S-TMASS

SMART LINE Series

Thermal mass flowmeters



Applications

- Water treatment
- Petrochemical industry, power plants
- Industry of ceramics, glass, building materials
- Air separation systems
- Food, beverage, pharmaceutical industry

Features and Benefits

- Mass or volumetric flow rate of gases
- Does not require temperature and pressure compensation
- Wide range 0.5 ... 100 Nm/s for gases; also for gas leak detection
- Vibration resistant, long service life (no moving parts)
- Ease of installation and maintenance
- Configuration via RS485 or HART interface





S-TMASS

EXTREMELY CONVENIENT FLOW MEASURE FOR PROCESS AND SERVICE APPLICATIONS

The S-**TMASS flowmeters of the Smart Line series** have been developed based on the principle of the thermal dispersion and adopt the method of a constant differential temperature to measure the mass flow or volume flow of gas.

The large display indicated mass flow, volume flow in standard conditions, flow totalizer, date and time, working time and velocity.

They offer the advantage of small size, ease of installation, high repeatability and accuracy.

The thermal principle monitors the effect of heat dispersion (cooling) when a fluid flows over a heated body.

The thermal flowmeter contains two platinum resistance thermometers, one used as a temperature sensor and the other as a heater. The temperature sensor controls the process values while the heater is kept at a constant temperature differential.

The higher the gas speed, the greater the cooling effect and the energy required to maintain the differential temperature. As a result, the measured thermal energy corresponds to the mass flow of the gas.

INSERTION TYPE













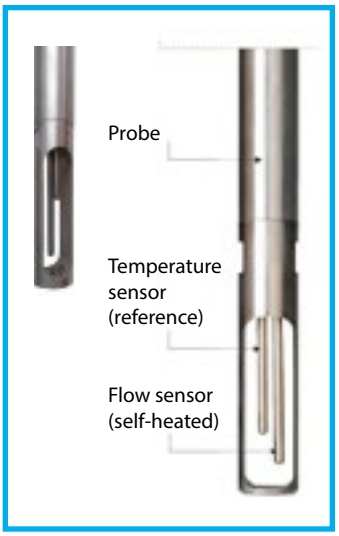
FLANGE TYPE



DN 50

STRUCTURE OF THE SENSOR

The sensitive element should be inserted in the axis of the tube, considering that the bar length depends on of the pipe diameter. If the flowmeter in installed condition does not reach the axis of the tube, at the moment of the order, request the calibration coefficient to ensure accurate measurements.



