Instruction Manual

Manufacturing Certificate
CMC Shanghai No.02220105

TYPE TBS

Flow Convertor

SHANGHAI NO.9 AUTOMATION INSTRUMENTATION CO., LTD.

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ZNZQ-B064-C-Y

CONTENTS

READ THIS MANUAL CAREFULLY BEFORE INSTALLATION AND USE

1. General Description

This manual is for the installation, application and maintenance of Type TBS Flow Convertor designed and made by SAIC No.9 .

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The Flow Convertor Type TBS is designed for use with flow meter or flow sensor, such as turbine meter.

There is a pick-up in the bottom of the convertor. As the equally-spaced ferromagnetic rotor blade pass through the magnetic field created by the pickup coil,a sinusoidal volage is generated. The peak-to-peak voltage of this signal is directly proportional to the rotor speed and each positive peak-to-peak voltage pulse represents an increment of volume throughput.

The Flow Convertor Type TBS converts the sinusoidal volage to square wave pulse ,than calculates and displays the instant flow rate and flow totalize.

There are two power supply modes: External power supply:DC 10 V~30 V and Internal power supply:DC 3.6V(ER 26500H).User can choose one of them,or both.

In the External power supply mode, the convertor outputs pulse signal: original pulse or scaling pulse.

The scaling pulse output has sectionally error correction function, may choose 0~9 sections of error correction.

The Flow Convertor can outputs Communication Signal:RS485(Modbus protocol).

Display on-site instant flow (5-digits) and totalized flow(8-digits).

The Flow Convertor has protected duration function if power failure.

The Flow Convertor performance is stable and trustiness,higher precision, fast response, easy and convenient for use,operation and service.

2. Technical Specifications

1) Frequency range: 1Hz~7000Hz
2) Totalized Flow Display: Decimal 8 digits
3) Instant Flow Display: Decimal 5 digits
4) Totalized Flow indicating error: ±1 display unit
5) Instant Flow indicating error: ±0.01%(REL)
6) Pulse output
   Waveform: square wave
   High level: ≥(Supply Voltage Vpo-2) V
   Low level: ≤1 V
   (load resistance 10 kΩ)
7) Communication Signal:RS485(Modbus protocol)
8) Power supply:
   External power supply: DC 10 V~30 V
   Internal power supply: DC 3.6V(ER 26500H)
9) Meter Coefficient Range:0.010000~99999
10) Protected Duration if Power Failure : not less than 20 years
11) Working environmental
    Ambient temperature:－20℃ to 60℃
    Humidity:0~85% non-condensing
12) Overall dimensions: see Figure 1
13) Weight: approximately 2.5 kg
14) Electrical approvals:dⅡCT1~T6, according to the standard GB3836.2-2010 《Explosive atmospheres – Part 2: Equipment protetion by flameproof enclosures "d"》,degree of protection provided by enclosure:IP65

3. Dimensions & Installation Reference

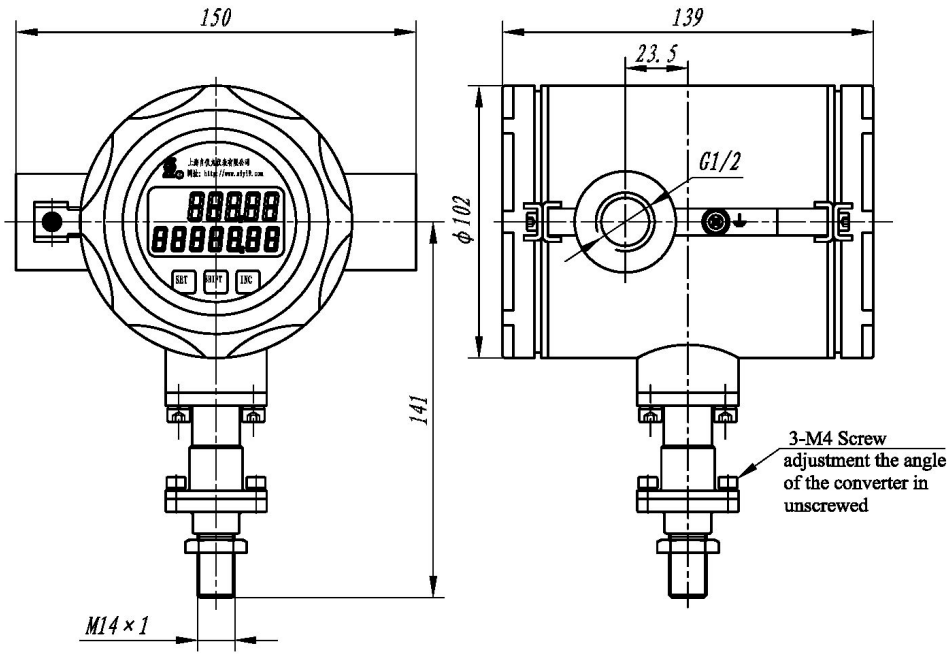


Figure 1 Dimensions of outline and Installation

4. Installation & Wiring

(1) Installation of convertor

In general,the convertor is installed on the flow meter.

