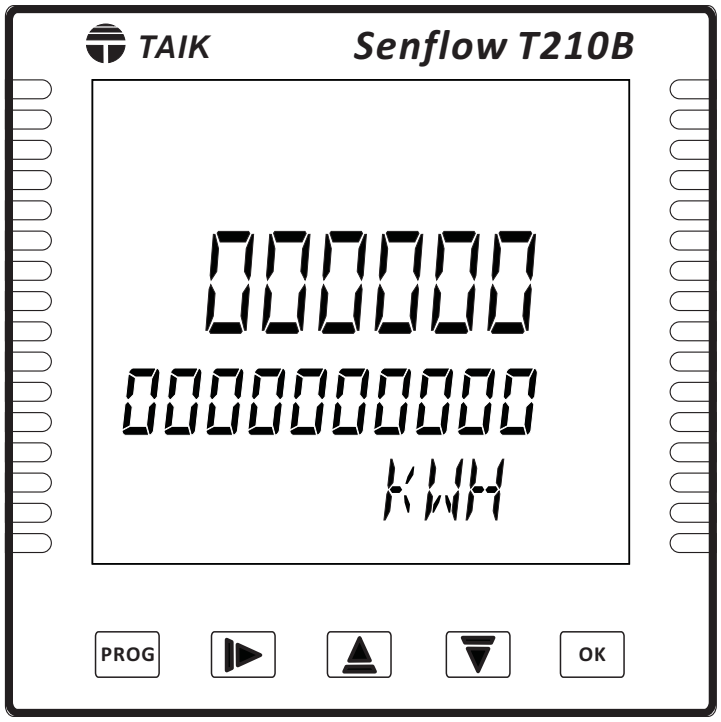
T210B

Instruction Manual

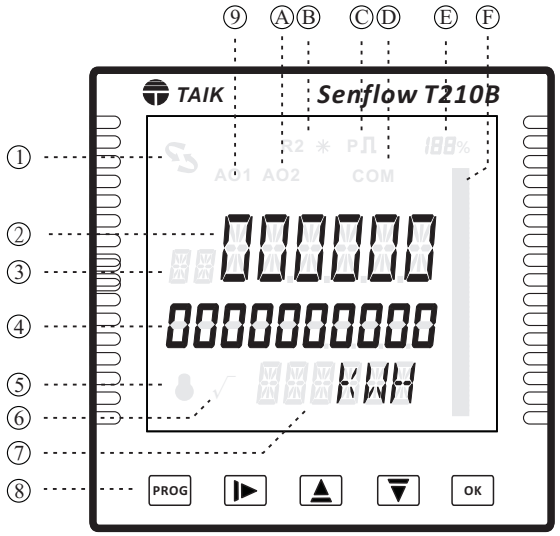


TAIK ELECTRIC

07/2020

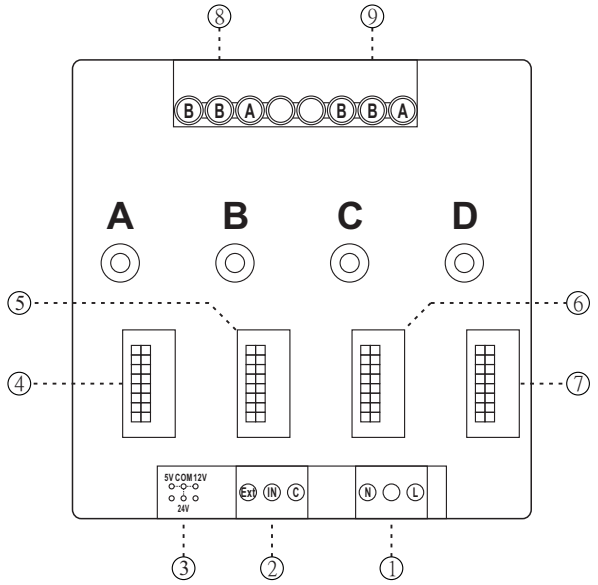
1. Hardware Structure：

1.1Push Buttons On Front Panel:



① Flow input indication flashes interactive
② 6 digits value display
③ Parameters display symbol
④ Tens digit accumulative value display
⑤ Password setting
⑥ Square root calculation
⑦ Unit display
⑧ 5 push buttons
⑨ If setting first analog output will display
Ⓐ If setting second analog output will display
Ⓑ If setting relay contact will display ✳:Relay contact activated
Ⓒ If setting pulse output will display
Ⓓ RS-485 activation
Ⓔ Analog output value percentage
Ⓕ Analog output value display in bar

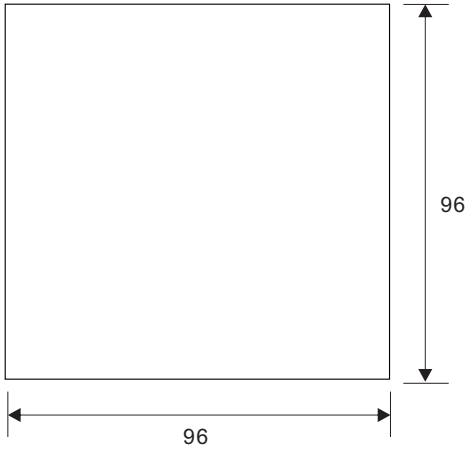
1.2 Terminals Configuration：



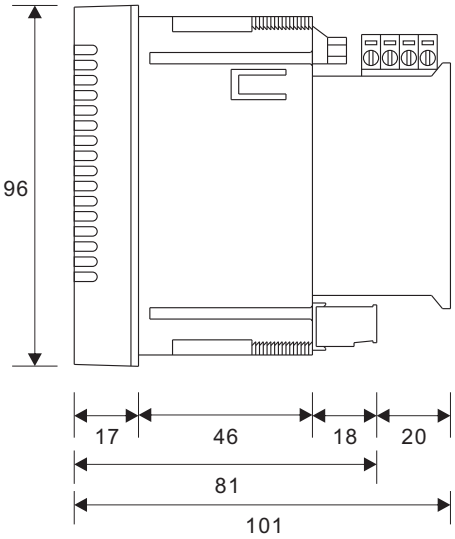
① Power supply
② Signal input
③ Aux. power option
④ RS-485 module
⑤ AOP1 Analog output module
⑥ AOP2 Analog output module
⑦ Pulse and relay contact output module
⑧ Inflow temperature terminal
⑨ Outflow temperature terminal

