



# ALTURBINE

## Turbine Flowmeter

### ALTM-T Series



## GENERAL

SMC's low-cost ALTM turbine flow meters are used for the precise measurement of instantaneous flow rates of low-viscosity fluids such as tap and demineralized water, fuels, liquefied gases, light fuel oils, solvents, and pharmaceutical fluids. Turbine flowmeters measure volumetric flow, where fluid passing through the meter body is measured by the mean velocity of the flowing fluid media. Flow rectifiers ensure a laminar flow in the axial direction of the wheel. A low-mass turbine wheel carried concentrically within the meter body is rotated by the fluid. The RPM of the turbine wheel is directly proportional to the mean flow rate within the meter body and directly corresponds to the volumetric flow over a wide range.



## FEATURES

- High resolution and fast response time within 5 to 50 msec
- Temperature range from -4~ 250°F (-20 ~ +120°C)
- Pressures up to 3,600 psig (250 bars) using optional high pressure flanges
- Sapphire bearings available for very low flows
- Factory calibrated, traceable to NIST
- Battery-powered display available
- RS-485 and HART communications available

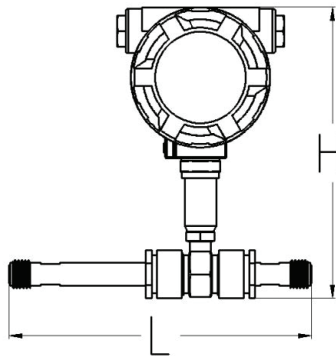


## SPECIFICATIONS

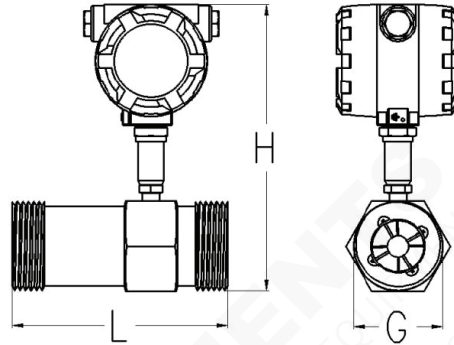
- |                              |   |                                 |   |
|------------------------------|---|---------------------------------|---|
| • Process Connections:       | NPT threads ½"~2" (4~50mm)<br>ANSI/DIN Flange for ½"~8" (15~200mm)  | • Relative Humidity             | 5%~90%  |
| • Line Sizes:                | ½" ~ 8" (4mm~200mm)   | • Power Supply:                 | 11-27 V <sub>DC</sub>   |
| • Process Temperature:       | -4~ 250°F (-20 ~ +120°C)  | • Cable Entry:                  | ½ " NPT   |
| • Operating Pressure:        | up to 3600 psi (25 Mpa)   | • Enclosure:                    | NEMA 4/IP65,<br>UL/FM Class 1,<br>Div 1& 2,<br>Grp A, B, C, D |
| • Accuracy:                  | ±1% of reading Std; ±0.5% Optional  | • Ex- Protection                | ATEXII2G, ExdII CT6   |
| • Materials of Construction: | Body: SS# 304 Std, SS# 316 Optional<br>Rotor: 2Cr13 Stainless Steel<br>Shaft: Tungsten Carbide<br>Bearing: Tungsten Carbide<br>Retaining RIngs: SS# 316 | • Ambient Temperature:          | 15 ~130°F<br>(-10°C~+55°C)                                    |
|                              |   | • Signal Output (std):          | Pulse, or 4-20mA  |
|                              |   | (opt):                          | RS485, HART   |
|                              |   | • Signal Transmission Distance: | ≤1,000 m (3,000 ft)   |

## DIMENSIONS

### ■ Thread connection type



1/8" ~ 3/8" (DN4-DN10): Threaded connections  
(straight pipe run included)

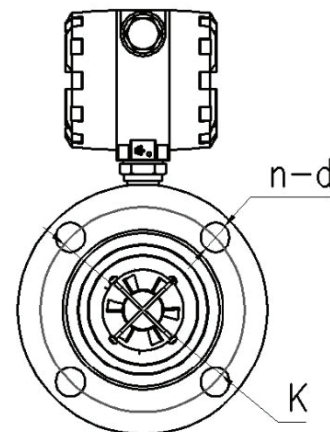
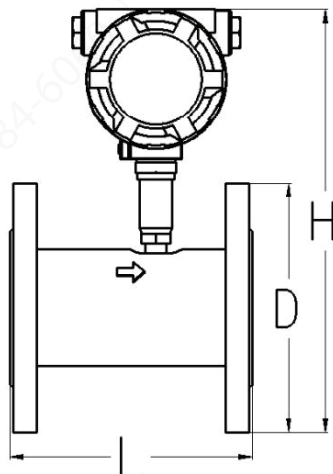


