

DOMA

User Manual



CONTENT

1 Safety Guidance.....	5
1.1 Manufacturer's Safety Instructions	5
1.2 Copyright And Data Protection	5
1.3 Disclaimer	5
2 Installation.....	6
2.1 Precautions Before Installation	6
2.2. Handling.....	6
2.3 Recommended Installation Location.....	6
2.4 Installation Location Is Not Recommended.....	7
2.5 Pipeline Installation.....	8
3 Electrical Connection.....	8
4 Output Signal Indroduction.....	9
4.1 Output Signal:Pulse/ Frequecy	9
4.2. Output Signal: Analog Output	10
4.3 Output Signal:Modbus RS485.....	10
5 Panel Description.....	10
6 Main Menu Structure.....	11
7 Menu Introduction And Operation.....	12
7.1 Access	12
7.2. Communication	12
7.3 Display	13
7.4 Digital Output.....	14
7.5 Current Output.....	15
7.6 Alarm	16
7.7 Flow	17
7.8 Factory.....	19
7.9 Information	21
8 Technical Parameters And Performance	22



9 Product Size Drawing	23
9.1 Clamp Type Without Display	23
9.2. Clamp Type With Display.....	24
9.3 Screw Thread Type Without Display	25
9.4 Screw Thread Type Without Display	26
10 Appendix	27
10.1 Modbus Address	27
10.2 Flow Range	28





Flow



Pressure



Level



Temperature



Analysis



Control

BASS INSTRUMENTS

Bass Ölçme Enstrümanları A.Ş. was founded in Istanbul in 2006 to develop specialized solutions for measuring, monitoring, and controlling fluid parameters such as flow, pressure, level and temperature.

For nearly 20 years, Bass Ölçme Enstrümanları A.Ş. has been making a significant impact in the industry and continues its operations in a 1,050 m² facility.

Our factory, spanning 10,000 m² of open space and 3,500 m² of enclosed area, is home to Turkey's most advanced and largest liquid and gas flow laboratory. Thanks to this state-of-the-art facility, all testing requirements of both the public and private sectors are met domestically, eliminating the need for international testing alternatives.

Our company exports to more than 40 countries and maintains a strong presence in the industry with its globally proven and reliable products.

Our company holds four patents, demonstrating our commitment to innovation and technological advancement in the industry.

Our company is a key supplier of products to leading firms in Türkiye and around the world across various industries, including Chemicals and Petrochemicals, Water and Wastewater, Textiles, Gas and Oil, Food and Beverage, Paper, Iron and Steel, Pharmaceuticals, Energy, Heating, Ventilation, and Air Conditioning.

Certificates



With its expert team, our company develops specialized solutions and operates in compliance with ISO 9001, ISO 14001, ISO 45001 standards and CE directives, and our calibration laboratory is accredited in accordance with ISO/IEC 17025.

We operate in relevant industries with our products certified for harsh conditions in compliance with ATEX directives and SIL (Safety Integrity Level) declaration, and with WRAS (Water Regulations Advisory Scheme) approved products for potable water applications.

With our EAC-certified products, we actively participate in numerous projects within the Eurasian Economic Union.



1 - Safety Guidance

1.1 Manufacturer's Safety Instructions

This instrument has been fully debugged before leaving the factory and conforms to JB/T 9248-2015 electromagnetic flowmeter and JJG 1033--2007 electromagnetic flowmeter verification regulations.

In order to ensure the normal use of the instrument, please read this manual carefully and fully understand how to use the meter before operation.

1.2 Copyright And Data Protection

The contents of this document have been carefully checked but there is no guarantee that the content is completely correct and consistent with the latest version. The content and works of this document are protected by copyright in China. Feeds from third parties are tagged. Copy, add production, distribution and any use beyond the scope of copyright must be approved in writing by the author or manufacturer. Manufacturers always strive to respect the copyrights of others and try to use their own or unlicensed works.

Whenever possible, the collection of personal data (e.g. name, address or e-mail address) used in the manufacturer's documentation is carried out on a voluntary basis. To the extent possible the use of products and services is carried out without the need to provide personal data. We would like to remind you that data transmission over the Internet, e.g. when communicating via e-mail, may be subject to security breaches. There is no complete guarantee that the data will not be accessed by third parties. We hereby publish a publication note expressly prohibiting the use of contact data provided within the scope of the copyright notice obligation to send unsolicited advertising and information materials.

1.3 Disclaimer

The manufacturer is not responsible for any form of loss caused by the use of this product; These damages include but are not limited to direct indirect, incidental or penalty-based losses and consequential losses. If the manufacturer's actions are intentional or grossly negligent this exclusion clause is invalid. To the extent that the law of use does not allow limitations on the implied warranties of the Product or the exclusion or limitation of certain types of indemnity and these rights apply to you in which case the above exclusions or limitations may not apply to you in part or at all.

For each purchased product the corresponding product documentation and the manufacturer's terms of sale apply. The manufacturer reserves the right to modify the contents of the document including this disclaimer in any way at any time and for any reason without prior notice and does not assume any form of responsibility for the consequences that may arise from any form of change.



2 - Installation



Warning

The installation of electromagnetic products must be done by a professional engineer to technician. Non-professionals are not allowed to perform installation-related procedures.

2.1 Precautions Before Installation

Precautions;

- Carefully inspect the box for signs of damage or rough shipping.
- Check the packing list to check if it fully meets the requirements of your order.
- Check on the product nameplate to ensure that the product delivery is in line with your order.