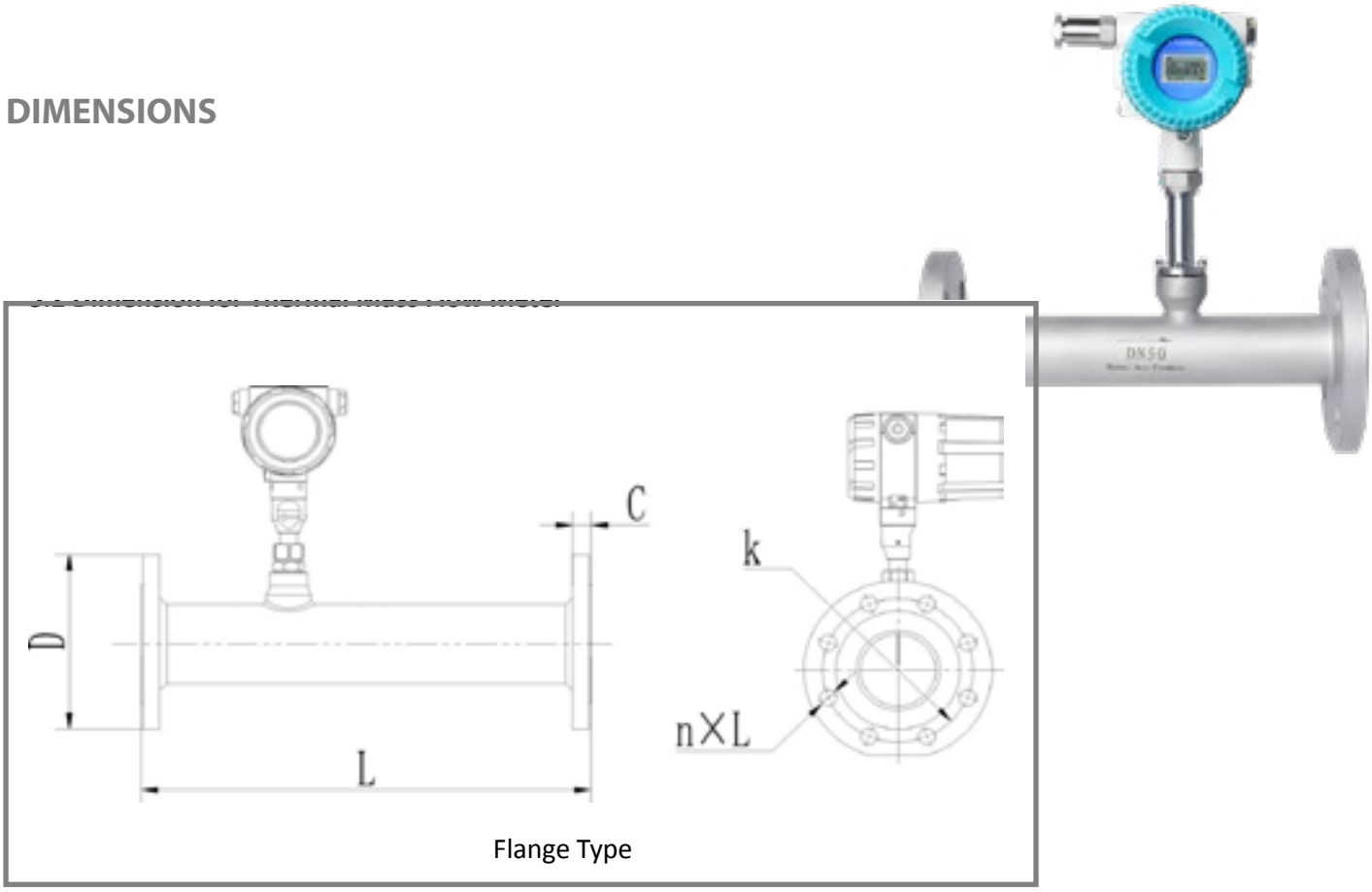
TECHNICAL DATA

Medium	Gas (except acetylene)
Pipe size	DN10-4000 mm
Sensor type	Standard insertion sensor, flange
Design	Compact, separated
Sensor housing material	SS304 or SS 316
Measuring tube material	Carbon steel, stainless steel, plastic etc.
Velocity	0,1-100 N/ms
Medium temperature	Sensor -40...+220 °C; in option max. 350 °C Transmitter -20...+45°C
Working pressure	Medium pressure ≤1,6 MPa
Accuracy	±1,0 ... 2.5%
Power supply	Compact type: 24 VDC or 220 VAC; power consumption ≤18 W Separated type: 220 VAC; power consumption ≤19 W
Response time	1 s
Output	4-20 mA (optoelectronic isolation, max. load 500 Ω), pulse, RS485 (optoelectronic isolation) and HART
Alarm output	Relay, normally open, 10A/220 VAC or 5A/30 VDC
Display	Four-line LCD
Protection degree	IP65

