REINMEER

www.reinmeer.com

RM-TD-F SERIES
TURBINE FLOWMETER WITH HIRSCHMANN

PULSE | FREQUENCY | RS485 MODBUS |
4...20MA OPTIONAL / ON REQUEST

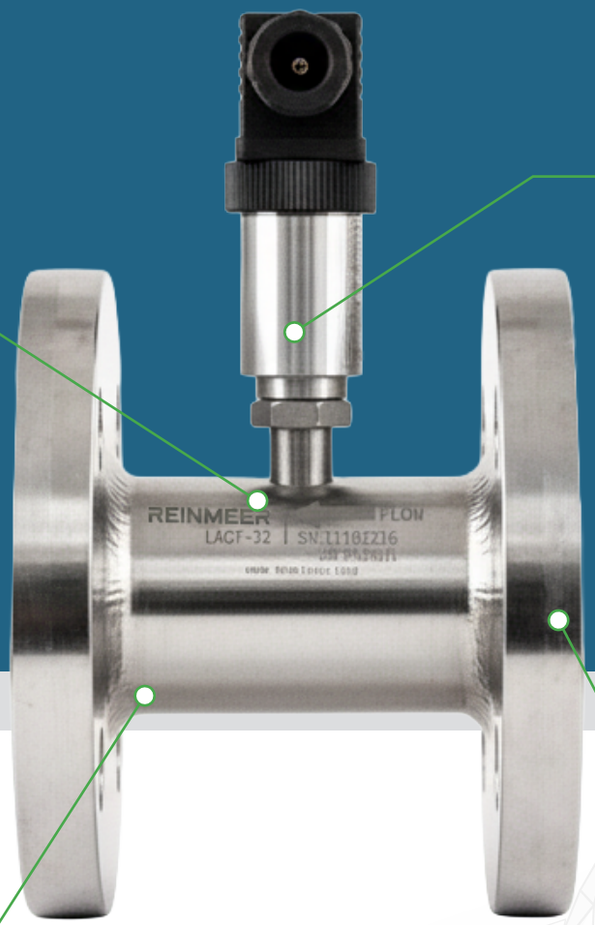
RELIABLE MEASUREMENTS FOR THE RIGHT DECISIONS

LIQUID **GAS**

REINMEER

RM-TD-F SERIES

TURBINE FLOWMETER WITH HIRSCHMANN



ALUMINUM DIE-CAST ELECTRONIC HOUSING

Robust housing suitable for industrial environments

STAINLESS STEEL PROCESS CONNECTION

Ensures secure and reliable process connection

STAINLESS STEEL FLANGED CONNECTION

Standard flanged connection for easy installation

CORROSION-RESISTANT STAINLESS STEEL FLOW BODY

PULSE | FREQUENCY | RS485 MODBUS |

4...20MA OPTIONAL / ON REQUEST

www.reinmeer.com

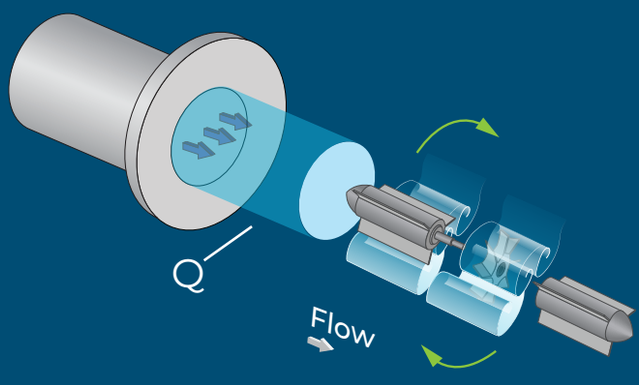
WORKING PRINCIPLE

The RM-TD Series turbine flowmeters operate on the advanced principle of converting the kinetic energy of a moving fluid into a measurable mechanical rotation.

When the process medium enters the meter body, it is guided through internal flow conditioners that stabilize the flow profile. This preparation ensures that the fluid strikes the multi-blade turbine rotor with maximum efficiency and minimal turbulence.

Calculation of Volume Flow

$$Q = \frac{f \times 60}{K}$$



Q = Volume flow (l/min)

f = Output frequency (Hz)

K = K-Factor (pulses/litre)

The high-grade turbine rotor is mounted on precision bearings within the flow path, allowing it to rotate freely. As the fluid moves through the pipe, its velocity forces the rotor to spin at a rate that is directly proportional to the volumetric flow rate. This linear relationship between fluid velocity and rotor speed is the foundation of the device's high measurement accuracy across its entire operating range.

As the turbine rotor spins, its blades pass through a magnetic field generated by a high-precision pick-up sensor mounted on the exterior of the meter body. The rotor blades are typically manufactured from paramagnetic materials, which means each passing blade disturbs the magnetic flux. This interaction induces a distinct electrical pulse, creating a continuous pulse train whose frequency corresponds to the flow speed.

This non-intrusive sensing technology is a key advantage of the RM-TD Series. Since there is no physical or mechanical connection between the internal moving parts and the external electronic sensors, the risk of pressure loss or leakage is significantly minimized. This design ensures long-term operational reliability and reduces maintenance requirements, even in demanding industrial environments.

The induced electrical pulses are transmitted to the integrated electronic converter unit. Here, sophisticated microprocessors analyze the frequency of the pulse signals to calculate both the instantaneous flow rate and the cumulative total volume. The unit can also apply compensation factors to account for different fluid viscosities or temperatures, ensuring the data remains precise under varying conditions.

In the final stage of the process, the calculated data is displayed on the high-contrast local LCD interface for immediate on-site monitoring. Simultaneously, the RM-TD Series supports seamless industrial integration by providing a variety of output options. These include standard 4-20mA analog signals, pulse outputs, and digital communication protocols, allowing the flowmeter to transmit vital data to remote PLC or SCADA control systems.

APPLICATION AREAS

flanged turbine flowmeters with indicator are suitable for accurate flow measurement of clean, homogeneous liquids with low to medium viscosity such as water, light oils, fuels, solvents, and similar fluids. They provide high accuracy and repeatability in processes where reliable flow monitoring is required, allowing direct on-site indication of both instantaneous flow rate and totalized flow. The flanged connection ensures easy installation and secure operation in industrial pipelines.

These flowmeters are widely used in chemical and petrochemical plants, power generation facilities, water and wastewater treatment systems, food and beverage industry, and general process automation applications. Thanks to their integrated mechanical or electronic indicator, they enable local flow reading without the need for external power supply or control systems, making operation, monitoring, and maintenance more practical and efficient.

