MAG

ALIA TECHNOLOGY LLC

Electromagnetic Flowmeter

Operation Manual

AMC3200 Series

CE

Index

1. Sensor

Electromagnetic flowmeter is made up with sensor and converter. Either for compact or separate version, Sensor's specifications vary as below:
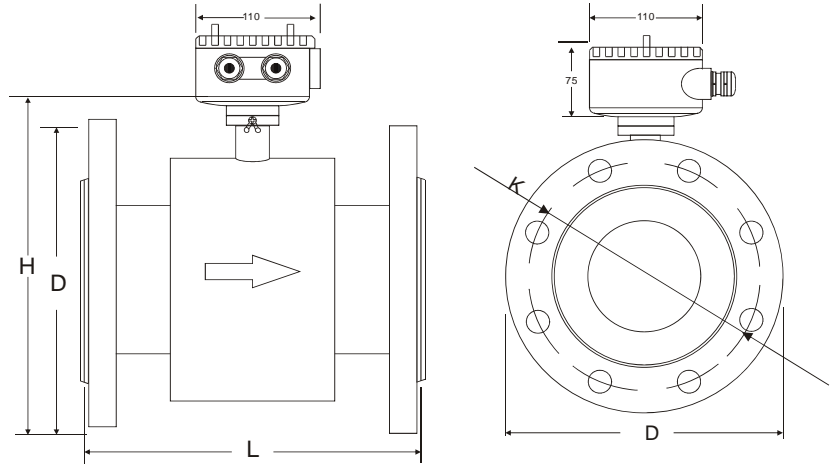
1.1 AMF900 Flange Type

Size: 10Amm ~ 2000mm (3/8"A ~ 80")
Liner: Neoprene
      Polyurethane
      FEP
      PTFE
      PFA
Protection Class: IP68
Max.Temp.:180 Deg. C
Process Connection: Flange End

| Size	Standard Pressure	Liner Material				Dimensions (mm)			Weight
(mm)	Kg/cm2	FEP / PFA	Neoprene	Polyurethane	PTFE	L	D	H	Kg
10A	40	◎			◎	120	90	145	3.5
10		◎			◎	120	90	145	3.5
15		◎			◎	150	95	155	3.5
20		◎			◎	150	105	160	4.5
25		◎		◎	◎	150	115	166	4.5
32		◎		◎	◎	150	140	180	6.5
40		◎		◎	◎	150	150	190	7.0
50		◎	◎	◎	◎	200	165	201	9.5
65		◎	◎	◎	◎	200	185	220	12
80		◎	◎	◎	◎	200	200	235	15
100	16	◎	◎	◎	◎	250	220	254	17
125		◎	◎	◎	◎	250	250	284	21
150		◎	◎	◎	◎	300	285	314	28
200	10	◎	◎	◎	◎	350	340	369	36
250		◎	◎	◎	◎	400	395	430	49
300		◎	◎	◎	◎	450	445	480	61
350			◎	◎	◎	450	505	540	79
400			◎	◎	◎	500	565	600	99
450			◎		◎	600	615	640	121
500			◎		◎	600	670	700	143
600			◎		◎	600	780	800	187
700			◎		◎	700	895	910	260
800			◎		◎	800	1015	1020	342
900			◎		◎	900	1115	1120	420
1000			◎		◎	1000	1230	1230	503
1200	6		◎		◎	1200	1405	1405	666
1400			◎		◎	1400	1630	1630	1036
1600			◎		◎	1600	1830	1830	1333
1800			◎		◎	1800	2045	2045	1720
2000			◎		◎	2000	2265	2265	2190

1.2 AMF500 Wafer Type
Size: 25mm ~ 200mm (1" ~ 8")
Liner: FEP
Protection Class: IP68
Max.Temp.: 180 Deg. C
Process Connection: Wafer
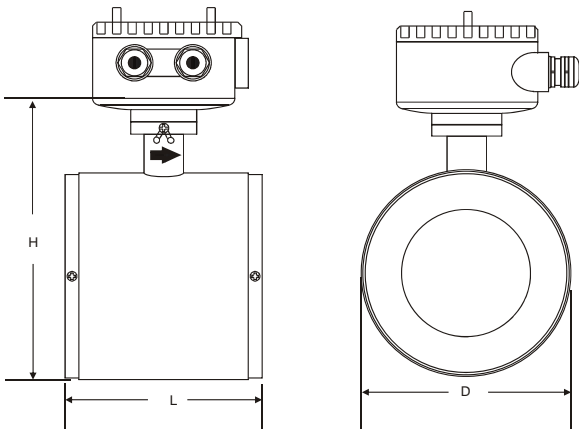
Size		Dimensions (mm)		
mm	Inch	L	D	H
25	1"	90	71	138
32	1-1/4"	100	80	147
40	1-1/2"		86	153
50	2"	115	100	167
65	2-1/2"	115	120	187
80	3"	130	131	198
100	4"	155	151	218
125	5"	155	181	248
150	6"	185	206	273
200	8"	215	261	328

1.3 AMF301 Installation

1.4 AMF500 Installation

Tie-rod

NUT

Packing

Flange

3
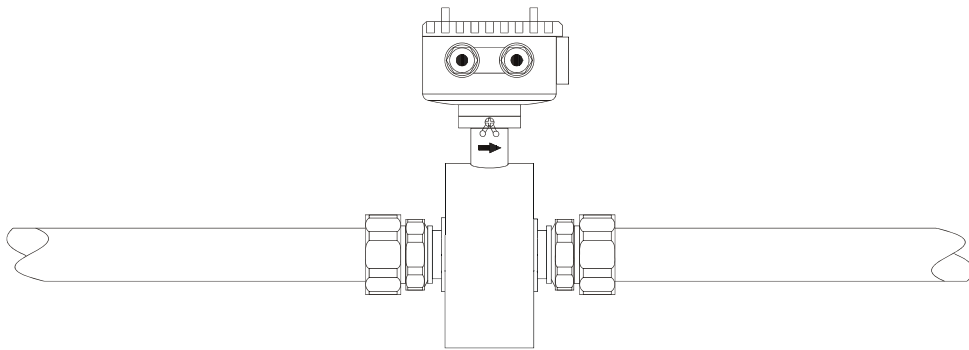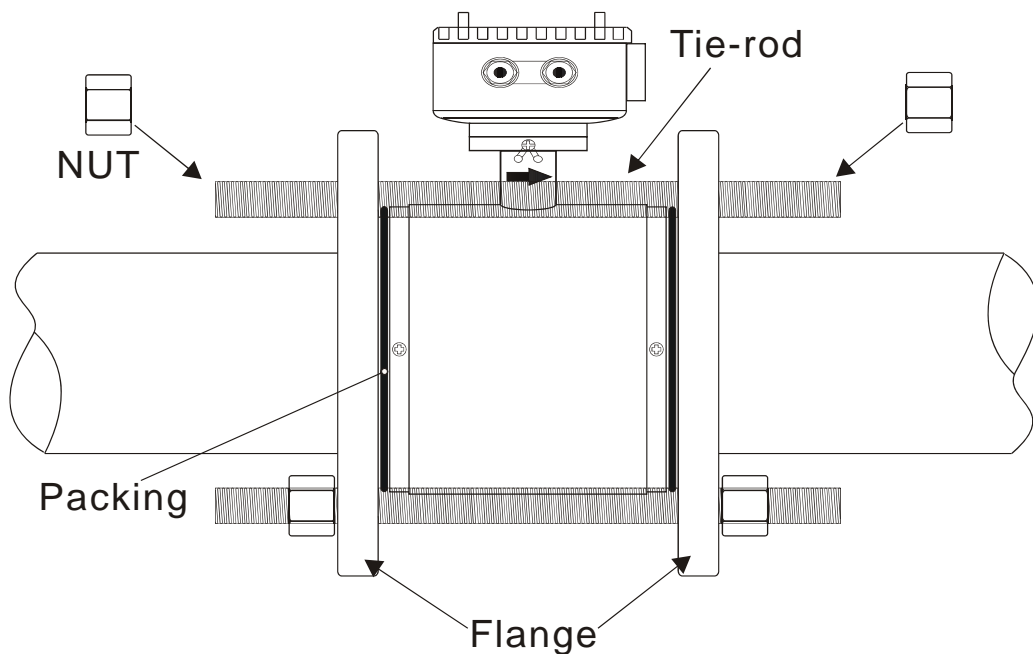
1.5 AMF601 Installation
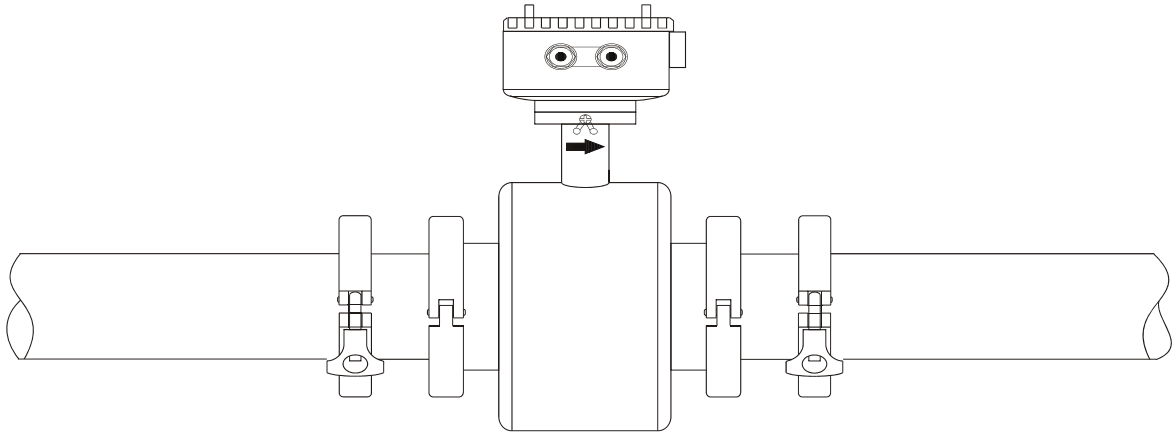
1.6 AMF900 Installation
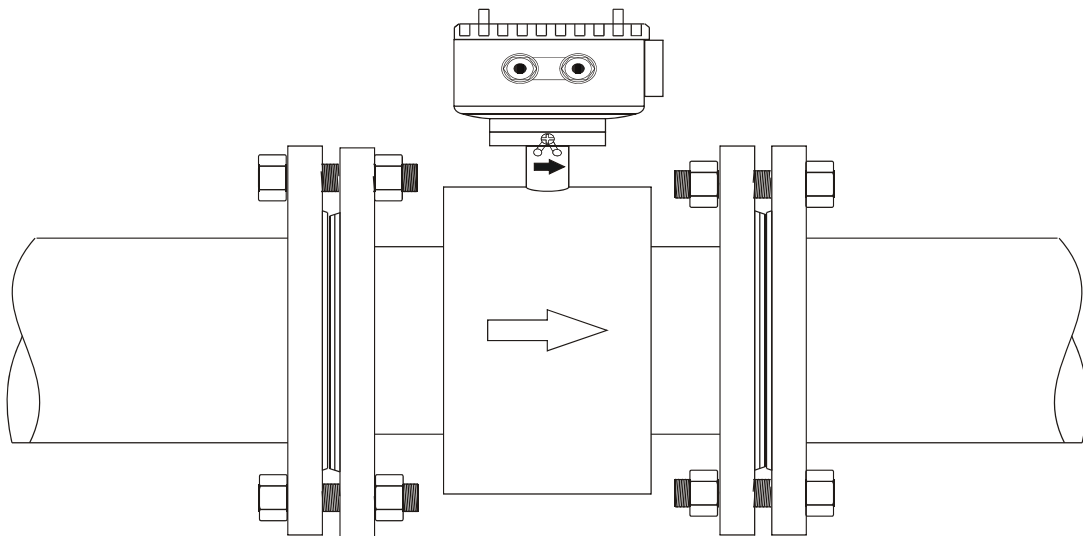
Note:

1) Pipe flange should be welded before flow meter's installation. Welding after flow meter's installation is prohibited. And the welding part of pipe flange should be flat, having no sharp residue. Otherwise liner will be damaged. After Flow meter is installed, if other places in pipe needs to be welded, flow meter's power must be shut down.