Explosion-proof approvals pending



DIMENSIONS



Flange Type

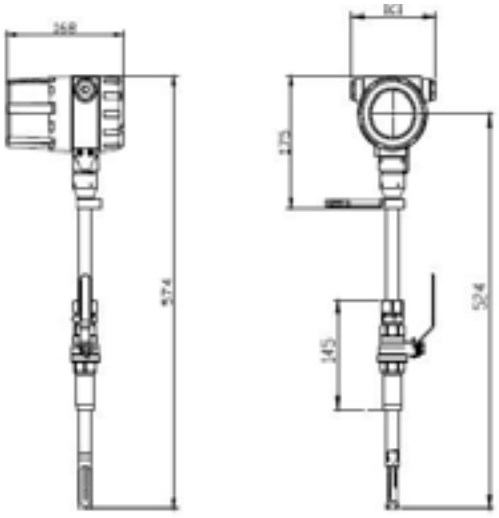
DIN PN16 Flange (Unit: mm)

Nominal Diameter	Flange Outer diameter	Center Hole	Screw Hole	Thread	Sealing Face		Flange Thickness	Pipeline Length
DN	D	k	n×L		d	f	C	L
15	95	65	4×14	M12	46	2	14	280
20	105	75	4×14	M12	56	2	16	280
25	115	85	4×14	M12	65	2	16	280
32	140	100	4×18	M16	76	2	18	350
40	150	110	4×18	M16	84	2	18	350
50	165	125	4×18	M16	99	2	20	350
65	185	145	4×18	M16	118	2	20	400
80	200	160	8×18	M16	132	2	20	400
100	220	180	8×18	M16	156	2	22	500

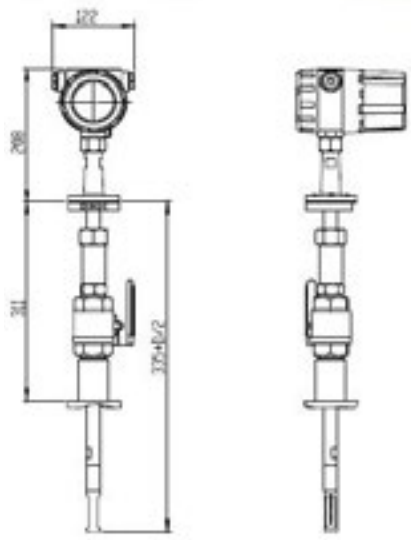
For DIN 15-80, the flowmeter can be ordered with threaded connection. This table is used for the rated pressure of 1.6 Mpa; if higher, please contact us.