Installation Conditions;

- It should be avoided to install in places where the ambient temperature exceeds the temperature range of the instrument so as to prevent the insulation performance of the excitation coil from being damaged due to the impermissible temperature rise due to the high ambient temperature.
- It should be kept away from strong magnetic equipment such as large motors large transformers and welding machines.
- The interference of strong vibration should be avoided and effective vibration reduction measures should be carried out in vibration occasions.
- It should be kept away from places with corrosive air such as ammonia and fog acid as much as possible. If the on-site environmental conditions are not met the user needs to raise it when ordering and the company will try to solve it.
- The pipe section where electromagnetic products are installed is not allowed to generate leakage current and the grounding resistance should not be greater than 10 ohms.
- The direction of fluid flow should be consistent with the direction of the sensor flow direction.
- The installed pipeline should ensure that the measuring pipeline is always filled with the measured medium to prevent empty pipes.

2.2 Handling

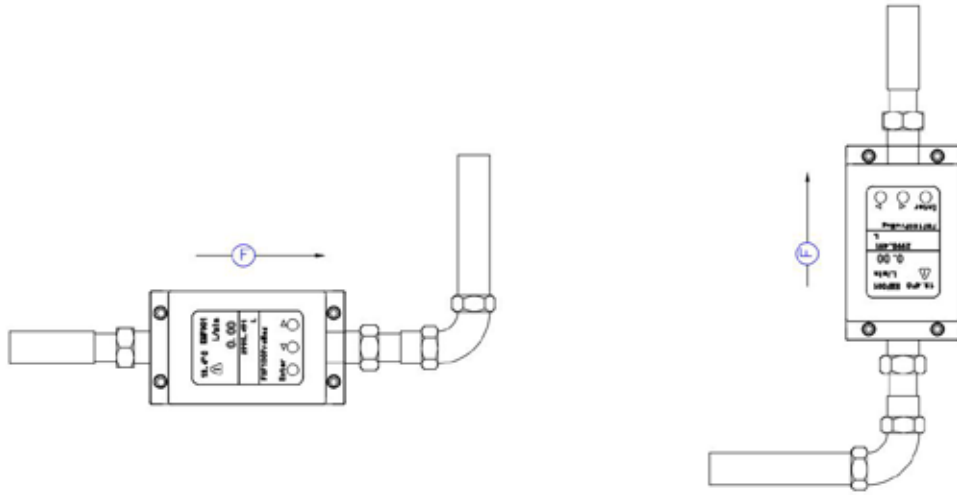
When handling products the following should be noted;

- It cannot be transported through the housing of the converter.
- Do not put a rope or chain into the sensor for transportation.

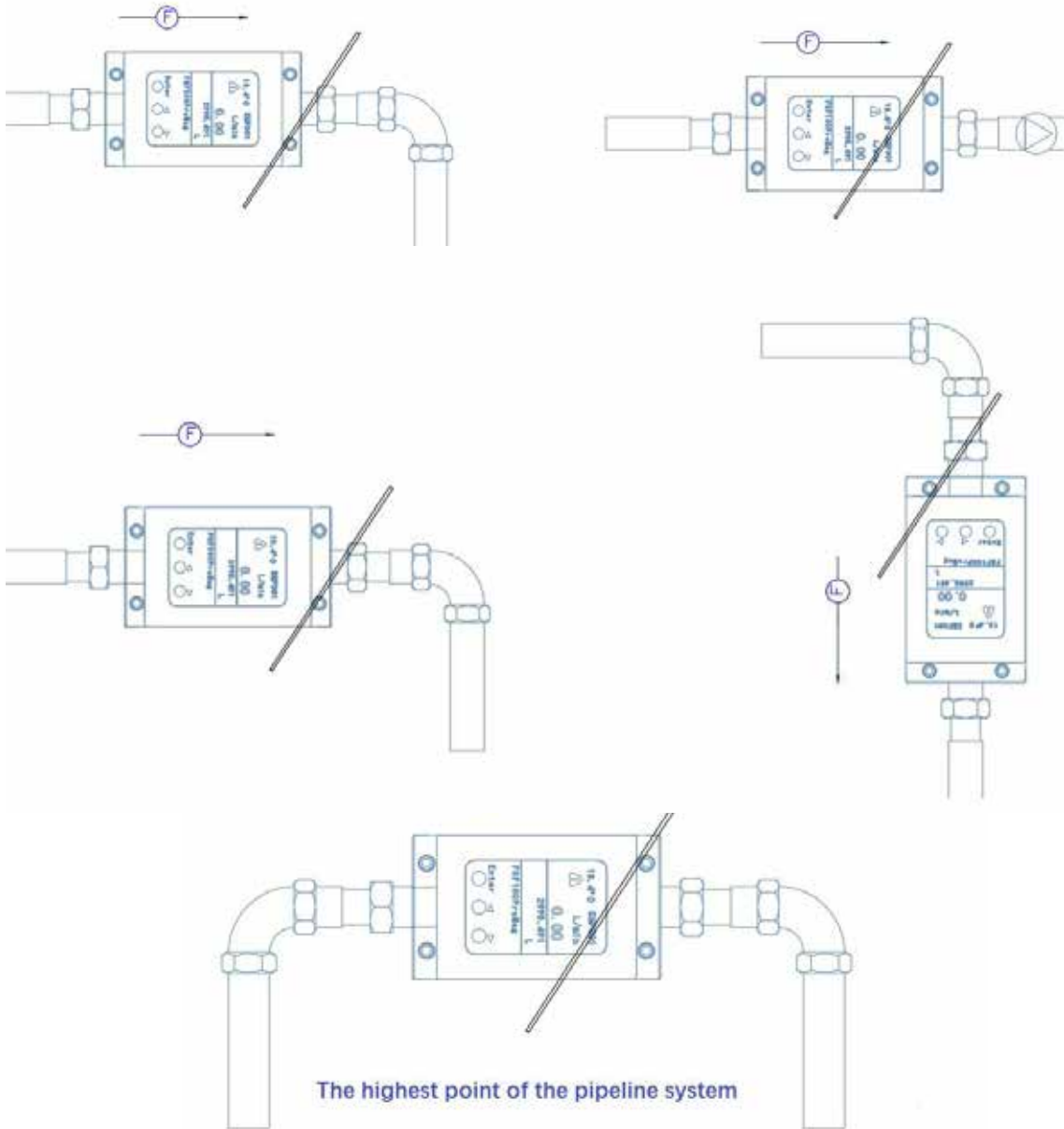
2.3 Recommended Installation Location

- Install the equipment to ensure that the measuring pipe is always fully filled.
- Installed before or with in the upper pipe line