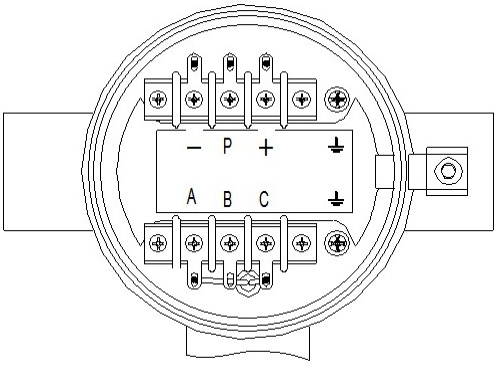
Mount the Flow Converter on the Flow Meter housing by M14×1 Screw. Put the Converter on the connection pad of the housing, rotate it into the pad manually , then fasten the lock nut finally.

(2) Explosion-proof sealing connection

Fix the explosion-proof connector, and wiring as per Chapter 5 of this manual

(3) Wiring

a) Wiring terminal



Terminal definition:

＋: DC Power Supply (＋)

P : Pulse output

－: DC Power Supply (－)

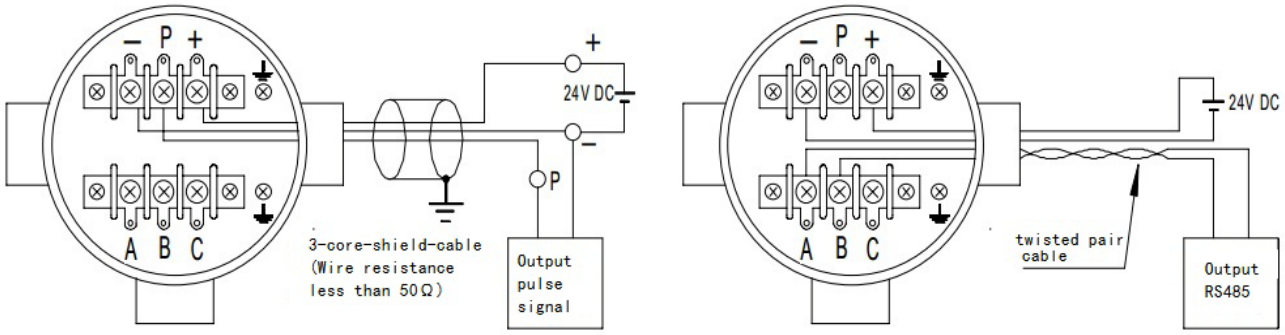
A: Communication Signal:RS485-A

B: Communication Signal:RS485-B

C: None

Figure 2 Wiring terminal

b) The Flow Converter wiring of pulse output



Pulse Output RS485 Communication Signal Output

Figure 3 Wiring

5. Key Points to the Installation of Explosion-Proof products

Products marked with "Ex d Ⅱ CT1~T6" can be used in the environment stipulated in the following standards:

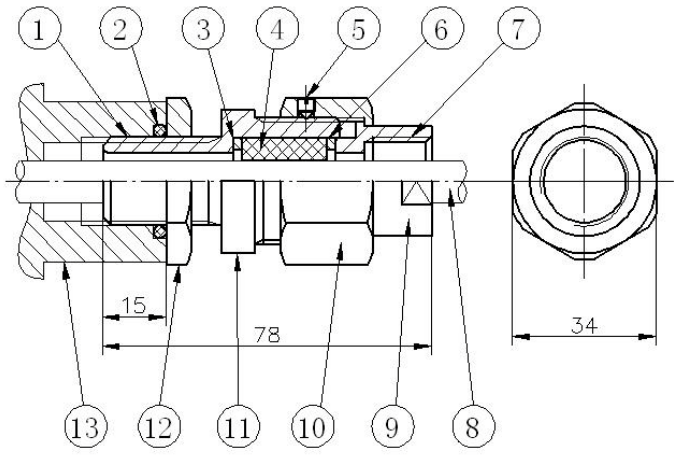
GB3836.1-2010 《 Explosive atmospheres – Part 1: Equipment – General requirement》 and

