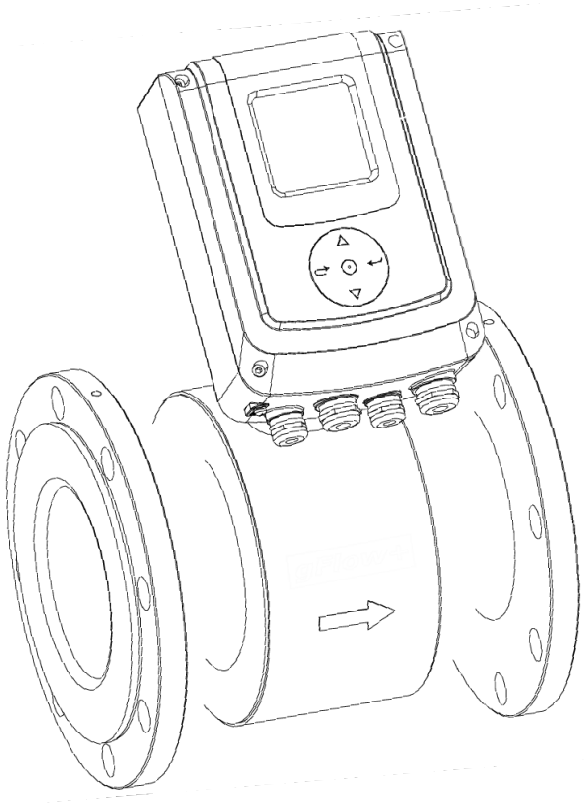
gFlow+ IF800
High Performance
Electromagnetic Flowmeter



User Instruction Manual

Table of contents

1 About this document

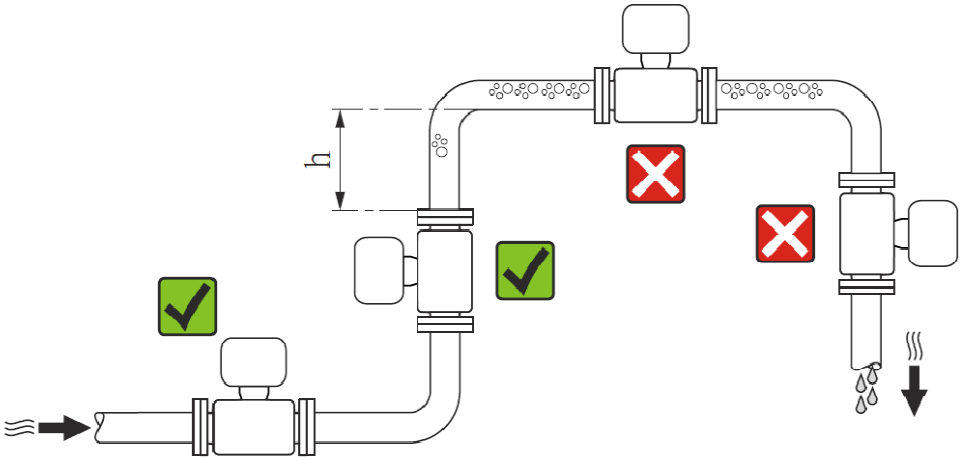
Type of information symbols

	Permitted
	Preferred
	Forbidden
	Tip or note

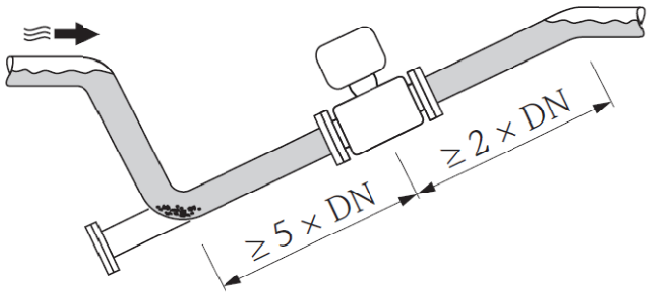
2 Installation

2.1 Mounting location

An accurate flow measurement always comes from careful installation of flowmeter. The meters are designed to give an empty pipe alarm should one or more electrodes become exposed. Air bubbles, sediment and other solids in the pipe can also cause false or instable readings.



For partially filled pipes, installation of flowmeter should set up as following guideline:



The empty pipe detection (EPD) function offers additional protection by detecting empty or partially filled pipes.

2.2 Mounting conditions

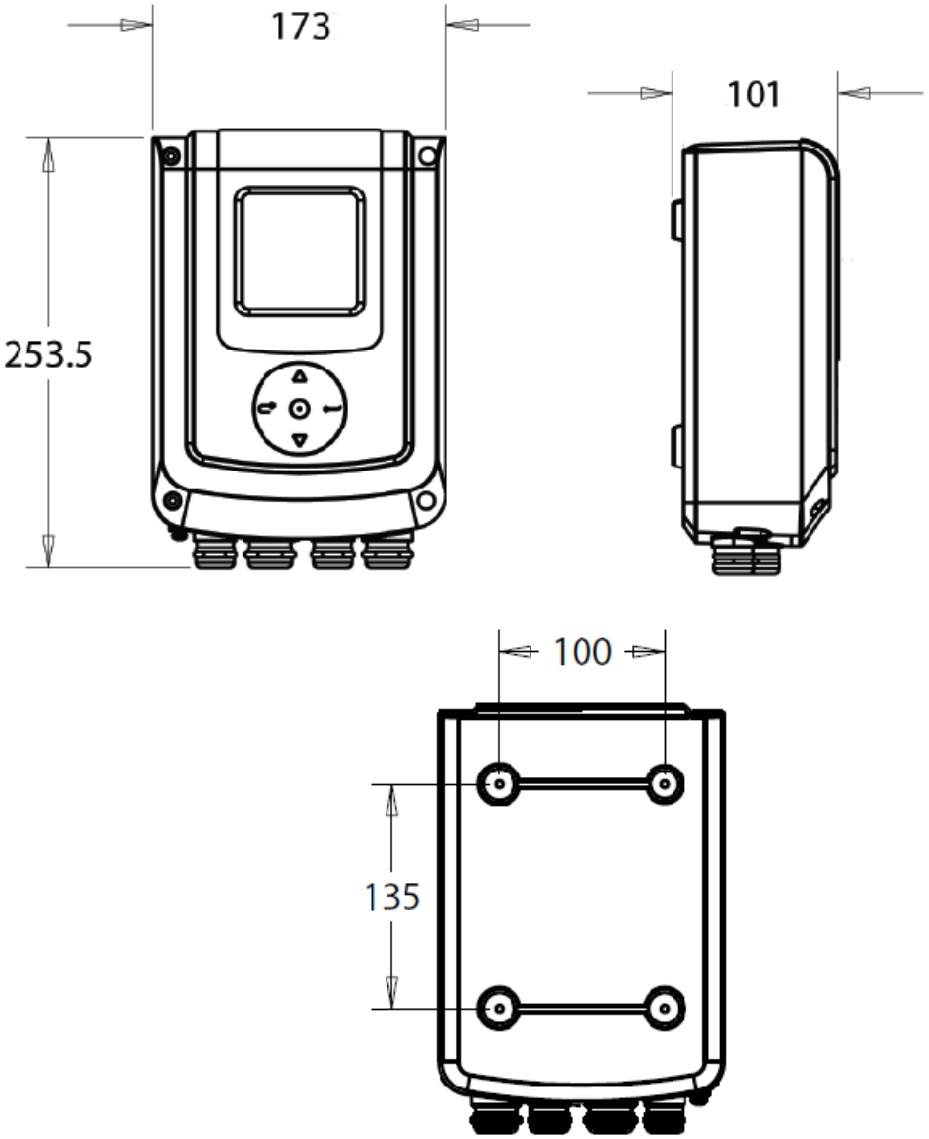
As best practice, minimum length of straight pipe at the meter inlet must be 2 times the pipe diameter and 1 times the pipe diameter at the meter outlet; this includes pipe lengths for control valves. Expansion joints can be installed in the pipeline after the meter.

If operating outdoors:

- Install the measuring device in a shady location.
- Avoid direct sunlight, particularly in warm climatic regions.
- Avoid direct exposure to weather conditions.
- Protect the display against impact.
- Protect the display from abrasion by sand in desert areas.

