinbration (Current outputCorrection factor,)Setup



6. Password


OK ST SP 0V mA
Flow 0.000 m³/h
00000000.0001 m³
00.0℃ 1.2kPa
F1
F2
F3
Move the cursor
Next screen
Change numbers and settings
F2
-- Main menu --
1. Self-test
2. Display unit
3. Total reset
4. Setup
5. Calibration
6. Password
Setup/Total reset/Calibration password Setup
F2
Setup pwd
Total reset pwd
Calibration pwd
Shift Enter Exit
Setup password
F2
Setup pwd
Old pwd: 0*****
New pwd: ******
Shift Enter Rev
Old pwd: 000000
New pwd: 000000
F2
OK ST SP 0V mA
Flow 0.000 m³/h
00000000.0001 m³
00.0℃ 1.2kPa
First screen
F2
Setup pwd
Total reset pwd
Calibration pwd
Shift Enter Exit
Total reset password
F2
Total pwd
Old pwd: 0*****
New pwd: ******
Shift Enter Rev
Old pwd:
New pwd:
F2
OK ST SP 0V mA
Flow 0.000 m³/h
00000000.0001 m³
00.0℃ 1.2kPa
First screen
F2
Setup pwd
Total reset pwd
Calibration pwd
Shift Enter Exit
Calibration password
F2
Calibration pwd
Old pwd: 0*****
New pwd: ******
Shift Enter Rev
Old pwd:
New pwd:
F2
OK ST SP 0V mA
Flow 0.000 m³/h
00000000.0001 m³
00.0℃ 1.2kPa
First screen

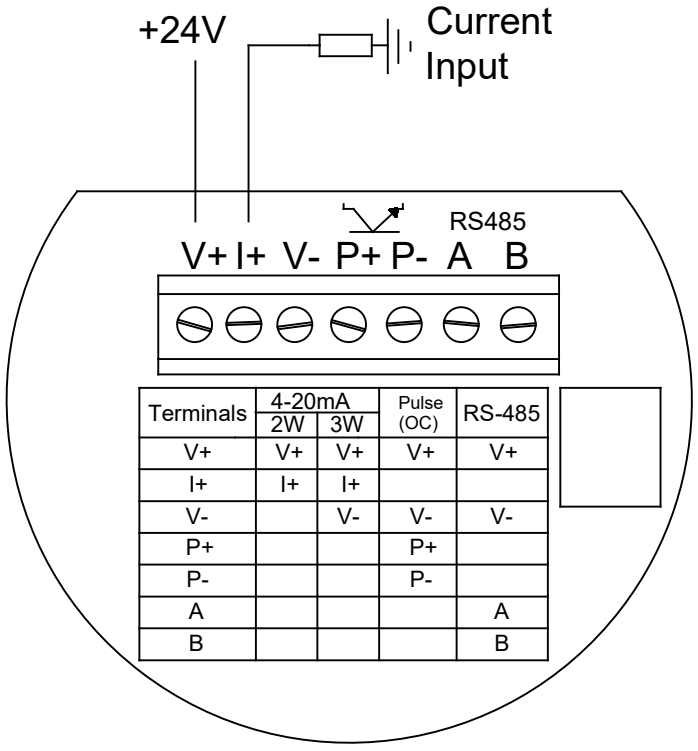
7. Wiring



Terminals	4-20mA		Pulse (OC)	RS-485
	2W	3W		
V+	V+	V+	V+	V+
I+	I+	I+		
V-		V-	V-	V-
P+			P+	
P-			P-	
A				A
B				B

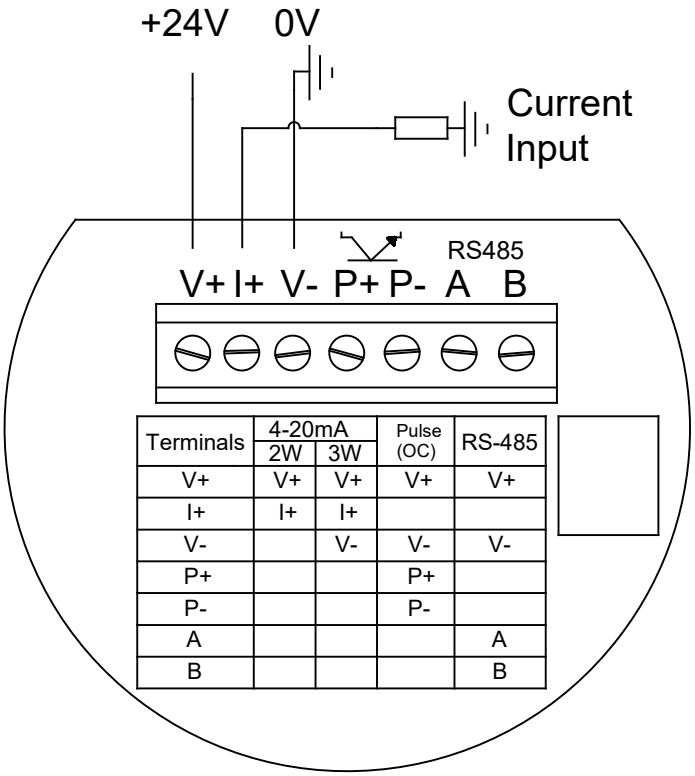
Terminal block

7.1 Current output



Terminals	4-20mA		Pulse (OC)	RS-485
	2W	3W		
V+	V+	V+	V+	V+
I+	I+	I+		
V-		V-	V-	V-
P+			P+	
P-			P-	
A				A
B				B