2. Installation/ Wiring :

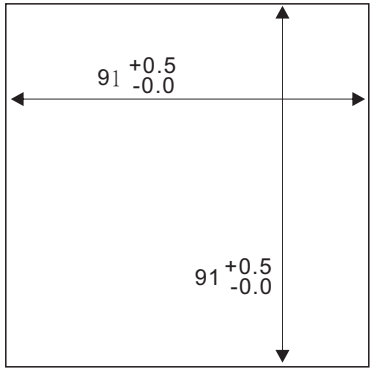
2.1 Case Dimension and Panel Cut-out : Unit : mm



- Side view

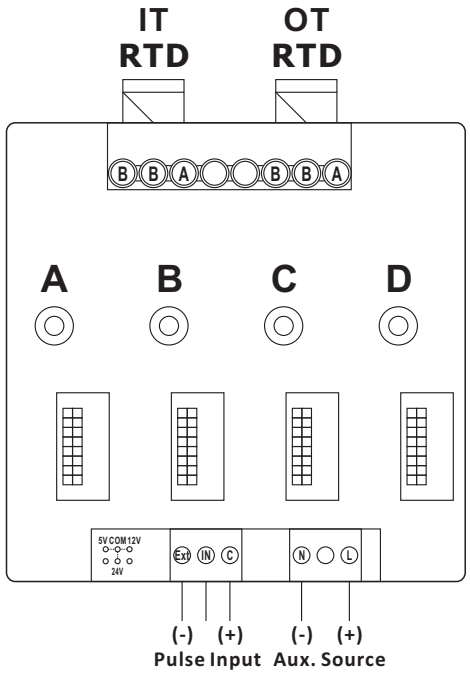


- Cut-out size



2.2 Connection Diagrams

- Meter connection



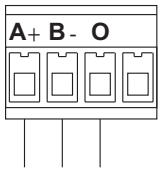
- Module

RS-485

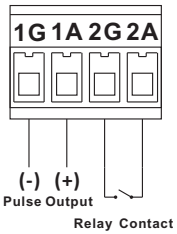
Pulse and relay contact

Analog output

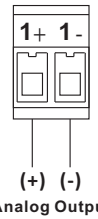
MD01



MD06

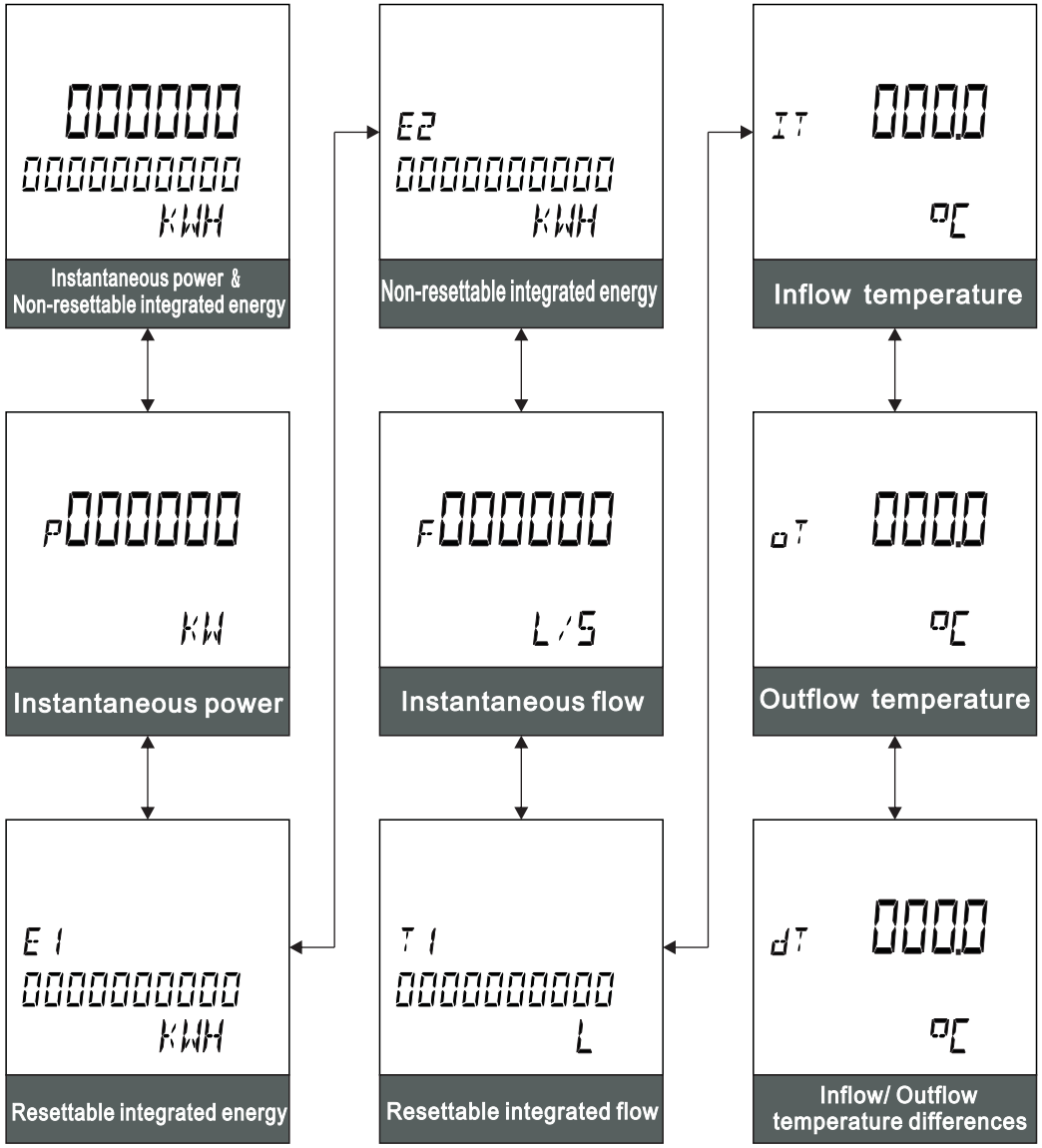


MD07



3. T210B Display Mode :

3.1 Display and buttons



● Keys Operation :