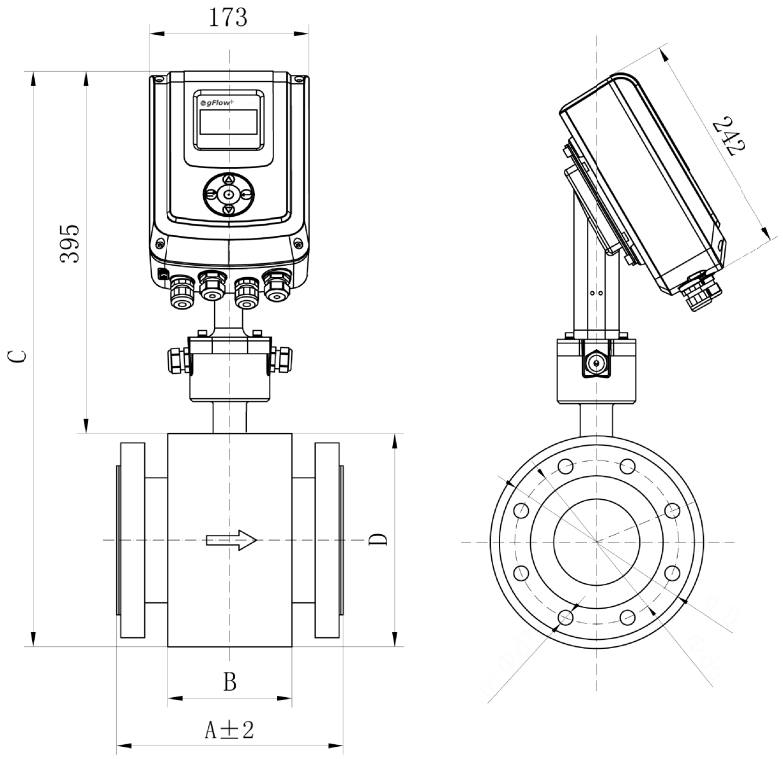
2.3 Installation dimensions

2.3.1 Transmitter dimension

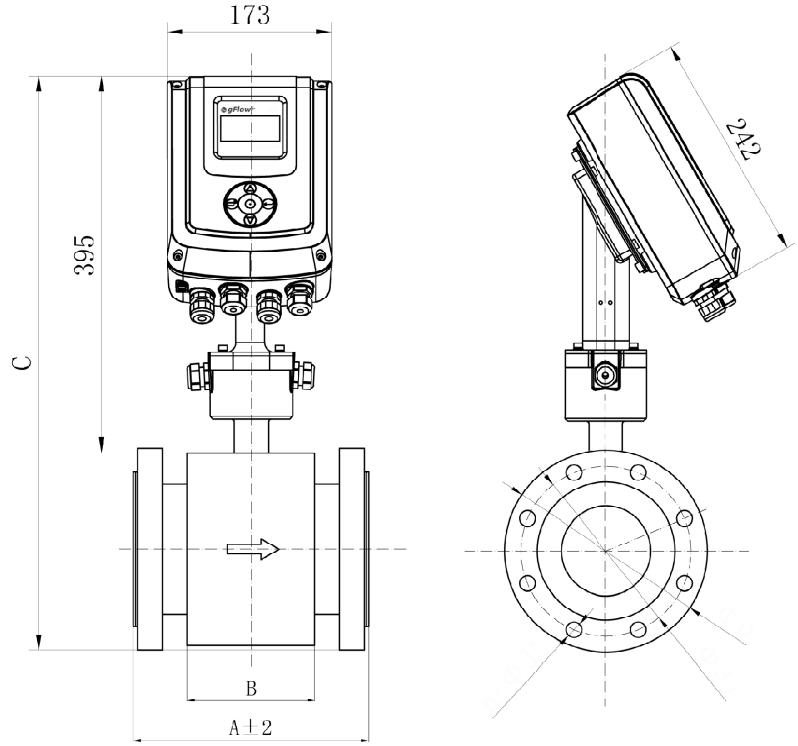


Unit: mm **Mounting Hole:** M4 thread x4

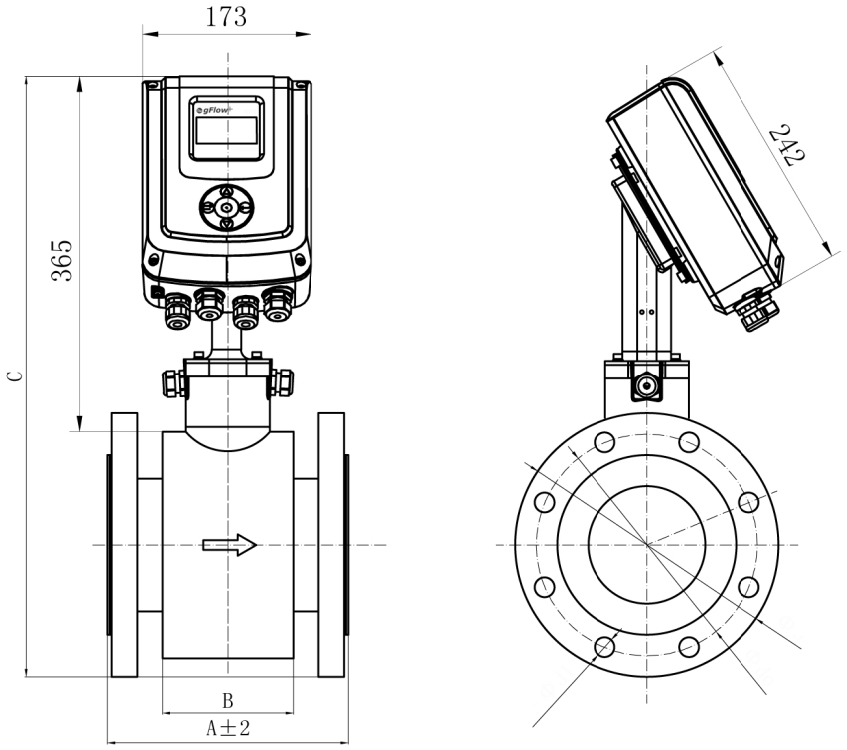
2.3.2 Sensor with integrated transmitter



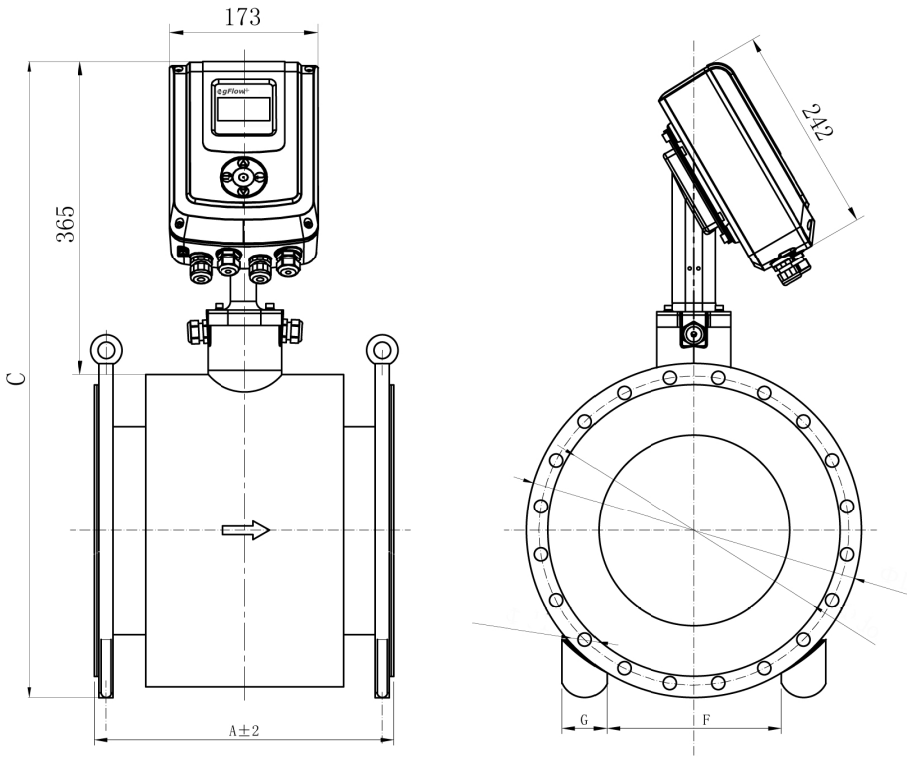
DN	Inch	B(mm)	A±2(mm)	C(mm)	D(mm)
10	3/8	68	150	525	110
15	1/2				
20	3/4				