GB3836.2-2010 《 Explosive atmospheres – Part 2: Equipment protetion by flameproof enclosures "d" 》

for Explosion Class not higher than Explosion Class Ⅱ, Grade C, Natural Temperature T1~T6 Group, Zone I or Zone II hazardous areas;

To secure SAFETY, user must be very careful in installation with bolts, cables and pipes and should pay high attention to safety regulations during maintenance;

1) Installation of Explosion-Proof Seal Connector: (see Fig.4)



1. G½ External Thread
2. O Ring
3. Washer
4. Seal Sleeve
5. M4 Set Screw
6. Washer
7. G½ Inner Thread
8. Cable
9. Pipe Connector
10. Nut
11. Connector
12. Lock Nut
13. Converter Housing

Figure. 4 Explosion-Proof Seal Connector

(1)Ground terminal is available; well- "grounded" is necessary in use

(2)During operation or maintenance on site, strictly observe the WARNING "Open the cover only when power is off"

(3)The out-diameter of leading cable is approximately φ9-10(mm); 3-core-shielded-cable

is recommended;

(4) Maintenance must be carried out in the safe area, where no combustible gas exists.

2) Ambient Conditions for Installation:

(1) Ambient atmosphere pressure 80kPa ～110kPa; temperature -20℃～+60℃, maximum relative air humidity 90%

(2) If there are combustible gases or vapors of flammable liquids working around, their explosion class must not be higher than Class II /Grade B; Natural Temperature within T4 Group; and Installation of the product is within Zone I or Zone II hazardous area.

(3) Listed below is a Table that stipulates the temperature limitations; within the Temperature Grade, the maximum out-exposed-surface temperature between explosion-proof product and equipment as well as the medium temperature are not allowed to exceed the limitations;

Temperature Group Grade	T1	T2	T3	T4	T5	T6
Maximum Medium Temperature (°C)	450	300	200	135	100	85

3) Usage:

(1) If housing corrosion happens, replace it promptly;

(2) Both internal and external ground terminals must be “grounded” properly; During maintenance, taking off the Terminal Box cover must be under power -off condition;

(3) The seal ring within the cable-leading connector and the O ring within the cover must be replaced in time, as soon as they are ageing;

(4) The connecting between wires and wiring-strips must be in firm and reliable way, meanwhile using insulation sleeve is also necessary, which shall be bent into right angle, to ensue the electrical gap bigger than 4mm

(5) Leading cable should be suitable to the corrosive and high temperature enduring conditions on site;

(6) During Terminal Box mounting, please to be sure, do not damage the thread and explosion-proof linkage surface;

(7)On-site installation, application and maintenance of the product shall also abide by stipulations related to« GB50058-92 Design Requisition for the Electrical Equipment on Explosion & Fire Hazardous Site » and «GB3836 .15-2000».

6. Display meaning

There are 3 keys on the Converter panel, they are SET,SHIFT and INC respectively .

a) Setting key SET**:** switch working status and setting status,and confirm the modification in the setting status.

b) Shifting key SHIFT: shift the cursor 1- digit to the right in the setting status.

c) Increasing 1 unit key INC: in the setting status, increasing 1 unit at the cursor position ,or switch new status.

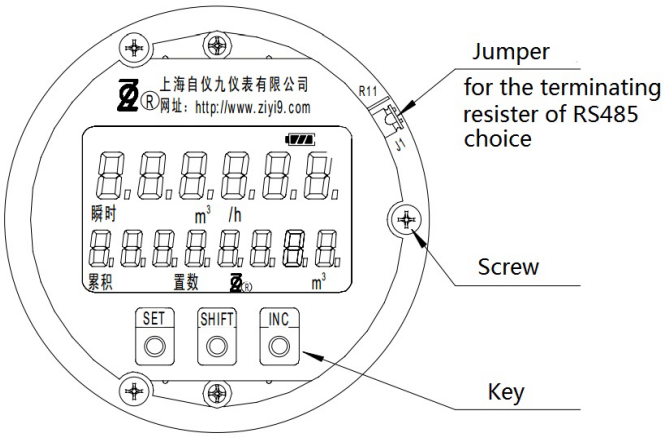


Figure 5 Panel and Display

The numbers display meaning:

latter five of up-row figure: Instant Flow

latter five of down-row figure: Totalized Flow

The prompt characters meaning:

on the middle: “瞬时”= Instant Flow,and its unit

on the bottom: “累积”= Totalized Flow, and its unit; “置数” is displayed in the setting status.