Advanced to the previous display

Advanced to the next display

PROG + ▶

Access to the set-up page and enter password

▶ + ▲

Clear integrated values at E1 or T1

OK Hold down to relieve error code

3.2 Formula Calculation

Instantaneous flow calculation： Q = F / K
Q：Flow(Ltr./Sec)
F：Pulse frequency(Hz)
K：K-factor

Mass flow rate calculation： W = Q * DS
W：Mass flow rate(kg/s)
Q：Volume flow rate(m^3/s)
DS：Density of fluid (kg / m^3)

Instantaneous power calculation： P = Q * DS * CP * dT
P：Power(J/s)
Q：Flow(m^3/s)
DS：Density of fluid(kg / m^3)
CP：Liquid specific heat(J/(kg * ℃))
dT：Temperature difference(℃)

3.3 Unit Conversion

1L = 1000mL = 0.001m^3 = 0.2642GAL

1kg = 2.205Lb = 0.001TON

1kw = 1kJ/s = 0.239kcal/s = 0.948BTU/s

1day = 24hour = 1440min = 86400s

1kwh = 3.6MJ

1kcal = 4.184kJ

1kBTU = 1.054MJ

1°F = 1℃ * 1. 8 + 32

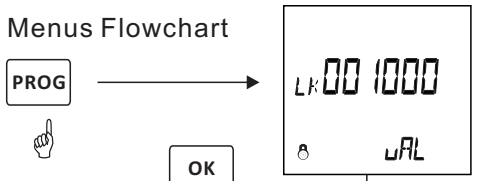
3.4 Error Code

ERR1	OVERFD	：Instantaneous flow or power exceed set value
ERR2	OVER P	：Pulse output exceed available output range
ERR4	AO1ERR	：AOP1 output exceed 20mA
ERR5	AO2ERR	：AOP2 output exceed 20mA
ERR6	K-0	：K-factor is zero
ERR7	ROMERR	：EEPROM malfunction
ERR10	NOINIT	：Ex-factory without calibration