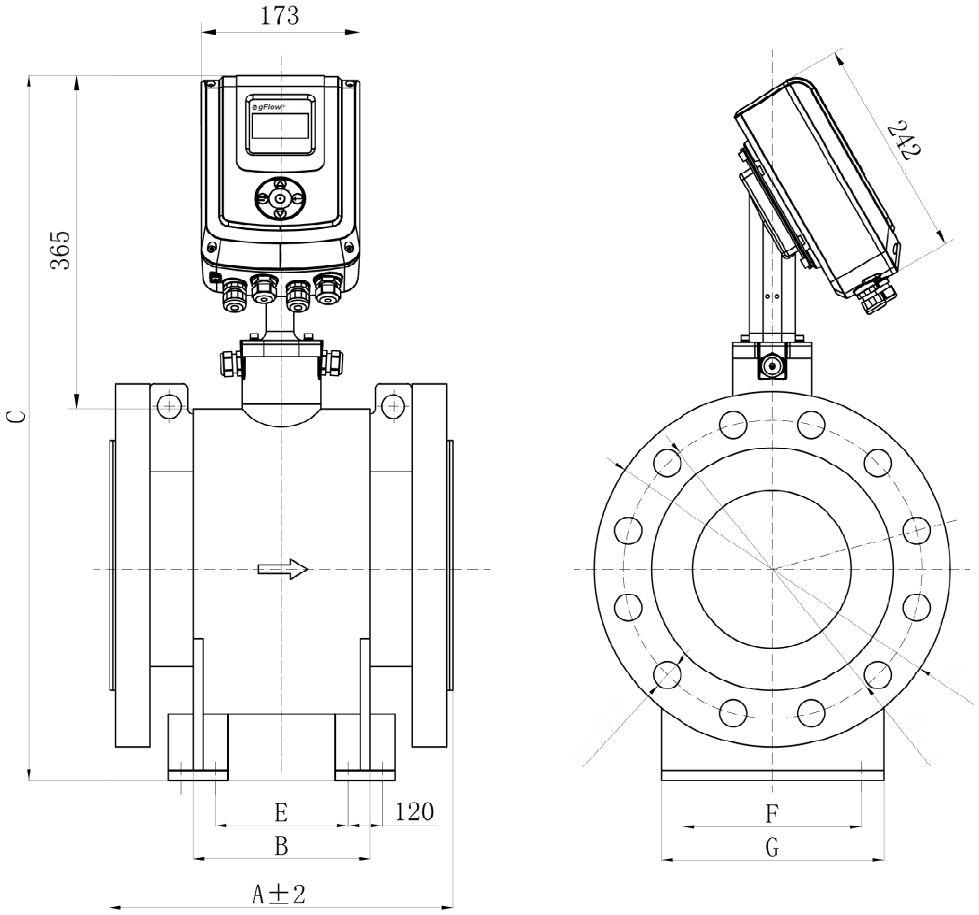
DN	Inch	B(mm)	A±2(mm)	C(mm)
25	1	66	150	559
32	1 1/4			576
40	1 1/2			586
50	2	102	200	563
65	2 1/2			582



DN	Inch	B(mm)	A±2(mm)	C(mm)
80	3	102	200	564
100	4	122	250	576
125	5	138	250	603
150	6	176	300	637
200	8	202	350	688
250	10	222	400	740
300	12	312	500	785
350	14	312	500	845
400	16	392	600	909
450	18	402	600	959

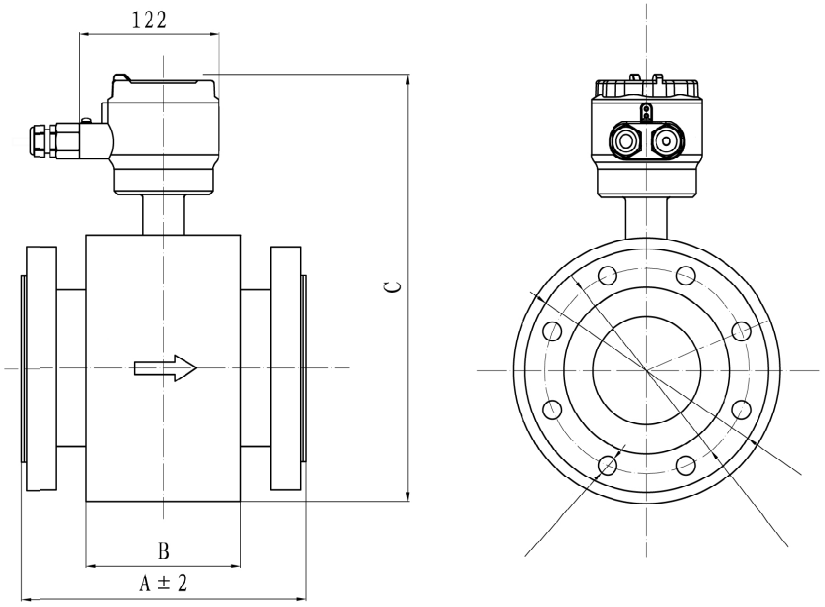


DN	Inch	A±2(mm)	C(mm)	F(mm)	G(mm)
500	20	600	1079	367.8	120
600	24	600	1184	399.4	
700	28	700	1299	436.0	
800	32	800	1396	466.2	150
900	36	900	1506	549.5	
1000	40	1000	1594	579.0	
1100	44	1100	1689	592.6	
1200	48	1200	1804	621.2	
1400	56	1400	2017	539.9	
1500	60	1500	2118	555.8	
1600	64	1600	2217	572.9	

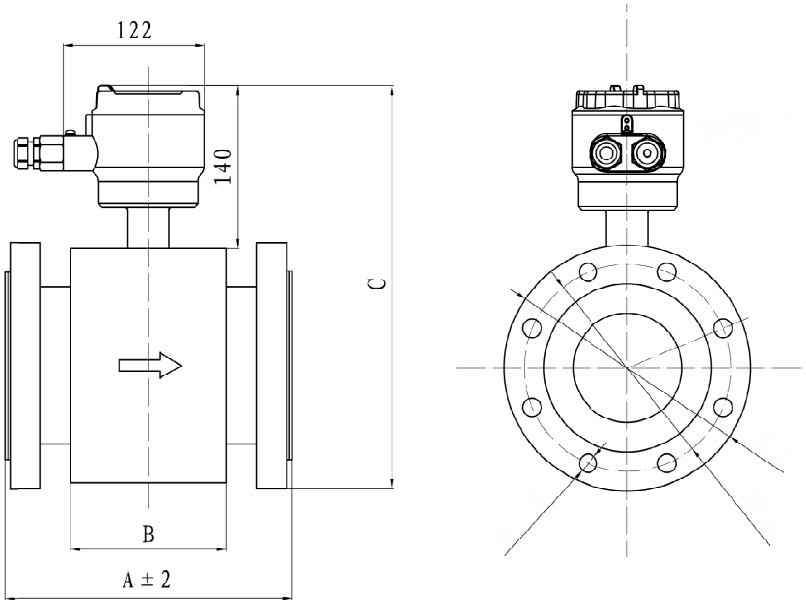


DN	Inch	A±2(mm)	B(mm)	C(mm)	E(mm)	F(mm)	G(mm)
1800	72	1800	1340	2488	1224	800	900
2000	80	2000	1510	2547	1382	1100	1200
2200	88	2200	1720	2757	1592		
2400	96	2400	1872	2977	1742	1300	1400
2600	104	2600	2022	3183	1892		
2800	112	2800	2172	3387	2042	1500	1600
3000	120	3000	2362	3593	2232		

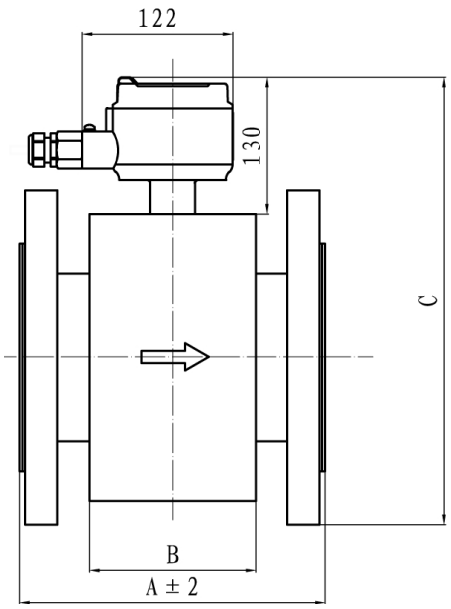
2.3.3 Sensor with remote transmitter

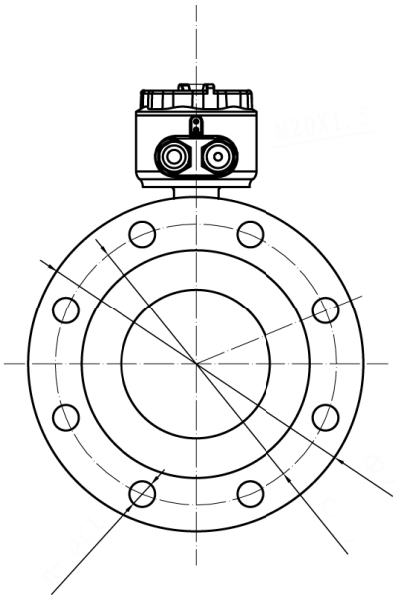


DN	Inch	B(mm)	A±2(mm)	C(mm)
10	3/8	68	150	250
15	1/2			
20	3/4			
25	1	66	150	254
32	1 1/4			271
40	1 1/2			281