Chemical Industry

Agricalture

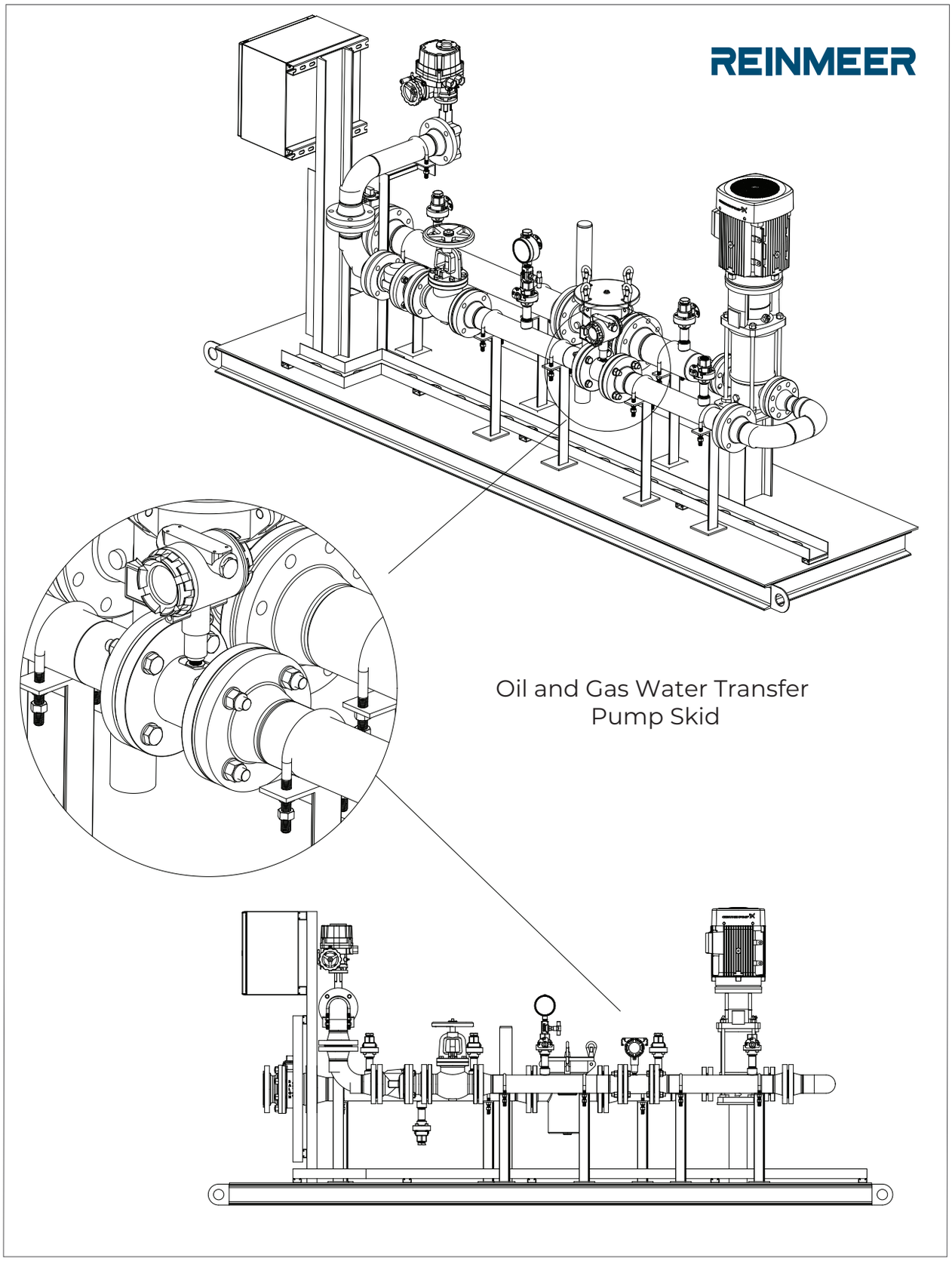
Food & Beverages

Water and Wastewater

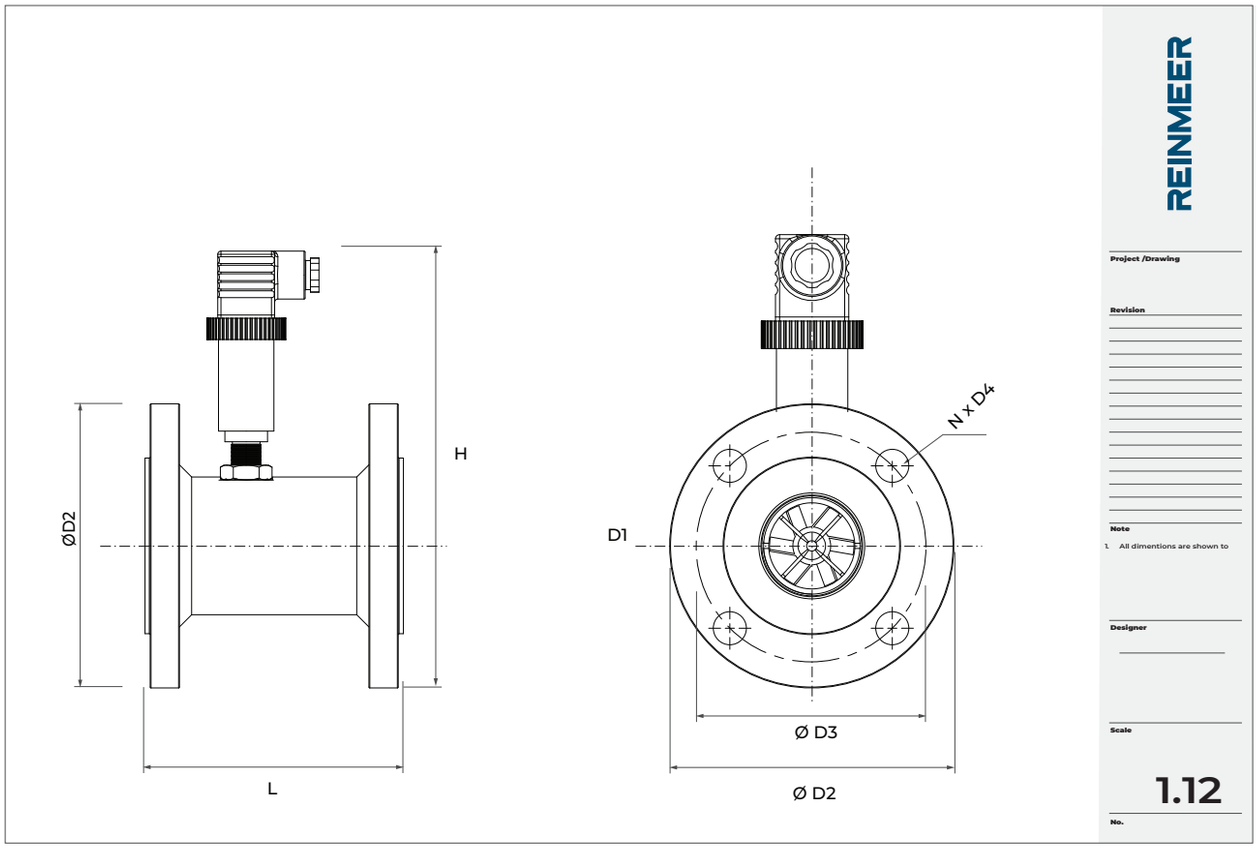
Paper Industry

Mining

APPLICATION



ELECTRONIC UNIT WITH FLANGED MOUNT / TECHNICAL DRAWING



TurbineFlowmeter Connection Dimensions

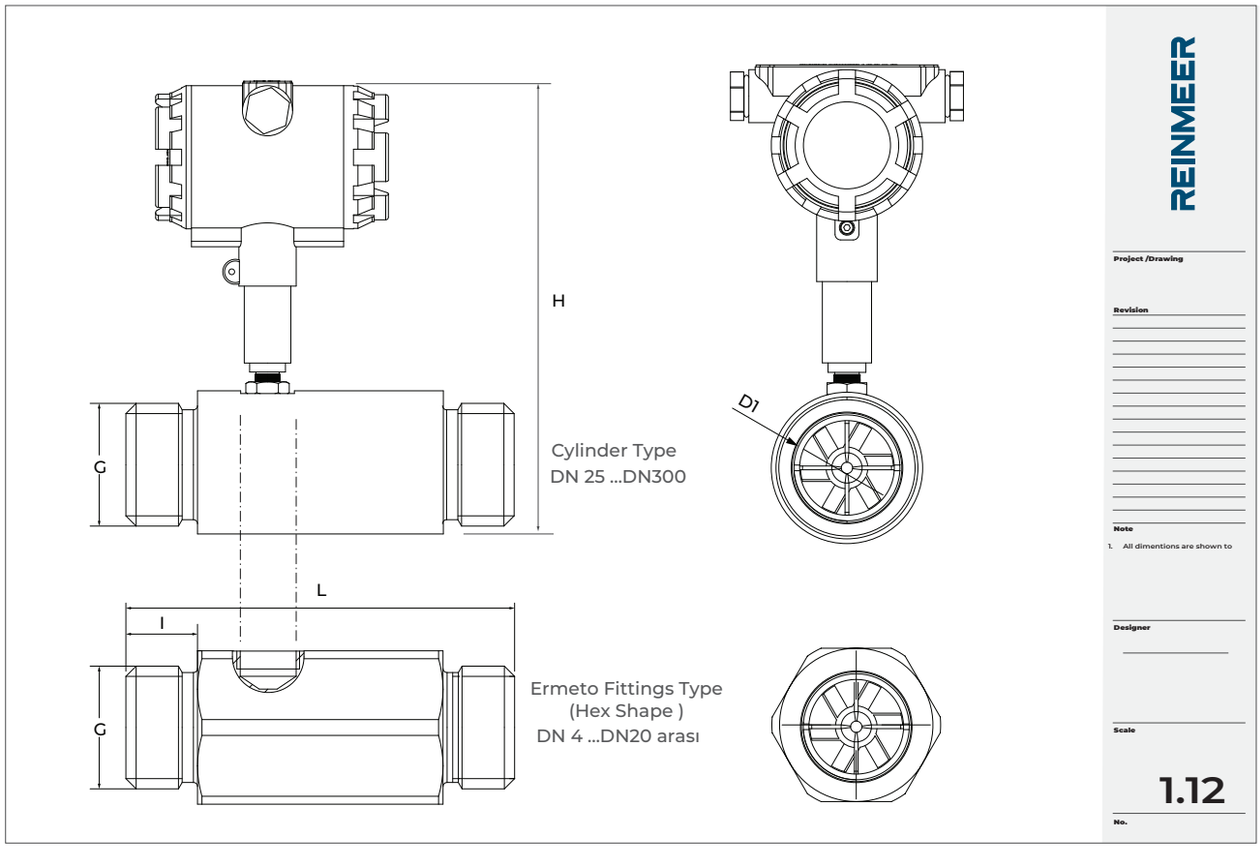
DN (mm)	Pressure Class	FLANGE									
		Measurement Rangem3/h	Average Puls / Litre	l(mm)	L(mm)	D1 (mm)	D2 (mm)	D3 (mm)	N x D4 (mm)	H (mm) DIN 43650	Weight (kg) (Displayed)
15	40 Bar	0,6-6	900	14	75	15	95	65	4x14	173	4,2
20		0,8-8	600	20	75	20	105	75	4x14	178	4,7
25		1,0-10	336	16	100	25	115	85	4x14	189	5,7