7. Settings on the Flow Converter

(1) Operational Interface:

Flow Converter operational interface can display as follows:

a) working status , up-row figure displays instant flow and down-row figure displays totalized flow

b) setting status , own-row figure displays the related parameters,and display the character “置数”

(2) Settings:

a. Please read instructions below carefully before setting:

a) The average meter coefficient is shown on the Quality Certificate attached to the Meter ; the Certificate should be well kept for reference; each time, after inspection or calibration, if the coefficient changes, the meter coefficient for the converter should be re-adjusted promptly. The meter coefficient setting range:0.010000~99999, five significant figures.

b) The biggest decimal point position for the total flow is choiced depending on the meter coefficient, the recommended position is in table 2.

c) The scaling pulse output value is is choiced depending on the flow rate, the recommended vavle is in table 2.

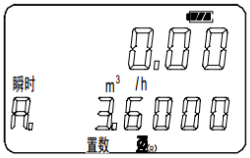
d) Sectionally error correction function,the number of sectionally error correction indecates the correction points,if it is “0”, means no error correction. In general, may choose three section of error correction,and divided into three flow velocity points and three correction

coefficients.

(Note : Sectionally error correction function only used for the scaling pulse output)

b. Flow Coefficient Setting(A interface):

In working status, consecutively push SET key twice, here shows the operational interface:



Decimal Point display is flashing at the time: push INC (increasing 1 key) to move the Decimal Point to the appropriate digit;

Push SHIFT key to enter the highest digit setting ,the highest digit flashes this time, push INC key to enter the highest effective digit of the Flow Coefficient;

Push SHIFT for moving to 2nd digit,then the 2nd digit flashing, push INC key to enter 2nd digit of the Flow coefficient;

Push SHIFT for moving to the 3rd ,then the 3rd digit flashing, push INC key to enter 3rd digit of the Flow coefficient;

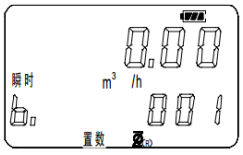
Push SHIFT for moving to the 4th ,then the 4th digit flashing, push INC key to enter 4th digit of the Flow coefficient,

Push SHIFT for moving to the lowest digit,then the lowest digit flashing, push INC to enter the lowest effective digit of the Flow coefficient,

Push SET key to save the settings, meanwhile return to the next operational interface,or consecutively push SET key return to the working status.

c. Modbus Communication device address Setting(B interface):

In working status, consecutively push SET key three times, here shows the operational interface:



The highest digit flashes this time, push INC key to enter the highest effective digit of the address;

Push SHIFT key to enter the next digit setting , push INC key to enter the next effective digit of the address;

Push SHIFT key to enter the third digit setting , push INC key to enter the third effective digit of the address;

Push SET key to save the settings, meanwhile return to the next operational interface,or consecutively push SET key return to the working status.

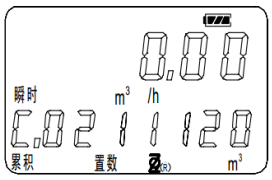
According to Modbus protocol,the rangeof the Modbus communication device address is 1~247,if the setting number overs this range, "Wrong" would be prompted, pushing SET key is invalid, must push INC key to enter the effective digit

d. Parameters Setting(C interface):

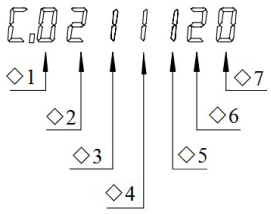
In this interface,set these parameters:

◇1: choice of Sectionally error correction function

◇2: decimal point position and scaling pulse output value
◇3: damping period
◇4: sampling time
◇5: type of pulse output
◇6: baud-rate
◇7: check digit and stop bit
In working status, consecutively push SET key four times, here shows the operational interface:



The digit s in the down-row figure are are showed as follows:



The highest digit(◇1) flashes this time, push INC key to enter the effective digit; push SHIFT key to enter the next digit setting, by this analogy, enter other digits, then push SET key return to the working status.
The value range of the parameters see Table 1

Table 1

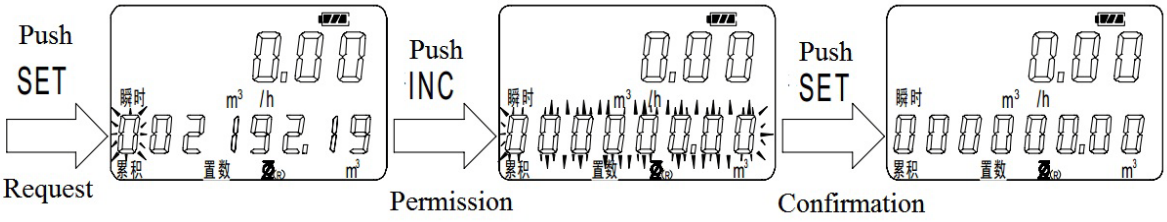
No.	Parameters	Value Range
◇1	Sectionally error correction function	0 : no correction 1~9 : flow velocity points number
◇2	decimal point position and scaling pulse output value	0~3,see Table 2
◇3	damping period	0:forbidden 1: 1 second 2: 5 second 3:30 second
◇4	sampling time	0: 0.5 second 1: 1 second 2: 2 second
◇5	type of pulse output	0: original pulse 1: scaling pulse
◇6	baud-rate	0: 1200 1: 4800 2: 9600 3: 19200
◇7	check digit and stop bit	0: even parity check 1: odd parity check 2: no check 3: no check,1 stop bit