2) Usually there will be weld residues in newly installed pipe. Before installing the sensor, those residues should be cleaned off so as to avoid liner damage.

3) If pipe is not aligned well or sloped, there will be leakage or liner damage.

2. Installation Considerations

Before tube design, please take the following situations into consideration:

### 2.1 Installation position

Please avoid sunlight when installing the flowmeter; the ambient temperature should be -25~60 Deg.C.

2.2 Avoid magnetic field interference

Please do NOT install flow meter near devices such as motor-driven machine, transformer, frequency transformer etc as it will cause magnetic field interference.

2.3 Straight Pipe Distance

In order to guarantee EM Flow meter's accuracy, upstream and downstream should meet below requirements (Picture)
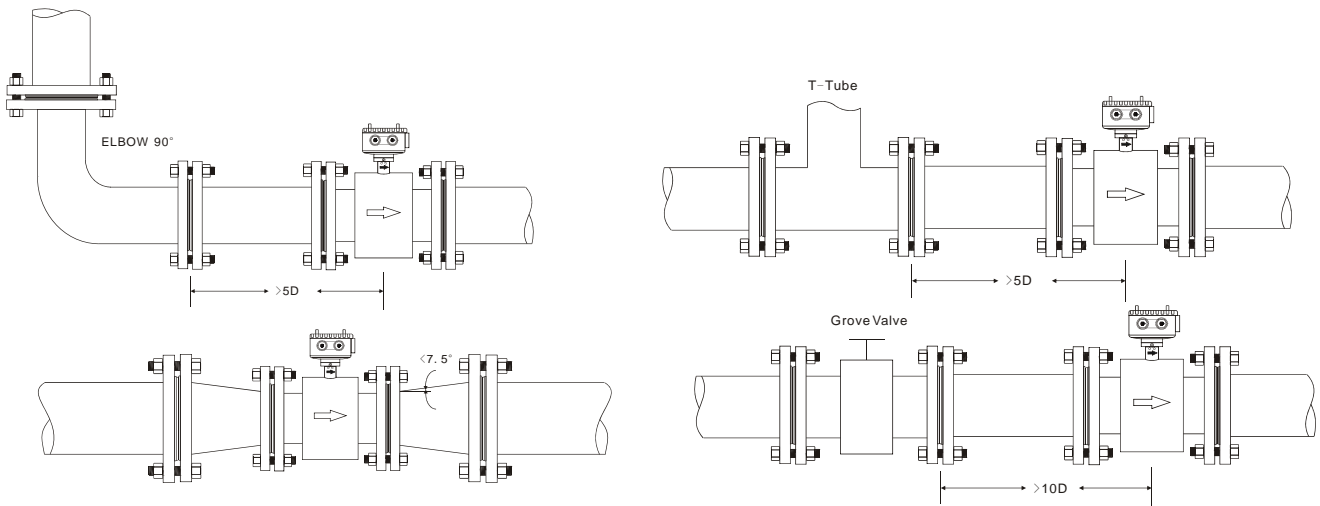
If upstream/downstream pipe is reduced, the reduced pipe's degree, should be less than 15Q .

And upstream distance should be 5D-10D while downstream 2D-5D.

2.4 Installation method

a. Flowmeter can be horizontal, vertical or slant. Please make sure pie is full either fluid is running or not.
b. If there are particles inside fluid, it's recommended to try vertical installation (bottom to top) so as to avoid particles deposit inside pipe.
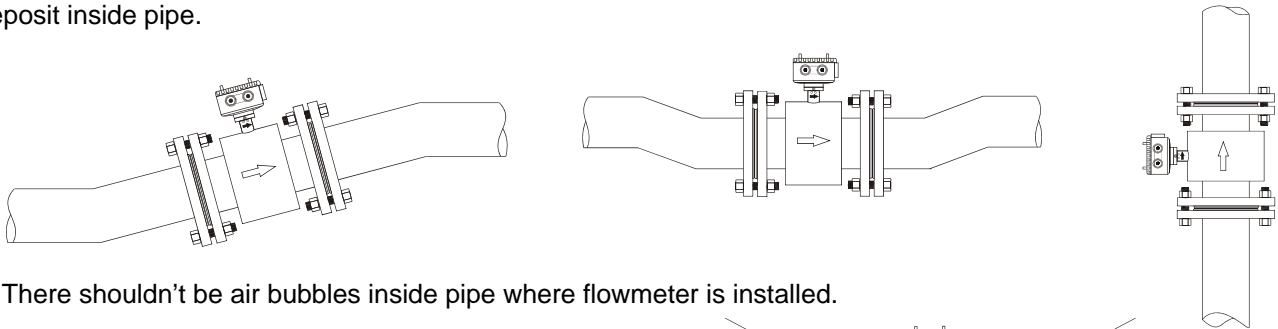
c. There shouldn't be air bubbles inside pipe where flowmeter is installed.
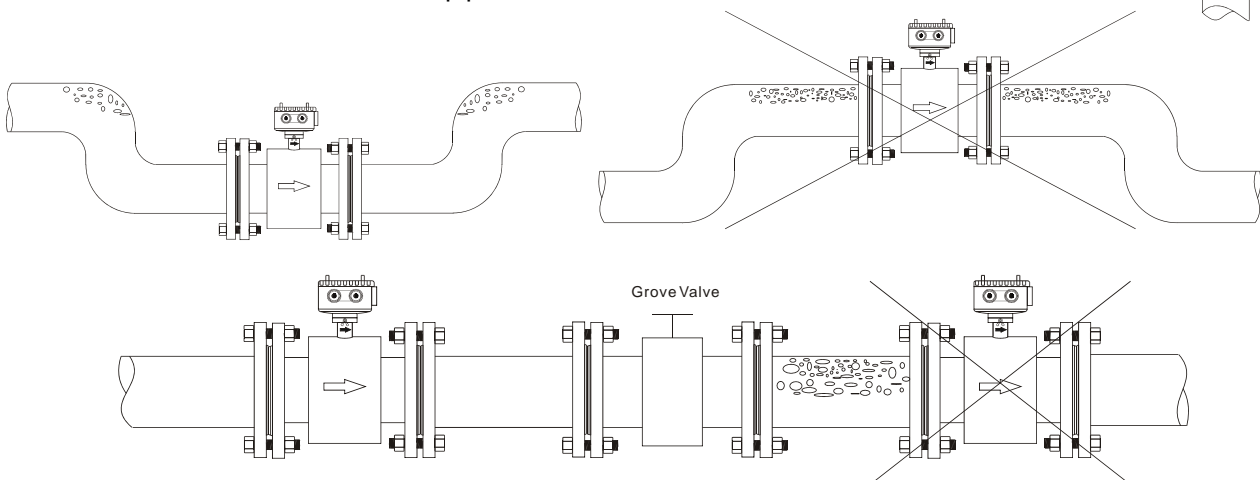
d. Electrode position should parallel with ground. The electrodes' position (A.B) of EM Flowmeter which is horizontally-installed or slant-installed should match the 2 sides (right/left) of tube, and converter (wiring box) should be on the top of the tube.
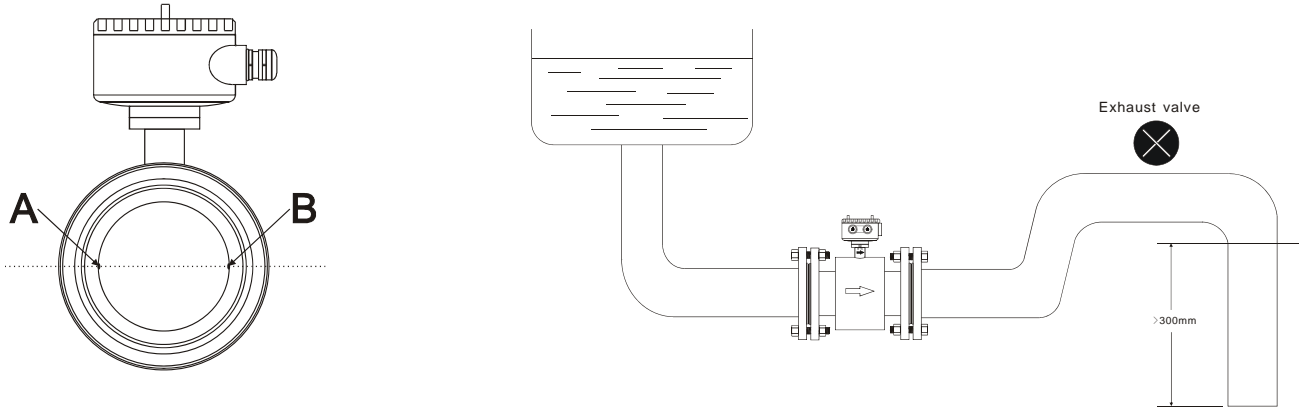
Horizontal installation, the electrode position A.B should on the right and left side.

e. Transportation
Do NOT use rope to hang the flowmeter through its tube as it may cause inside Liner broken.
Do NOT use your hand or rope to hang the converter or junction box. As their material is tender aluminum, if flowmeter size is bigger than 80mm, they can not stand such heavy weight.
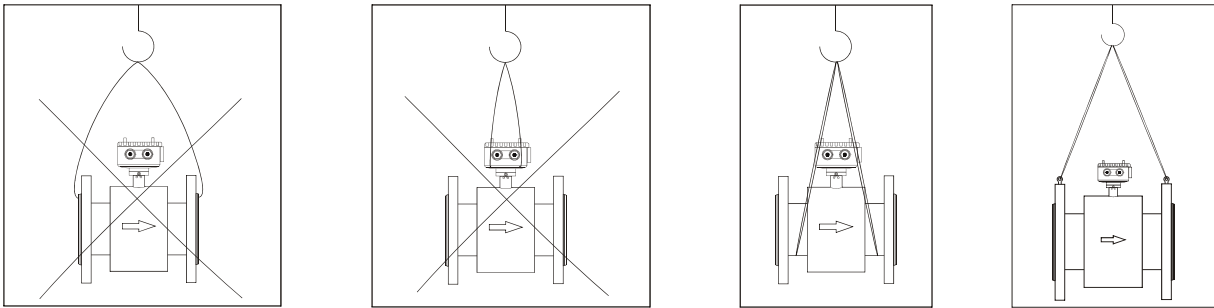
f. Grounding measurement
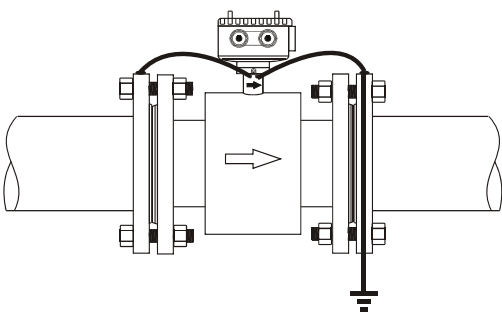
Grounding resistance < 10 Ω

Grounding resistance < 10 Ω

General metal tube
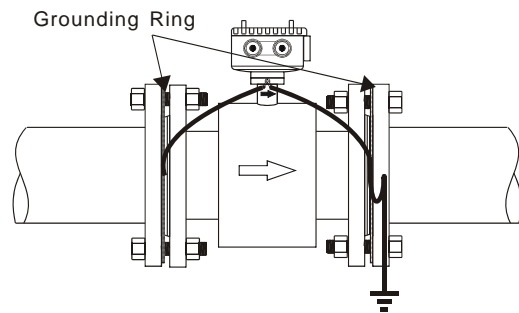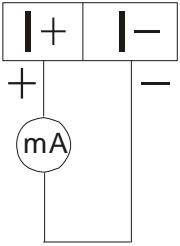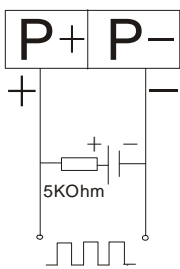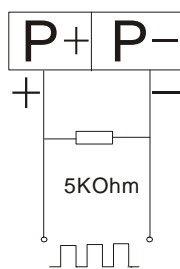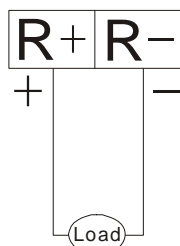
Non-metal tube (plastic tube Liner)

3. AMC3200 Operation

3.1 Wiring Diagram of Power and Signal Output (either compact or separate)

Connect terminals one by one when back cover is opened.