32		1,6-16	135	18	120	32	140	100	4x18	202	57
40		2-20	89	18	140	40	150	110	4x18	211	7,9
50		4,0-40	41	20	150	50	165	125	4x18	229	10,9
65	25 Bar	7,0-70	17	22	175	65	185	145	4x18	245	15,1
80		10-100	11	24	200	80	200	160	4x18	259	17,2
100	16 Bar	20-200	7.5	22	220	100	220	180	4x18	282	20,2
150		30-300	2.1	24	300	150	285	240	8x22	340	27,4
200		80-800	1.8	24	360	200	340	295	8x22	392	34,5

*** Flange connections are based on EN-1092

*** Flange connections are based on EN-1092

*** "Manufacturing according to different flange standards is available upon request."

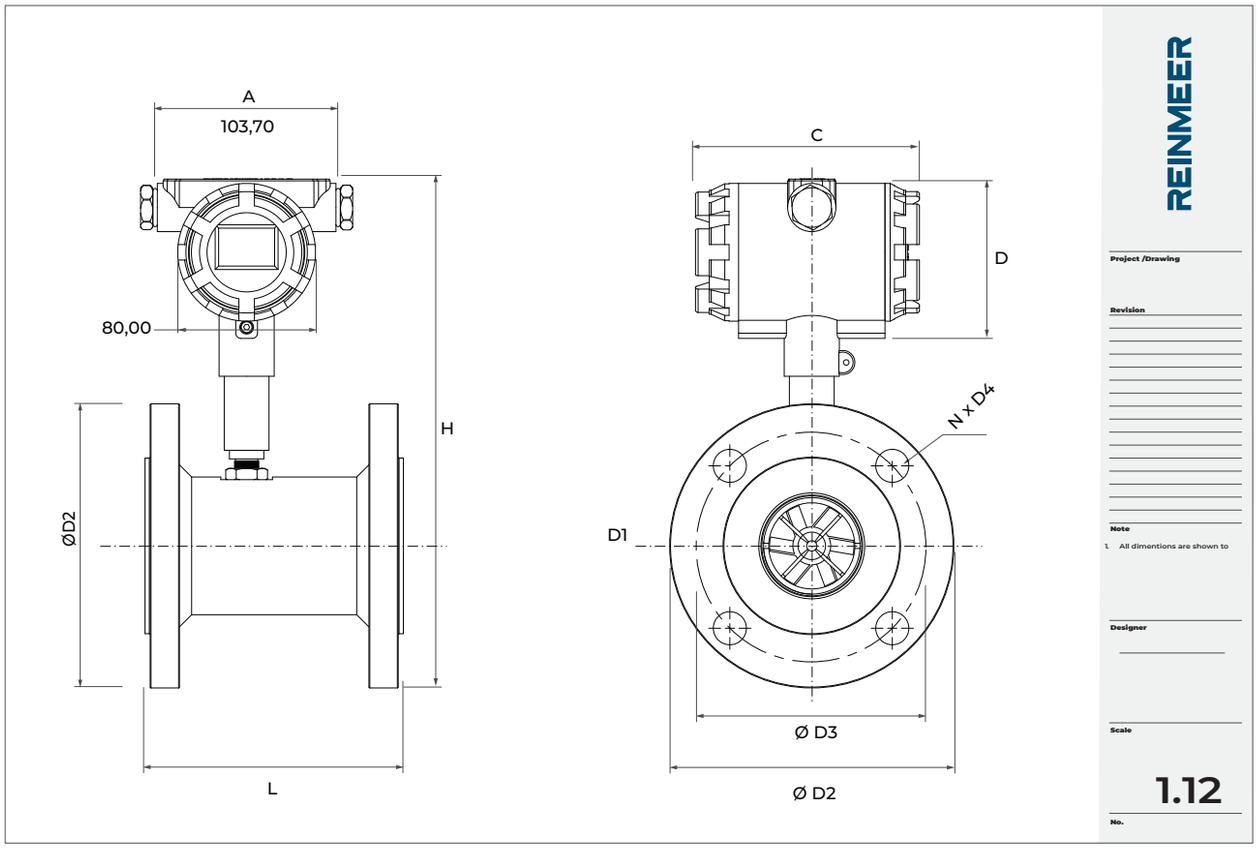
ELECTRONIC UNIT WITH THREADED MOUNT / TECHNICAL DRAWING