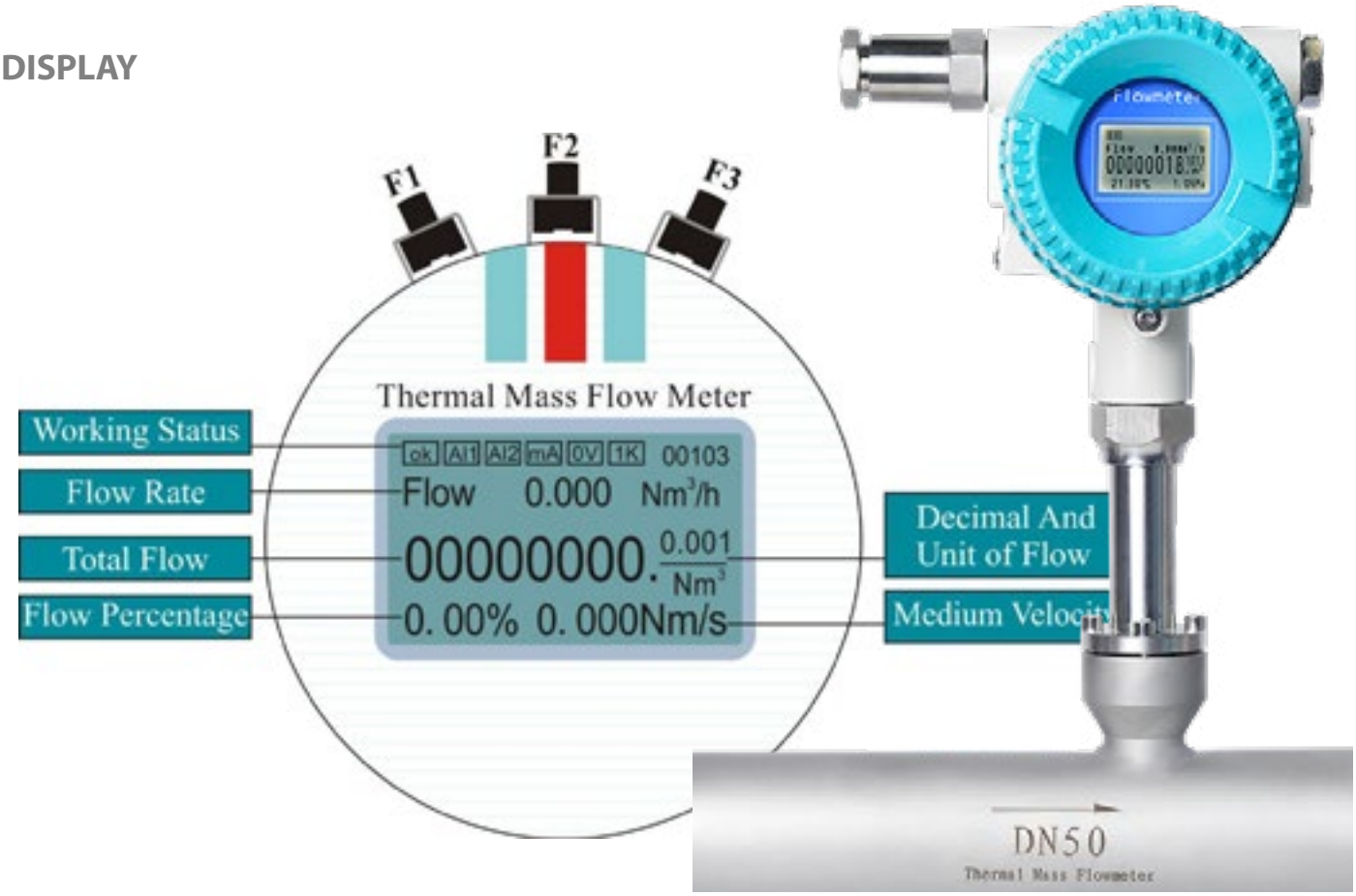
Standard insertion sensor



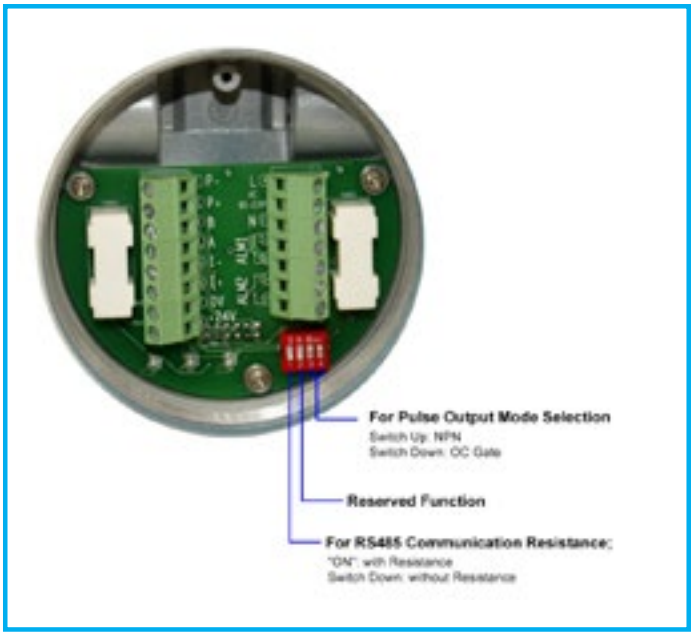
Insertion sensor with compression fitting



DISPLAY



CONNECTING THE TRANSMITTER



Standard electronics



Big size electronics with HART

Example of upper range value for common gas (unit Nm^3/h)