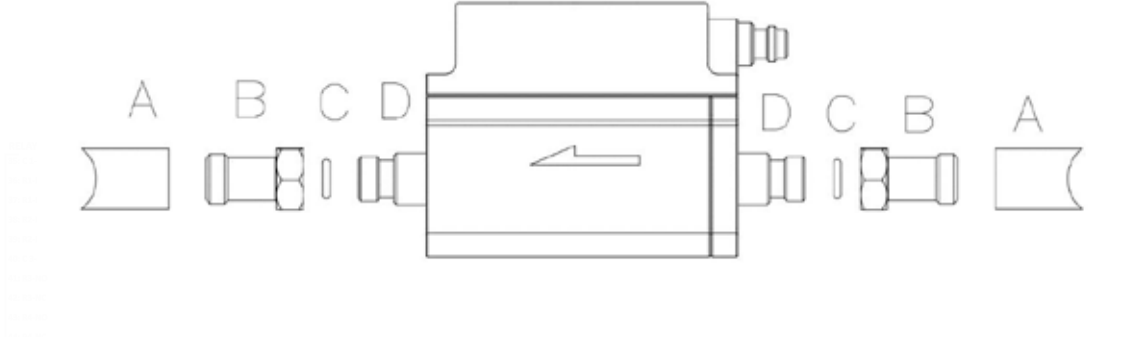


2.4 Installation Location Is Not Recommended



2.5 Pipeline Installation

Devices with G-threads can be mounted on pipes using adapters.



1. Apply lubricating oil to the threads adapters and sensors of the process connection. Use an approved lubricant that is appropriate for the application.
2. Screw the adapter (B) into the pipe(A).
3. According to the marked flow direction place the seal (C) and install the equipment.
4. Screw the adapter (B) onto the tubing connector (D) until it is tightened into place by hand.
5. Tighten the two adapters separately in opposite directions:

-Tightening torque: DN15 DN20 DN25: 30Nm

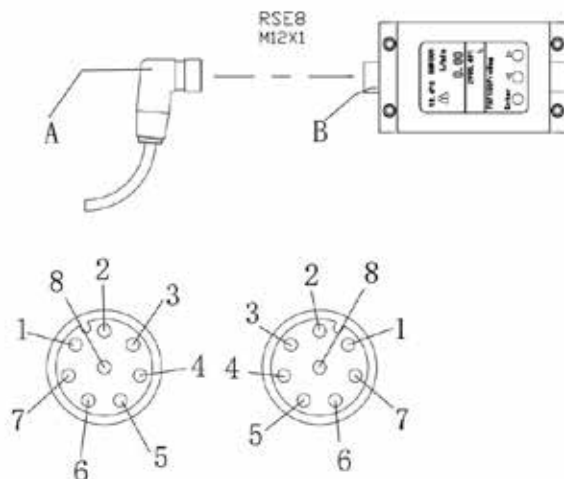
-Tightening torque: DN6 DN8 DN10 DN12: 15Nm

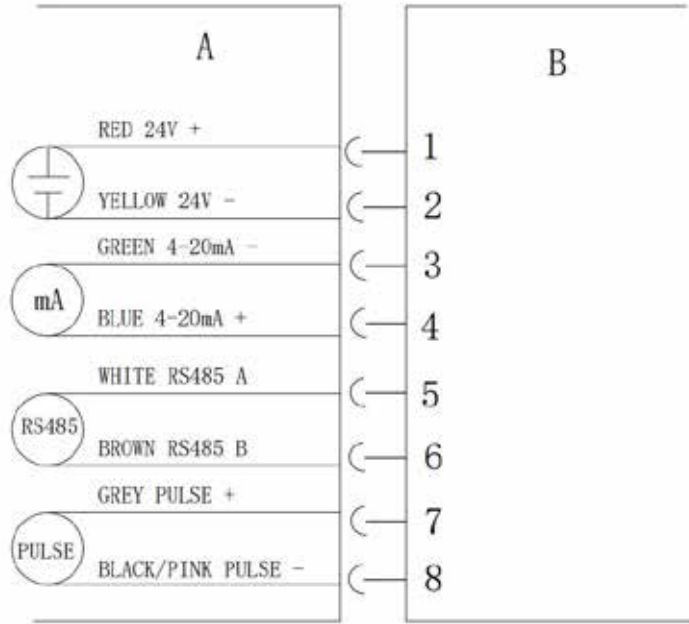
After installation air bubbles in the system may affect the measurement allowing the system to be flushed after installation for exhaust.

3 - Electrical Connection

Always have a qualified electrician connect the device. The voltage supply shall comply with HGT 20509-2014, EN 50178, SELV and PELV standards.

- Disconnect the power supply.
- Connect the device as follow:





4 - Output Signal Introduction

4.1 Output Signal: Pulse/Frequency

Frequency	Can be set to: Pulse equivalent with settable pulse width frequency The upper frequency limit is 2K Hz
Type	Passive signal, open emitter
Maximum Input Value	30 VDC 25mA
Voltage Drop	At 25mA: $\leq 2VDC$
Pulse Output	
Pulse Width	Adjustable 0.05...1000ms
Pulse Equilable	0.00-100000000L/P
Pulse Value	Adjustable
Measurement Variables Can Be Assigned	Volumetric flow rate
Frequency Output	
Output Frequency	Adjustable 1...2000Hz
Duty Cycle	10%...90%
Measurement Variables Can Be Assigned	Volumetric flow rate



4.2 Output Signal: Analog Output

4-20mA (active), 3.5mA output when the air traffic alarm is generated, 22mA when the range is exceeded by 110%. Maximum load resistance 500 ohms.