Turbine Flowmeter Connection Dimensions

DN (mm)	Pressure Class	THREAD								
		Measurement Range m3/h	Average Puls / Litre	G	I(mm)	L(mm)	D1 (mm)	H (mm) (Display)	H (mm) DIN 43650	Weight (kg) (Display)
4	40 Bar	0,04 - 0,27	9900	3/8”	7	40	4	200	127	2,8
6		0,1 - 0,6	10000	3/8”	11	50	6	200	127	2,8
10		0,2 - 1,2	3600	1/2”	16	60	10	200	127	2,9
15		0,6 - 6	900	1”	19,5	75	15	216	143	3,1
20		0,8 - 8	600	1”	19,5	75	20	216	143	3,1
25		1,0 - 10	336	1 -1/4”	23	100	25	231	158	3,6
32		1,6 - 16	135	1 -1/2”	23	120	32	231	158	3,9
40		2 - 20	89	2”	25	140	40	239	166	4,3
50		4,0 - 40	41	2 -1/2”	26	150	50	239	186	6,3

ELECTRONIC UNIT WITH FLANGED MOUNT / TECHNICAL DRAWING



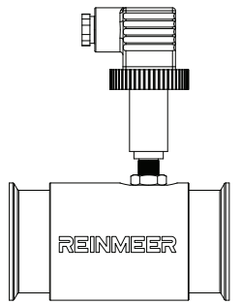
Turbine Flowmeter Connection Dimensions

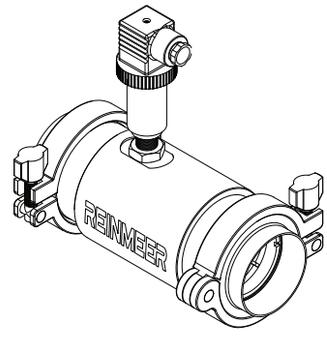
DN (mm)	Pressure Class	FLANGE									
		Measurement Rangem3/h	Average Puls / Litre	l(mm)	L(mm)	D1 (mm)	D2 (mm)	D3 (mm)	N x D4 (mm)	H (mm) (Display)	Weight (kg) (Displayed)
15	40 Bar	0,6-6	900	14	75	15	95	65	4x14	246	4,2
20		0,8-8	600	20	75	20	105	75	4x14	251	4,7
25		1,0-10	336	16	100	25	115	85	4x14	262	5,7
32		1,6-16	135	18	120	32	140	100	4x18	275	57
40		2-20	89	18	140	40	150	110	4x18	284	7,9
50		4,0-40	41	20	150	50	165	125	4x18	302	10,9
65	25 Bar	7,0-70	17	22	175	65	185	145	4x18	318	15,1
80		10-100	11	24	200	80	200	160	4x18	332	17,2
100	16 Bar	20-200	7.5	22	220	100	220	180	4x18	355	20,2
150		30-300	2.1	24	300	150	285	240	8x22	413	27,4
200		80-800	1.8	24	360	200	340	295	8x22	465	34,5

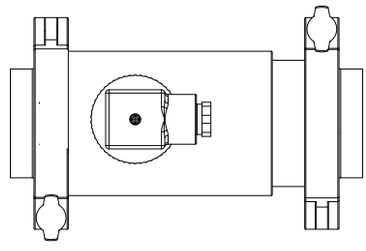
*** Flange connections are based on EN-1092

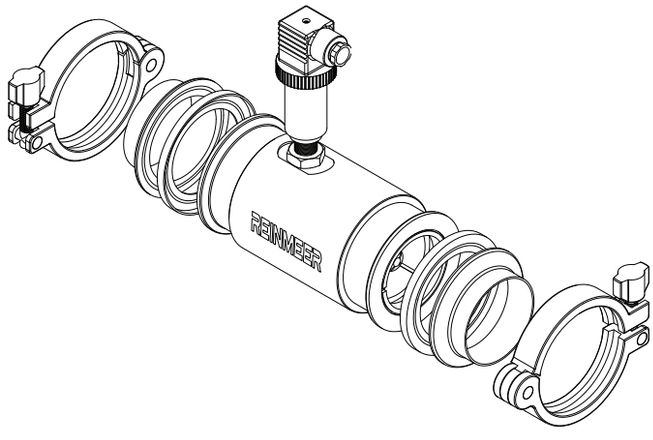
TURBINE CLAMP VERSION

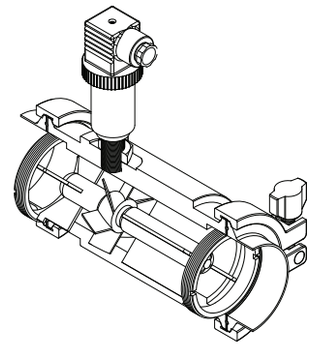
FRONT VIEW OF THE SENSOR











REINMEER Project / Drawing	Revision	Note 1. All dimensions are shown Designer	Scale 1.12 No.

TECHNICAL SPECIFICATIONS

LIQUID

STAINLESS STEEL TURBINE FLOWMETERS (LIQUID)

Measurement Media	Liquids below 20 cSt viscosity
Diameter	DN02...DN50 (Male thread) DN15...DN200 (Flange)
Flow Range	0.036...1,400 m³/hour
Accuracy	±0.5% of M.V. (Standard), ±0.2% (Optional)
Process Temperature	-20°C ... 120°C
Process Pressure	Up to 63 Bar
Power Supply	5...24 VDC, 3.6 V Lithium Battery
Protection Class	IP65, IP67 (Depending on electronics)
ATEX Class	Ex d IIC T6 Gb
Output	Pulse, 4...20 mA, 0...10 V, RS485 (selectable)
Options	Local OLED Display
Flow Direction	Unidirectional (indicated by arrow)

GAS

STAINLESS STEEL TURBINE FLOWMETERS (GAS)

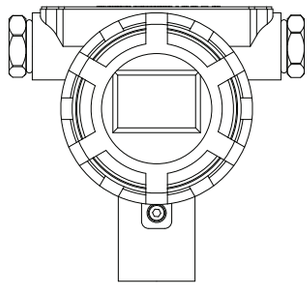
Measurement Media	All homogeneous gases
Diameter	DN15...DN200 (Flange)
Flow Range	1.5...4,000 m³/h (0.1...25 m/s)
Accuracy	±1% F.S.
Process Temperature	-20°C ... 120°C
Process Pressure	Up to 63 Bar
Power Supply	5...24 VDC, 3.6 V Lithium Battery
Protection Class	IP65, IP67 (Depending on electronics)
ATEX Class	Ex d IIC T6 Gb
Output	Pulse, 4...20 mA, 0...10 V, RS485 (selectable)
Options	Local OLED Display
Flow Direction	Unidirectional (indicated by arrow)

TRANSMITTER (ELECTRONIC UNIT)

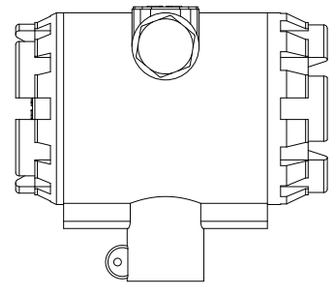
Power Supply	8...36 VDC
Power Consumption	2 W
Display	OLED Graphic Display
Input Frequency Range	0.01 Hz – 10 kHz
Operating Temperature	-20...+70 °C
Protection Class	IP67
Load Resistance	60 Ω
Outputs	4–20 mA (three-wire), Pulse (passive), RS485 Modbus
Flow Units	Liter, m^3, kg, Ton, Gallon, lb, Ugal, ft^3
Language Options	Turkish / English
Menu Structure	Functional menu
Functions	Current and pulse simulation, total and instantaneous flow
Indication	Instantaneous flow and totalizer (12-digit total)