I+. 4~20mA output+

I-. 4~20mA output-

90-260VAC or 24VDC
50/60Hz

P+. Pulse output+

R-. RS485 output-

P-. Pulse output-

R+. RS485 output-

I+ I− Max. Output Load: 600Ω 4~20mA Output (Hart Protocol)	P+ P− Max. Supply Voltage: 30VDC Max. Current: 50mA Passive Pulse (Frequency) Output (0~5000Hz)	P+ P− Output Voltage: 15VDC Max. Current: 50mA Active Pulse (Frequency) Output (0~2000Hz)	R+ R− MODBUS Output RS485 Output

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3.2 Wiring Diagram for Separate Type

Converter AMC3200 Series

A B C   X Y

Electorde

Coil

Sensor
AMF301／AMF500
AMF601／AMF900
Series

A B C   X Y
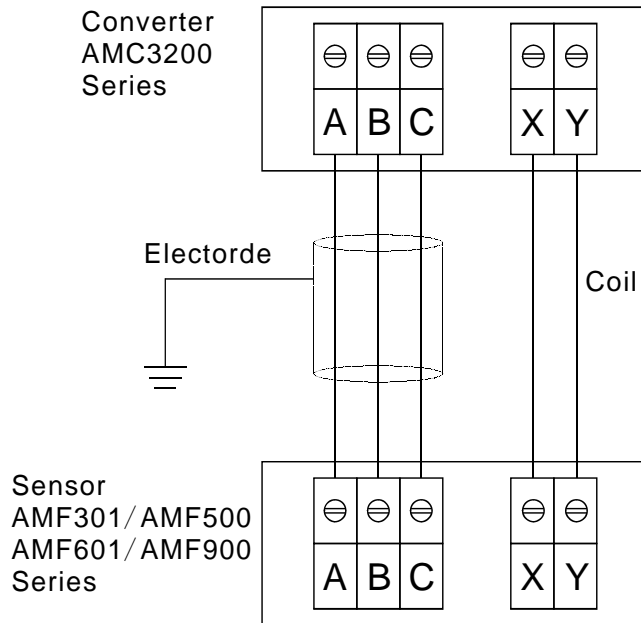
3.3 AMC3200 Panel & Dimensions

Σ 123. 456 m3
+0. 000 m3/h

40mm   26mm   120mm

190mm   23mm   23mm
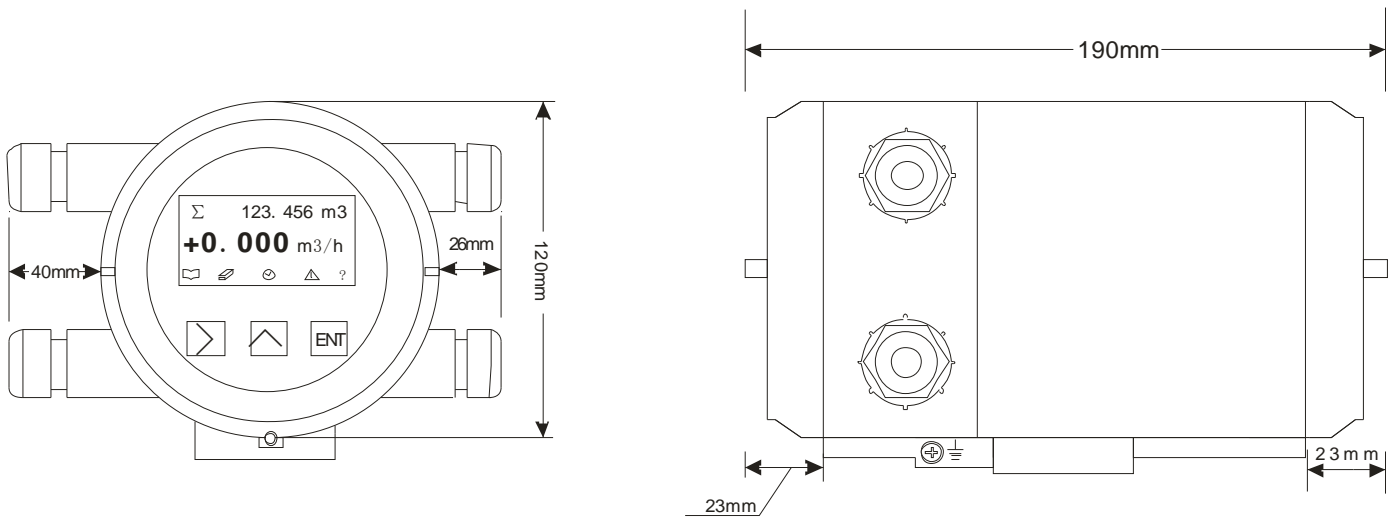
Name	Button	Functions Under Measurement	Functions Under Parameter Settings
Set	ENT	Press it to enter parameter settings mode	Save current settings and shift to next setting interface. Press and hold ENT key for 5 seconds to exit parameter settings and return to measuring interface.
Up	∧	Press it to choose one of the four lines in screen	Move cursor up or down; change numerical value, decimal point and unit
Right	>	Press it to revise chosen content	Move cursor

3.4 Measurement Mode

Converter will be in normal display when power up. The display contents are as follows:

Position	Display	Symbols	Unit	Description
1st Line	Totalizer	Σ	M3, L, ml, Igal, gal, Mgal, bbl, ft3, a-ft, t, kg, g, lb, ston, lton	Σ = Σ+ (−) Σ−
	Positive Totalizer	Σ+		
	Negative Totalizer	Σ−		
2nd Line	Velocity		m/s	Display"-" when flow is reverse.
	Flow Rate		m3/h	Display"-" when flow is reverse.
	%Scale		FS%	Actual flow's scale percentage
	Current		mA	Actual flow's current
	Frequency		Hz	Frequency for full scale: 5000Hz

3.5 Examples

To change the unit m3/h as % in first line, please do as follows.

```
Σ        123.456 m3
+0.0000m3/h
ᛞ  ⌦
```
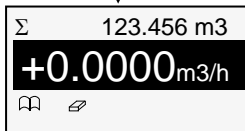
```
Σ        123.456 m3
+0.0000m3/h
ᛞ  ⌦
```
Under normal display interface, hold △ until number in second line is chosen.

```
Σ        123.456 m3
+0.0000 %FS
ᛞ  ⌦
```
Press ᴱᴺᵀ to change m3/h as %FS.
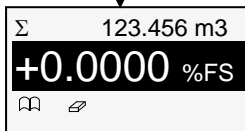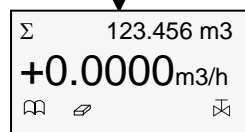
```
Σ        123.456 m3
+0.0000m3/h
ᛞ  ⌦        ⋈
```
If batch control is chosen in Alarm option, ⋈ icon will be shown in the main display.

3.6 Totalizer Reset

| Σ　　　123.456 m3
+0.0000 m3/h
📖　✎ | Under normal display interface, press ▷ or △ key to choose ✎ and enter trimming interface. |

ENT

| Σ　　　123.456 m3
Σ1　　　123.450 m3
Σ2　　　123.400 m3
EXIT　　　　CLR, | Trimming Window
Σ: present totalizer　　　Σ1:　last totalizer　　　Σ2:　totalizer before last
Choose CLR to start trimming. |

ENT

| Clear　　Total

NO　　　YES | Choose YES and press ENT to confirm. |

3.7 Zero Trim

If pipe is full and static, Zero Trim can be used to adjust flowmeter to Zero when deviation is produced by ground resistance. Procedures are as follow:

| Σ　　　123.456 m3
+0.0000 m3/h
📖　✎ | Under normal display interface, hold ENT for 5s and release to enter parameter setting interface. |

ENT

| Password

　　　　　2222 | Password
Input password 2222 and press ENT to confirm. |

ENT

| ZERO
V0:+1.929mv
V1:-1.929mV
NO　　　YES | Press ▷ or △ to choose YES and press ENT to confirm. |

ENT

| Zero　Trimming … | Zero Trimming… |

ENT

| Zero　Trimming …
-0.624mv | Zero Trimming… |

ENT

| ZERO
V0: +0.189mV
V1: -0.189mV
NO　　　YES | Choose NO and press ENT to return to normal display interface. |

ENT

| Σ　　　123.456 m3
+0.0000 m3/h
📖　✎ | Normal display. |

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3.8 Operational Flowchart


```
                        ┌─────────────────────────┐
                        │ Σ         123.456 m3     │
                        │ +0.0000 m3/h            │
                        │ 📖  ✎                   │
                        └─────────────────────────┘
                                  [ENT]
                                    ↓
                        ┌─────────────────────────┐
                        │ Password                │
                        │                  ****   │
                        └─────────────────────────┘
```

Left branch	Middle branch	Right branch
[ENT]		[ENT]
Password	Passive	HART Address
[0000]	[ENT]	
Language	Pls Factor Unit	
[ENT]	[ENT]	
Total Units	Pls Factor	
[ENT]	[ENT]	
Time Units	Pulse Width (ms)	
[ENT]	[ENT]	
URV (FS)	Pulse Type	
[ENT]	[ENT]	
Low Cutoff (%fs)	Comm	
[ENT]	[ENT]	
Damping (s)	MODBUS Type	
[ENT]	[ENT]	
Hydro-State	Baudrate	
[ENT]	[ENT]	
Direction	Data Bit	
[ENT]	[ENT]	
Indication	Parity	
[ENT]	[ENT]	
Empty Detect	Stop Bit	
[ENT]	[ENT]	
PIO Interface	Modbus Address	

PIO Interface → Active / Alarm / Input

11

```
   ┌─────────────────────►                                              ┐
   │                      │                                             │
  [ENT]                   ▼                                             ▼
              ┌───────────────────────┐                 ┌───────────────────────┐
              │       Password        │                 │       Password        │
              └───────────────────────┘                 └───────────────────────┘
                    [1111] │                                  [2222]    │
                           ▼                                          [ENT]│
              ┌───────────────────────┐                                   ▼
         ┌───►│      Sensor   NO.      │                 ┌───────────────────────┐
         │    └───────────────────────┘                 │         ZERO          │
         │         [ENT] │                               │       V0:+1.929mv     │
         │               ▼                               │       V1:-1.929mV     │
         │    ┌───────────────────────┐                  │  NO              YES  │
         │    │      Size (mm)        │                  └───────────────────────┘
         │    └───────────────────────┘                       [ENT] │
         │         [ENT] │                                           ▼
         │               ▼                               ┌───────────────────────┐
         │    ┌───────────────────────┐                  │  Zero   Trimming …    │
         │    │     Sensor （Ks）      │                  └───────────────────────┘
         │    └───────────────────────┘                       [ENT] │
         │         [ENT] │                                           ▼
         │               ▼                               ┌───────────────────────┐
         │    ┌───────────────────────┐                  │         ZERO          │
         │    │   Load Settings       │                  │       V0:+1.929mv     │
         │    │  NO         YES       │                  │       V1:-1.929mV     │
         │    └───────────────────────┘                  │  NO              YES  │
         │         [ENT] │                               └───────────────────────┘
         │               ▼                                    [ENT] │
         │    ┌───────────────────────┐                            ▼
         │    │   INITIALIZING…..     │                  ┌───────────────────────┐
         │    └───────────────────────┘                  │  Σ       123.456 m3   │
         │               │                               │  +0.0000 m3/h         │
         └───────────────┘                               │  ⌗   ⌀                │
                                                         └───────────────────────┘
```

```
                              ┌──────┐
          ──────────────────► │ **** │
                    ┌─────┐    └──────┘
                    │ ENT │
                    └─────┘

        ┌───────────────────────┐
        │ 0.0000      15.000    │
        │   0.0%       m3/h     │
        │ 0.00m/s      DN 15    │
        │ 0.2mV        0.6mV    │
        └───────────────────────┘
                    ┌─────┐
                    │ ENT │
                    └─────┘
```