**After error exclusion, hold down [OK] can back to display

4. Set-up Page Flowchart :

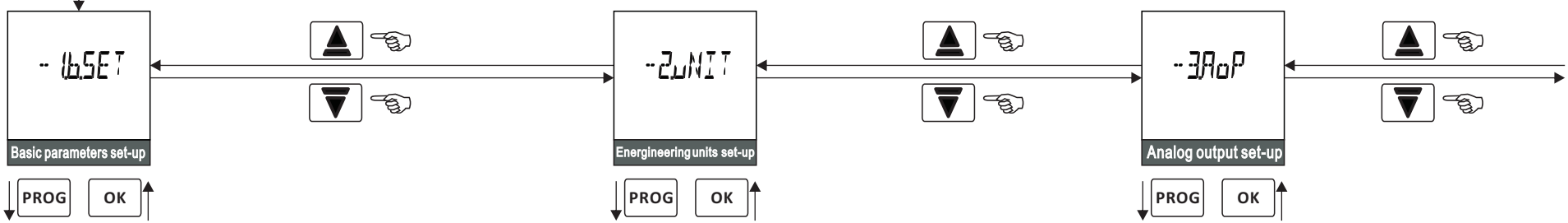
4.1 Menus Flowchart

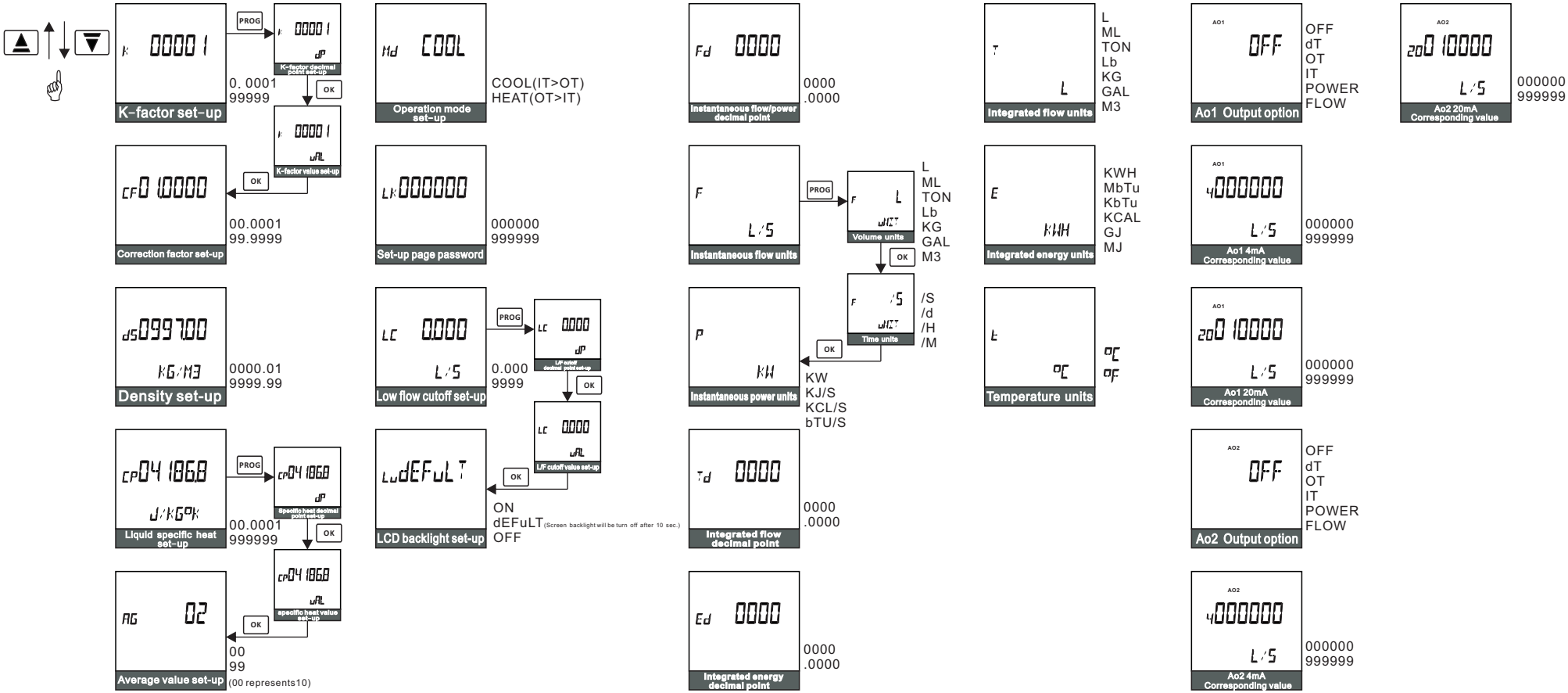


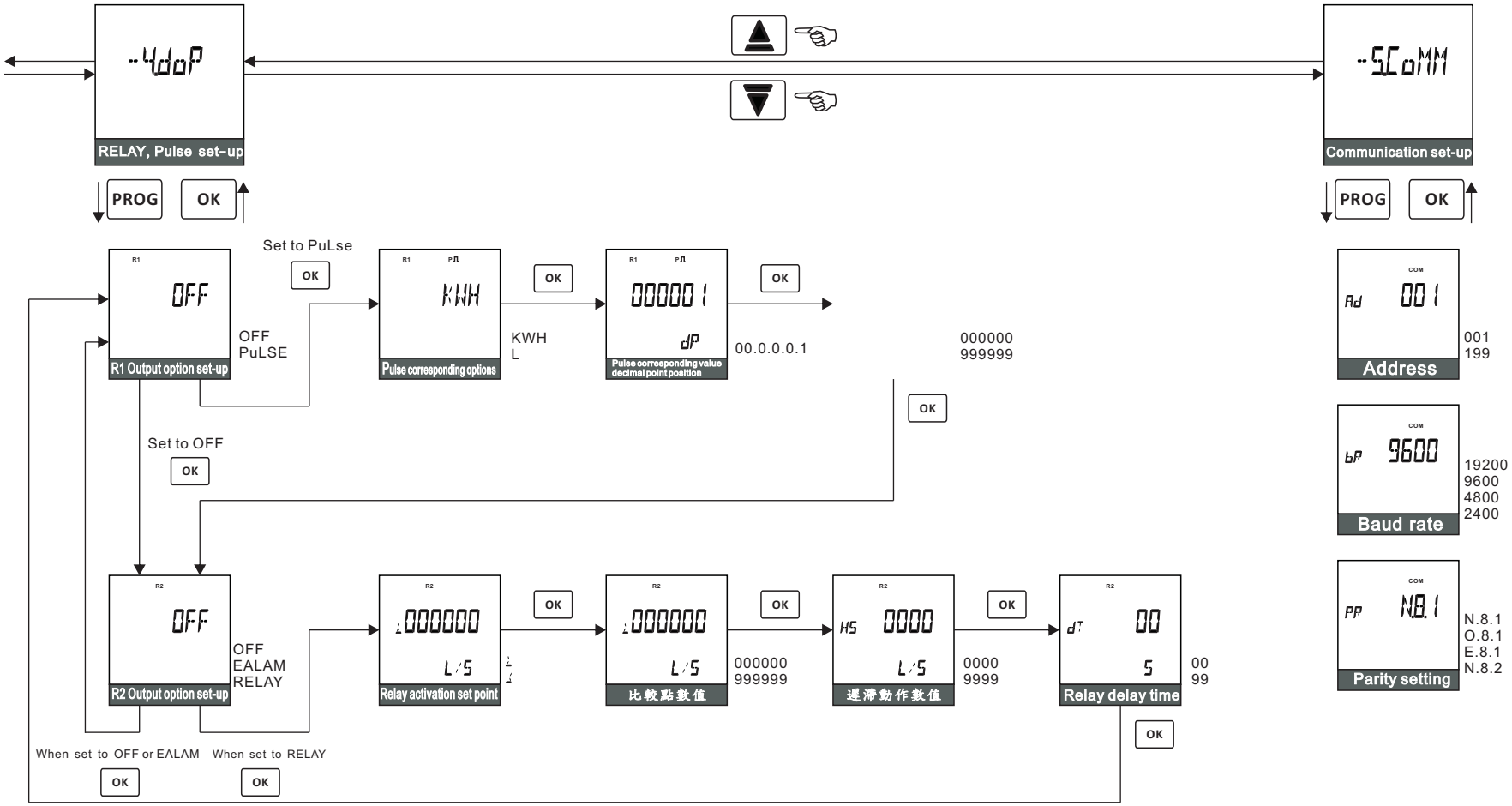
Default code is 1000

● Buttons :

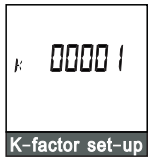
Main menus	Sub-menus	Values set-up
▲ Advance to the last page	▲ Advance to the last page	▲ Vary value
▼ Advance to the next page	▼ Advance to the next page	▼ Vary value
PROG Access to Sub-menus	PROG Access to Values set-up	▶ Vary digits position
OK Confirm and return to the Display	OK Return to the Main menus	OK Confirm and access to next setting



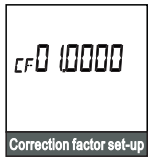



RELAY, Pulse set-up
Communication set-up
PROG
OK
Set to PuLse
R1 Output option set-up
OFF
PuLSE
Pulse corresponding options
KWH
L
Pulse corresponding value decimal point position
00.0.0.0.1
000000
999999
Set to OFF
R2 Output option set-up
OFF
EALAM
RELAY
Relay activation set point
比較點數值
000000
999999
遲滯動作數值
0000
9999
Relay delay time
00
99
When set to OFF or EALAM
When set to RELAY
Address
001
199
Baud rate
19200
9600
4800
2400
Parity setting
N.8.1
O.8.1
E.8.1
N.8.2

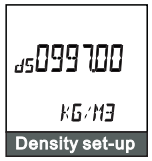
4.2 Menu Legends:



Setting K-factor
Range: 0. 0001~99999

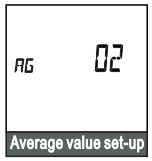


Correction factor set-up : A coefficient can correct deviation
Range: 00. 001~99. 999

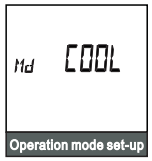


When calculating fluid weight need to set-up liquid density
Range:0000. 01~9999. 99