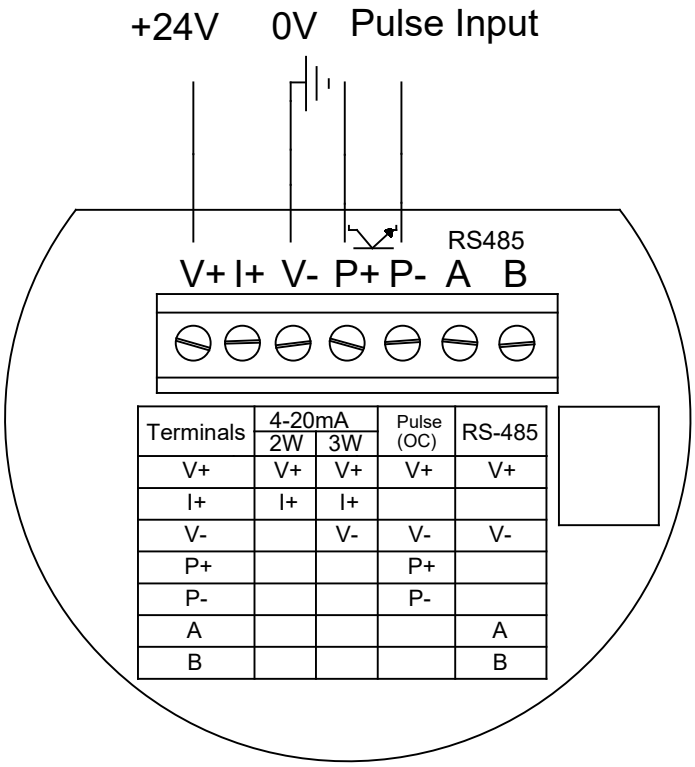
2-Wire Current output wiring



Terminals	4-20mA		Pulse (OC)	RS-485
	2W	3W		
V+	V+	V+	V+	V+
I+	I+	I+		
V-		V-	V-	V-
P+			P+	
P-			P-	
A				A
B				B

3-Wire Current output wiring

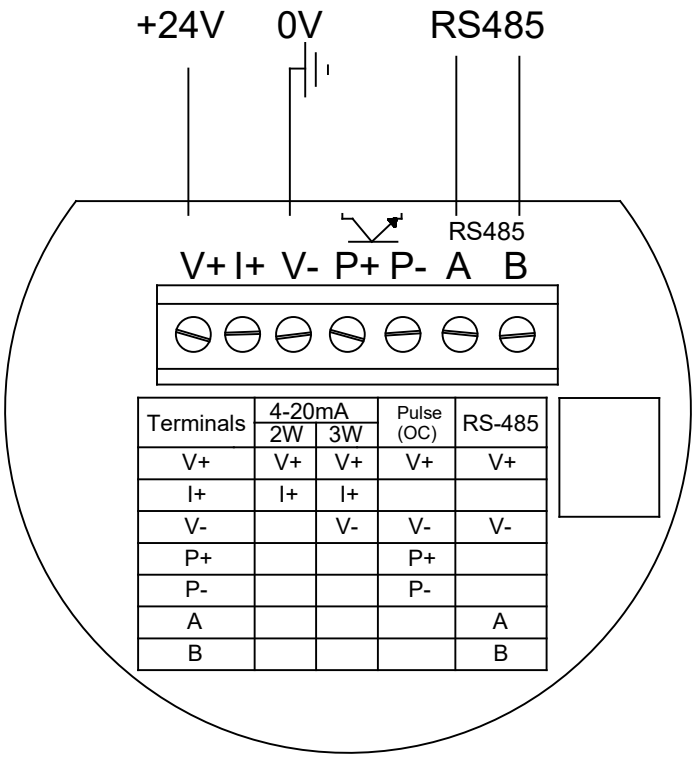
7.2 Pulse



Terminals	4-20mA		Pulse (OC)	RS-485
	2W	3W		
V+	V+	V+	V+	V+
I+	I+	I+		
V-		V-	V-	V-
P+			P+	
P-			P-	
A				A
B				B

4-Wire Pulse output wiring

7.3 RS-485



Terminals	4-20mA		Pulse (OC)	RS-485
	2W	3W		
V+	V+	V+	V+	V+
I+	I+	I+		
V-		V-	V-	V-
P+			P+	
P-			P-	
A				A
B				B

RS485

Vortex Flowmeter Communication Protocal

(MODBUS-RTU)

Command:03
Floating point:IEEE-754,;Endianness:3-4-1-2
Holding register:

40001 - 2 : Floating point, Medium temperature(℃) ;
40003 - 4 : Floating point, Medium pressure(KPa) ;
40005 - 6 : Floating point, Frequency(Hz) ;
40007 - 8 : Floating point, Flow (Nm3/s) ;
40009 - 10 : Floating point, Total of more than one hundred (1234);
40011 - 12 : Floating point, Total of less than one hundred (87.89); Total =
1234 × 100 + 87.89 = 123487.89 ;
40013 - 14 : Up Limit alarm ;
0001 - operator flow;
0004 - flow;
0010 - pressure;
0040 - temperature ;
40015 - 16 : Down Limit alarm
0001 - operator flow;
0004 - flow;
0010 - pressure;
0040 - temperature ;
40017 - 18 : Floating point, 4 - 20mA current output ;
40019 : Reserve
40020 : Reserve

국제공인교정기관
(액체,기체 유량분야)

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