4.3 Output Signal: Modbus RS485

Check the Modbus register information sheet.

Physical Interface	EASTERNIA/TIA-485-Ayers	
Agreement	Modbus application protocol specification V1.1	
Device Type	From the device	
From The Device Address Range	1-247	
Broadcast Address Range	0	
Feature Codes	03: Read hold register	
	04: Read the input register	
	06: Write to a single register	
	08: Diagnosis	
	16: Write to multiple registers	
	23: Read/Write multiplexed registers	
Supported Baud Rates	4800 Baud	9600 Baud
	RTU	
Data Transfer Mode	RTU	
Data Access	Check the Modbus register information sheet	

5 - Panel Description

Temperature Product Name Number
Alarm Message Flow Unit
Flow Rate Total
Total Unit Keys

Key Description:

1. Press and hold the first key(Enter) to display the flow data for the first time and press again to display the alarm information.
2. Press the first key (Enter) and the second key (←) at the same time to enter the password menu settings with the highest authority 4, password 000000.
3. The second key (←) is to turn up the third key(→) is to turn down and press the first key (Enter) and third key (→) at the same time to shift.
4. After entering the menu, press the first (Enter) and second key (←) at the same time to return to the previous menu and press and hold the first key (Enter) to enter the current menu.
5. Press and hold the second and third key (← + →) at the same time press and hold for 5 seconds the displays screen will rotate 90 degrees, this operation is limited to the operation of the main interface.



6 - Main Menu Structure

Menu



7 - Menu Introduction And Operation

Press enter + then into start interface

Password Input

Access Level : 1/2/3/4

Password: *****

7.1. Access

Access

Password New

Meter Reset

Password New

Please enter a new password

000000

Meter Reset

The meter will restart
Disable / Enable

7.2 Communication

Communication

Address

Baudrate

Parity

Stop Bits

Address

1-247

001

Baudrate

9600, 4800

Cancel

Ok

Parity

None, Even add

Stop Bits

1 bit, 2 bits



7.3. Display

Display

TOTAL Select

TOTAL Decimal Number

TOTAL Integer Number

INST Select

User ID

INST Decimal Number

Rotate

Total Select

Totalizer 1
Totalizer 2

Cancel Ok

Total Decimal Number

0/1/2/3/4 decimal please

Cancel Ok

Total Integer Number

5-15
08

Cancel Ok

INST Select

Value flow, flow speed,
flowrate percent

Cancel Ok

User ID

Maximum 10 CHARS

EMF 0001

INST Decimal Number

0/1/2/3/4 decimal please

Cancel Ok

Rotate

0" 90" 180" 270"