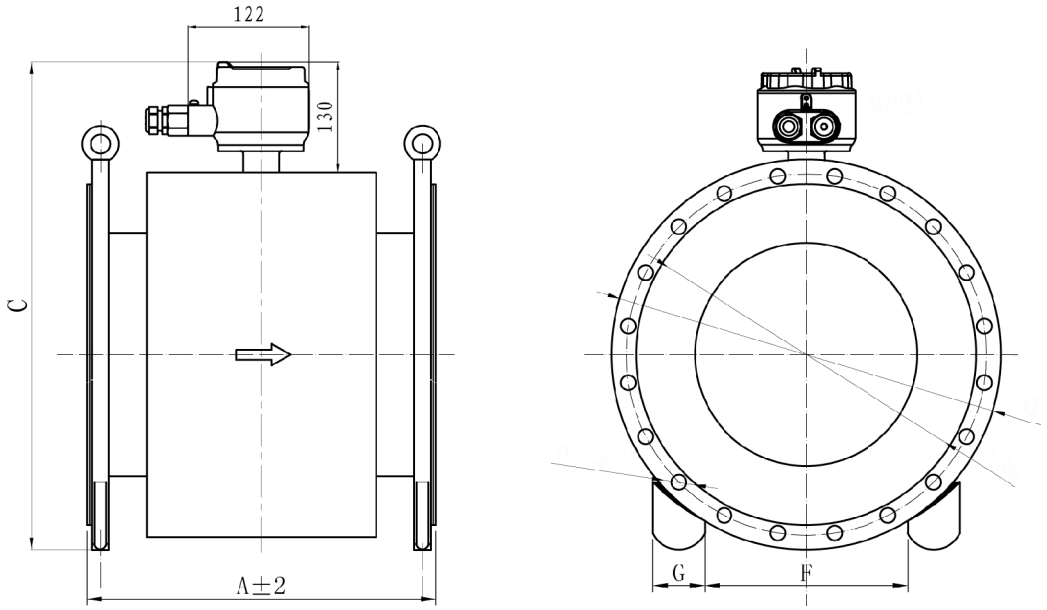


DN	Inch	B(mm)	A±2(mm)	C(mm)
50	2	102	200	299
65	2 1/2			318

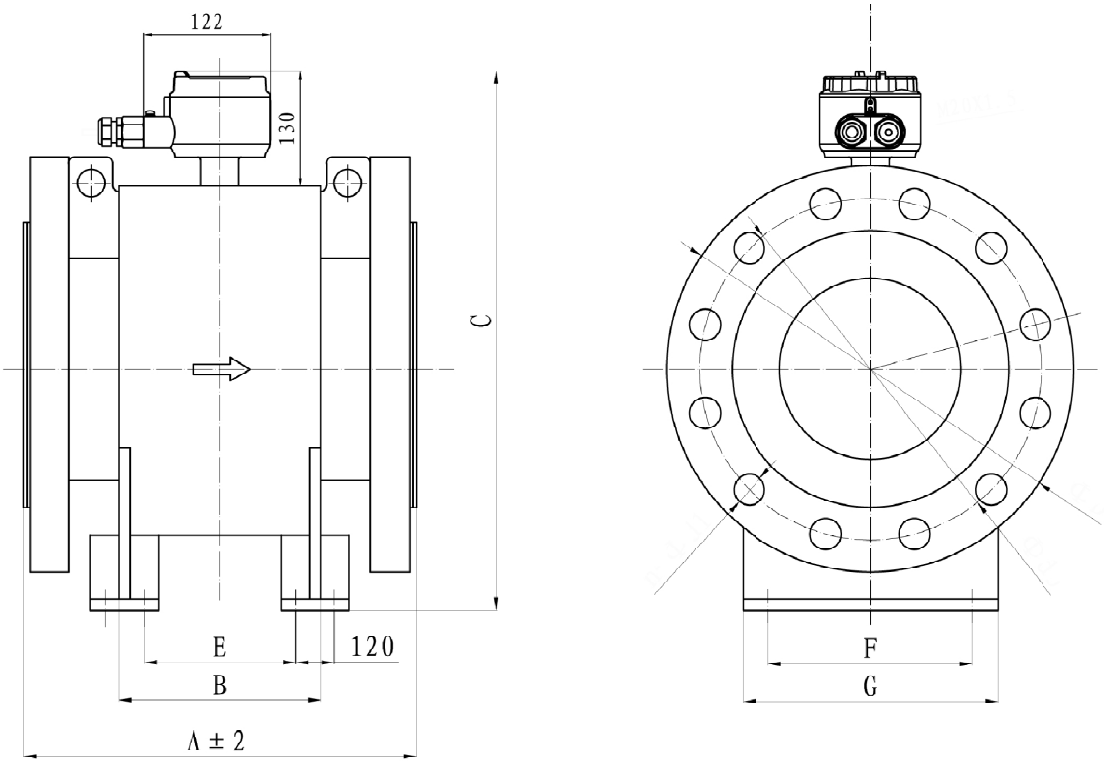




DN	Inch	B(mm)	A±2(mm)	C(mm)
80	3	102	200	320
100	4	122	250	341
125	5	138	250	368
150	6	176	300	402
200	8	202	350	453
250	10	222	400	505
300	12	312	500	560
350	14	312	500	610
400	16	392	600	674
450	18	402	600	724



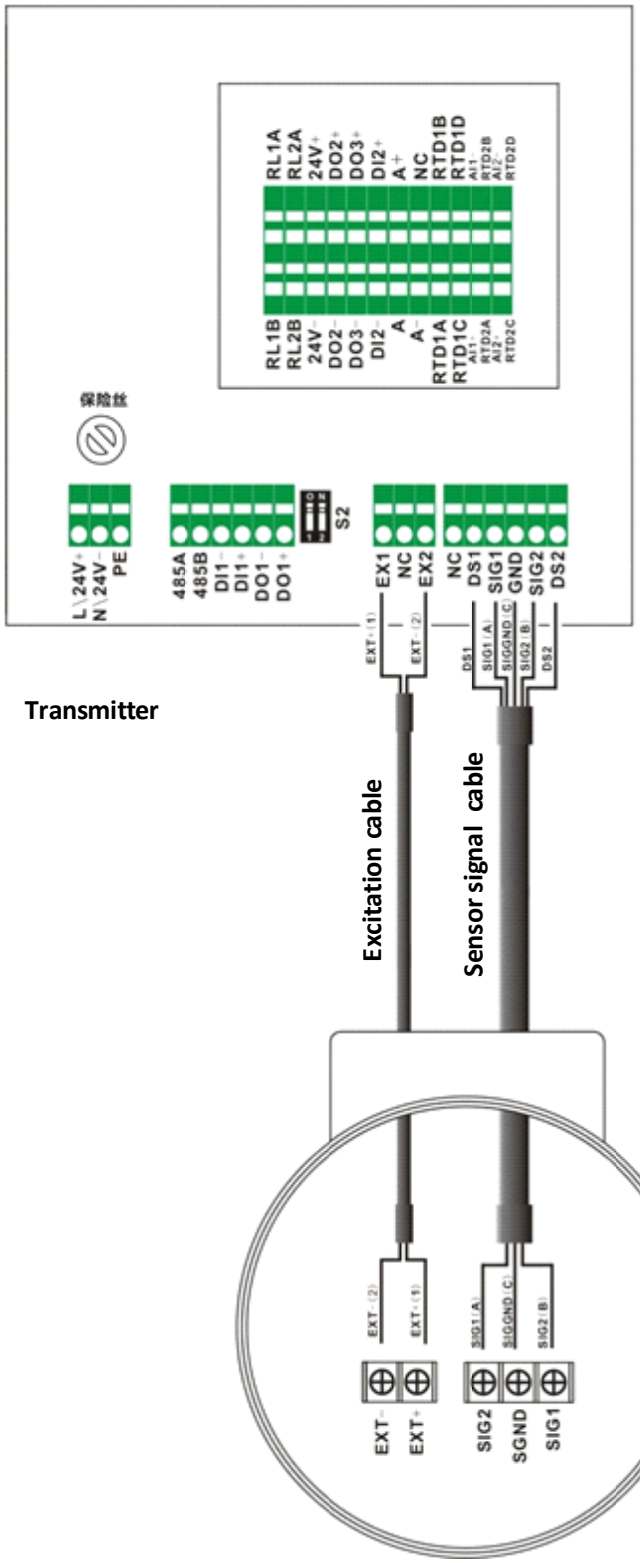
DN	Inch	A±2(mm)	C(mm)	F(mm)	G(mm)
500	20	600	844	367.8	120
600	24	600	949	399.4	
700	28	700	1064	436.0	
800	32	800	1161	466.2	150
900	36	900	1271	549.5	
1000	40	1000	1359	579.0	
1100	44	1100	1463	592.6	
1200	48	1200	1569	621.2	
1400	56	1400	1782	539.9	
1500	60	1500	1883	555.8	
1600	64	1600	1982	572.9	