Back Bsc Sensor	
Zero Trim Conv	
Spec Bluetooth	
Exit	

Back

Bsc → Same as Password 0000

Sensor → Same as Password 1111

Zero → Same as Password 2222

Back Bsc Sensor
Zero Trim Conv
Spec Bluetooth
Exit

Trim menu	Conv menu	Spec menu
Actual Zero	Converter No.	Factor(K)
F.Offset m3/h	Converter Factor	HART Option
V.Offset m/s	Coil Current (A)	Password
Zero Factor	Coil Freq (Hz)	
Span Factor	Power Freq (HZ)	
Loop Test	PGA	
Pulse Test		
Coil Test		
Full Tube Value		

Trim (second column):

- Full Tube Trim
- Empty Tube Value
- Empty Tube Trim
- 4mA Value
- 4mA Trim
- 20mA Value
- 20mA Trim
- Zero Fct Rng1
- Zero Fct Rng2
- Revise Option

3.9 User Operation

Σ 123.456 m3 **+0.0000**m3/h 📖 ✎	Under normal display interface, hold ᴱᴺᵀ for 5s and release to enter parameter setting interface.

ENT ↓

Password 0000	Password Input password 0000 and press ᴱᴺᵀ to confirm.

ENT ↓

Language 争既 **ENGLISH** 纝侯 ESPAÑOL	Language Press ▷ or △ to choose language.

ENT ↓

Total Units /h **m3** L mL Igal gal Mgal bbl ft3 …	Totalizer Units Press ▷ or △ to choose totalizer units. 0: m3 1: L 2: mL 3: Igal 4: gal 5: Mgal 6: bbl 7: ft3 8: a-ft 9: t 10: kg 11: g 12: lb 13: Ston 14: LTon

ENT ↓

Time Units m3 Sec min **hour** day	Time Units Press ▷ or △ to change cursor, and press ᴱᴺᵀ to choose time units.

ENT ↓

URV (FS) m3/h **7**0.0000	Range Limit Set range limit, namely 4-20mA. 20mA corresponds to max. range and max. frequency output. Press ▷ to move cursor, and press △ to change value.

ENT ↓

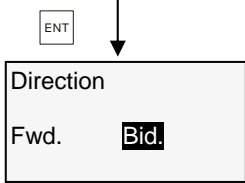|	
Low Cutoff (%fs) **1**.0	Low cutoff Press ▷ to move cursor, press △ to change value. Choose proper low cutoff value. Setting limit: 0.0% ~ 9.9%. E.g., flow range is set to 100m3/h and low cutoff is set to 1%. If flow rate is lower than -1m3/h~+1m3/h, it would be cutoff and converter shows 0 flow rate.

ENT ↓

Damping (s) **0**1	Damping Press ▷ to move cursor, and press △ to change value. Setting limit: 01 ~ 99s, default value is 2s. You can set damping here when flow rate has a large fluctuation, the greater the damping, the slower the flow rate changes.

ENT ↓

|	
Hydro-State Normal **Waved**	Fluid State Press ▷ or △ to choose fluid state: Normal and Waved.

ENT ↓

|	
Max Limit(%FS) 00	Max Limit (%FS) Press ▷ to move cursor and press △ to change value. Range: 0~30% It means the max permitted fluctuation value of flow rate in each Limit Time. If exceed this limit, it will be regarded as interference value.

ENT

Limit Time(S)

00
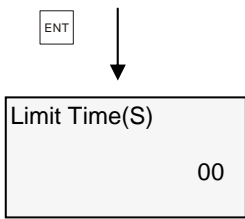
Limit Time (s)
Press ▷ to move cursor and press △ to change value.
It's used to adjust limit time.

ENT

Direction

Fwd.　　Bid.

Direction
Press ▷ or △ to choose flow direction.
1. forward　　2. bidirectional

ENT

Indication

Fwd　Rev
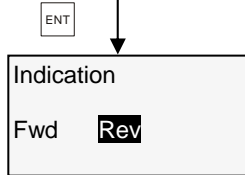
Indication
Press ▷ or △ to choose flow indication.
1. forward　　2. Reverse

ENT

Empty　Detect

NO　　YES
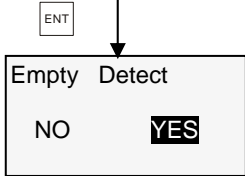
Empty　Detection
Press ▷ or △ choose Yes nor No.

ENT

Empty　Limit (%)

50
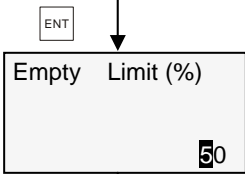
Empty Limit
Press ▷ to move cursor, and press △ to change value.
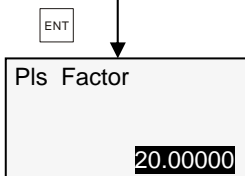
ENT

PIO Interface

Passive　Active
Alarm　　Input
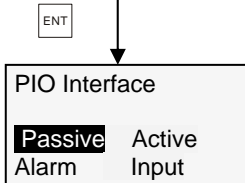
PIO Interface
Press ▷ or △ to choose output type (F+ F-).
1. passive pulse　2. active pulse　3. alarm output　4. contact input

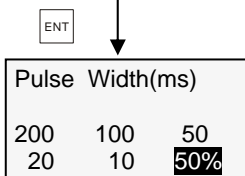If user want to choose batch control in Alarm option.
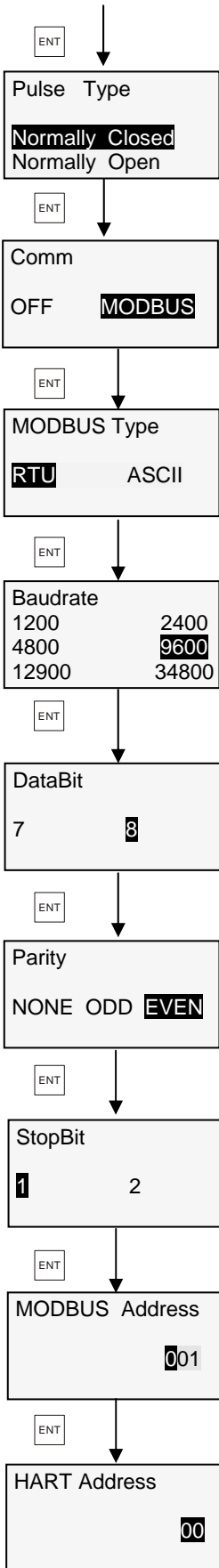
Please see page 23 for its details.

ENT

Pls　Factor Unit

L/p　mL/p　HZ
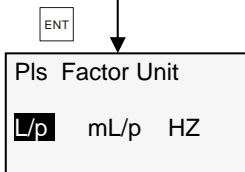
Pulse Factor Unit
Press ▷ or △ to choose pulse factor unit.

ENT

Pls　Factor

20.00000

Pulse Factor
It's the factor of Liter quantity per pulse (Liter/Pulse).
Press ▷ to move cursor and △ to change value.

ENT

Pulse　Width(ms)

200　　100　　50
20　　10　　50%

Pulse Width
Press ▷ or △ to choose pulse width.

ENT	
Pulse Type ▮Normally Closed▮ Normally Open	**Contact Mode** Press ▷ or △ to choose: 1. normally closed 2. normally open
ENT	
Comm OFF ▮MODBUS▮	**Communication** Press ▷ or △ to choose communication on or off.
ENT	
MODBUS Type ▮RTU▮ ASCII	**MODBUS Mode** Press ▷ or △ choose MODBUS mode.
ENT	
Baudrate 1200 2400 4800 ▮9600▮ 12900 34800	**Baud Rate** Press ▷ or △ to choose baud rate.
ENT	
DataBit 7 ▮8▮	**Data Bit** When MODBUS mode is chosen as RTU, data bit is defaulted as 8.
ENT	
Parity NONE ODD ▮EVEN▮	**Parity** Press ▷ or △ to choose parity. 1. None 2. Odd 3. Even
ENT	
StopBit ▮1▮ 2	**Stop Bit** Press ▷ or △ to choose stop bit. 1. 1 2. 2
ENT	
MODBUS Address ▮0▮01	**MODBUS Address** Press ▷ to move cursor, and △ to change value. Setting range: 0~247
ENT	
HART Address ▮00▮	**HART Address** Press ▷ to move cursor and △ to change address. Setting range: 0~15 This option is only available when there is HART function. **Press and hold ENT key for 5 seconds, it will return to normal display.**

3.10 System Mode

Σ 123.456 m3 **+0.0000**m3/h ⌂ ✐	Under normal display interface, hold ENT for 5s and release to enter parameter setting interface.

ENT ↓

Password **1111**	Password Input password 1111.

ENT ↓

Sensor NO. A**7**0821060	Sensor No. Press ▷ to move cursor and △ to change value.

ENT ↓

Size (mm) **0**065	Size Press ▷ to move cursor and △ to change size. Please enter real size as size influences flow rate.

ENT ↓

Sensor (Ks) **0**.9410	Sensor Factor KS KS is factory calibrated factor, It's not allowed to be changed unless representative/original factory technician. Press ▷ to move cursor and △ to change value.

ENT ↓

|	
Load Settings **NO** YES	Factory Reset Press ▷ or △ to choose Yes or No. **Choose NO and hold ENT for 5s to return to normal display.**

3.11 Advanced Mode

3.11.1 Trim Settings

Σ 123.456 m3 **+0.0000**m3/h 📖 ✎	Under normal display interface, hold ⌷ENT for 5s and release to enter parameter setting interface.

⌷ENT

Password ****	Password Input system password: ****.

⌷ENT

0.0000 m3/h 0% 0.00m/s DN 15 150.00 m3/h 0.46 0.160A 0mV	Display Window 1. flow rate 2. %range 3. velocity 4. size 5. range 6. zero mV 7. Excitation current 8. gain mV

⌷ENT

Back Bsc Sensor Zero **Trim** Conv Spec Bluetooth Exit	Options Press ▷ or △ to choose options. 1. return 2. basic 3. sensor 4. zero 5. trim 6. converter 7. spec 8.Bluetooth

⌷ENT

Back **Bsc** Sensor Zero Trim Conv Spec Bluetooth Exit	See page 14

⌷ENT

Back Bsc **Sensor** Zero Trim Conv Spec Bluetooth Exit	See page 17

⌷ENT

Back Bsc Sensor **Zero** Trim Conv Spec Bluetooth Exit	See page 10

⌷ENT

Actual Zero(mV) **+**01.9286	Zero Point Please do not change it as it's the zero point after trimmed.