When calculating power need to set-up liquid specific heat
Range:00. 0001~999999

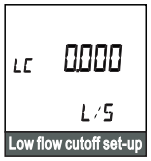


Set-up for average sampling times
Range: 00~99
（00 means 10 times）



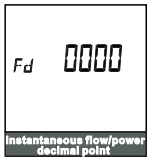
Temperature operation mode set-up
COOL at IT>OT
HEAT at OT>IT

Change password
Range: 000000~999999

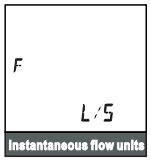


If input is lower than set value will be 0
Range: 0. 000~9999

LCD backlight set-up
ON：LCD backlight stays on
dEFuLT：LCD backlight shut down after 10 secs.when not in use
OFF：Close LCD backlight

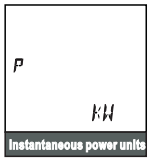


Instantaneous flow/power decimal point position
Range：. 0000~0000。

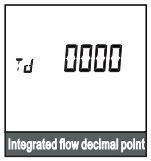


Instantaneous flow units

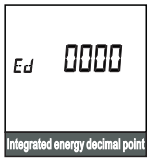
Volume or weight units：L,ML,TON,Lb,KG、SFT3,NM3
NL,FT3,GAL,M3
Time units：S：sec.， D：day, H：hour, M：month



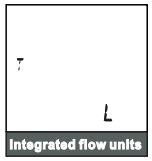
Instantaneous power units
KW, KJ/S,KCL/S, bTU/S



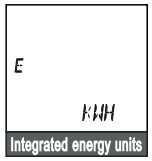
Integrated flow decimal point position
Range：. 0000~0000



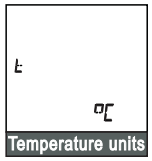
Integrated energy decimal point position
Range：. 0000~0000



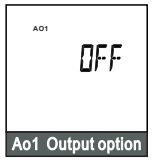
Integrated flow units
L, ML, TOM, Lb, KG, GAL, M3



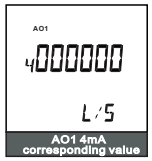
Integrated energy units
KWH, MbTu, KbTu, KCAL, GJ, MJ



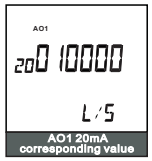
Temperature units
°C, °F



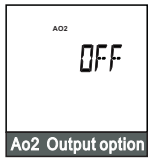
Ao1 output options
OFF：No output, dT：Temperature differences
OT：Outflow temperature ,IT：Inflow temperature
POWER, FLOW



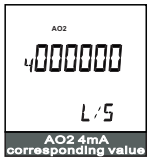
Ao1 4mA corresponding value
Range: 000000~999999



Ao1 20mA corresponding value
Range: 000000~999999

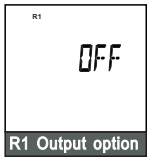


Ao2 output options
OFF：No output, dT：Temperature differences
OT：Outflow temperature ,IT：Inflow temperature
POWER, FLOW

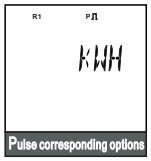


Ao2 4mA corresponding value
Range: 000000~999999

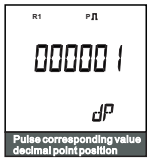
Ao2 20mA corresponding value
Range: 000000~999999



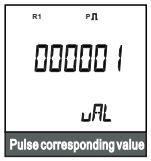
R1 output options
OFF：output disable, PuLSE：pulse output



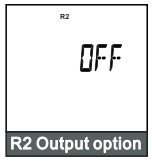
Pulse corresponding options
KWH：power, L：flow



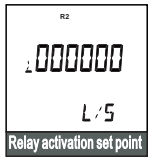
Pulse corresponding value decimal point position
Range: 000001~00. 0001



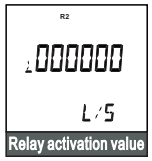
Setting the accumulative value that corresponding to pulse
Range: 000000~999999



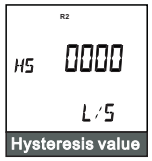
R2 output option
OFF：output disable, EALAM：Will activate when error happens
RELAY：Set point activation



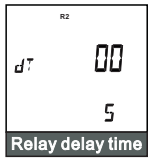
R2 activation set-up point
≧ ：more than or equal to set value
≦ ：less than or equal to set value



R2 activation set-up point value
Range: 000000~999999

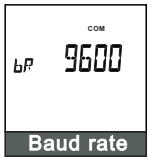


Activation set-up point hysteresis setting
Range:0000~9999



R2 delay time set-up
Range:00~99(sec.)

RS-485 communication address set-up
Range:001~199



RS-485 baud rate set-up
2400,4800,9600,19200

RS-485 parity setting
N. 8. 1, O. 8. 1, E. 8. 1,N. 8. 2

5. Specifications:

5.1 Specifications

- **Display screen**：

Format	LCD white backlit
Instantaneous flow digits	6 digits
Instantaneous energy digits	6 digits
Temperature digits	4 digits
Integrated flow digits	10 digits
Integrated energy digits	10 digits
Status symbol	Relay contact status, RS-485 communication status Pulse output,Analog output percentage Input signal status, Unit display, Error message

- **Power supply**：

Auxiliary power supply	AC/DC85-265V
Frequency Range	45-70Hz
Power consumption	≦15VA(All modules)

- **Pulse input:**

Input genre	NPN、PNP、open collector
Frequency range	5-10KHz(Default10-10KHz)
Voltage peak-to-peak value	0-30V
Deviation range	±0. 05% reading(When over10Hz)

- **Temperature input:**

Input genre	RTD 3-wire, PT100,PT500,PT1000
Temperature range	-200-600°C
Deviation range	According to EN 60751 Class A

- **Communication**：

Interface	RS485
Protocol	MODBUS , RTU format
Baud rate	2400～19200 programmable
Address	1～199 programmable
Data formal	N,8,1/N,8,2/O,8,1/E,8,1 programmable
Parallel connection	32 meters

- **Analog output:**

Output range	DC4-20mA isolated
Corresponding value	Instantaneous flow, Instantaneous energy Inflow temperature, Outflow temperature Inflow/Outflow temperature differences
Maximum load	≦350Ω
Deviation range	±0. 1%R. O.