This table can be extended
With temperature 20 °C and pressure 101.23 kPa

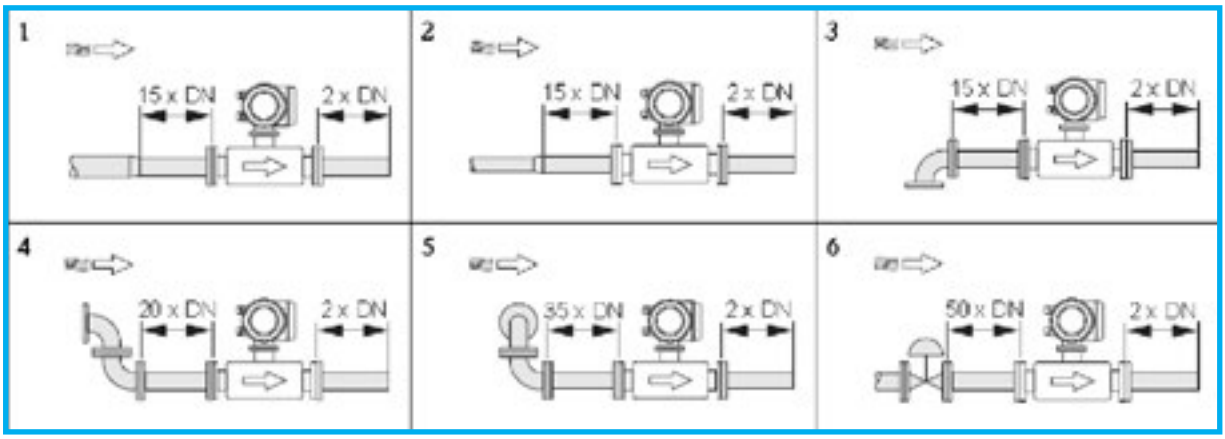
DN (mm)	Air	Nitrogen	Oxygen	Hydrogen
15	65	65	32	10
25	175	175	89	28
32	290	290	144	45
40	450	450	226	70
50	700	700	352	110
65	1200	1200	600	185
80	1800	1800	900	280
100	2800	2800	1420	470
125	4400	4400	2210	700
150	6300	63000	3200	940
200	10000	10000	5650	1880
250	17000	17000	8830	2820
300	25000	25000	12720	4060
400	45000	45000	22608	7200
500	70000	70000	35325	11280
600	100000	100000	50638	16300
700	135000	135000	69240	22100
800	180000	180000	90432	29000
900	220000	220000	114500	77807
1000	280000	280000	141300	81120
1200	400000	400000	203480	91972
1500	600000	600000	31800	10152
2000	700000	700000	565200	18048



INSTALLATION

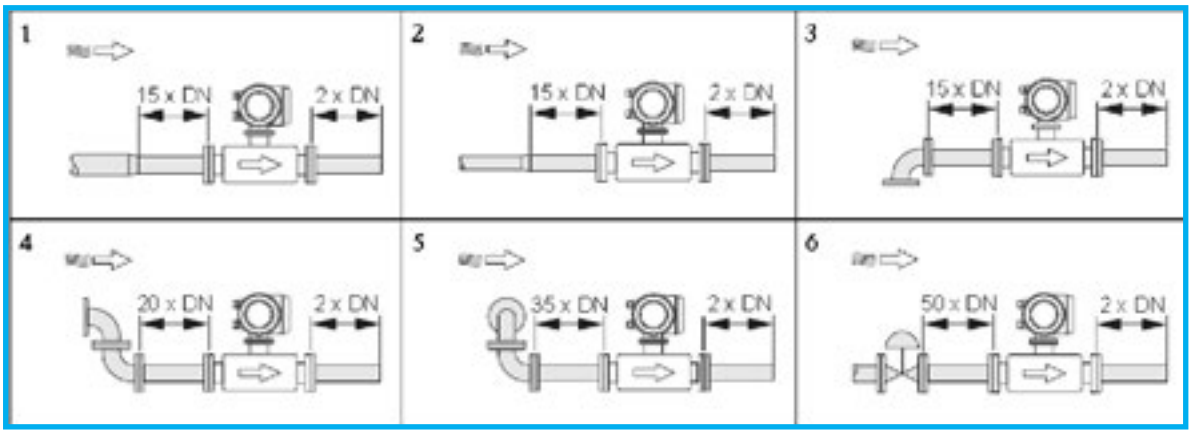
The thermal mass flowmeter requires a fully developed flow profile to ensure correct measurements.
If the gas is very humid or saturated with water (e.g biogas), the piping and the measuring body must be isolated to avoid the generation of water drops on the sensor.