⌷ENT

F.Offset m3/h **+**0.0000	Flow Offset m3/h Press ▷ to move cursor and press △ to change value. It's used to correct flow rate. Range: 9.99999~+9.99999m3/h

⌷ENT

V.Offset m/s **+**0.0000	Velocity Offset m/s Press ▷ to move cursor and press △ to change value. It's used to correct velocity, and flow rate will change with velocity. Range: -1~+1m/s

```
[ENT]
```

| Zero   Factor
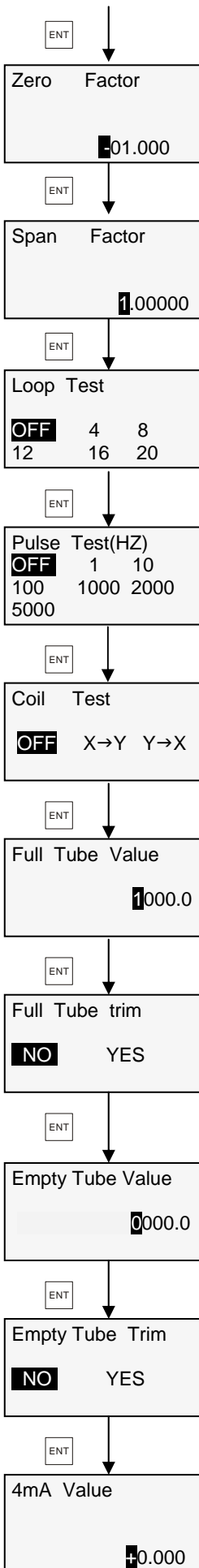
       -01.000 | Zero Correction Factor
Press ▷ to move cursor and △ to change value. This is used for small flow rate (zero correction range 1 and zero correction range 2). |

```
[ENT]
```

| Span   Factor

       1.00000 | Span Correction Factor
Press ▷ to move cursor and △ to change value. This is used for linear correction of range. Please do not change it. |

```
[ENT]
```

| Loop Test

OFF   4   8
12   16   20 | Current output Test
Press ▷ or △ to choose analogue output.
OFF . 4 . 8 . 12 . 16 . 20 |

```
[ENT]
```

| Pulse Test(HZ)
OFF   1   10
100   1000 2000
5000 | Frequency Output Test
Press ▷ or △ to choose frequency type.
OFF . 1 . 10 . 100 . 1000 . 2000 . 5000 |

```
[ENT]
```

| Coil   Test

OFF   X→Y   Y→X | Excitation Test
Voltage of X->Y/Y->X should be more than 24VDC/ -24VDC. If less than 24VDC, converter fails to work normally. Press ▷ or △ to choose options.
If choose X->Y, voltage will be 24VDC; if Y->X, voltage will be -24 VDC. |

```
[ENT]
```

| Full Tube Value

       1000.0 | Full Tube Value
It's not allowed to be changed by anyone unless representative/original factory technician.
Press ▷ to move cursor and △ to change value. |

```
[ENT]
```

| Full Tube trim

NO   YES | Full Tube Trim
Press ▷ or △ to choose Yes or Not, do not change it at will. |

```
[ENT]
```

| Empty Tube Value

      0000.0 | Empty Tube Value
It's not allowed to be changed by anyone unless representative/original factory technician.
Press ▷ to move cursor and △ to change value. |

```
[ENT]
```

| Empty Tube Trim

NO   YES | Empty Tube Trim
Press ▷ or △ to choose Yes or No. Do not change it at will. |

```
[ENT]
```

| 4mA Value

      +0.000 | 4mA Value
Press ▷ to move cursor and △ to change value.
If 4mA value has error, you may enter error to make it accurate. For example: if 4mA value's error is +0.1mA, input 0.1mA in this window to trim 4mA. Do not change it at will. |
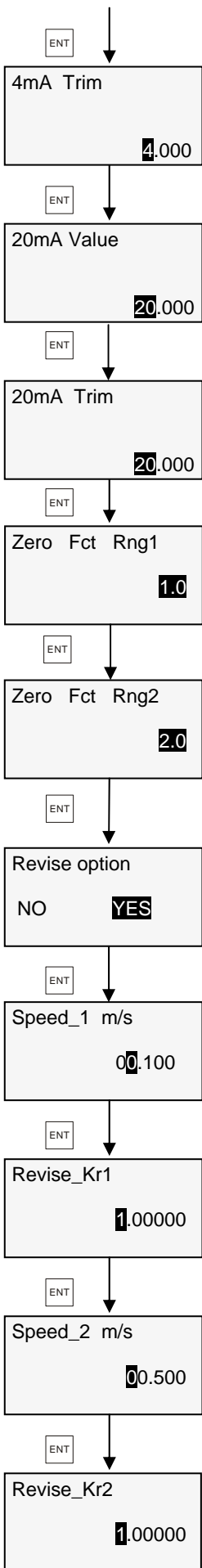
4mA Trim **4**.000	**4mA Trim** Press ▷ to move cursor and △ to change value. Another way to trim 4mA value is as follows: when 4mA is measured as 3.9mA, input 3.9mA in this window to trim 4mA. It's for the same purpose like the window above. Do not change it at will.

[ENT]

20mA Value **20**.000	**20mA Value** Press ▷ to move cursor and △ to change value. Please refer to the way of 4mA Value, do not change it at will.

[ENT]

20mA Trim **20**.000	**20mA Trim** Press ▷ to move cursor and △ to change value. Please refer to the way of 4mA Trim, do not Change it at will. **Hold ᴇɴᴛ for 5s to return to main window.**

[ENT]

Zero Fct Rng1 **1.0**	**Zero Correction Range 1 Unit (m/s)** Press ▷ to move cursor and △ to change value, then press ᴇɴᴛ to confirm. It's used to set small flow rate and influenced by zero factor.

[ENT]

Zero Fct Rng2 **2.0**	**Zero Correction Range 2 Unit (m/s)** Press ▷ to move cursor and △ to change value, then press ᴇɴᴛ to confirm. **Hold ᴇɴᴛ for 5s to return to main window.**

[ENT]

Revise option NO **YES**	**Linear revision** 11point revision is used for trimming accuracy. Choose YES to start linear revision.

[ENT]

Speed_1 m/s 0**0**.100	**Linear revision** 11point revision is used for trimming accuracy. Speed_1 ~ Speed_11 are revision velocity points, they can be set for revision. Revise_1 ~ Revise_11 are flow factors of Speed_1 ~ Speed_11 to trim flow rate. i Press ▷ to move cursor and △ to change value. For operation details, please see example below. . Note: accuracy is standard, please do not do linear revision unless it's necessary; or you may contact ALIA technician for help.

[ENT]

Revise_Kr1

1.00000

[ENT]

Speed_2 m/s

00.500

[ENT]

Revise_Kr2

1.00000

Example 1: size: 50 mm(2"), calibrated flow rate: 0.5 M3/Hr, 1 M3/hr, 2 M3/Hr, 4 M3/hr
Here is the test result for these four points:

	Measure point 1	Measure point 2	Measure point 3	Measure point 4
Actual flowrate	0.5 m3/h	1 m3/h	2 m3/h	4 m3/h
Actual Velocity	0.071 m/s	0.142 m/s	0.283 m/s	0.566 m/s
Flowmeter flowrate	0.530 m3/h	0.983 m3/h	2.046 m3/h	4.176 m3/h
Flowmeter Velocity	0.075 m/s	0.139 m/s	0.289 m/s	0.591 m/s

Speed_3 m/s

        01.000

ENT

Revise_Kr3

        1.00000

ENT

Speed_4 m/s

        02.000

ENT

Revise_Kr4

        1.00000

ENT

Speed_5 m/s

        04.000

ENT

Revise_Kr5

        1.00000

ENT

Speed_6 m/s

        06.000

ENT

Revise_Kr6

        1.00000

ENT

Speed_11 m/s

        12.000

ENT

Revise_Kr11

        1.00000
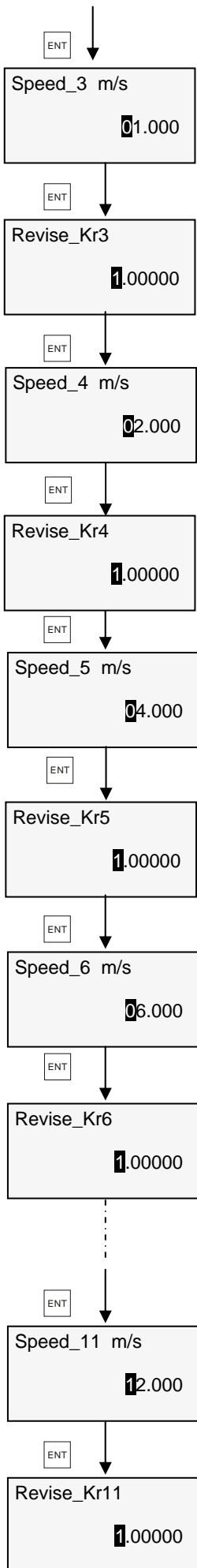
Error of these four points:
  Point 1: 0.5/ 0.530 = 0.943, new Revise value = 0.943
  Point 2: 1 / 0.983 = 1.017, new Revise value= 1.017
  Point 3: 2 / 2.046 = 0.978, new Revise value= 0.978
  Point 4: 4 / 4.176 = 0.958, new Revise value= 0.958

	1	2	3	4
Speed	0.071	0.142	0.283	0.566
Revise	0.943	1.017	0.978	0.958

Then you have to input the following value:
Speed_1= 0.071, Revise_1=0.943, Speed_2=0.142, Revise _2=1.017
Speed_3= 0.283, Revise_3=0.978, Speed_2=0.566, Revise _4 =0.958

After those inputs above, please do NOT change the following values:
t Revise_5, Revise _6, Revise _7 , Revise _8 , Revise_9, Revise _10,
Revise _11, Speed_5, speed_6 , Speed_7, speed_8 , Speed_9, speed_10
speed_11.

Example 2: Size: 500 mm (20") , for example if a calibrated flow rate is 4000 m3/h
Actual flow rate 4000 m3/h, actual flow velocity 5.66 m/s,
Display flow rate 4012 m3/h, display flow rate 5.677 m/s.
New Revise=4000/4012=0.997
As 5.66 m/s is between Revise_5 (4 m/s) and Revise_6 (6 m/s),
you may set as below:

Speed_5=5.66, Revise_5=0.997, Speed_6 and Revise_6: no change.
Or Speed_6=5.66, Revise_6=0.997, Speed_5 and Revise_5: no change.

3.11.2 Converter Settings

```
Back   Bsc   Sensor
Zero   Trim   [Conv]
Spec   Bluetooth
                 Exit
```

Converter
Press ▷ or △ to choose options and press ᴱᴺᵀ to enter chosen parameter settings.

│ ENT

```
Converter  NO.


        A[0]0000000
```

Converter No.
Press ▷ to move cursor and △ to change value; do not change it at will.

│ ENT

```
Converter  Factor


        [0].35000
```

Converter Factor KC
KC is the calibration value of full tube. It's not allowed to be changed by anyone unless representative/original factory technician.
Press ▷ to move cursor and △ to change value.

│ ENT

```
Coil    current (A)


        [0].1620
```

Excitation Current Ic(A)
Ic is the factory calibration current, It's not allowed to be changed by anyone unless representative/original factory technician.
Press ▷ to move cursor and △ to change value.

│ ENT

```
Coil    Freq (HZ)

3.125          [6.25]
12.5            25
```

Coil Frequency (Hz)
Press ▷ or △ to choose coil frequency, default value: 6.25.

│ ENT

```
Power    Freq(HZ)

[50HZ]          60HZ
```

Power Frequency (HZ)
Press ▷ or △ to choose power frequency.

│ ENT

```
PGA

x1.  x2.  x4.  [x8.]
```

Gain Settings
Press ▷ or △ to choose Gain Settings.
Hold ᴱᴺᵀ for 5s to return to main window.

3.11.3 Special

```
Back   Bsc   Sensor
Zero   Trim   Conv
Spec   Bluetooth
              Exit
```
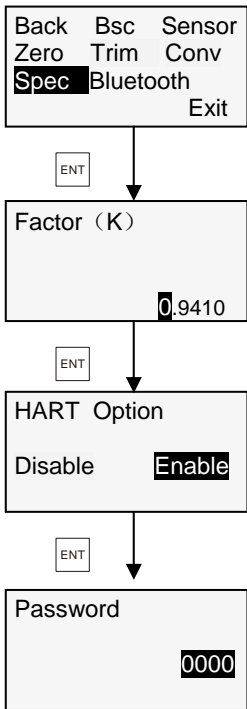
Spec
Press ▷ or △ to choose special option and press ᴇɴᴛ to enter settings.