- **Pulse output**:

Output genre	Open Collector (O.C.)
Corresponding value	Integrated flow/energy
Setting range	0. 001-999999
Pulse width	0. 2 sec.
Maximum load	DC30V 30mA

- **Relay contacts output:**

Output genre	A contact (N.O.)
Corresponding value	Instantaneous flow high/low alarm or error alarm
Setting range	0-999999
Contact load	AC240V 5A DC24V 5A

- **Auxiliary power supply:**

Output voltage	DC5V, DC12V, DC24V(option)
Max. current	30mA

- **Permissible module quantity：At most 4 sets**

Rs485 module quantity	1 set(A)
DC analog output module	2 sets(B、C)
Pulse and relay contacts module	1 set(D)

- Application environment :

Operating temperature	0-60°C
Operating humidity	5-95%RH,non condensing
Storage temperature	-10-70°C

- Characteristic and terms:

Sampling time	0.3 secs.
Ingress protection	Ip54 front,IP20 rear
Dielectric strength	Input/Output/Power AC2KV,1min
	Terminals/Case AC3KV,1min
Surge immunity	Input/Output/Power/Case
	DC500V ≧100MΩ

EMC Testing

Conducted emission	EN 55011
Radiated emmission	EN 55011
Harmonic current emissions	EN 61000-3-2
Voltage changes, voltage fluctuations,and flicker	En 61000-3-3
Electrostatic discharge	IEC61000-4-2
Electromagnrtic field immunity	IEC61000-4-3
Electrical fast transient/burst immunity	IEC61000-4-4
Surge immunity	IEC61000-4-5
immunity to conducted disturbances	IEC61000-4-6
Power frequency magnetic field immunity	IEC61000-4-8
Short interruptions and voltage variations immunity	IEC61000-4-11
CE certification	

6. Communications:

6.1 Communication protocol：

Adopting MODBUS communication shall use a repeater as the meters are in parallel connection more than 30 pcs.

6.2 Transmission mode：

RTU MODE

6.3 Communication method：

Rs485 (Half-Duplex)

6.4 MODBUS Frame：

6.4.1 Basic Comm and Framing: Hexadecimal Code

Start of frame	Address Field	Function Code	Data Field	Error Check	End of Frame

Start of frame ：The data is not transmitted by a silent period of at least 4 characters

Address field ：The valid MODBUS addresses are in the range of 1-255, the address 0 for broadcast command is only valid for Function Code ⇨ 06H

Function code ：03H⇨Read data
06H⇨Write data

Data field ：The start address of a register. Reading N WORDS and Writing N values

Error check ：16bit CRC。

End of frame ：The date is not transmitted by a silent period of at least 4 characters

6.4.2 **Bit Per Byte**: Access to sub-menus 485→FrAE to set-up

Start Bit	Data Bit	Parity	Stop	Frame
1	8	None	2	N，8，2
1	8	Odd	1	O，8，1
1	8	Even	1	E，8，1
1	8	None	1	N，8，1

6.5 **Reading Register Command**：

Query：

Start of Frame	Address Field	Function Code	Start Address Hi	Start Address Lo	Number of Word Hi	Number of Word Lo	Error Check		End of Frame
	01H~FFH	03H	0~nnH	0 ~ nnH	0H	1~nnH	CRC Lo	CRC Hi	
	1 Byte	1 Byte	2Byte		2 Byte		2 Byte		

Response：(Command is correct)

Start of Frame	Address Field	Function Code	Number of Data Byte Count	D0、D1.. Dn (Hi,Lo,Hi,Lo....)	Error Check		End of Frame
	01H~FFH	03H			CRC Lo	CRC Hi	
	1 Byte	1 Byte	1Byte		2 Byte		

6.6 **Writing Register Command: A single writing WORD command**

Query：

Start of Frame	Address Field	Function Code	Start Address Hi	Start Address Lo	Value Hi..	Value ..Lo	Error Check		End of Frame
	01H~FFH	06H	0~nnH	0 ~ nnH	Setting Value		CRC Lo	CRC Hi	
	1 Byte	1 Byte	2Byte		2 or 4 Byte		2 Byte		

Response：(Response to the writing data if the command is correct)

Start of Frame	Address Field	Function Code	Start Address Hi	Start Address Lo	Value Hi..	Value .. Lo	Error Check		End of Frame
	01H~FFH	06H	0~nnH	0 ~ nnH	Setting Value		CRC Lo	CRC Hi	
	1 Byte	1 Byte	2Byte		2 or 4 Byte		2 Byte		

6.7 **Message Error：(A command is error)**

Start of Frame	Address Field	Function Code	Error Code	Error Check		End of Frame
	01H~FFH	83H or 86H		CRC Lo	CRC Hi	
	1 Byte	1 Byte	1 Byte	2 Byte		

- Function Code：Response to the received Function Code but MSB is set to 1, it functions like 03H ⇨ 83H
- Error Code：
  01：Error Function。
  02：Error Data Address。
  03：Error Data Value。

6.8 The CRC Calculation：

The CRC is calculated on all byte of a message from the Address Filed to the last data byte ended (Data Field); Furthermore, it means that the data received is in error if the CRC calculation performed on host does not match the received data.

The CRC Calculation Performed:
1. Load a CRC register with 0 x FFFF
2 Exclusive- OR the first 8 bits of the message with the low-order byte of the CRC register. Put the result in the CRC register.
3.Shift the CRC register one bit to the right then fill the message in high-order of the CRC register with a zero, and compare the bit shifted out (SLSB).
4. Repeat step 3 if the SLSB=0; Exclusive- OR the CRC register with the value A001(Hex), then put the result in the CRC register if the SLSB=1.
5. Repeat steps 3 and 4 uutil the 8 bits have been performed and tested.
6. Repeat steps 2 to 5 until all bytes have been performed.
7. Swap a message with low and high order bytes of the CRC register.