*** The specified temperature range refers to the operating temperature of the electronic unit, not the process fluid temperature.
*** Explosion Protection ATEX certified Ex-proof enclosure (optional)

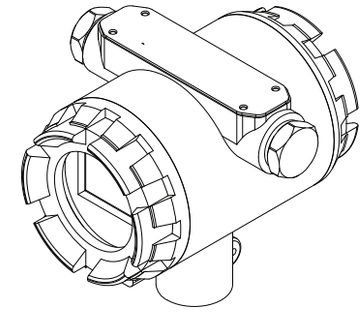
Front Panel



Side View

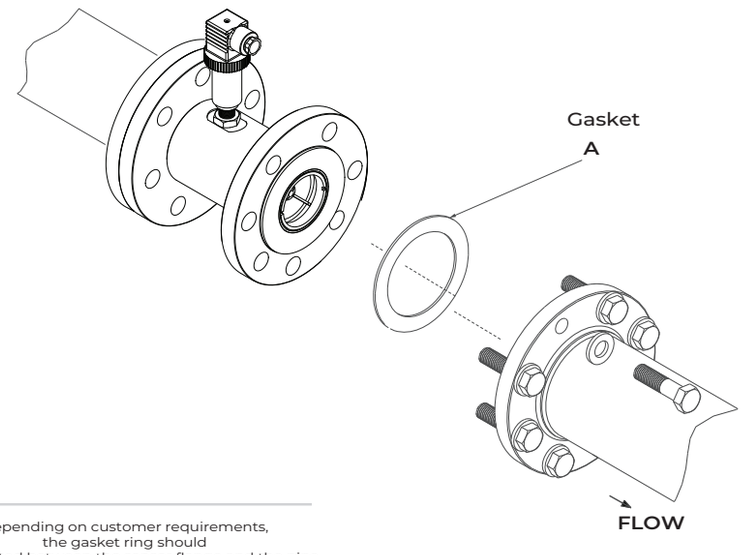


Rear Panel



POSITION OF FLANGE SEALS

It is mandatory to use a grounding ring in plastic lines and in lines with pipe insulation.



Depending on customer requirements,
the gasket ring should
be mounted between the sensor flange and the pipe.

REINMEER

Project /Drawing

Revision

Note

1. All dimentions are shown to

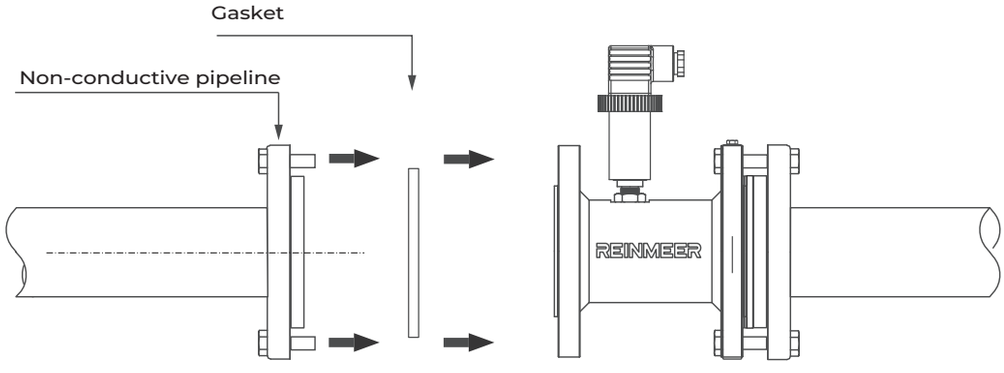
Designer

Scale

1.12

No.

It is mandatory to use a grounding ring in plastic lines and in lines with pipe insulation.



Gasket positioning

REINMEER

Project /Drawing

Revision

Note

1. All dimentions are shown to

Designer

Scale

1.12

No.

TECHNICAL SPECIFICATIONS FOR LIQUID AND GAS FLOWMETERS

STAINLESS STEEL TURBINE FLOWMETER (LIQUID)

LIQUID

STAINLESS STEEL TURBINE FLOWMETER (LIQUID)		
DN (mm)	DESCRIPTION	CONNECTION
DN-2	1.3 - 2 L/min * 63 Bar	3/8" Threaded
DN-4	0.6 - 4.5 L/min * 63 Bar	3/8" Threaded
DN-6	1.5 - 10 L/min * 63 Bar	3/8" Threaded
DN-10	3 - 20 L/min * 63 Bar	1/2" Threaded
DN-15	10 - 100 L/min * 63 Bar	1" Threaded
DN-20	13 - 133 L/min * 63 Bar	1" Threaded
DN-25	16 - 165 L/min * 63 Bar	1 1/4" Threaded
DN-32	25 - 250 L/min * 25 Bar	1 1/2" Threaded or DN32 Flanged
DN-40	33 - 335 L/min * 25 Bar	2" Threaded or DN40 Flanged
DN-50	4 - 40 m3/h * 25 Bar	DN50 Flanged
DN-65	7 - 70 m3/h * 25 Bar	DN65 Flanged
DN-80	10 - 100 m3/h * 25 Bar	DN80 Flanged
DN-100	20 - 200 m3/h * 16 Bar	DN100 Flanged
DN-150	30 - 300 m3/h * 16 Bar	DN150 Flanged
DN-200	80 - 800 m3/h * 16 Bar	DN200 Flanged

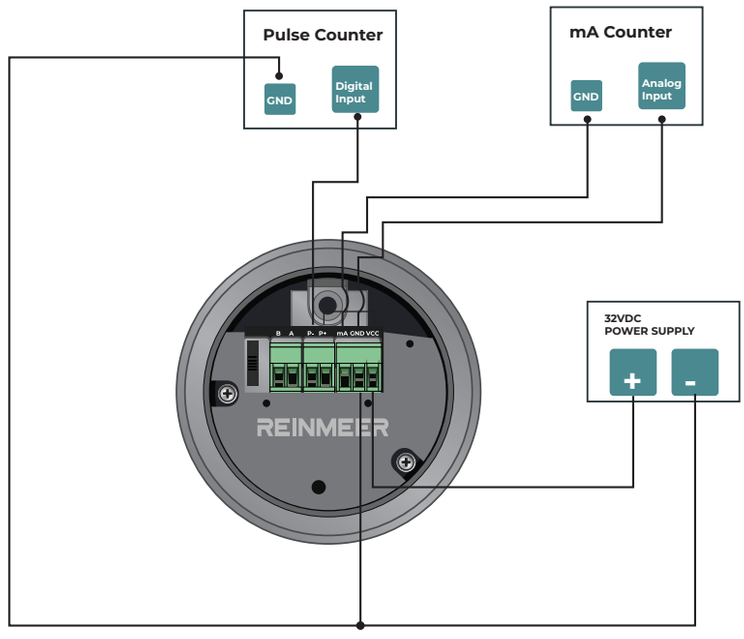
STAINLESS STEEL TURBINE FLOWMETER (GAS)