Table 2

Meter Size (mm)	Set Number	Instant Flow	Totalized Flow	Scaling Pulse Output Value
4,6,10	0	X. XXXX m^3/h	XXXX. XXXX m^3	10000 P /L
15,25,40	1	XX. XXX m^3/h	XXXXX. XXX m^3	1000 P /L
50,80,100	2	XXX. XX m^3/h	XXXXXX. XX m^3	100 P /L
150,200,250,300	3	XXXX. X m^3/h	XXXXXXX. X m^3	10 P /L

e. Total Flow Display clearing operation:

In working status, push SET key to enter Total Flow clearing interface, its operational interface and clearing steps like:



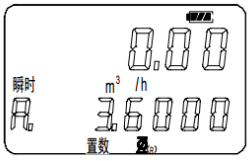
Under Total Flow clearing mode, the highest digit of the down-row figure flashes ,push INC key (increasing 1 key), all the Total Flow shows zero, and flash ,if push SET key, Clearing is completed ; if Clearing is not required, push INC again, the total flow display resumes, then, push SET key to return to the operational interface without clearing.

8. Application Example

Example A) Flow Meter with Meter Coefficient K=35.584(P/L), want original pulse output.

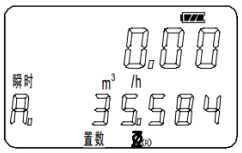
Setting as follows:

In working status, consecutively push SET key twice, enter Flow Coefficient Setting**(A interface)**, the interface is as shown:



Decimal Point display is flashing at the time: push INC (increasing 1 key) to move the Decimal Point right one step,then shows "A。 36.000";

Push SHIFT key to enter the highest digit setting ,the "3" flashes this time,no need change, push SHIFT for moving to 2nd digit,the "6" flashes, push INC key to chnge it to "5"; by this analogy, enter other digits, the interface is as shown:

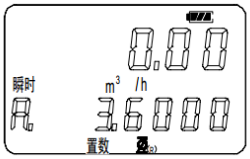


Push SET key, to confirm the Meter returns to working status.

Example B) Flow Meter with Meter Coefficient K=2.8827(P/L), want scaling pulse output,and need sectionally error correction,the three correction points and the correction errors are:q1=24.5m³/h,e1=－0.68%; q2=47.8m³/h,e2=－0.31%; q3=117.3m³/h,e3=＋0.26%.

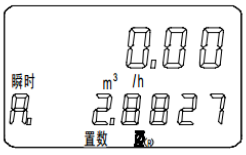
Setting as follows:

In working status, consecutively push SET key twice, enter Flow Coefficient Setting**(A interface)**, the interface is as shown:

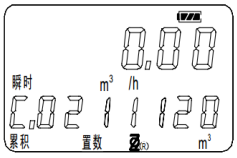


Decimal Point display is flashing at the time: decimal point do not need to change this time;

Push SHIFT key to enter the highest digit setting ,the "③" flashes this time, push INC key to chnge it to "②"; push SHIFT for moving to 2nd digit,the "⑥" flashes, push INC key to chnge it to "⑧"; by this analogy, enter other digits, the interface is as shown:

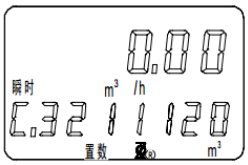


The Flow Coefficient Setting is finished,consecutively push SET key twice, enter Parameters Setting**(C interface)** , the interface is as shown:



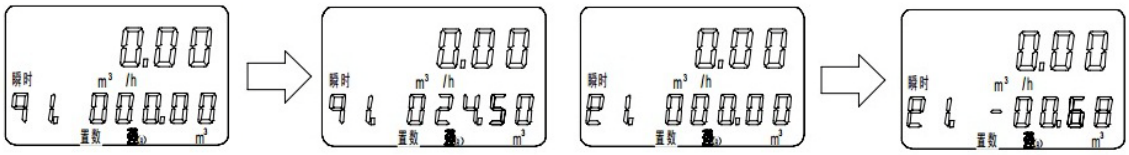
According to the Parameters Setting Table 1 and Table 2, the parameters must be:③2111120.