CRC Checkup Routine：

The CRC register returned is as unsigned short int.
The starting address and the field of the data are transmitted, and the high and low order bytes of the returned CRC register have been swapped.

```
/*CRC Generation Function with 'C' language*/
/* Msg:*message to calculate CRC upon*/
/* usDatalen: number of bytes in message*/
unsigned int CRC16(char *Msg,unsigned char usDatalen)
{
   unsigned char uchCRCHi=0xFF；/*CRC high byte*/
   unsigned char uchCRCLo=0xFF；  /*CRC low byte*/
   unsigned char uIndex；
   while(usDatalen--)/*pass through message buffer*/
   {
      uIndex=uchCRCHi^*Msg++；/*calculate the CRC*/
      uchCRCHi=uchCRCLO^auchCRCHi[uIndex]；
      uchCRCLo=auchCRClo[uIndex]；
   }
}
return (uchCRCHi<<8|uchCRCLo)；
```

```
static unsigned char auchCRCHi[]={
0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,0x01,0xc0,
0x80,0x41,0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,
0x00,0xc1,0x81,0x40,0x00,0xc1,0x81,0x40,0x01,0xc0,
0x80,0x41,0x01,0xc0,0x80,0x41,0x00,0xc1,0x81,0x40,
0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,0x00,0xc1,
0x81,0x40,0x01,0xc0,0x80,0x41,0x01,0xc0,0x80,0x41,
0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,0x00,0xc1,
0x81,0x40,0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,
0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,0x01,0xc0,
0x80,0x41,0x00,0xc1,0x81,0x40,0x00,0xc1,0x81,0x40,
0x01,0xc0,0x80,0x41,0x01,0xc0,0x80,0x41,0x00,0xc1,
0x81,0x40,0x01,0xc0,0x80,0x41,0x00,0xc1,0x81,0x40,
0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,0x01,0xc0,
0x80,0x41,0x00,0xc1,0x81,0x40,0x00,0xc1,0x81,0x40,
0x01,0xc0,0x80,0x41,0x00,0xc1,0x81,0x40,0x01,0xc0,
0x80,0x41,0x01,0xc0,0x80,0x41,0x00,0xc1,0x81,0x40,
0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,0x01,0xc0,
0x80,0x41,0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,
0x00,0xc1,0x81,0x40,0x00,0xc1,0x81,0x40,0x01,0xc0,
0x80,0x41,0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,
0x01,0xc0,0x80,0x41,0x00,0xc1,0x81,0x40,0x01,0xc0,
0x80,0x41,0x00,0xc1,0x81,0x40,0x00,0xc1,0x81,0x40,
0x01,0xc0,0x80,0x41,0x01,0xc0,0x80,0x41,0x00,0xc1,
0x81,0x40,0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,
0x00,0xc1,0x81,0x40,0x01,0xc0,0x80,0x41,0x01,0xc0,
0x80,0x41,0x00,0xc1,0x81,0x40};
static unsigned char auchCRCLo[]={
0x00,0xc0,0xc1,0x01,0xc3,0x03,0x02,0xc2,0xc6,0x06,
0x07,0xc7,0x05,0xc5,0xc4,0x04,0xcc,0x0c,0x0d,0xcd,
0x0f,0xcf,0xce,0x0e,0x0a,0xca,0xcb,0x0b,0xc9,0x09,
0x08,0xc8,0xd8,0x18,0x19,0xd9,0x1b,0xdb,0xda,0x1a,
0x1e,0xde,0xdf,0x1f,0xdd,0x1d,0x1c,0xdc,0x14,0xd4,
0xd5,0x15,0xd7,0x17,0x16,0xd6,0xd2,0x12,0x13,0xd3,
0x11,0xd1,0xd0,0x10,0xf0,0x30,0x31,0xf1,0x33,0xf3,
0xf2,0x32,0x36,0xf6,0xf7,0x37,0xf5,0x35,0x34,0xf4,
0x3c,0xfc,0xfd,0x3d,0xff,0x3f,0x3e,0xfe,0xfa,0x3a,
0x3b,0xfb,0x39,0xf9,0xf8,0x38,0x28,0xe8,0xe9,0x29,
0xeb,0x2b,0x2a,0xea,0xee,0x2e,0x2f,0xef,0x2d,0xed,
0xec,0x2c,0xe4,0x24,0x25,0xe5,0x27,0xe7,0xe6,0x26,
0x22,0xe2,0xe3,0x23,0xe1,0x21,0x20,0xe0,0xa0,0x60,
0x61,0xa1,0x63,0xa3,0xa2,0x62,0x66,0xa6,0xa7,0x67,
0xa5,0x65,0x64,0xa4,0x6c,0xac,0xad,0x6d,0xaf,0x6f,
0x6e,0xae,0xaa,0x6a,0x6b,0xab,0x69,0xa9,0xa8,0x68,
0x78,0xb8,0xb9,0x79,0xbb,0x7b,0x7a,0xba,0xbe,0x7e,
0x7f,0xbf,0x7d,0xbd,0xbc,0x7c,0xb4,0x74,0x75,0xb5,
0x77,0xb7,0xb6,0x76,0x72,0xb2,0xb3,0x73,0xb1,0x71,
0x70,0xb0,0x50,0x90,0x91,0x51,0x93,0x53,0x52,0x92,
0x96,0x56,0x57,0x97,0x55,0x95,0x94,0x54,0x9c,0x5c,
0x5d,0x9d,0x5f,0x9f,0x9e,0x5e,0x5a,0x9a,0x9b,0x5b,
0x99,0x59,0x58,0x98,0x88,0x48,0x49,0x89,0x4b,0x8b,
0x8a,0x4a,0x4e,0x8e,0x8f,0x4f,0x8d,0x4d,0x4c,0x8c,
0x44,0x84,0x85,0x45,0x87,0x47,0x46,0x86,0x82,0x42,
0x43,0x83,0x41,0x81,0x80,0x40};
```