GAS

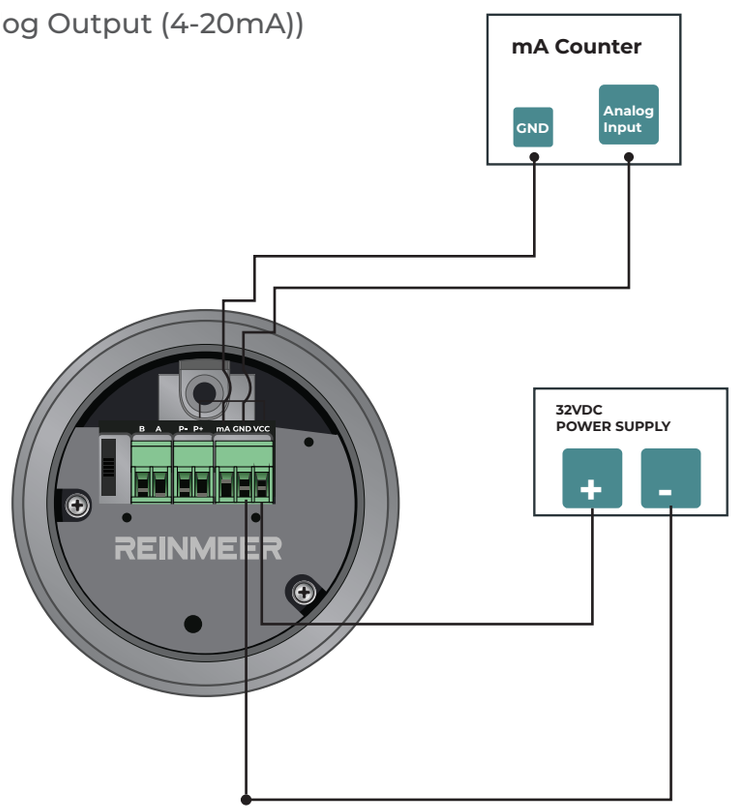
STAINLESS STEEL TURBINE FLOWMETER (GAS)	
DN (mm)	DESCRIPTION
DN-15	1.5 - 7.5 m3/h
DN-25	6 - 42 m3/h
DN-40	8.4 - 84 m3/h
DN-50	16.8 - 168 m3/h
DN-80	34 - 340 m3/h
DN-100	51 - 510 m3/h
DN-150	98 - 980 m3/h
DN-200	170 - 1,700 m3/h
DN-250	230 - 2,300 m3/h
DN-300	400 - 4,000 m3/h

ELECTRONIC CARD CONNECTION

Outputs (4-20, Pulse, Modbus)



Outputs (Analog Output (4-20mA))



REINMEER

Project / Drawing

Revision

Not

1. All dimensions are shown

Designer

Scale

1.12

No.

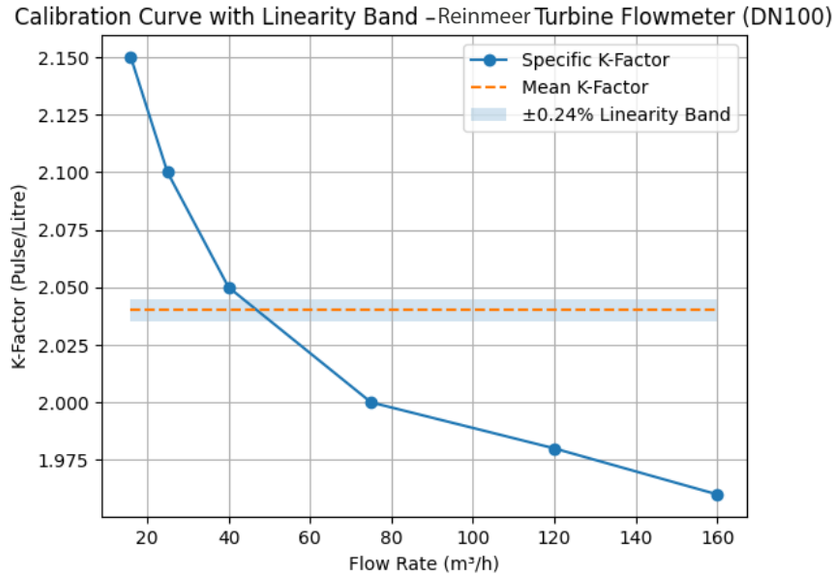
CALIBRATION

Calibration Characteristics of Turbine Flowmeters

Each Reinmeer turbine flowmeter is individually calibrated under controlled conditions to ensure high accuracy and repeatability over its specified measuring range. Calibration is performed by relating the measured output signal (pulse/frequency) to the actual volumetric flow rate.

The calibration process determines the K-Factor (pulse per litre), which represents the number of output pulses generated for a defined volume of fluid passing through the meter.

Flanged Type Turbine Flowmeters – Representative Calibration Curve (DN100)



Calibration Curve and K-Factor Behavior

The calibration curves illustrate the relationship between flow rate and the corresponding K-Factor.

At lower flow rates, the K-Factor is typically higher due to mechanical and hydraulic effects inherent to turbine flowmeter operation. As the flow rate increases, the turbine reaches stable rotational conditions and the K-Factor gradually decreases and stabilizes. This behavior is a characteristic and expected feature of turbine flowmeters and indicates proper mechanical design and flow profile development.

All calibration curves are evaluated against the specified ±0.24% linearity band (flanged type).

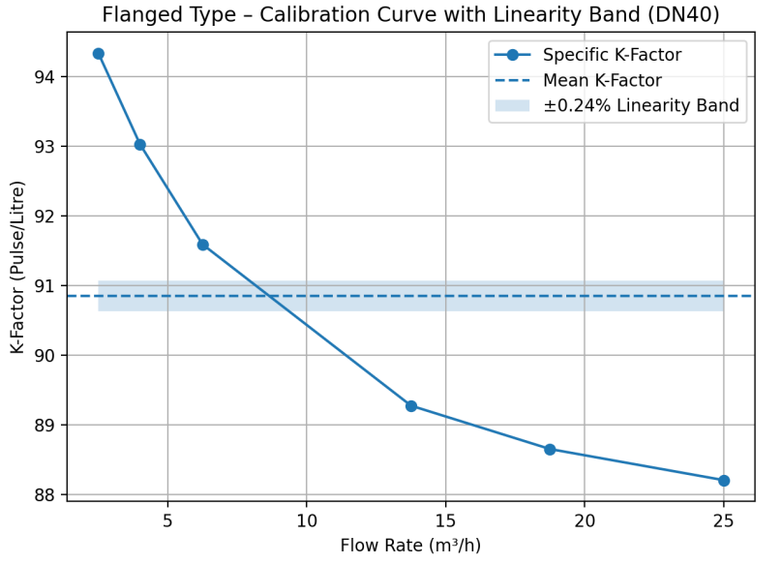
- The measured K-Factor values remain within this tolerance over the operating flow range.
- This confirms the high accuracy, linearity, and repeatability of the flowmeter.

For standard applications, the mean K-Factor may be used.
For applications requiring higher accuracy, flow-rate-specific K-Factors can be applied.

Note: Representative calibration curves. Actual calibration values are provided with the individual calibration certificate.

The calibration curves illustrate the relationship between flow rate and K-Factor for different nominal diameters (DN). The turbine flowmeters exhibit stable and repeatable performance over their respective measuring ranges. The specific K-Factor varies slightly with flow rate, which is a characteristic behavior of turbine flowmeters. All measured values remain within the specified ±0.24% linearity band, confirming high accuracy and measurement stability.