The highest digit "⓪" flashes this time, push INC key to chnge it to "③";the other digits do not need to change, the interface is as shown:

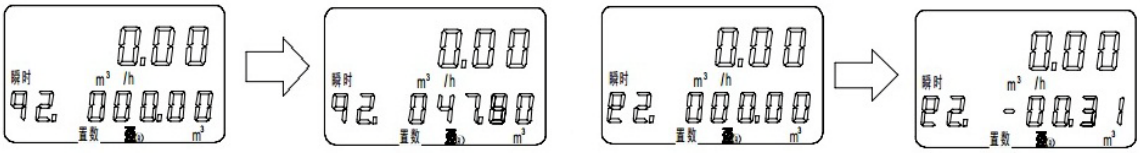


Push SET key , enter sectionally error correction Setting, set the three correction points and the correction errors according to the interfaces and process as shown below:

1) In the “q1” interface,push SHIFT key and INC key,set the first correction point flow rate value “24.5”,push SET key enter the “e1” interface, push SHIFT key and INC key,set the first correction error value “-00.68”.



2) Push SET key enter the “q2” interface, set the second correction point flow rate value “47.8”, push SET key enter the “e2” interface, set the second correction error value “-00.31”.



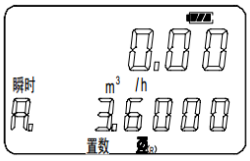
3) Push SET key enter the “q3” interface, set the third correction point flow rate value “117.3”, push SET key enter the “e3” interface, set the second correction error value “000.26”.

The Parameters Setting is finished, push SET key, to confirm the Meter returns to working status.

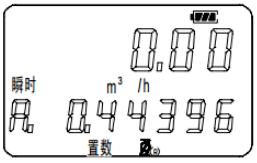
Example C) Flow Meter with Meter Coefficient K=0.44396(P/L), want RS485 communication signal output,scaling pulse output10 P/L, baud-rate is 9600, check digit and stop bit is even parity check, communication device address is 15.

Setting as follows:

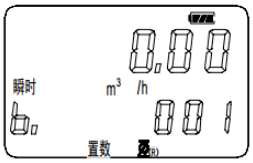
In working status, consecutively push SET key twice, enter Flow Coefficient Setting**(A interface)**, the interface is as shown:



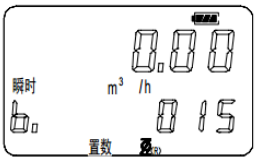
By reference to example A,set the flow coefficient, the interface is as shown:



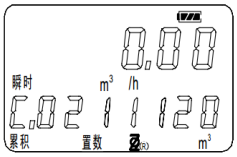
Push SET key, enter Modbus Communication device address Setting(**B interface**)**,** the interface is as shown:



The highest digit "⓪"flashes this time, no need change, push SHIFT for moving to 2nd digit,the "⓪" flashes, push INC key to chnge it to "①", push SHIFT for moving to 3rd digit,the "①" flashes, push INC key to chnge it to "⑤", **,** the interface is as shown:

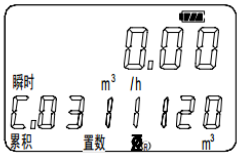


The Modbus Communication device address Setting is finished, push SET key , enter Parameters Setting**(C interface)** , the interface is as shown:



According to the Parameters Setting Table 1 and Table 2, the parameters must be:⓪①①①②⓪.

By reference to example B,set the parameters , the interface is as shown:



The Parameters Setting is finished, push SET key, to confirm the Meter returns to working status.

9. Illustrate of Modbus Communication

This convertor can be connceted by RS485, realized the Modbus protocol ,visited the procedure parameter, Instant Flow and Totalized Flow. Realized read-only visit the Instant Flow and Totalized Flow by Modbus Input Register.

RS485 Communication protocol: Modbus protocol

RS485 baud-rate:1200,4800,9600,19200

RS485 check digit and stop bit: even parity check+1 stop bit, odd parity check+1 stop bit, no check+2 stop bit, no check+1 stop bit

Modbus Data Link Layer protocol:only PDU mode

Note:1. factory setting :9600 bps, even parity check

2. no check+1 stop bit isn't allowed by Modbus Data Link Layer Specifications,but in some PLC,there is this option.And this mode offers the compatibility for the no-Modbus device needs no check+1 stop bit in the same RS485 circuit.