↓ ENT

```
Factor（K）


          0.9410
```

Factor (K)
This factor is the reciprocal value of sensor factor KS. It's the factory calibration value. It's not allowed to be changed by anyone unless representative/original factory technician.
Press ▷ to move cursor and △ to change value.

↓ ENT

```
HART  Option

Disable      Enable
```

HART Function
Press ▷ or △ to enable or disable HART function, and then press ᴇɴᴛ to confirm.

↓ ENT

```
Password


          0000
```

Password
Press ▷ to move cursor and △ to change value. Press ᴇɴᴛ to confirm. This is used to set HART communication password. **Hold ᴇɴᴛ for 5s to return to main window.**

3.11.4 Bluetooth Settings

```
Back   Bsc   Sensor
Zero   Trim   Conv
Spec   Bluetooth
              Exit
```
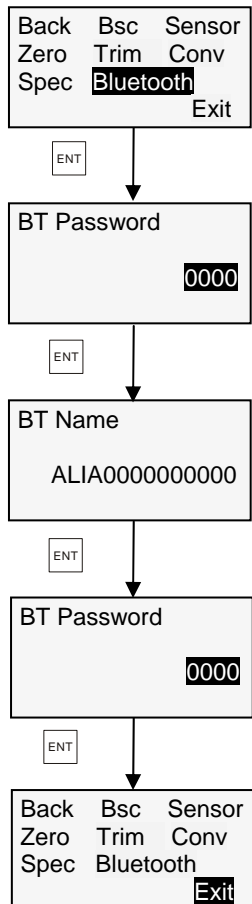
Bluetooth
Press ▷ or △ to choose Bluetooth option and press ᴇɴᴛ to enter settings.

↓ ENT

```
BT Password

          0000
```

Bluetooth Password
Press ▷ to move cursor and △ to change value. Press ᴇɴᴛ to confirm. This is used to change Bluetooth password between converter and Bluetooth app. Do not change it at will.

↓ ENT

```
BT Name

    ALIA0000000000
```

Bluetooth Name
Press ▷ to move cursor and △ to change Bluetooth name. Press ᴇɴᴛ to confirm.
The modified Bluetooth name will take effect when the converter is powered on again.

↓ ENT

```
BT Password

          0000
```

Bluetooth Password
Press ▷ to move cursor and △ to change value. Press ᴇɴᴛ to confirm. This is used to change Bluetooth password between converter and Bluetooth app. Do not change it at will.
Hold ᴇɴᴛ for 5s to return to main window.

↓ ENT

```
Back   Bsc   Sensor
Zero   Trim   Conv
Spec   Bluetooth
              Exit
```

Exit
Choose cursor to exit.

3.12 Batch Control

Σ 123.456 m3 **+0.0000**m3/h 📖 ✐	Under normal display interface, hold ᴇɴᴛ for 5s and release to enter parameter setting interface.

ENT

Password 0000	Password Input password 0000 and press ᴇɴᴛ to confirm.

ENT

Language 争既 **ENGLISH** 纏侯 ESPAÑOL	Language Press ▷ or △ to choose language.

ENT

Total Units /h **m3** L mL lgal gal Mgal bbl ft3 …	Totalizer Units Press ▷ or △ to choose totalizer units. 0: m3 1: L 2: mL 3: lgal 4: gal 5: Mgal 6: bbl 7: ft3 8: a-ft 9: t 10: kg 11: g 12: lb 13: Ston 14: LTon

ENT

Time Units m3 Sec min **hour** day	Time Units Press ▷ or △ to change cursor, and press ᴇɴᴛ to choose time units.

ENT

URV (FS) m3/h **7**0.0000	Range Limit Set range limit, namely 4-20mA. 20mA corresponds to max. range and max. frequency output. Press ▷ to move cursor, and press △ to change value.

ENT

Low Cutoff (%fs) **1**.0	Low cutoff Press ▷ to move cursor, press △ to change value. Choose proper low cutoff value. Setting limit: 0.0% ~ 9.9% E.g., flow range is set to 100m3/h and low cutoff is set to 1%. If flow rate is lower than -1m3/h~+1m3/h, it would be cutoff and converter shows 0 flow rate.

ENT

Damping (s) **0**1	Damping Press ▷ to move cursor, and press △ to change value. Setting limit: 01 ~ 99s, default value is 2s. You can set damping here when flow rate has a large fluctuation, the greater the damping, the slower the flow rate changes.

ENT

Hydro-State **Normal** Waved	Fluid State Press ▷ or △ to choose fluid state: Normal, Waved.

ENT

Direction Fwd. **Bid.**	Direction Press ▷ or △ to choose flow direction. 1. forward 2. bidirectional

ENT

Indication	Indication
Fwd **Rev**	Press ▷ or △ to choose flow indication. 1. forward 2. Reverse

[ENT]

Empty Detect	Empty Detection
NO **YES**	Press ▷ or △ choose Yes nor No.

[ENT]

Empty Limit (%)	Empty Limit
50	Press ▷ to move cursor, and press △ to change value.

[ENT]

PIO Interface	PIO Interface
Passive Active **Alram** Input	Press ▷ or △ to choose output type (F+ F-). 1. passive pulse 2. active pulse 3. alarm output 4. contact input

[ENT]

Alarm Select	Alarm Selection
UPPER LOWER DIR **BAT**	Press ▷ or △ to choose"BAT". 1. upper limit 2. lower limit 3. Direction 4. Batch Control

[ENT]

Pulse Type	Contact Mode
Normally Closed Normally Open	Press ▷ or △ to choose: 1. normally closed 2. normally open **Hold ENT for 5s to return to normal display.**

[ENT]

Σ 123.456 m3 +0.0000m3/h ꀀ ⌀ ⚒	Press ▷ or △ to choose ⚒ and then enter batch control.

[ENT]

Batch Control	Batch Control
SET AUTO MANUAL EXIT	Press ▷ or △ to choose SET option.

[ENT]

Batch Value(m3)	Batch Value (m3)
1.00000	Press ▷ to move cursor and △ to change value.

[ENT]

Batch Control	Batch Control
SET **AUTO** MANUAL EXIT	Press ▷ or △ to choose MANUAL or AUTO mode.

```
┌─────┐
│ ENT │ ────────────┐
└─────┘             ▼
```

| SET   1.000m3
RUN   0.050m3
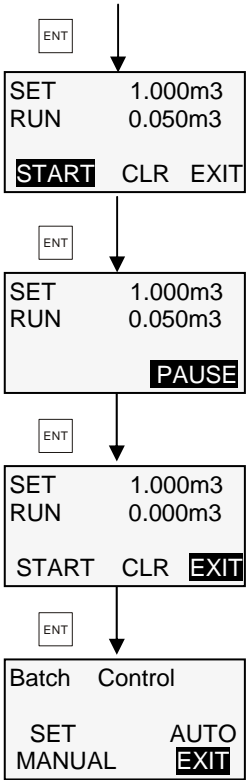
START CLR EXIT | Batch Control
Press ▷ or △ to choose START option.
If choose CLR, actual flow rate will be cleared to zero. |

```
┌─────┐
│ ENT │ ────────────┐
└─────┘             ▼
```

| SET   1.000m3
RUN   0.050m3

        PAUSE | Batch Control
Press ENT to stop flow measuring. |

```
┌─────┐
│ ENT │ ────────────┐
└─────┘             ▼
```

| SET   1.000m3
RUN   0.000m3

START CLR **EXIT** | Batch Control
Choose START to continue the measuring that is suspended last time.
Exit batch control. |

```
┌─────┐
│ ENT │ ────────────┐
└─────┘             ▼
```

| Batch Control

 SET   AUTO
MANUAL   **EXIT** | Batch Control
Press ▷ or △ to choose EXIT.
Press ENT to return to normal display interface. |

26

4. AMC3200 APP Software

1. AMC3200 converter and android phone (should be android system)
2. Operation procedures
① Install the app on cell phone (android)
② Enable Bluetooth after app is successfully installed.
③ Enter the app as shown below:
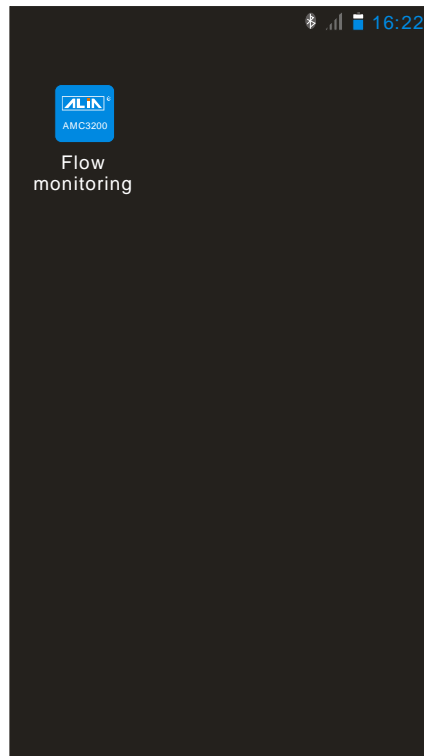
④ Three modes available:

Read-write mode: read and write any parameters in converter (default mode). If enter the wrong Bluetooth password, you will be prompted to enter in read-only mode.

Terminal mode: Use PC software to realize remote monitoring through IP address.