6.9 Setting Data Address

6.9.1 Communication address

Address	(Hex)	Contents	Format	Codename	Access	Range & Unit
0000	0000H	Resettable integrated energy	(Note 1)	E1.A	R	0~9999999999
0001	0001H	Resettable integrated energy	(Note 1)	E1.B	R	0~9999999999
0002	0002H	Resettable integrated energy	(Note 1)	E1.C	R	0~9999999999
0003	0003H	Resettable integrated energy	(Note 1)	E1.D	R	0~9999999999
0004	0004H	Non-resettable integrated energy	(Note 1)	E2.A	R	0~9999999999
0005	0005H	Non-resettable integrated energy	(Note 1)	E2.B	R	0~9999999999
0006	0006H	Non-resettable integrated energy	(Note 1)	E2.C	R	0~9999999999
0007	0007H	Non-resettable integrated energy	(Note 1)	E2.D	R	0~9999999999
0008	0008H	Resettable integrated flow	(Note 1)	T1.A	R	0~9999999999
0009	0009H	Resettable integrated flow	(Note 1)	T1.B	R	0~9999999999
0010	000AH	Resettable integrated flow	(Note 1)	T1.C	R	0~9999999999
0011	000BH	Resettable integrated flow	(Note 1)	T1.D	R	0~9999999999
0012	000CH	Instantaneous power/Low byte	Long	PW.L	R	0~999999
0013	000DH	Instantaneous power/High byte	Long	PW.H	R	0~999999
0014	000EH	Instantaneous flow/Low byte	Long	FW.L	R	0~999999
0015	000FH	Instantaneous flow/High byte	Long	FW.H	R	0~999999
0016	0010H	Inflow temperature	Integer	IT	R	-9999~9999
0017	0011H	Outflow temperature	Integer	OT	R	-9999~9999
0018	0012H	Temperature differences	Integer	DT	R	-9999~9999
0019	0013H	K-factor/Low byte	Long	K.L	R/W	1~99999
0020	0014H	K-factor/High byte	Long	K.H	R/W	1~99999
0021	0015H	Correction factor/Low byte	Long	CF.L	R/W	1~999999
0022	0016H	Correction factor/High byte	Long	CF.H	R/W	1~999999
0023	0017H	Density/Low byte	Long	DS.L	R/W	1~999999
0024	0018H	Density/High byte	Long	DS.H	R/W	1~999999
0025	0019H	Specific heat/Low byte	Long	CP.L	R/W	1~999999
0026	001AH	Specific heat/High byte	Long	CP.H	R/W	1~999999
0027	001BH	Average value set-up	Integer	AG	R/W	0~99
0028	001CH	Low flow cutoff	Integer	LC	R/W	0~9999
0029	001DH	K-factor decimal point	Integer	PDK	R/W	0~4(Note 2)
0030	001EH	Specific heat decimal point	Integer	PDC	R/W	0~4(Note 2)
0031	001FH	Low flow cutoff decimal point	Integer	LCD	R/W	0~3(Note 2)

Address	(Hex)	Contents	Format	Codename	Access	Range & Unit
0032	0020H	Define pulse decimal point	Integer	PDP	R/W	0~3(Note 2)
0033	0021H	Instantaneous flow decimal point	Integer	DPF	R/W	0~3(Note 2)
0034	0022H	Instantaneous flow units	Integer	UTF	R/W	0~6(Note 3)
0035	0023H	Instantaneous flow time	Integer	TMF	R/W	0~3(Note 4)
0036	0024H	Instantaneous power units	Integer	UTP	R/W	0~3(Note5)
0037	0025H	Integrated flow decimal point	Integer	DPT	R/W	0~3(Note 2)
0038	0026H	Integrated energy decimal point	Integer	DPE	R/W	0~3(Note 2)
0039	0027H	Integrated flow units	Integer	UTT	R/W	0~6(Note 3)
0040	0028H	Integrated energy units	Integer	UTE	R/W	0~5(Note 6)
0041	0029H	Temperature units	Integer	TUT	R/W	0~1(Note 7)
0042	002AH					
0043	002BH					
0044	002CH					
0045	002DH					
0046	002EH					
0047	002FH					
0048	0030H					
0049	0031H	Relay1 status set-up	Integer	R1V	R/W	0~1(Note 8)
0050	0032H	Relay2 status set-up	Integer	R2V	R/W	0~2(Note9)
0051	0033H	Pulse corresponding value /Low byte	Long	R1_P. L	R/W	0~999999
0052	0034H	Pulse corresponding value /High byte	Long	R1_P. H	R/W	0~999999
0053	0035H					
0054	0036H					
0055	0037H	Relay2 alarm value/Low byte	Long	R2_FW. L	R/W	0~999999
0056	0038H	Relay2 alarm value/High byte	Long	R2_FW. H	R/W	0~999999
0057	0039H					
0058	003AH	Relay2 alarm hysteresis value	Integer	R2_HS	R/W	0~9999
0059	003BH					
0060	003CH	Relay2 alarm delay	Integer	R2T	R/W	0~99
0061	003DH	Inflow temperature compensation	Integer	IT.C	R/W	-9999~9999
0062	003EH	Outflow temperature compensation	Integer	OT.C	R/W	-9999~9999
0063	003FH	System operating mode	Integer	MD	R/W	0~1(Note 10)

Address	(Hex)	Contents	Format	Codename	Access	Range & Unit
0064	0040H					
0065	0041H					
0066	0042H					
0067	0043H	Zero resettable integrated energy	Integer	RST.E	R/W	1: Reset
0068	0044H	Zero resettable integrated flow	Integer	RST.T	R/W	1: Reset
0069	0045H					
0070	0046H	RS-485 address	Integer	ADD	R/W	1~199
0071	0047H	RS-485 baud rate	Integer	BRD	R/W	0~3 (Note 11)
0072	0048H	RS-485 parity	Integer	PAR	R/W	0~6 (Note 12)

6.9.2 Notes

Note	Description
1	Integrated value byte order from high to low is DCBA, if using tens digit calculation, the integrated value: D * 2^48 + C * 2^32 + B * 2^16 + A
2	Decimal position : 0 : No decimals , 1 : First decimal place, 2 : Second decimal place 3 : Third decimal places, 4 : Fourth decimal place
3	Flow units : 0 : ml, 1 : L, 2 : m³, 3 : Gallon 4 : kg, 5 : lb, 6 : ton
4	Time units : 0 : Sec., 1 : Mins, 2 : Hours, 3 : Days
5	Power units : 0 : kW, 1 : kJ/S, 2 : kcal/s, 3 : Btu/s
6	Integrated energy units : 0 : kWH, 1 : MJ, 2 : GJ 3 : kcal, 4 : kBtu, 5: MBtu
7	Temperature units : 0 : °F, 1 : °C
8	Relay1 status : 0 : Off, 1 : Pulse
9	Relay2 status : 0 : Off, 1 : Alarm set value, 2 : Alarm error
10	System operating mode 0 : Inflow temperature > Outflow temperature, 1 : Outflow temperature > Inflow temperature
11	RS-485 Baud rate : 0 : 2400、1 : 4800、2 : 9600、3 : 19200
12	RS-485 Parity : 0 : n.8.1, 1 : n.8.2, 2 : e.8.1, 3 : o.8.1