DN	Inch	A±2(mm)	B(mm)	C(mm)	E(mm)	F(mm)	G(mm)
1800	72	1800	1340	2253	1224	800	900
2000	80	2000	1510	2469	1382	1100	1200
2200	88	2200	1720	2679	1592		
2400	96	2400	1872	2899	1742	1300	1400
2600	104	2600	2022	3105	1892		
2800	114	2800	2172	3309	2042	1500	1600
3000	120	3000	2362	3515	2232		

3 Electrical wiring

3.1 Wiring diagram for remote type transmitter

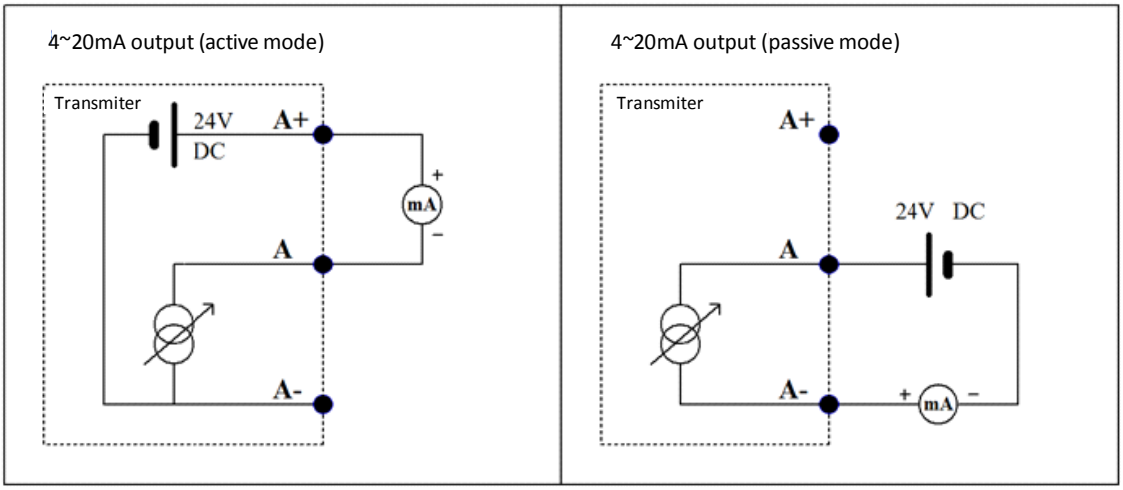


Digital output 1: DO1+, DO1-;
Active mode S2.2 ON; passive mode: S2.2 OFF
Digital output 2: DO2+, DO2-;
Digital output 3: DO3+, DO3-;

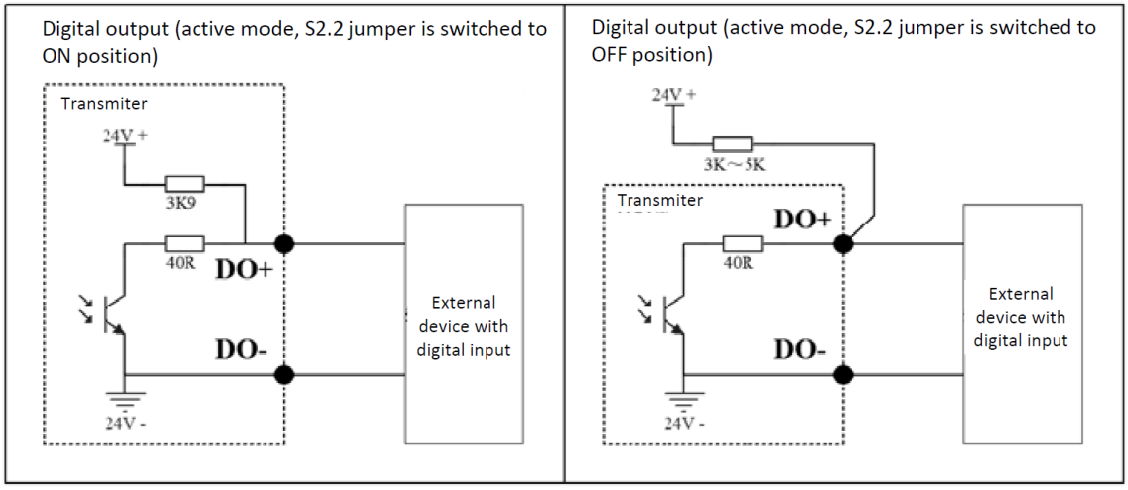
Digital input 1: DI1+, DI1-;
Active mode: S2.1 ON; passive mode: S2.1 OFF
Digital input 2: DI2+, DI2-; active

4~20mA output: A+, A (active mode)
A, A- (passive mode)
MODBUS: 485A, 485B

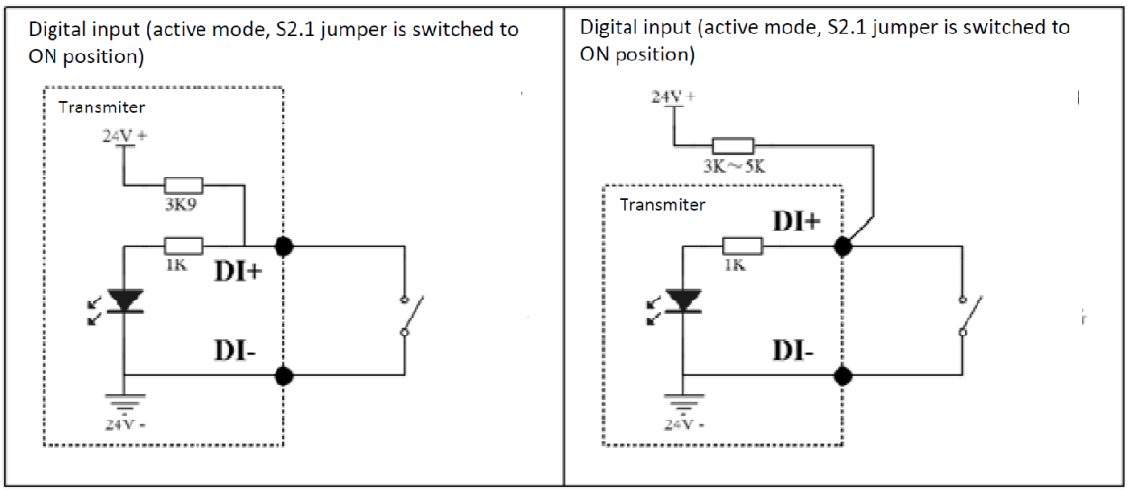
3.2 Wiring diagram for 4~20mA output



3.3 Wiring diagram for digital outputs



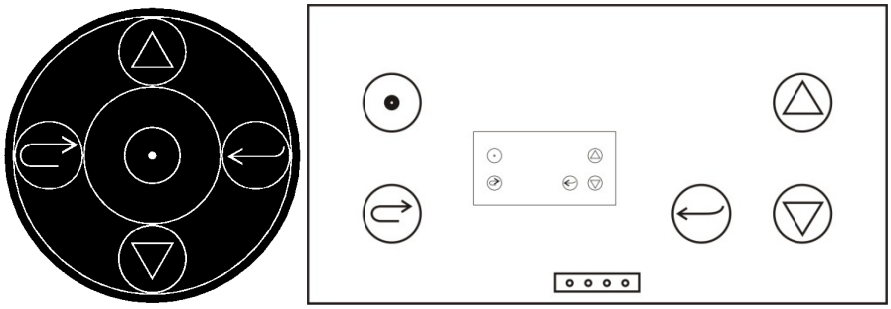
3.4 Wiring diagram for digital inputs



4 User menu operation

4.1 Basic operation

4.1.1 Keypad definition

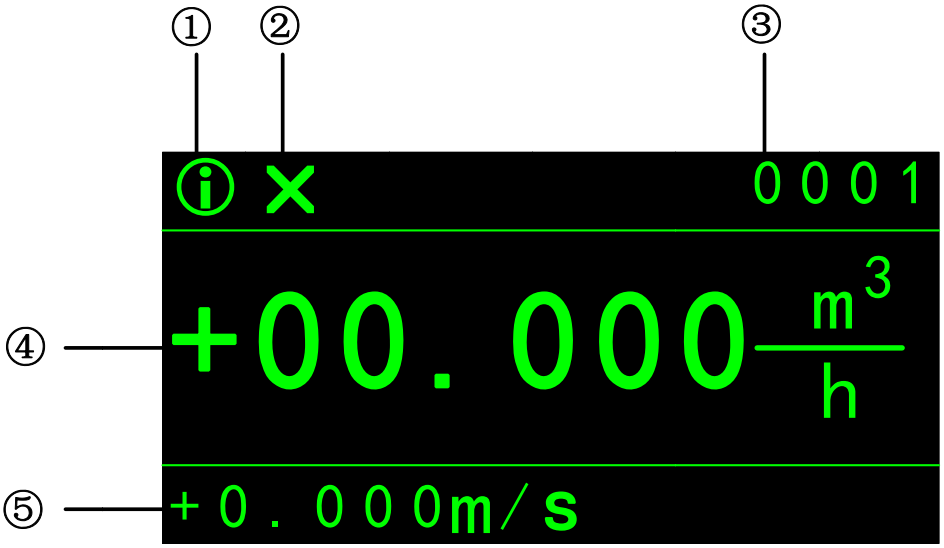


Capacitive touch screen and mechanical push button

Touch button	Push button	Description
		**Menu Key** Press this key to enter the main menu from main measurement screen. This key can also be used to go back to the main measurement screen from any menu.
		**Enter Key** Use this key to enter the menu items or character entry.
		**Up/Left Key** Use this key to move the cursor to up or left.
		**Down/Right Key** Use this key to move the cursor to down or right.
		**Back Key** Use this key to exit the menu item.