Cancel Ok



7.4. Digital Output

Digital Output

Output Enable

Output Polar Select

Function Select

Pulse MEAS Polar

Pulse Amount Per Pulse

Pulse Width

FREQ MEAS Polar

FREQ Range

FREQ Duty Cycle

Output Enable

Enable / Disable

Cancel

Ok

Output Polar Select

Low / High

Cancel

Ok

Function Select

Frequency / Pulse

Cancel

Ok

Pulse MEAS Polar

Forward / Reverse / Bilateral

Cancel

Ok

Pulse Amount Per Pulse

0.0-100000000.0
1.0 L/P

Cancel

Ok

Pulse Width

0.05-1000
1.00 ms

Cancel

Ok

FREQ MEAS Polar

Forward / Reverse / Bilateral
/ Absolute

Cancel

Ok

FREQ Range

1-2000
1000 Hz

Cancel

Ok

FREQ Duty Cycle

10-90
50 %

Cancel

Ok



7.5. Current Output

Current Output

Output Enable

MEAS Polar

CALIB Enable

4 mA CALIB Offset

20 mA CALIB Offset

Open Alarm Enable

Output Mode

Output Enable

Enable / Disable

Cancel Ok

MEAS Polar

Forward / Reverse / Bilateral / Absolute

Cancel Ok

CALIB Enable

Disable
4 mA / 20 mA Calibration enable

Cancel Ok

4 mA CALIB Offset

Enable 4 mA CALIB first
4.0000 mA

Cancel Ok

20 mA CALIB Offset

Enable 20 mA CALIB first
20.0000 mA

Cancel Ok

Open Alarm Enable

Enable / Disable

Cancel Ok

Output Mode

4-20 mA / 0-20 mA

Cancel Ok



7.6 Alarm

Alarm

Flow REV Alarm Enable

Flow REV Alarm THR

Flow Upper Alarm Enable

Flow Upper Alarm THR

Flow Lower Alarm Enable

Flow Lower Alarm THR

Flow REV Alarm Enable

Enable / Disable

Cancel Ok

Flow REV Alarm THR

-10-10
0.00 %

Cancel Ok

Flow Upper Alarm Enable

Enable / Disable

Cancel Ok

Flow Upper Alarm THR

-200-200
90.00 %

Cancel Ok

Flow Lower Alarm Enable

Enable / Disable

Cancel Ok

Flow Lower Alarm THR

-20-200
10.00 %

Cancel Ok



7.7 Flow

Flow

Total 1 Unit

Total 1 Unit Factor

Total 1 Function

Total 1 Set

Total 2 Unit

Total 2 Unit Factor

Total 2 Function

Total 2 Set

Flow Unit

Flow Unit Factor

Flow Range

Low Flow Cut Off

Flow Direction Set

Flow RES-MEAS Enable

Total 1 Unit

Mximum 5 CHARS

L

Cancel Ok

Total 1 Unit Factor

0.000001-1000000

1000.00

Cancel Ok

Total 1 Function

Positive/Negative/Total
/Net accumulation
Disable

Cancel Ok

Total 1 Set

0.001-999999999

0.000 L

Cancel Ok

Total 2 Unit

Maximum 5 CHARS

L

Cancel Ok

Total 2 Function

Positive/Negative/Total
/Net accumulation
Disable

Cancel Ok

Total 2 Set

0.001-999999999

0.000 L

Cancel Ok

Flow Unit

Maximum 8 CHARS

L/min

Cancel Ok

Flow Unit Factor

0.000001-1000000

16.6667

Cancel Ok



Flow Range

0.001-999999
100.000 L/min

Cancel Ok

Low Flow Cut Off

0.0001-1.0000
0.0050 m/s

Cancel Ok

Flow Direction Set

Forward / Reverse

Cancel Ok

Flow RES-MEAS Enable

Enable / Disable

Cancel Ok



7.8 Factory

Factory	Pipe Diameter Size	Sensor Factor
Pipe Diameter Size	6~300 015 mm	0.01~10.0 1.0000
Converter Factor		
Sensor Factor	Cancel Ok	Cancel Ok
Correction Zero Offset	Correction Zero Offset	EI 200KΩ Offset
EI 200KΩ Offset	-0.2~0.2 0.00000 m/s	Connect the two SE to the GE with a 200K R resp 021.6 KΩ
EI 0KΩ Offset	Cancel Ok	Cancel Ok
SYS TOTAL Forward Set	EI 0KΩ Offset	SYS TOTAL Forward Set
SYS TOTAL Reverse Set	Short circuit the two SE to the GE 0.000KΩ	0.001~999999999 00000000.000 m3
Temp 0R Resi Offset	Cancel Ok	Cancel Ok
Temp 1K Resi Offset	SYS TOTAL Reverse Set	Temp 0R Resi Offset
Nonlinea Corr FR1	0.001~999999999 00000000.000 m3	Short circuit the two SE to the GE 0.000KΩ
Nonlinea Corr FR1 Factor	Cancel Ok	Cancel Ok
Nonlinea Corr FR2		
Nonlinea Corr FR2 Factor		
Nonlinea Corr FR3		
Nonlinea Corr FR3 Factor		
Nonlinea Corr FR4		
Nonlinea Corr FR4 Factor		
Nonlinea Corr FR5		
Nonlinea Corr FR5 Factor		



Temp 1K Resi Offset

950.0~1050.0
1000.00 Ω

Cancel Ok

Nonlinea Corr FR1 Factor

0.0~10.0
0.0000

Cancel Ok

Nonlinea Corr FR2

0.00~15.0
0.0000 m/s

Cancel Ok

Nonlinea Corr FR2 Factor

0.0~10.0
0.0000

Cancel Ok

Nonlinea Corr FR3

0.00~15.0
0.0000 m/s

Cancel Ok

Nonlinea Corr FR3 Factor

0.0~10.0
0.0000

Cancel Ok

Nonlinea Corr FR4

0.00~15.0
0.0000 m/s

Cancel Ok

Nonlinea Corr FR4 Factor

0.0~10.0
0.0000

Cancel Ok

Nonlinea Corr FR45

0.00~15.0
0.0000 m/s

Cancel Ok

Nonlinea Corr FR5 Factor

0.0~10.0
0.0000

Cancel Ok



7.9 Information

Information

Sensor Serial Number

Converter Serial Number

Converter Software REV

Converter Hardware REV

Sensor Serial Number

Maximum 14 CHARS

.....

Cancel Ok

Converter Serial Number

Maximum 14 CHARS

.....

Cancel Ok

Converter Software REV

Maximum 14 CHARS

V1.14-20240122

.....

Cancel Ok

Converter Hardware REV

Maximum 14 CHARS

.....

Cancel Ok



8 - Technical Parameters And Performance

Measuring principle:

According to Faraday's law of electromagnetic induction a conductive liquid flows through the inside of an insulated pipe and under the action of the internal magnetic field a voltage signal U is generated at both ends of the electrode.

$$U = K \cdot B \cdot D \cdot V \quad (1) \quad U = K$$

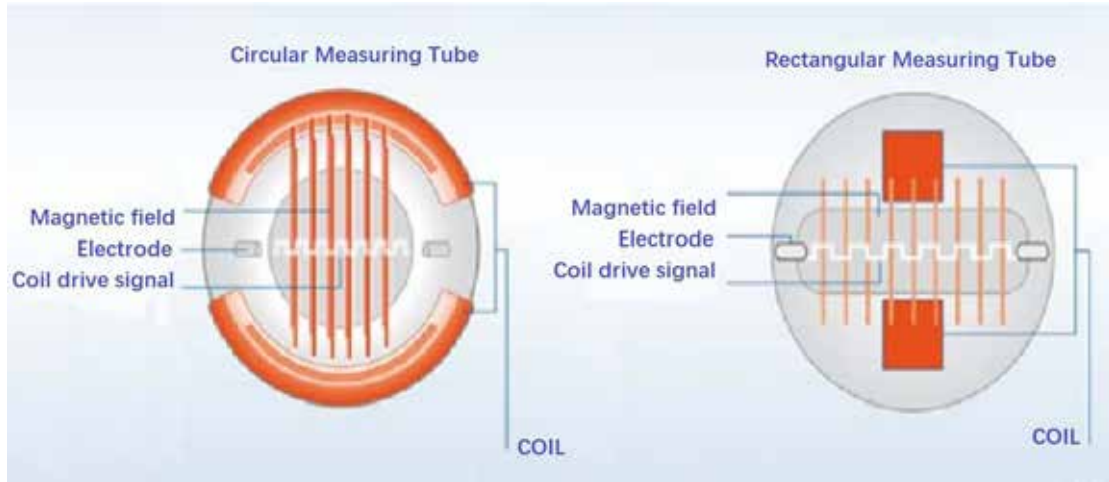
K: Geometric correction factor

B: Magnetic field strength

D: Diameter of the sensor

V: Flow rate

The signal voltage U is acquired by the electrodes on both sides of the sensor and is proportional to the fluid flow rate and therefore to the fluid flow rate. The signal is amplified, filtered and then accumulated, recorded and output.