Client mode: Use APP to realize remote monitoring through IP address.
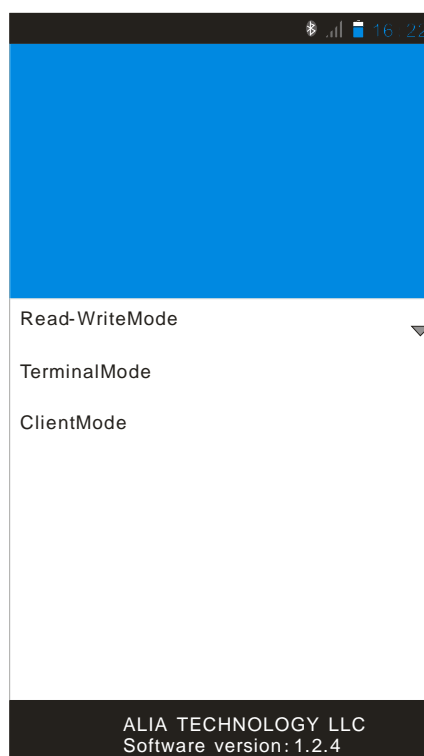
⑤ If parameters are to be changed, please choose read-write mode and then choose login. Cell phone will search device automatically. See pictures below.
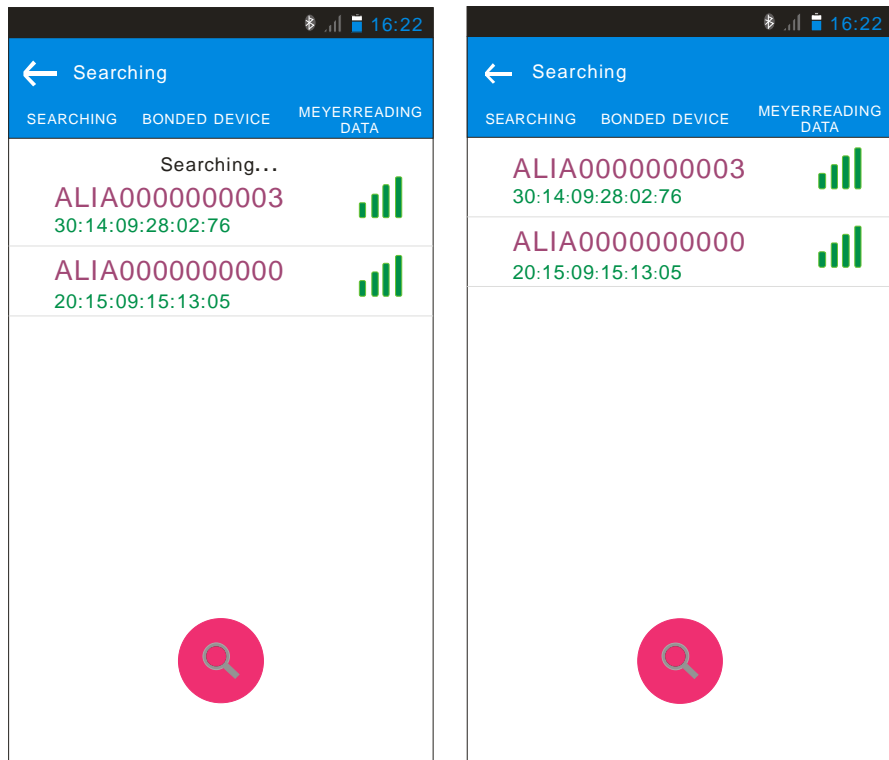
⑥ After converter's name is searched (such as ALIA0000000003), press it and enter PIN code 1234. This code is the Bluetooth identification between cell phone and converter and needs to be entered every time they connect. You don't have to enter the code if this interface does not appear. See picture below.
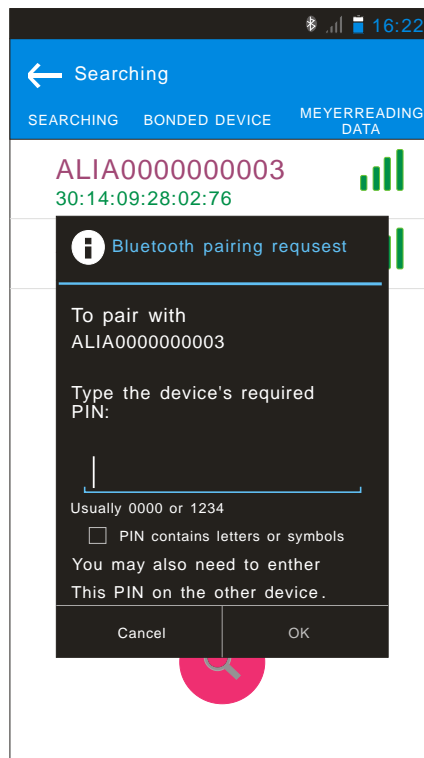
⑦ After entering system, you will see Bluetooth name in the middle of upper interface, mode in upper right interface, flowmeter version, password and nickname in bottom interface.

Set Nickname: you can set a nickname for AMC3200, and this won't change the Bluetooth name. The nickname will be displayed only after Bluetooth name. For example, if you set AMC3200's nickname as "flow", the Bluetooth name will become ALIA0000000003 (flow). See picture below:
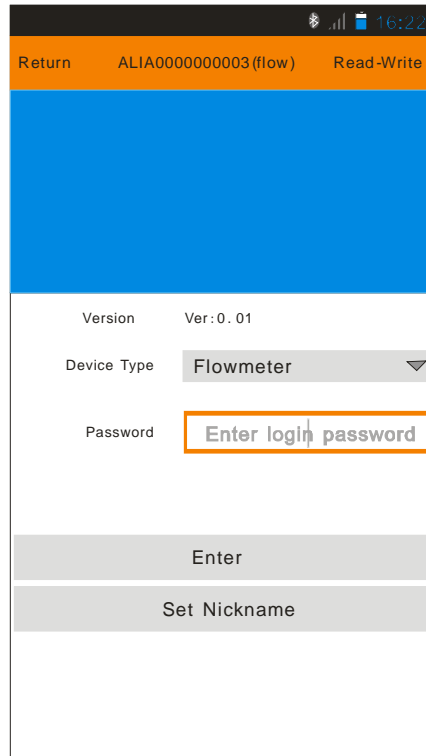
⑧ Only the input password is conformed to Bluetooth password can parameters be changed. Password is defaulted to be 0000. If you forget your password, please enter Bluetooth option of advanced settings in converter to check the Bluetooth password. If password is input wrong in APP, it will give a warning to enter read-only mode. See picture below:
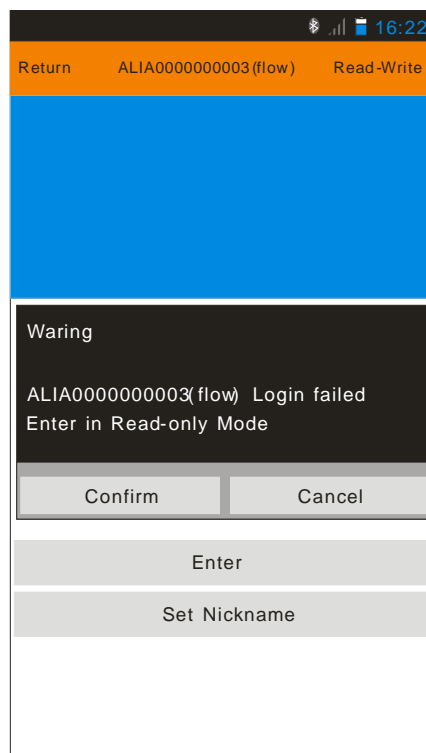
⑨ Once Bluetooth password is conformed, system will be as below:
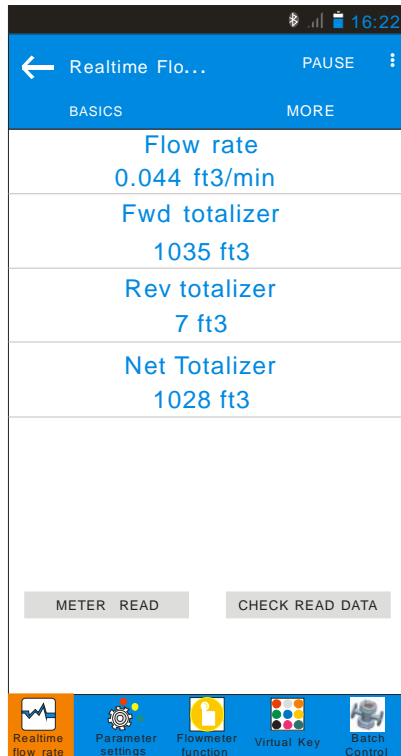
⑩ Menu (7 functions in bottom screen)

Fist function: Real-time flow rate. Slide to the left/right to shift interface so as to check real-time flow rate such as totalizer, flow rate, output current and output frequency. Data can be shared to your email or software through its billing function.
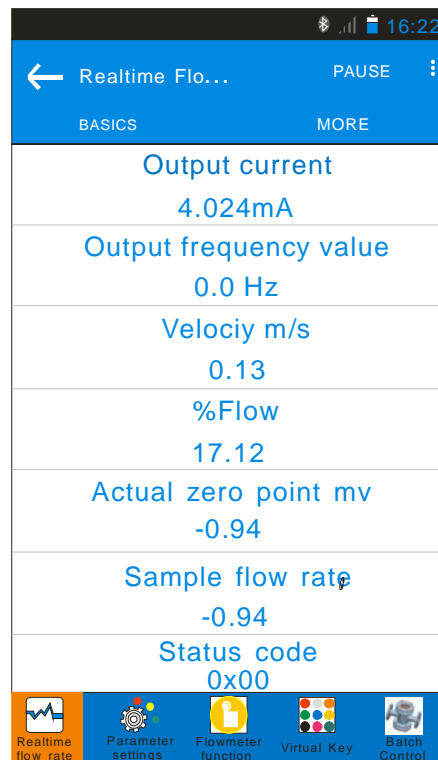
Second function: Parameter settings. 5 options inside: basics, interface, communication, sensor and converter. Or user can slide the screen to left/right to shift these options.
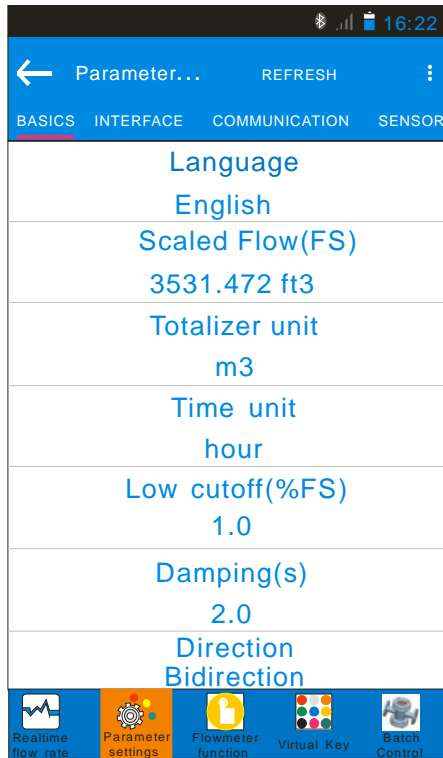
A.   For example, if totalizer unit ft3 is to be changed to m3:
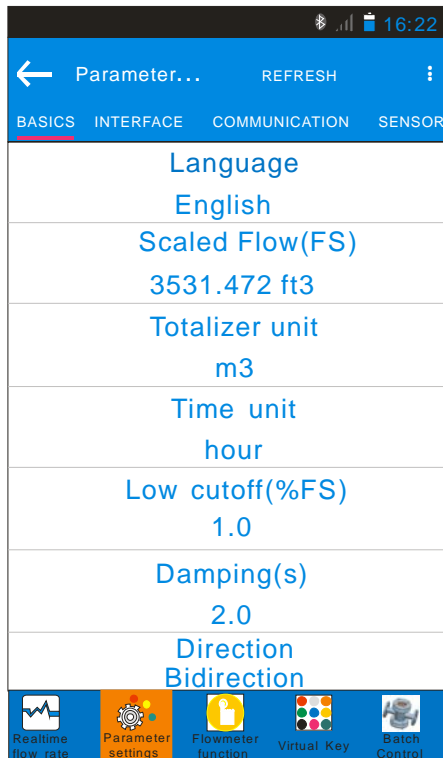
B. Press the column of "Totalizer unit" and change unit to m3:
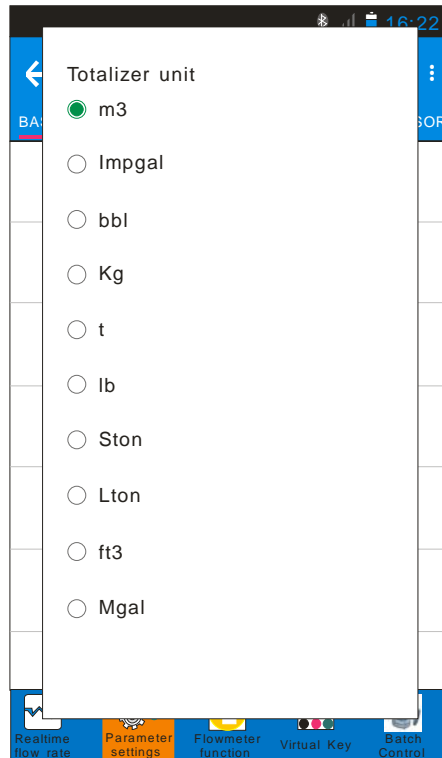
C. After pressing "confirm", screen will be shown as below. The unit before arrow is current unit while after is the changed m3. Click "set" to finish settings.
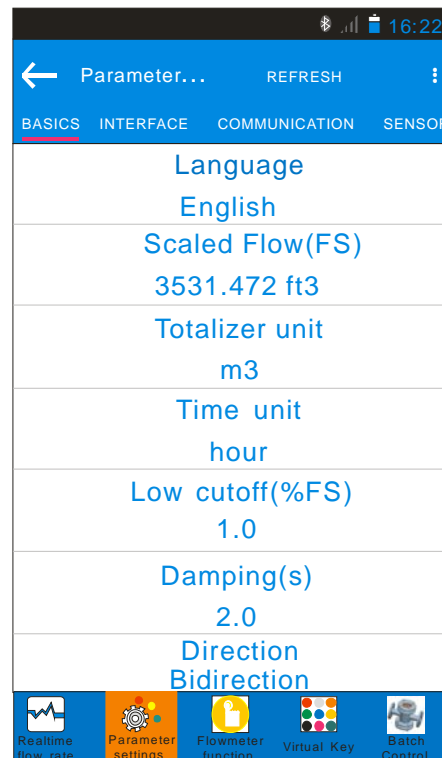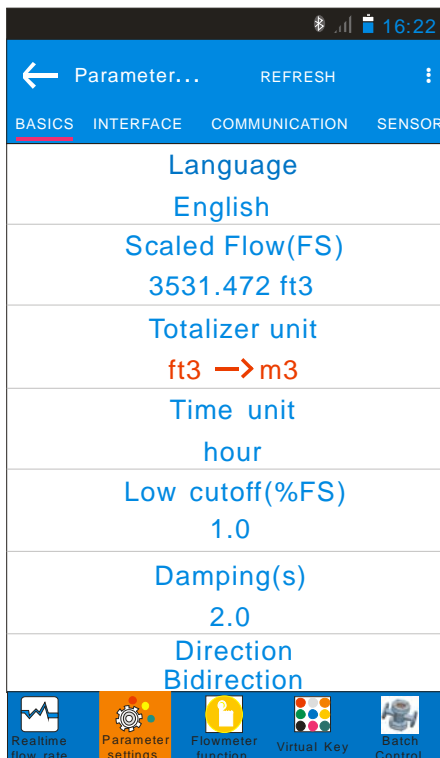
Third function: Flowmeter function. 3 options inside: Basics, Empty Pipe and Calibration. You can slide screen to the left/right to shift interface.