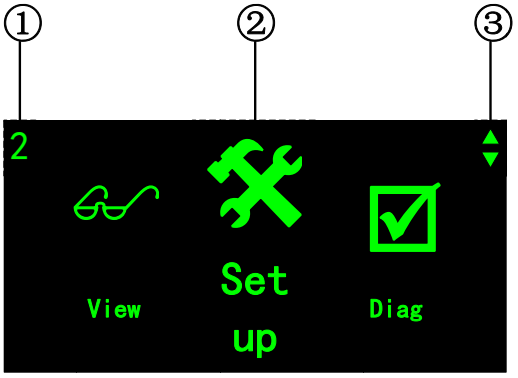
 Device will return to main measurement screen if no keypad activity in 2 minutes.

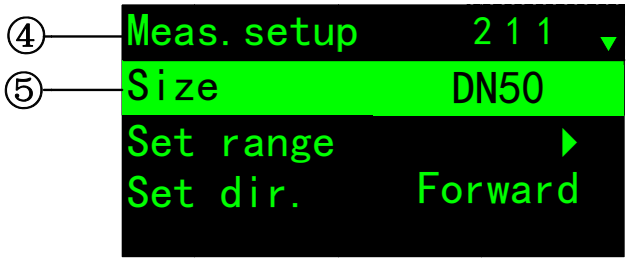
4.1.2 Main measurement screen



① Device warning information
② Device alarm information
③ Device tag
④ Measurement object line 1
⑤ Measurement object line 2

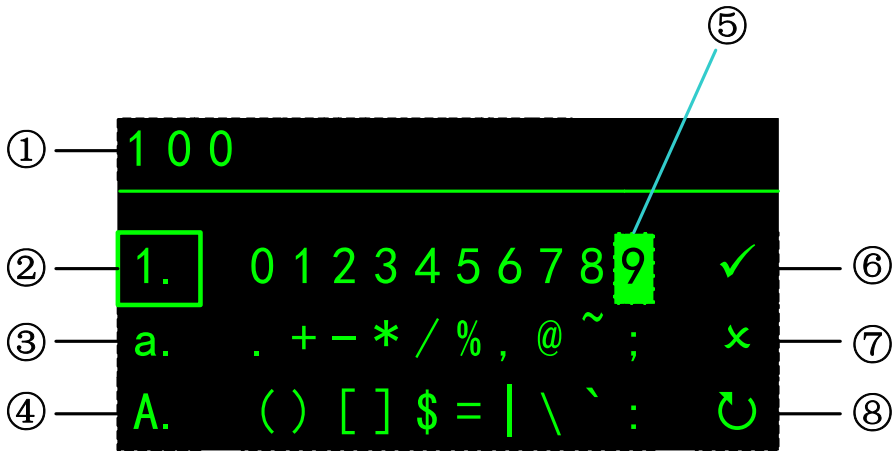
4.1.3 Menu and sub-menu structure





① Menu category code
② Menu category name
③ Operation indicator
④ Sub-menu name
⑤ Highlighted parameter

4.1.4 Soft-keypad for number/text entry



① Current entered content
② Number/symbol entry selection
③ Lower case text entry selection
④ Upper case text entry selection
⑤ Highlighted cursor on the text
⑥ Enter/Confirm and exit the soft-keypad
⑦ Cancel entry and exit soft-keypad
⑧ Clear current entry content

4.1.5 Factory default password

The factory default password to enter "Setup" menu is "0000". The factory default password to enter "Diag" menu is "88888". User can enter password setup menu to change the password and manage the access right.

5 Full menu function list

5.1 Main screen setup

Function	Setup /Description
Main screen page 1	Display main measurement objects and alarm/warning status of the meter. The display content can be configured in View menu.
Main screen page 2	Display user defined measurement objects.
Main screen page 3	Display current activated warning or alarm information
Main screen page4	Display historical measurement value curve. The content can be set up in "View->History trend->X axle setup (Y axle setup".

5.2 System information

Function Name	Menu Id	Setup /Description
System information	0	User can look up meter's information for identification, service or maintenance purposes.
Date/time	00	Device date/time.
System time	001	System clock.
Operation hour	002	Display the total running time for the device.
Manufacture date	003	Display the production date of the device.
Serial number	01	Display the serial for the service and calibration data reference.

Sensor serial number	011	Display the sensor(flowtube)'s serial number.
Transmitter serial number	012	Display the transmitter's serial number.
Version information	02	Show device's version information.
Power board info.	021	Show power PCB's version information.
Main board info.	022	Show main PCB's version information.
I/O board info.	023	Show I/O PCB's version information.
Display board info.	024	Show display PCB's version information.
Keypad board info.	025	Show keyboard PCB's version information.

5.3 View

Function Name	Menu Id	Setup /Description
View	1	This menu configures the main screen display contents. User can configure the all the meter's viewing perspective variables including measurement objective , unit, alarm etc..
Display configuration	10	Use this menu to configure the page 1 and page 2 of main display.
Main screen page 1	101	Configure main screen page 1.
Line 1	1011	Configure line 1 of main screen page 1, user can select one of the following 4 measurement objective to display in line 1: **flow speed, volumetric(simultaneous) flow rate, mass flow rate and percentage of flowrate to measurement span**. The unit of the targeted measurement objective can be configured in menu #14.
Line 2	1012	Configure line 2 of main screen page 1, user can select one of the following 10 measurement objective to display in line 2: **flow speed, volumetric (simultaneous) flow rate, mass flow rate, percentage of flowrate to measurement span, forward totalizer, reverse totalizer, net totalizer, accumulated totalizer, forward incremental totalizer, reverse incremental totalizer**. The unit of the targeted measurement objective can be configured in menu #14.
Main screen page 2	102	Configure main screen page 2.
Line 1	1021	Configure line 1 of main screen page 2, user can select one of the following 12 measurement objective to display in line 1: **output frequency, 4~20mA output, conductivity, polarized voltage, signal voltage, excitation current, coil resistance, coil temperature, DI1, DI2, AI1, AI2**. The unit of the conductivity measurement can be configured in menu #1417.
Line 2	1022	Same to main screen page 2 line1.
Line 3	1023	Same to main screen page 2 line1.
Language	11	Setup meter's display language, currently on support English.
Alarm	12	User can review the alarm status of the meter, including: Empty pipe detection(EPD), excitation, flow range, totalizer, reverse flow, communication and 4~20mA output etc.. User can enter the corresponding menu items to check the detail alarm information.
EPD alarm	121	The EPD alarm will be triggered once the meter detects empty pipe condition. If the EPD function is not calibrated the alarm will show un-calibrated. The EPD calibration is done during meter production. In certain case, user may need to calibrate it according to actual process condition, consult the distributor or local sale for detail information before conduct the EPD calibration.
Excitation alarm	122	Detail alarm status:

		Excitation alarm over limit; Excitation alarm under limit; Coil resistance over limit; Coil resistance under limit; Excitation short circuitry; Excitation circuitry open.
Flowrate limit alarm	123	Flowrate detail alarm status: Flowrate over upper limit; Flowrate under lower limit; Flowrate over range.
Totalizer limit alarm	124	Totalizer detail alarm status: Forward totalizer over threshold; Reverse totalizer over threshold; Accumulated totalizer over threshold; Reverse incremental totalizer over threshold; Forward incremental totalizer over threshold;
Reverse flow alarm	125	Display reversal flow condition alarm.
Communication alarm	126	Communication detail alarm status: Main PCB to display PCB error; Main PCB to I/O PCB error; Display PCB to keypad PCB error.
4~20mA alarm	127	4~20mA detail alarm status: Current output circuitry open; Current loop impedance over limit; Current output over limit.
Historical trend	13	Configure the x-axis and y-axis of the plot.
X axle setup	131	Configure the x-axis for plotting interval：1min、2min、5min、10min、20min、50min、120min。
Y axle setup	132	User can configure the Y axle of history data curve in main screen page 4. The Y axle range can be 10%, 20%, 50% and 100% of the flow measurement range. It can also be set as automatic and meter can set the range to follow the simultaneous flowrate.
Unit	14	This menu configures the measurement and display unit.
Unit selection	141	Configuration objects: **flowspeed, volume, volumetric (simultaneous) flow rate, density, mass, mass flowrate, conductivity, totalizer unit.**
Flow speed	1411	Options: **m/s, ft/s**
Volume	1412	Options: **m3, L, mL, inch3, ft3, custom engineering unit.**
Volumetric flowrate	1413	Options: **m3/h, m3/min, m3/s, L/h, L/min, L/s, ft3/h, ft3/min, ft3/s, custom engineering unit.**
Density	1414	Options: **t/m3, Kg/m3, t/L ,Kg/L, g/L, Kg/mL, g/mL, custom engineering unit.**
Mass	1415	Options: **t, Kg, g, custom engineering unit.**
Mass flow rate	1416	Options: **t/h, t/min, t/s, Kg/h, Kg/min, Kg/s, g/min, g/s, custom engineering unit.**
Conductivity	1417	Options: **uS/cm, S/cm**
Totalizer unit	1418	Options**:** Volume unit, mass unit. Once totaling unit is set, all the totalizer in the meter will be set as the same.
Analog input unit	1419	AI channel 1and channel 2 unit setup are according to the input variables: Pressure: **Pa, Bar, MPa, KP;** Temperature: **ºC** Distance: **mm, cm, m, Km;** Voltage: **uV, mV, V, kV;** Current: **nA, uA, mA, A, kA;**

		Resistance: **ohm，Kohm，Mohm.**
User defined unit	142	Options: **volume, volumetric (simultaneous) flowrate, density, mass, mass flow rate.**
Volume	1421	Set the custom volume unit and its transferring factor.
Volumetric flowrate	1422	Set the custom volumetric flowrate unit and its transferring factor.
Density	1423	Set the custom density unit and its transferring factor.
Mass	1424	Set the custom mass unit and its transferring factor.
Mass flowrate	1425	Set the custom mass flowrate unit and its transferring factor.
Event	15	Currently not supported.
Report	16	Currently not supported.

5.4 Maintenance

Function Name	Menu Id	Setup/Description
Alarm reset	20	Options: **Reset errors, Reset warning.**
Reset all errors	201	Reset all error items displayed in main screen 3.
Reset all warning	202	Reset all warning items displayed in main screen 3.
Measurement setup	21	Set up all measurement parameters.
Size	211	Set meter size.
Measurement range	212	Options: **flowrate range, flow speed range.**
Flowrate range	2121	Set flowrate range: The maximum settable range is displayed in the 3rd row of this menu, and the corresponding flow speed range is displayed in the 4th row. **Note: The change of flowrate range will automatically change the flow speed range (in menu#2122) and vice versa.**
Flow speed range	2122	Set flow speed range: The maximum settable range is displayed in the 3rd row of this menu, and the corresponding flowrate range is displayed in the 4th row. **Note: The change of speed range will automatically change the flowrate range (in menu#2121) and vice versa.**
Flow direction setup	213	Options: **Forward, Reverse.**
Density setup	214	Set the measurement media's density value through soft keypad. The input range is in between: 0.01Kg/L-99.99Kg/L.
User zero	215	Use automatic or manual way to set the user zero by following the instruction on the menu screen.
Low flow cut-off	216	Set the low cut off flow point. The set value is the percentage of the flow rate/speed range. **The maximum cut off value is 20% of the full set flow measurement range.** Use the soft keypad to enter value from 0% to 20%.
Empty pipe detection	217	Empty pipe detection (EPD) configuration
On/Off	2171	Turn on/off EPD detection.
Calibration	2172	Calibrate both empty pipe condition and full pipe condition.
Full pipe calibration		Make sure the flow tube is in full pipe condition and press enter to start the calibration, wait 60 seconds and meter will record the full pipe condition and display the calibration value. This value doesn't have actual physical meaning, just used as reference number and service purposes.
Empty pipe calibration		Make sure the flow tube is in empty pipe condition and press enter to start the calibration, wait 60 seconds and meter will record the full pipe condition and display the calibration value. This value doesn't have actual physical meaning, just used as

		reference number and service purposes.
Alarm threshold	2173	Options: 05%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%; User can use the value selection to determine the sensitivity of the empty pipe detection function; the default set value is 30%. Higher the value is, lower sensitivity for EPD module.
Totalizer	22	Configure all 6 totalizer in the meter.
Forward totalizer	221	Set forward totalizer.
Start/Stop	2211	Options: Start/Stop the totalizer.
Clear totalizer	2212	Options: Yes/No.
Totalizer set value	2213	Set current value of the totalizer.
Set totalizer threshold	2214	Set totalizer threshold value, when totalizer value is over this threshold value, meter will trigger the totalizer alarm.
Reverse totalizer	222	Same to forward totalizer.
Net totalizer	223	Same to forward totalizer.
Accumulated totalizer	224	Same to forward totalizer.
Forward increment	225	Same to forward totalizer.
Reverse increment	226	Same to forward totalizer.
Low flow cut-off	227	The cut off value here is to adjust the sensitivity of the totalizer, and this cut-off value will not affect the low cut off value in measurement setup menu. If the flow rate is lower than the set value here, the totalizer will stop accumulating.
4~20mA output	23	Set the 4~20mA output function.
Measurement object	231	Set the mapping measure object for 4~20mA output. Options: **flow speed, flowrate.**
Measurement range	232	Set the 20mA output to the measurement range span. The value can be entered from 5% to 100% of measurement range.
Low flow cut-off	233	Set the low cut-off value for 4~20mA output only.
Current output range	234	Options: 4~20mA. (currently only support 4~20mA)
Polarity mode	235	Options: **positive, negative, bi-polar and absolute.**
Error current	236	Define the error current(24mA) condition.
Error condition	2361	Options: **disable, warning or error, error only.**
4~20mA output hold	237	Options: On/Off.
Digital output	24	Configure all 2 digital output channels.
Channel 1	241	Configure digital output channel #1.
Output selection	2411	Select output type. Options: Frequency output, disable, pulse output, status output.
Frequency output	2412	Set frequency output.
Output object		Options: **flow speed, flowrate.**
Measurement range		Set the frequency output to the measurement range span. The value can be entered from 5% to 100% of measurement range.
Low flow cut-off		Set the low cut-off value for frequency output only.
Frequency range		Set the frequency range: 1~1000Hz.
Polarity mode		Options: **positive, negative, bi-polar and absolute.**
Pulse width		Options: **duty cycle, pulse width;**
Output reverse		Options: Yes/No.
Output hold		Options: Yes/No. The hold function the current output value until it is disabled by user.
Output set zero		Options: Yes/No. The function will set the output status back to 0Hz.
Pulse output	2413	Set up pulse output
Measurement object		The pulse output is related to the totalizer, the meter can correlate all totalizer to the pulse output. User can choose from: forward totalizer, reverse totalizer, accumulated totalizer, forward incremental totalizer, reverse incremental totalizer.
Volume k factor		Set up the k factor of pulse output, the k factor is set in term of pulse/unit, where the unit is configured as in unit configuration