Technical Indicators

The following data is used for general applications. If you need data more relevant to your specific application please contact us or your local sales office. Additional information (certificates, special too/s, software, etc.) and complete product documentation can be downloaded free of charge from the website (download center).

Volumetric flow rate

Measuring Principle	Faraday principle of electromagnetic induction
Scope Of Application	Conductive liquid media
Measured Values	
Main Measurements	Velocity of flow
Secondary Measurements	Volumetric flow rate

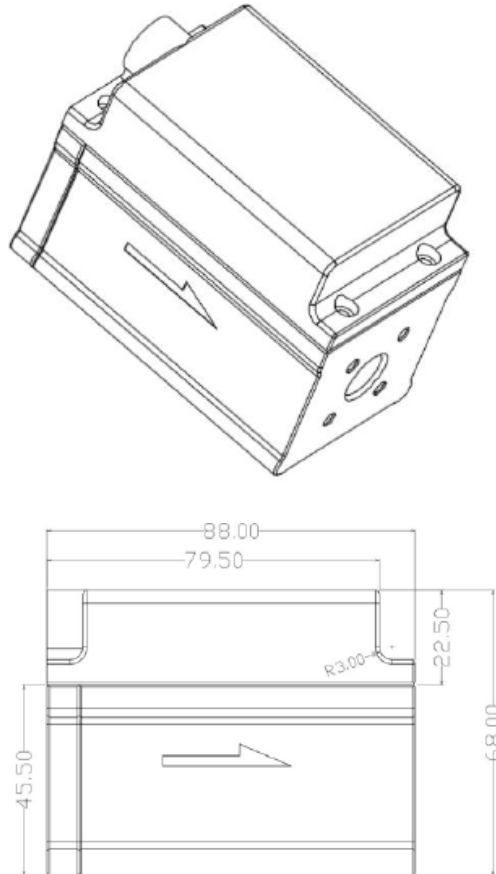


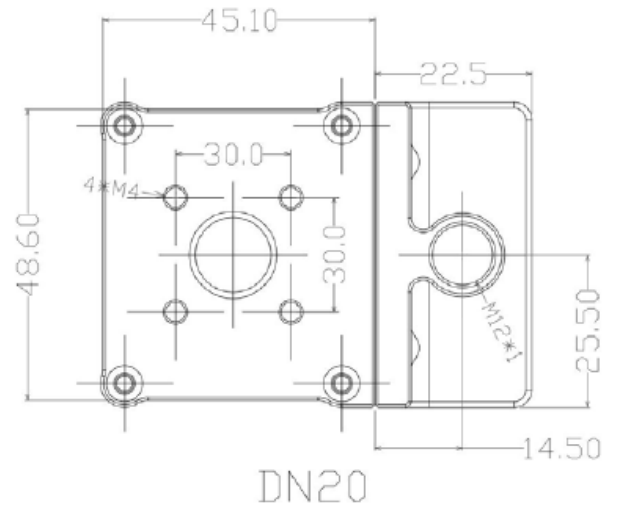
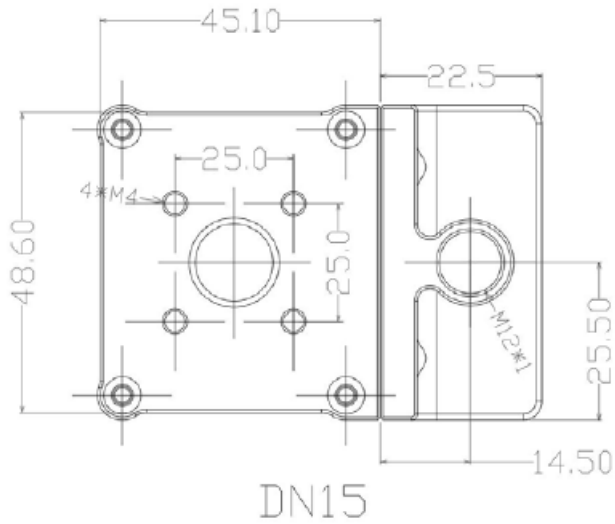
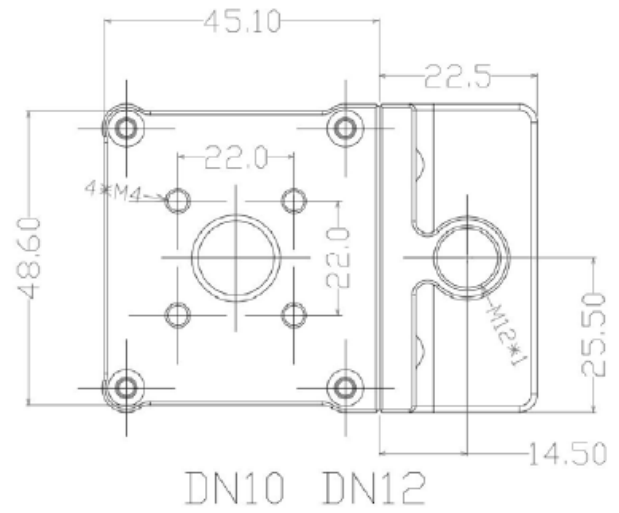
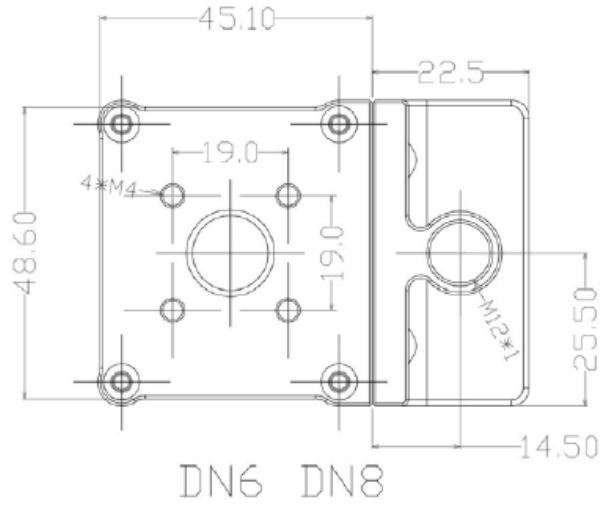
Design system