FLANGED SENSOR



1 = reduction, 2 = expansion, 3 = 90° elbow or T-element, 4 = 2 x 90° elbows,
5 = 2 x a 90° elbows (tridimensional), 6 = control valve

INSERTION SENSOR



1 = reduction, 2 = expansion, 3 = 90° elbow or T-element, 4 = 2 x 90° elbows,
5 = 2 x a 90° elbows (tridimensionality), 6 = control valve or pressure regulator



SELECTION GUIDE

The order code consists of the root of the product (S-TMASS-TMF-) followed by the positions based on the selected options.

MODEL	
INSERTION TYPE (12, 14, 19 mm)	I
FLANGE TYPE	F
VERSION	
COMPACT	C
REMOTE (cable 10 m)	R
INSERTION LENGTH (for insertion type)	
200 mm	2
300 mm	3
400 mm	4
500 mm	5
600 mm	6
700 mm	7
800 mm	8
Steam in SS 316 optional	**SS**
PROCESS CONNECTION (insertion type)	
Compression fitting 3/4" SS or 1/2" SS	T
Flange DN 50	F
FLANGE (for flange type SS 304)	
DN 10 mm - 3/8"	10
DN 15 mm - 1/2"	15
DN 20 mm - 3/4"	20
DN 25 mm - 1"	25
DN32 mm - 1 1/4"	30
DN 40 mm -1 1/2"	40
DN 50 mm 2"	50
DN 65 mm - 2 1/2"	65
DN 80 mm - 3"	80
DN 100 mm - 4"	100
DN 125 mm - 5"	125
DN 150 mm - 6"	150
DN 200 mm - 8"	200
Body in SS 316 optional	**SS**

PRESSURE RATING	
2.5 Mpa (not for insertion type)	25
1.6 Mpa	16
1.0 Mpa	10
Higher pressure rating	99
TEMPERATURE RATING	
Max 220 °C	T1
Max 450°C (pending)	T2
POWER SUPPLY	
AC 85…250 V	AC
DC 20…36 V	DC
OUTPUT SIGNAL	
Display + 4 ... 20 mA + Pulse + RS485	RS
Display + 4 ... 20 mA + Pulse + HART	HT



Explosion proof certification pending.



We are a company with more than 50 years of experience in the field of industrial measurement and control instrumentation.

Specifically, we look at the internalization of some measuring systems that, due to shipping speed, performance, and low costs, can be offered in multiple industrial branches, from food to petrochemicals, from pharmaceuticals to energy production, from naval to water treatment.

Each process has specific requirements, which depend on the characteristics of the system, the environment, and the fluid to be treated.

SMERI International offers tailor-made instrumentation for liquids and gases, from the most common to the most critical ones.

We have the luck and the merit to benefit from a young and highly dynamic team of experts, who can recommend ad-hoc solutions for each application to optimize customers' processes in terms of economic efficiency and safety.

The motto is *Finding solutions together* and summarizes the spirit of SMERI: **a close collaboration with the customer and according to an ethical behaviour of respect, fairness, and confidentiality.**

In the European market, SMERI is represented and distributed by companies well-known in the industrial world for their seriousness and experience.

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