Fourth function: Virtual keys. 3 virtual keys and 3 keys on converter have the same functionality.
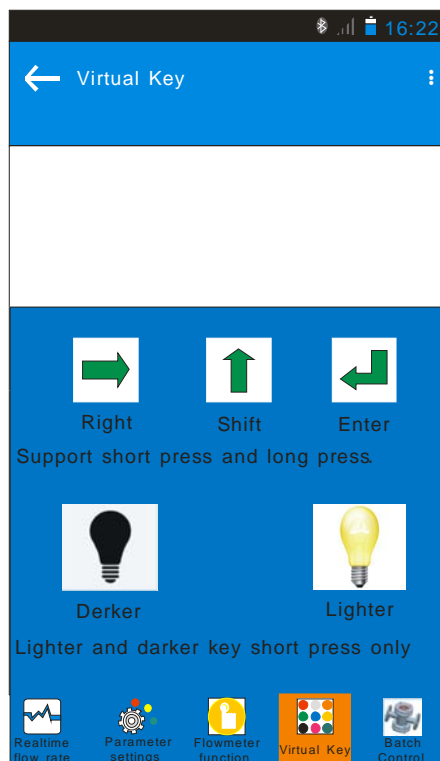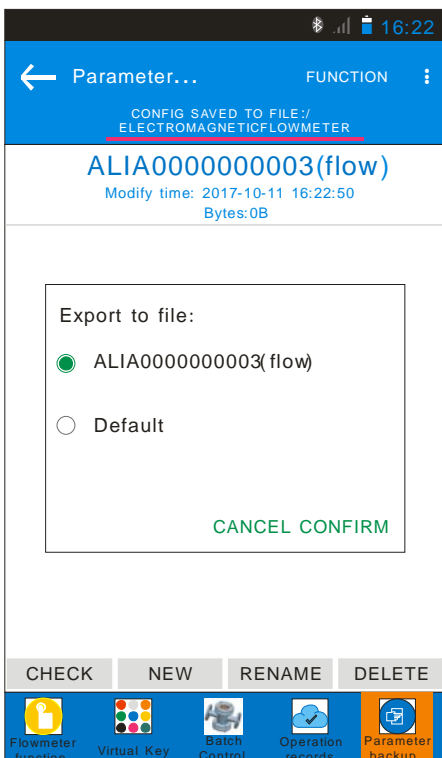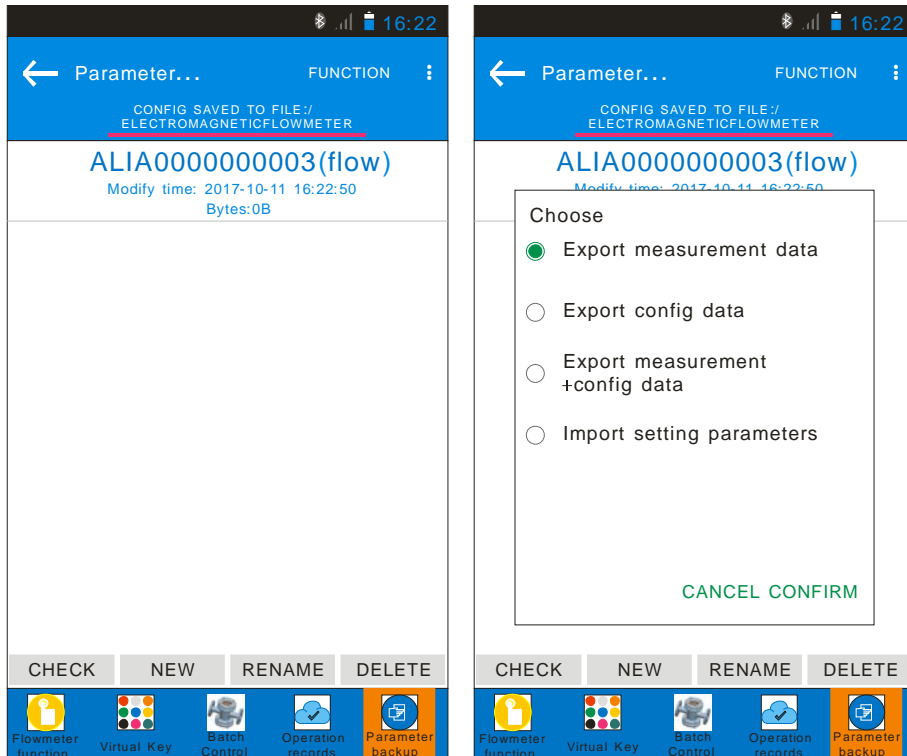
Fifth function: Batch control. You can set batch control here when converter is set to batch control.
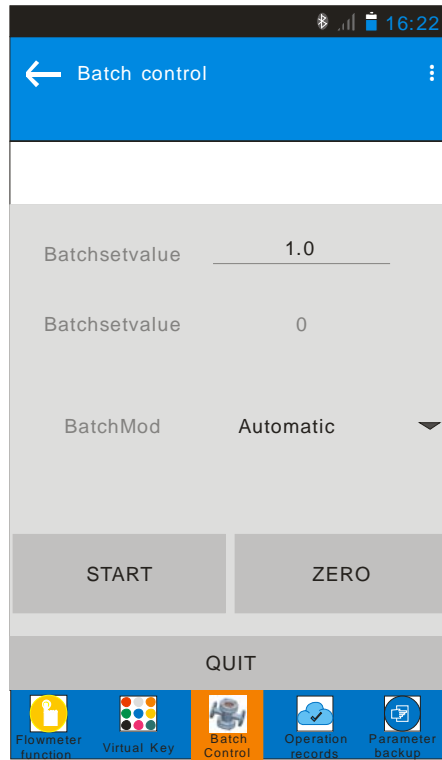
Sixth function: Operation records.
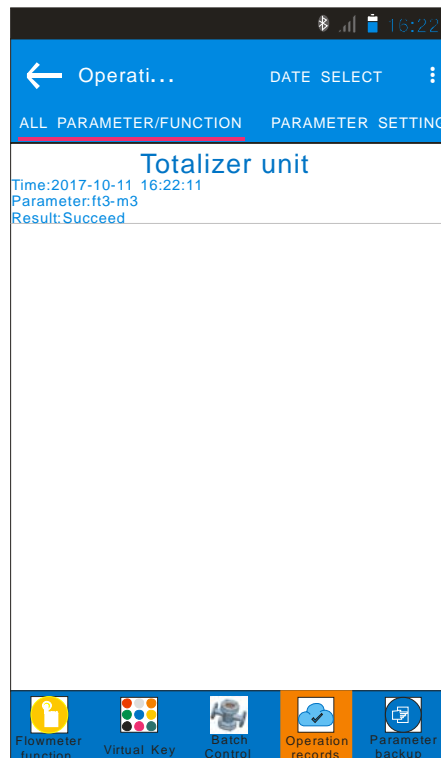
Seventh function: Parameter backup. Recreate a file and rename it. Press "Function" in upper part to choose: export measurement data, export config data, export measurement config data and import setting parameters.
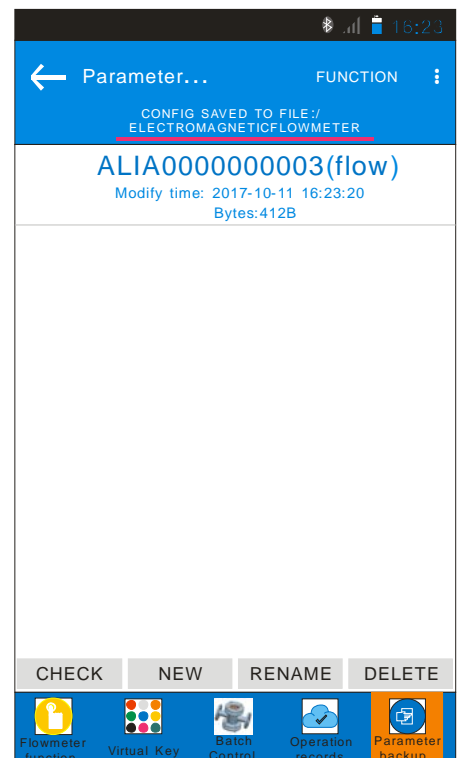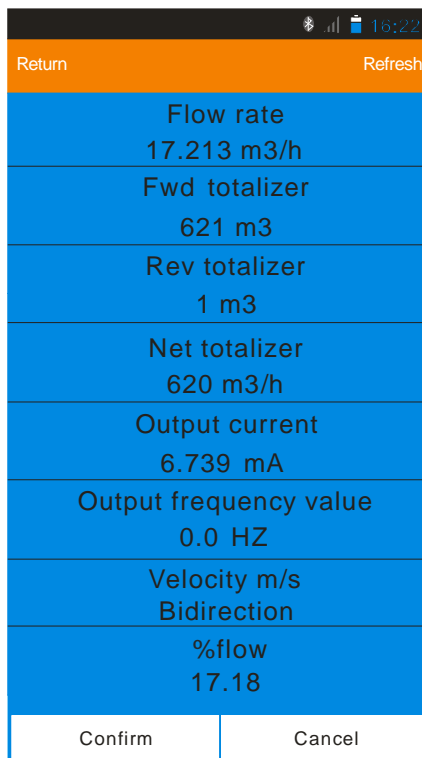
5. Common Alarm Code

	AMC3200 Alarm Table		
Code	Content	Meaning	Solution
2	Overflow	Over range	Increase range
4	Over upper limit	More than setting upper limit	Turn off alarm output or increase alarm upper limit
6	Overflow, over upper limit	More than setting upper limit Over range	Increase range Turn off alarm output or increase alarm upper limit
8	Over low limit	Less than setting low limit	Turn off alarm output or decrease alarm low limit
10	Overflow, over low limit	Over range Less than setting low limit	Increase range Turn off alarm output or decrease alarm low limit
16	Empty pipe	Empty pipe alarm	Please check pipe and make sure it's full
128	Storage	EEPROM fault	Internal storage malfunctioned, send CPU board to ALIA for repair

6. APP Download Link

Link 1: scan QR code to download.

Link 2: click the following link to download:
http://www.alia-inc.net/download/alia/amc3200/alia_AMC3200.apk

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