Peculiarity	Standart wet calibration
Modular Construction	The measuring system consists of a flow sensor and a signal converter compact design.
Design The Product Model	DOMA
Nominal Diameter	DN6, DN8, DN10, DN12, DN15, DN20
Measuring Range	-6.5.....+6.5m/s
UI	Instantaneous flow, cumulative flow, temperature, alarm prompt, meter number
Operational Data	The factory is set to customer specifications
Human Machine Interface (HMI) Options	FSC11XProMag RS485 software
Cable Connection Standart	1x M12,8-pin connector

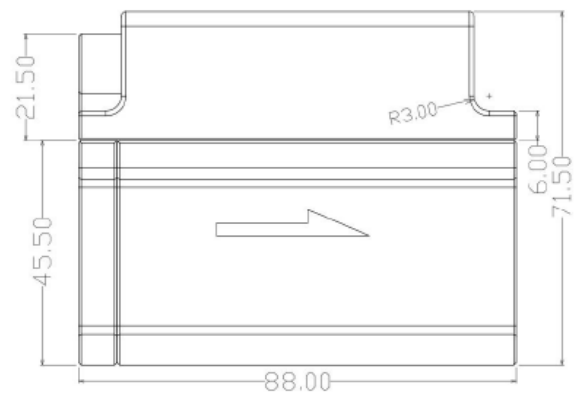
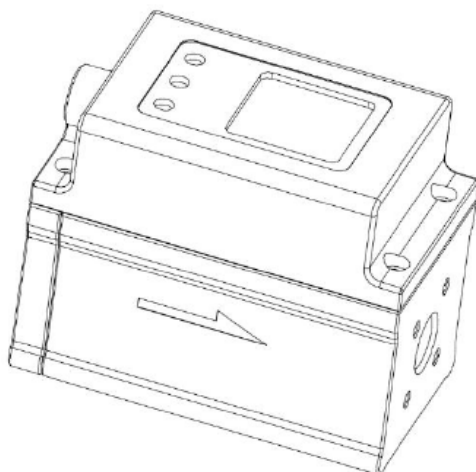
9 - Product Size Drawing

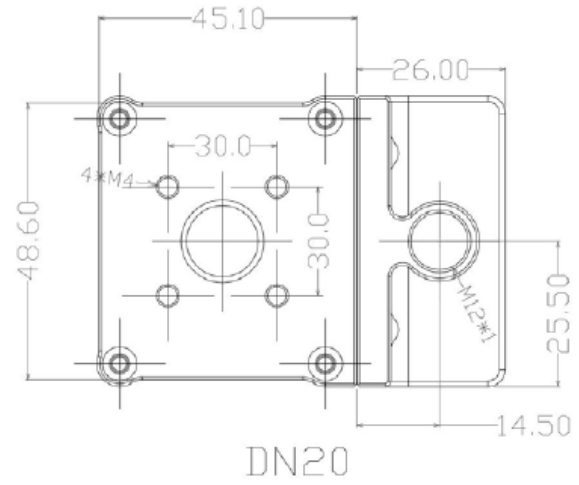
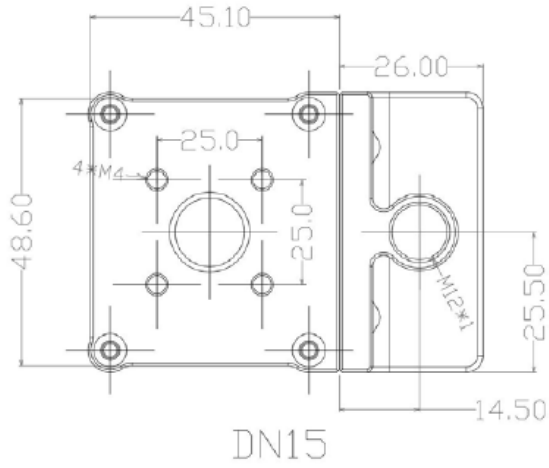
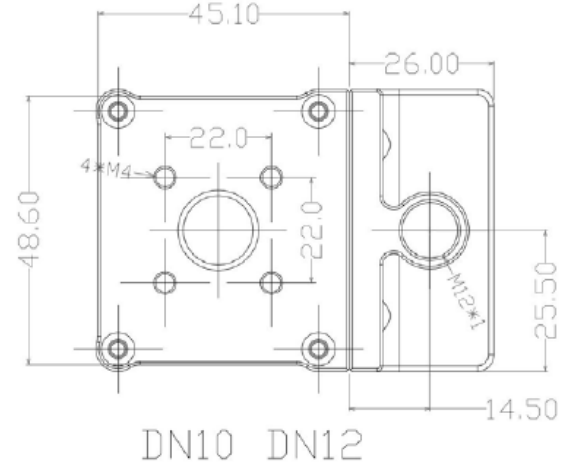
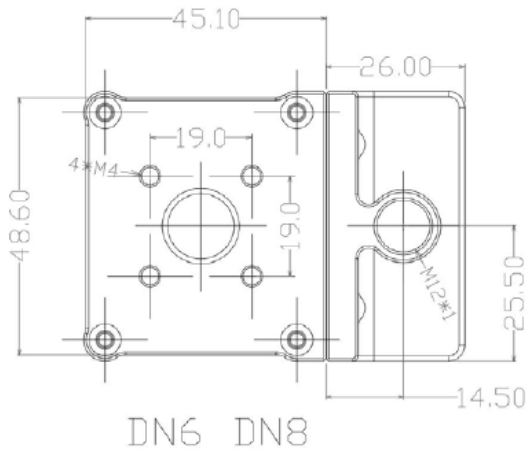
9.1 Clamp type without display:



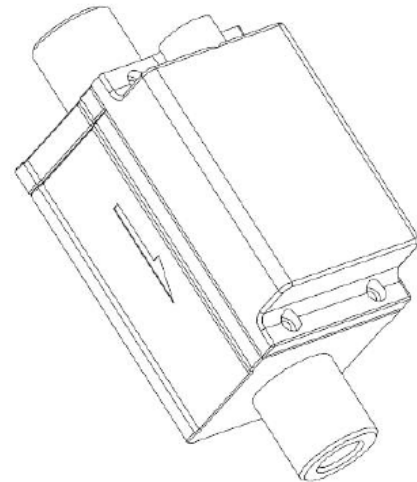
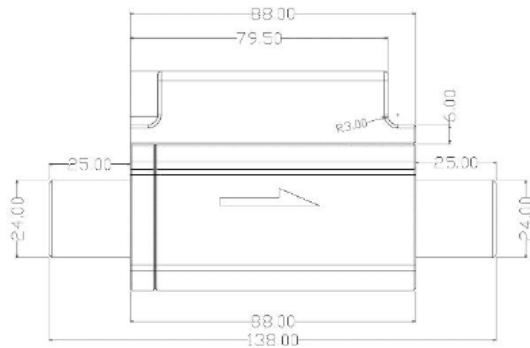


9.2 Clamp type with Display:

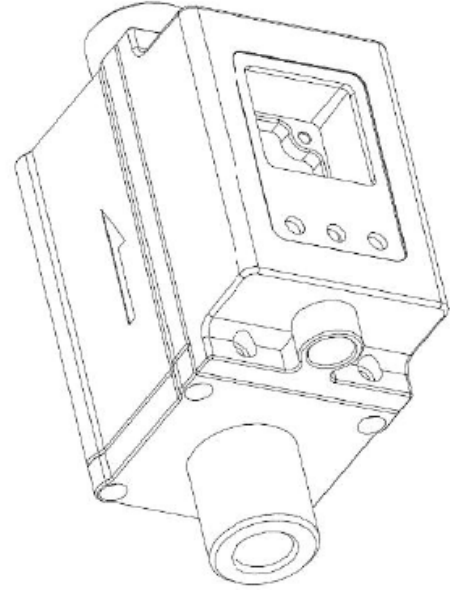
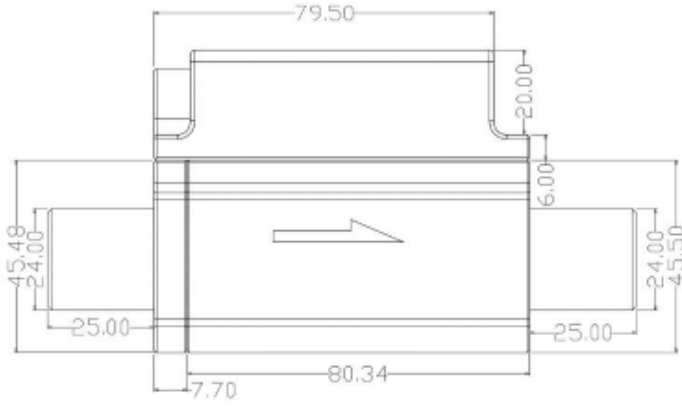




9.3 Screw thread type without Display:



9.4 Screw thread type without Display:



10 - Appendix

10.1 Modbus Address

Modbus registers	Number of registers	Data type	Parameter	Unit	Access permissions	Description
0000	2	float	flow rate	m/s	R	It is updated once per measurement cycle
0002	2	float	volumetric flow	same as the user unit	R	
0004	2	float	percen of flow	%	R	Volumetric flow as a percent of full scale
0006	4	double	user totalizer 1	same as the user unit	R/W	This can be changed via the multi-register write command
0010	4	double	user totalizer 2		R/W	
0014	4	double	system forward accumulator	m3	R	-
0018	4	double	system reverse accumulator	m3	R	-
0022	2	float	temperature	°C	R	-
0024	2	uint32-t	alarm	-	R	0x0000 No: 0x0001: Empty alarm 0x0002: Flow reverse alarm 0x0004: Flow upper limit alarm 0x0008: Lower flow limit alarm 0x0010: Excitation coil alarm 0x0020: Stroage Abnormal Alarm 0x0040: Electrode low resistance alarm 0x0080: Upper temperature alarm 0x0100: Lower temperature limit alarm 0x0020: Current open circuit alarm
0026	1	uint16-t	flow direction	-	R	0: forward 1: reverse
0027	2	float	Electrode impedace	ohm	R	-
0029	2	float	PT1000 resistance value	ohm	R	



10.2 Flow Range

Size	Low Range (60Nm/s)	Standart Range (100Nm/s)	Wide Range (100Nm/s)
DN8	0,1...25,08 Nm ³ /h	0,17...32,47 Nm ³ /h	0,2...45,1 Nm ³ /h
DN15	0,1...38,15 Nm ³ /h	0,17...63,63 Nm ³ /h	0,2...76,3 Nm ³ /h
DN20	0,2...67,85 Nm ³ /h	0,34...127,26 Nm ³ /h	0,4...135,7 Nm ³ /h
DN25	0,3...106 Nm ³ /h	0,51...190,89 Nm ³ /h	0,6...212 Nm ³ /h
DN32	0,45...173,7 Nm ³ /h	0,76...289,73 Nm ³ /h	0,9...347,4 Nm ³ /h
DN40	0,7...271,4 Nm ³ /h	1,17...437,68 Nm ³ /h	1,4...542,8 Nm ³ /h
DN50	1,1...424,1 Nm ³ /h	1,84...707,39 Nm ³ /h	2,2...848,2 Nm ³ /h