Flanged Type – DN40 Calibration Curve

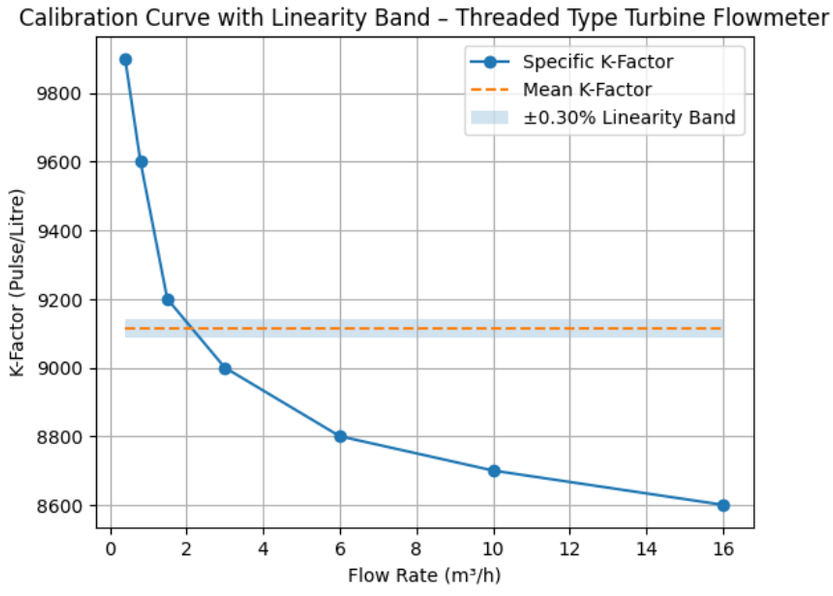


DN-Based Calibration Curves (Flanged Type)

For flanged-type turbine flowmeters, calibration characteristics vary slightly depending on the nominal diameter (DN). DN-based calibration curves are provided to represent the typical behavior of each size across its respective measuring range.

- These curves ensure:
- Reliable performance evaluation for each DN
- Transparent presentation of measurement characteristics
- Consistent behavior across the product family

Threaded Type Turbine Flowmeters – Typical Calibration Curve



The calibration curve illustrates the relationship between flow rate and K-Factor for threaded-type turbine flowmeters.

Due to the smaller nominal diameters and lower flow rates, threaded-type turbine flowmeters exhibit a more pronounced variation of the K-Factor at low flow conditions. This behavior is inherent to turbine flowmeter operation and is mainly influenced by mechanical friction and hydraulic effects.

As the flow rate increases, the turbine reaches stable rotational conditions and the K-Factor gradually decreases and stabilizes.

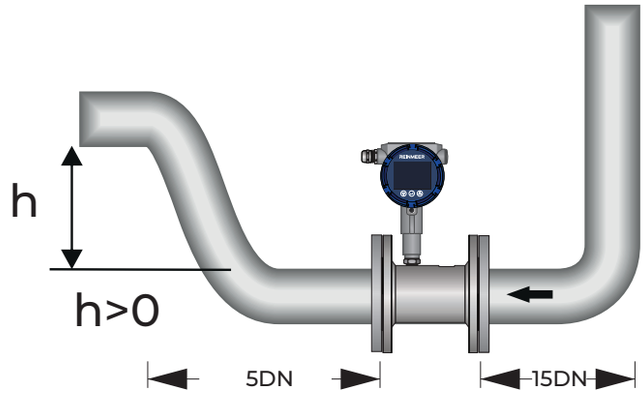
All measured values remain within the specified ±0.30% linearity band, confirming reliable measurement performance, repeatability, and accuracy across the operating range.

Important Note;

The calibration curves shown are representative (typical) characteristics.
Actual calibration values for each flowmeter are supplied with the individual calibration certificate.

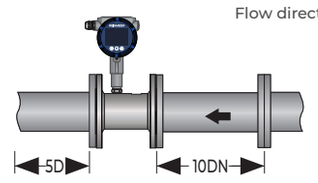
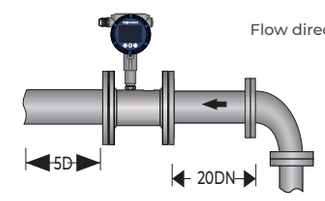
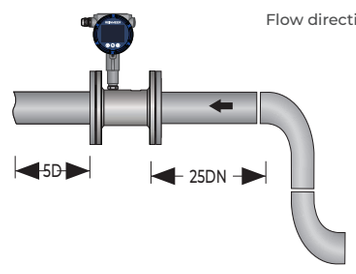
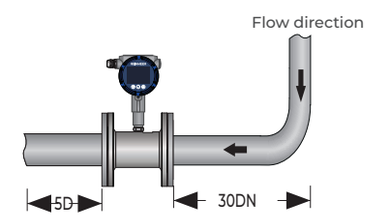
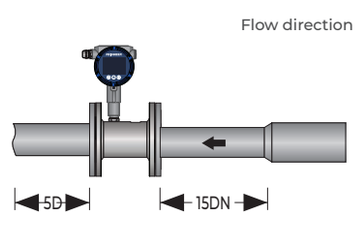
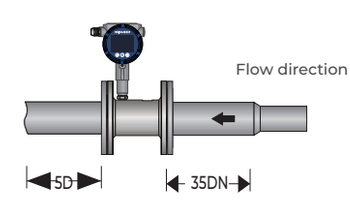
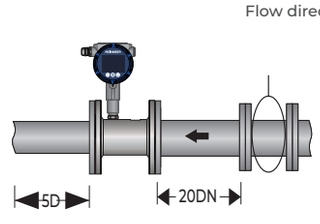
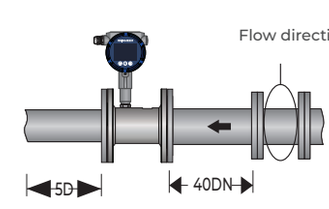
TERMS OF USE

1. • Flowmeters should be installed in a sheltered place, where they will not be affected by electrical and gas installations.
2. • Flowmeter should be mounted away from devices that can generate vibration and electromagnetic fields.
3. • In order to avoid false pulse detection, large motors that may generate electrical noise and strong cable lines should not be mounted close.
4. • It is recommended to make a by-pass line for maintenance and repair at the place where the flowmeter will be mounted.



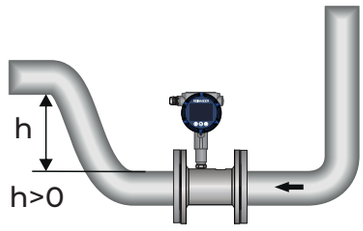
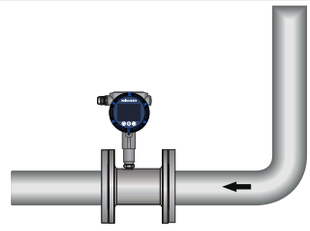
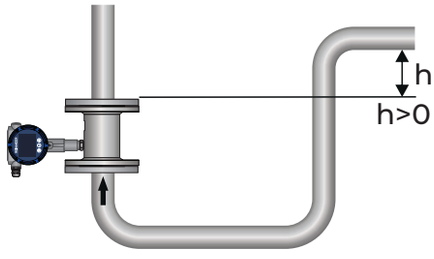
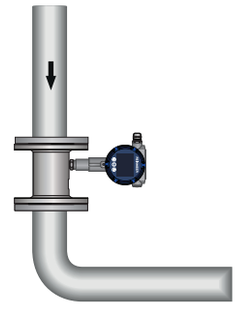
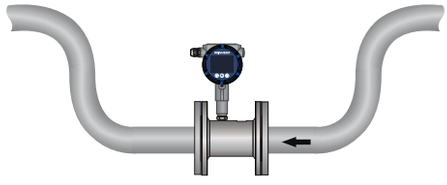
1. • Since there are mechanical parts inside the flowmeter, it is necessary to use a filter before the flowmeter or to make sure that there are no solid parts in the fluid.
2. • The flow direction should be the same as the arrow direction on the flowmeter.
3. • The line where the flow meter will be installed must pass fully.