		menu.
Output reverse		Options: Yes/No.
Status output	2414	Configure the status output of the meter. **Note: Digital output channel #1 is mapped to this configuration to send the meter status signal.**
Measurement object		Options: **disabled, any alarm, any error, alarm or error, EPD alarm, flowrate over limit alarm, flowrate under limit alarm, reverse flow alarm, flow over range alarm, all totalizer alarm, current loop open alarm, current loop over load alarm, current loop over range alarm, meter communication alarm, excitation alarm.**
Output reverse		Options: Yes/No.
Output hold		Options: disabled, current status, high, low.
Digital output channel 2	242	Same to output channel #1.
Digital output channel 3	243	Same to output channel #1
Relay output	25	Configure the relay output
Channel 1	251	Configure relay channel #1
Measurement object	2511	Options: **disabled, any alarm, any error, alarm or error, EPD alarm, flowrate over limit alarm, flowrate under limit alarm, reverse flow alarm, flow over range alarm, all totalizer alarm, current loop open alarm, current loop over load alarm, current loop over range alarm, meter communication alarm, excitation alarm.**
Output reverse	2512	Options: Yes/No
Output hold	2513	Options: Close, open, current status, disable.
Channel 2	252	Same to relay channel #1
Digital input	26	Configure digital input
Channel 1	261	Configure digital input channel #1
Function select	2611	Options: **disabled, output hold, output set zero, start/stop totalizer, reset totalizer, set user zero, reset error condition, digital output reverse, change display screen.**
Output hold setup	2612	Options: **disabled, 4~20mA output, channel #1 frequency output, channel #1 status output, channel #2 status output, channel #3 status output, channel #1 relay, channel #2 relay.**
Output set zero	2613	Options: **disabled, 4~20mA output, channel #1 frequency output, channel #1 status output, channel #2 status output, channel #3 status output, channel #1 relay, channel #2 relay.**
Start/stop totalizer	2614	Options: **disabled, start/stop forward incremental totalizer, start/stop reverse incremental totalizer.**
Totalizer reset	2615	Options: **disabled, reset forward incremental totalizer, reset reverse incremental totalizer.**
Signal reverse	2616	This switch will enable the reversing of meter's digital output. Options: **Yes/No.**
Channel 2	262	Same to digital input channel #1
Alarm setup	27	This menu configures the meter's alarm functions.
Flow rate upper limit	271	Configure flowrate upper limit alarm.
On/Off	2711	Options: On/Off
Alarm threshold	2712	Enter the threshold value of flowrate upper limit; the value has to be between -150% and 199% of the defined flowrate range.
Flow rate lower limit	272	Configure flowrate lower limit alarm.
On/Off	2721	Options: On/Off
Alarm threshold	2722	Enter the threshold value of flowrate lower limit; the value has to be between -150% and 199% of the defined flowrate range.
Reverse flow alarm	273	The alarm is triggered when reversed flow condition occurs. Options: Disabled, trigger alarm at forward flow, trigger alarm at reverse flow.

Communication	28	This menu configures the communication function of the meter.
RS-485 setup	281	Configure RS-485 communication module.
Meter address	2811	Enter the meter's communication address: Address range from 1 to 255.
Baudrate	2812	Choosing baudrate：600、1200、2400、4800、9600、19200。
Report management	29	Not available in this version.
Other setup	2A	Other meter information setup.
Tag	2A1	Enter the user defined meter tag number: from 0 to 9999.
Date setup	2A2	Enter the current system date, entered number should follow YYYY-MM-DD format, or entry will be invalid.
Time setup	2A3	Enter the current system time, entered number should follow HH:MM:SS format, or entry will be invalid.
Analog input	2B	Configure the analog input module of the meter
Channel 1	2B1	Configure channel 1.
Input type	2B11	Currently support 4~20mA analog input only.
Measurement object	2B12	Supported mapping measurement objects: **pressure, temperature, distance, voltage, current, resistance**
Measurement range	2B13	Measurement object span.
Channel 2	2B2	Same to Channel 1

5.5 Diagnosis

Function Name	**Menu Id**	**Setup /Description**
Excitation	30	Configure excitation current of the meter.
Setup	301	Set up excitation current.
Work frequency	3011	Options: 50Hz, 60Hz; This value should be same to user country's AC power supply value.
Frequency divider	3012	Options: **2, 8, 16;** The excitation frequency is the combination of work frequency and frequency divider.
Excitation mode	3013	Options: **Alternative, Positive only, Negative only.** **This option is for expert use only.**
Start/Stop	3014	Options: Start, stop.
Diagnosis value	303	This screen display the current excitation current value, coil resistance and coil temperature.
Filter	31	Set measurement filter.
Stage 1 filter	311	Options: **filter selection, filtering parameter setup.**
Filter selection	3111	Options: **disabled, peak suppression, rate of change limit.**
Filter parameter setup	3112	Peak suppression parameter: The filter parameter range from 100~10000, higher the value is, more significant suppression for the measurement peak. Rate of change filter limits the delta of the measurement objective, the parameter ranges from 0.1% to 100%, lower the value is, more significant filtering result.
Stage 2 filter	312	Options: **filter selection, filtering parameter setup.**
Filter selection	3121	Options: Disabled, damping, 1st order inertia delay, peak suppression
Filter parameter setup	3122	1st order inertia delay filter parameter: Range from 0.1-100, higher the value, more significant filtering. Damping filter parameter: Value can be chosen from 2,4 or 8, higher the value, more significant filtering. Peak suppression parameter: The filter parameter range from 100~10000, higher the value is, more significant suppression for the measurement peak.

Totalizer update period	313	Set up the totalizer update interval.
Authorization management	32	Set up the access authorization for the meter.
Password setup	321	Set up the security management of the meter.
Maintenance password	3211	Set up the password for the Maintenance menu functions.
Diagnosis password	3212	Set up the password for Diagnosis menu functions.
Function control	322	Set up function lock up.
Change size	3221	Options: **unlock, lock.** Once the this function is locked, there is a lock symbol shown in the Size sub-menu of the measurement setup menu. The currently parameter value will be locked.
Change flow direction	3222	Options: **unlock, lock.**
User zero	3223	Options: **unlock, lock.**
Change low flow cut-off	3224	Options: **unlock, lock.**
Totalizer operation	3225	
Forward totalizer		Options: **unlock, lock.**
Reverse totalizer		Options: **unlock, lock.**
Forward increment		Options: **unlock, lock.**
Reverse increment		Options: **unlock, lock.**
Accumulated totalizer		Options: **unlock, lock.**
Net totalizer		Options: **unlock, lock.**
Totalizer management		Options: **unlock, lock.**
Input/Output operation	3226	
Digital output 1		Options: **unlock, lock.**
Digital output 2		Options: **unlock, lock.**
Digital output 3		Options: **unlock, lock.**
4~20mA output		Options: **unlock, lock.**
Pulse output		Options: **unlock, lock.**
Frequency management		Options: **unlock, lock.**
Clear report	3227	Not supported.
Parameter management	33	Not supported.
Simulation	34	Simulate the input and output condition for user diagnosis and evaluation purposes.
Flow speed simulation	341	In this menu user can key in value from -12~12m/s to simulate the flow speed measurement; the meter will simulate the set flow speed when user stay in the simulation menu, the meter will exit simulation mode once press the back key to exit to the main screen.
4~20mA output simulation	342	In this menu user can key in value from 3.2~24 in the unit of mA to simulate the flow speed measurement; the meter will simulate the set current output when user stay in the simulation menu, the meter will exit simulation mode once press the back key to exit to the main screen.
Digital output simulation	343	Digital output simulation.
Digital output 1	3431	Digital output channel #1 simulation.
Frequency simulation		In this menu user can key in value from 1~1000 in the unit of Hz to simulate the flow speed measurement; the meter will simulate the set frequency output when user stay in the simulation menu, the meter will exit simulation mode once press the back key to exit to the main screen.
Pulse output simulation		In this menu user can select Start/Stop to enable the pulse output. The pulse frequency is set in the frequency simulation menu. The meter will exit simulation mode once press the back key to exit to the main screen.
Status output simulation		Options: **high, low.**

Digital output 2	3432	Digital output channel #1 simulation.
Digital output 3	3433	Digital output channel #1 simulation.
Relay output simulation	344	Relay output simulation
Relay 1	3441	Options: **open, close.**
Relay 2	3442	Options: **open, close.**
Digital input simulation	345	Digital input simulation.
Digital input 1	3451	Options: **high, low.**
Digital input 2	3452	Options: **high, low.**
Factory reset	35	Not supported in current version.
System information setup	36	Set the meter information (used by factory or service personal only).
Sensor serial number	361	Set sensor serial number.
Transmitter serial number	362	Set transmitter serial number.
Manufacture date	363	Set factory manufacturing date by using YYYY-MM-DD format.
Operation hours	364	Set total operation hours.
Meter calibration	37	This meter is used for calibration of the flow measurement system. All IF800 meter are calibrated carefully in the factory. **Note:** **User calibration is not suggested unless conducted by qualified/certified party. Factory calibration certificate will be void once the meter is calibrated by parties other than meter product factory.**
Transmitter factor	371	Set transmitter factor. The transmitter factor is an factory defined parameter to unify the transmitters electronics characteristics to the flow signal simulation generator. This factor is normally used when user like to swap or replace the remote version transmitter.
Manual calibration	3711	Use soft keypad to enter the transmitter factor manually; this factor can be retrieved from manufacturer or distributor by providing factory serial number.
Automatic calibration	3712	Distributor or service personnel can also use the automatic transmitter calibration function to set the transmitter factor by using flow signal simulator. User should turn on the flow signal simulator and set the simulating value to 10m/s, then press automatic calibration to start the calibration, wait 60 seconds; meter will set the transmitter factor by itself.
Sensor calibration	372	Calibrate flowmeter system.
Sensor zero point	3721	Set meter zero point.
Manual		Use soft keypad to enter the transmitter zero point manually.
Automatic		Close both upstream and downstream valve(in applicable), make sure the meter is in full pipe condition, press start to perform zero point adjustment.