Basic format of data:

Register Address	Implication
30001+3*N	variable description
30002+3*N	variable LoWord
30003+3*N	variable HiWord

N=0: Instant Flow
N=1: Totalized Flow
Inside , the format of variable description is:

15:12	11:0
variable type	variable unit

Variable type definition:

Value	Type	Value	Type
0	char(4)	8	float
1	unit8_t	9	int8_t
2	unit16_t	10	int16_t
3	unit32_t	11	int32_t
4	unit32_t * 0.1	12	int32_t * 0.1
5	unit32_t * 0.01	13	int32_t * 0.01
6	unit32_t * 0.001	14	int32_t * 0.001
7	unit32_t * 0.0001	15	int32_t * 0.0001

Variable unit definition:

Value	Quantity	Unit	Conversion Coefficient
X	volume	m^3	N/A
Y	folw-rate	m^3/h	N/A

Application Example for the Type TBS Flow Convertor RS485 Communication(MODBUS protocol)

Example D) Flow Meter with Meter Coefficient K=2.8827(P/L),
the present Instant Flow: 98.29 m^3/h, Totalized Flow: 77159.58 m^3
want RS485 communication signal output, baud-rate is 9600, check digit and stop bit is even parity check+1 stop bit, communication device address is 15.

Setting as follows:
By reference to example C , finish related parameters seting, that is A.2.8827,b.015,C.3211120

1). **Communication format:**
1 Start Bit,8 Data Bit,1 1 Stop Bit, even parity check

2). **Communication order**
MODBUS order “Read input register”
The variable in the instrument, is as a set of three digits(16 Bit register), denotes a specific variable. Thereinto, the first digit is variable description, the second is variable LoWord,the third is variable HiWord.
The digit of variable description indicates the variable’s meaning(the Parameter’s Physical meaning,such as Instant Flow, Totalized Flow)and the unit , data format of the follow-up two digits(such as fixed point numbers, floating-point number).
There are 16 Bits in the digit of variable description,the higher 4 Bits is variable type definition, data format of the follow-up two digits; the lower 12 Bits is the meanin of the variable, at present only support two values.
Variable type definition:

Value	Type	Value	Type
0	char(4)	8	float

1	unit8_t	9	int8_t
2	unit16_t	10	int16_t
3	unit32_t	11	int32_t
4	unit32_t * 0.1	12	int32_t * 0.1
5	unit32_t * 0.01	13	int32_t * 0.01
6	unit32_t * 0.001	14	int32_t * 0.001
7	unit32_t * 0.0001	15	int32_t * 0.0001

Variable unit definition:

Value	Quantity	Unit
301	volume	m^3
4001	folw-rate	m^3/h

3). **Communication data address**

Address	Introduction
30001--30003	Instant Flow, LoWord in the first Unit: 0.01
30004--30006	Totalized Flow, LoWord in the first Unit: 0.01

A) Read the Instant Flow value of instrument No. 15:

send: 0F 04 00 00 00 03 B1 25

0F: instrument address

04: read functional input register No.04

00 00: initial address of register 0

00 03: read 3 registers

B1 25: CRC of data packet

return data: 0F 04 06 8F A1 8F 5C 42 C4 55 E0

0F: instrument address

04: read functional input register No.04

06: return 6 bytes (3 registers) data

8F A1: variable description, variable type=8 is floating-point number, variable unit definition=$(FA1)_{16}=(4001)_{10}$ is instant flow-rate m^3/h

8F 5C 42 C4: variable value, *id est* 0x42C48F5C, IEEE754 format floating-point number 98.27999≈98.28

55 E0: CRC of data packet

This meanings the Instant Flow value of instrument No. 15 is 98.28 m^3/h.

B) Read the Totalized Flow value of instrument No. 15:

send: 0F 04 00 03 00 03 41 25

0F: instrument address

04: read functional input register No.04

00 03: initial address of register 3

00 03: read 3 registers

41 25: CRC of data packet

return data: 0F 04 06 51 2D BC 76 00 75 88 D9

0F: instrument address

04: read functional input register No.04

06: return 6 bytes (3 registers) data
51 2D: variable description, variable type=2 is fixed point number with two decimals, variable unit definition=$(12d)_{16}=(301)_{10}$ is volume m^3
BC 76 00 75: variable value, *id est* 0x0075BC76, decimal digit number 7715958, with two decimals it is 77159.58
88 D9: CRC of data packet

This meanings the Totalized Flow value of instrument No. 15 is 77159.58 m^3.