MOUNTING METHODS

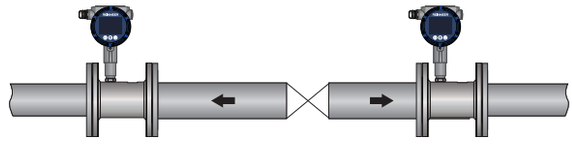
Inlet section (choke type)	Installation conditions			Installation conditions	
	Exit segment	Entrance section		Exit segment	Entrance section
General situation			Two 90° elbows in the same plane		
Two 90° elbows in the same plane			Two 90° elbows in different planes		
Shrink tube (Reducer)			Expansion		
Full open valve			Half open valve		

MOUNTING METHODS

Installation conditions

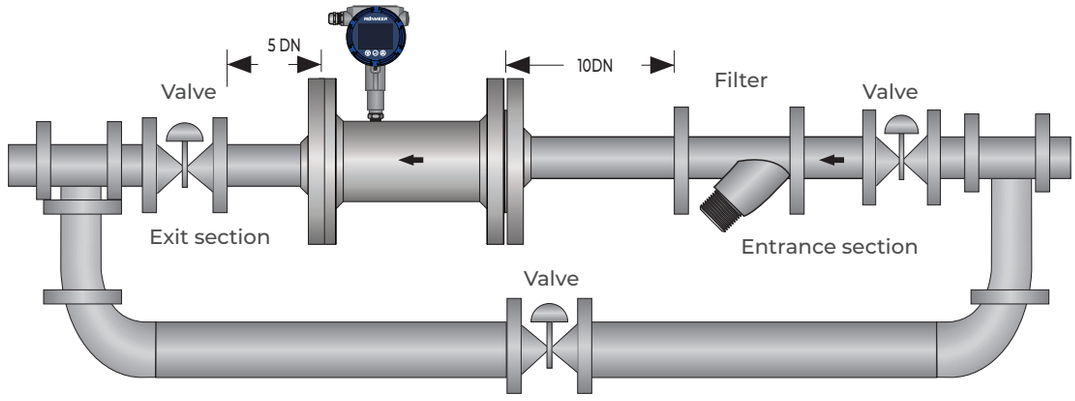
Right	Wrong
	
	
	

Right **Wrong**



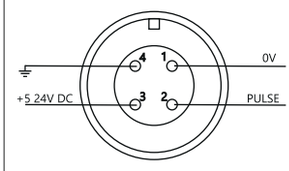
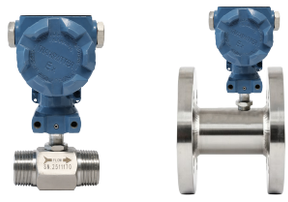
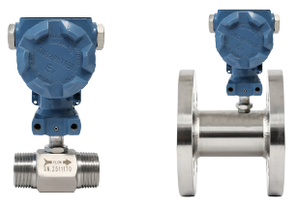
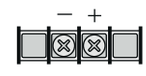
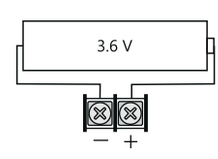
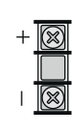
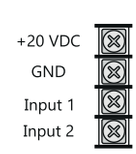
1. Flowmeters should be installed in a sheltered place, where they will not be affected by electrical and gas installations.
2. Flowmeter should be mounted away from devices that can generate vibration and electromagnetic fields.
3. In order to avoid false pulse detection, large motors that may generate electrical noise and strong cable lines should not be mounted close.
4. It is recommended to make a by-pass line for maintenance and repair at the place where the flowmeter will be mounted.
5. Since there are mechanical parts inside the flowmeter, it is necessary to use a filter before the flowmeter or to make sure that there are no solid parts in the fluid.
6. The flow direction should be the same as the arrow direction on the flowmeter.
7. The line where the flow meter will be installed must pass fully.

TURBINE FLOW SENSOR TYPICAL INSTALLATION PIPELINE FORM



- A valve and filter should be installed upstream of the flow sensor.
- The required straight pipe length before the sensor should be ≥ 10 × DN.
- The required straight pipe length after the sensor should be ≥ 5 × DN.
- Shut-off valves should be installed on both sides of the sensor for maintenance purposes.
- When it is not possible to stop the process, a bypass pipeline and a reliable shut-off valve should be installed.
- Ensure that the bypass pipeline does not leak during measurement, otherwise the measurement accuracy will be affected.

OPTIONS

Options		Description	Connection
P		Pulse output • 8 – 32 VDC Supply • -40°C / +120°C Temp. • %0,5 Accuracy	
PEXP		Exproof Pulse Output • 8 – 32 VDC Supply • -40°C /+120°C Temp. • %0,5 Accuracy	
CEXP		Exproof 4–20 mA output • 10 – 30 VDC Supply • -30°C +120°C Temp. • %0,5 Accuracy	
DB		LCD Indicator with battery • 3.6V Lithium • -20°C +100°C Temp. • %0,5 Accuracy	
DCPM		Exproof LCD Indicator • 4–20 mA (three-wire) • Pulse (passive) • RS485 Modbus • 8...36 VDC Supply • -40°C +120°C Temp. • %0,5 Accuracy	
604 **604-2**		Panel-type Indicator • Rs485/Relay output • Opt.: 4–20mA • 220VAC / 24VDC supply • Çift Giriş	

RM - TD - **Liquid** [ ] - **Gas** [ ] / **F.....** [ ] - **T.....** [DN15] - [S4] - [0,2] - [1,6] - [ ]

❶ ❷ ❸ ❹ ❺ ❻

❶ Flow Materials

Liquid	√	L
Gas		G

❷ Size (DN)

(F) Flanged Model Connection Dimensions	√	
DN15	√	DN15
DN20		DN20
DN25		DN25
DN32		DN32
DN40		DN40
DN50		DN50
DN65		DN65
DN80		DN80
DN100		DN100
DN150		DN150
DN200		DN200
(C) Clamp Connection Option		
Please contact sales.		

(T) Threaded Model Connection Dimensions	√	
DN4	√	DN4
DN6		DN6
DN10		DN10
DN15		DN15
DN20		DN20
DN25		DN25
DN32		DN32
DN40		DN40
DN50		DN50

❸ Body Material

SS304 Stainless Steel	√	S4
SS316 Stainless Steel		S6

❹ Accuracy

%0.2 accuracy	√	02
%0.5 accuracy		05

❺ Pressure

PN 1.6MPa	√	C1
PN2.5MPa		C2
PN6.3MPa		C3

High pressure class			
	PN 16 MPa	√	C1
	PN25 MPa		C2
	PN35 MPa		C3

❻ Output Signal

Pulse Output	√	P
Explosion-proof Pulse		PEXP
Explosion-proof 4-20mA		CEXP

❻ Indicator Signal

LCD Display (Battery-powered model, 2-3 years battery life)	√	DB
RS485/4-20mA/Pulse		DCPM
RS485/2x Relay Output		604
4-20mA/RS485/2x Relay Output		604-2

*** For Exit Signal or Indicator options, see page 19.

Contact us

Adress :

Reinmeer Office Address
Eutiner Str.12,22143
Hamburg, Germany
reinmeer@reinmeer.com