C) Read the Instant Flow and Totalized Flow value of instrument No. 15:

send: 0F 04 00 00 00 06 71 26
0F: instrument address
04: read functional input register No.04
00 00: initial address of register 0
00 06: read 6 registers
71 26: CRC of data packet

return data: 0F 04 0C 8F A1 8F 5C 42 C4 51 2D BC 76 00 75 31 F3
0F: instrument address
04: read functional input register No.04
0C: return 12 bytes (6 registers) data
8F A1: variable description, variable type=8 is floating-point number, variable unit definition=$(FA1)_{16}=(4001)_{10}$ is instant flow-rate m^3/h
8F 5C 42 C4: variable value, *id est* 0x42C48F5C, IEEE754 format floating-point number 98.27999≈98.28
51 2D: variable description, variable type=2 is fixed point number with two decimals, variable unit definition=$(12d)_{16}=(301)_{10}$ is volume m^3
BC 76 00 75: variable value, *id est* 0x0075BC76, decimal digit number 7715958, with two decimals it is 77159.58
31 F3: CRC of data packet

This meanings the Instant Flow value of instrument No. 15 is 98.28 m^3/h, the Totalized Flow value of instrument No. 15 is 77159.58 m^3.

10. Usage and Maintenance

1) Avoid violent quake and collision.
2) When the convertor is in the explosive atmospheres, after de-energizing,delay 1 minute before opening.
3) Don't be installed in the areas which have stronge electromagnetic interference.
4) For long distance signal transmission, if the signal has greater rate of attenuation in the transmission lines, or power supply voltage has greater rate of decline, the cable must be changed to more thick cable. Away from the power line to avoid interference, reliable grounding.
5) When the liquid crystal display becaomes dim,mest change the dry battery. This instrument uses a SIZE C, 3.6V Li-SOCL2 Battery, Model ER26500H.

The steps of change:

A) Unscrew the front cover, unscrew three M3 screws, take out the inner convertor subassembly, disconnect two plugs of wire coupling, take out the old dry battery, set up the new dry battery, then the the liquid crystal display can display.

B) Connect two plugs, place the inner convertor subassembly, screw on the three M3 screws, screw the front cover.

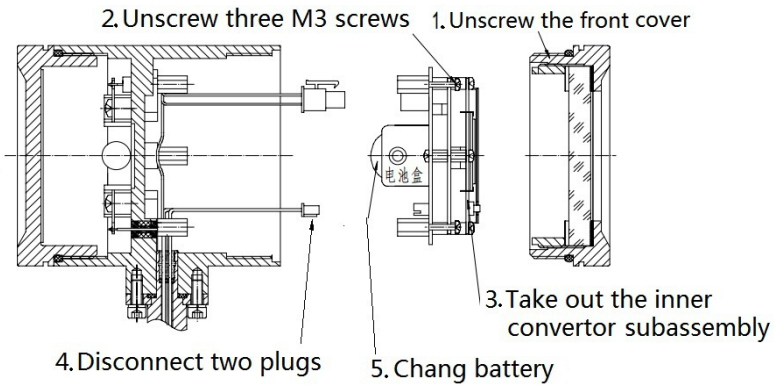


Figure 6 Steps of change battery

6) When the pulse output is used, two types of pulse output can be chosen as required, original pulse and scaling pulse:

A) original pulse, its output is frequency, square wave.
If the instant flow is demanding, advise to use original pulse.

B) scaling pulse, its output is pulse train, square pulses in a cluster.
Its advantage is pulse integral multiple of Totalized Flow,such as 10P/L, 100P/L, 1000P/L, 10000P/L. When the flow-meter's K-Coefficient changes or the flow-meter changes, it is not need to change that the instrument coefficient of the signal received system (such as computer,flow totalizer, etc).
The scaling pulse is usually used to totalize the flow. If it is used to calculate the instant flow, advise to keep sampling time is more than 5 seconds.

C) If the pulse is used to totalize the flow, advise that the signal received system calculates the totalized flow using the pulse accumulation method.

11. Transportation & Storage

1) During transportation or moving of the Flow Meter/Convertor (dispatching it to the job-site or returning it for repair), please to keep the Ex-works packing condition that is initially provided by this company.
2) The Flow Meterr/Convertor shall be stored within the room where temperature ranges from 5-40C° and relative humidity does not exceed over 85%, with good ventilation and without corrosive gases.
3) Strictly prohibit from directly taking the Flow Convertor on the Flow Meter for the whole set moving

12. Notice for Ordering

Cable for the Flow Convertor Output is not included in the delivery. It is customer's own option. This company offers RVVP metal-shielded-cable with Polyethylene insulation, in 3

specifications as 3×23/0.15, 3×28/0.15; 3×32/0.15.If require, please specify the specification and length during order placing.

13. Accessories

1) Instruction Manual 1
2) Quality Certificate 1
3) Seal Ring 2
4) Wiring Strip 3
5) Hexagon socket screw key 1

The end.