1/2" ~ 2" (DN15-DN50): Threaded connections

METER CALIBER (mm)	L (in) (mm)		H (in) (mm)								weight (lb) (kg)		G (male thread)
			Pulse type		Explosion-proof pulse type		4-20mA output type		Intelligent display type				
1/8" (DN4)	8.86	225	5.5	140	5.71	145	5.71	145	8.26	210	7.75	3.5	G1/2
1/8" (DN6)	8.86	225	5.5	140	5.71	145	5.71	145	8.26	210	7.75	3.5	G1/2
3/8" (DN10)	13.58	345	5.71	145	5.91	150	5.71	145	8.26	210	7.75	3.5	G1/2
1/2" (DN15)	2.95	75	5.71	145	5.91	150	5.91	150	8.46	215	7.75	3.5	G1
3/4" (DN20)	3.15	80	5.91	150	6.10	155	6.10	220	8.66	220	7.75	3.5	G1
1" (DN25)	3.94	100	6.10	155	6.29	160	6.29	160	8.85	225	7.75	3.5	G1 1/4
1 1/4" (DN32)	5.51	140	6.89	175	7.09	180	7.09	180	9.65	245	9.92	4.5	G2
1 1/2" (DN40)	5.51	140	7.09	180	7.28	185	7.28	180	9.84	250	11.02	5	G2
2" (DN50)	5.91	150	7.28	185	7.48	190	7.48	190	10.04	255	13.23	6	G2 1/2

Note: The 1/8" ~ 3/8" meter sizes shown above include the straight pipe section standard. Larger sizes do not include the straight pipe sections.

### ■ Flanged connection type



Flanged connection diagram

## ■ Flanged connection size dimensional table

METER CALIBER (mm)	L (in) (mm)		D (in) (mm)		K (in) (mm)		H (in) (mm)								weight (lb) (kg)	
							Pulse output type		Explosion-proof pulse output type		4-20mA output type		Intelligent display type			
½" (DN15)	2.95	75	3.74	95	2.55	65	6.89	175	7.09	180	7.09	180	245	9.65	7.75	3.5
¾" (DN20)	3.14	80	4.13	105	2.95	75	7.28	185	7.48	190	7.48	190	255	10.04	9.92	4.5
1" (DN25)	3.94	100	4.53	115	3.34	85	7.87	200	7.68	195	7.68	195	260	10.24	11.02	5
1¼" (DN32)	5.51	140	5.51	140	3.94	100	8.27	210	8.46	215	8.46	215	275	10.83	15.43	7
1½" (DN40)	5.51	140	5.91	150	4.33	110	7.68	195	8.66	220	8.66	220	285	11.22	17.64	8
2" (DN50)	5.91	150	6.49	165	4.92	125	9.06	235	9.25	235	9.25	235	295	11.61	22.05	10
2½" (DN65)	6.69	170	7.28	185	5.71	145	10.03	255	10.24	260	10.24	260	325	12.79	24.25	11
3" (DN80)	7.87	200	7.87	200	6.29	160	10.24	260	10.43	265	10.43	265	330	12.99	44.09	20
4" (DN100)	8.66	220	8.66	220	7.08	180	11.22	285	11.22	285	11.22	285	350	13.78	46.30	21
5" (DN125)	9.84	250	9.84	250	8.26	210	12.20	310	12.40	315	12.40	315	380	14.96	88.18	40
6" (DN150)	11.81	300	11.22	285	9.44	240	13.58	345	13.58	345	13.58	345	410	16.14	99.21	45
8" (DN200)	13.78	350	13.38	340	11.61	295	15.55	395	15.75	400	15.75	400	465	18.31	103.61	47

Note: The ½" ~ ¾" meter sizes shown above include the straight pipe section standard. Larger sizes do not include the straight pipe sections. The outer packaging for ½" ~ 2½" meters is a cardboard carton. Larger meter sizes ship in a wooden crate.

## ■ Intelligent Display Type with- Ex Approval



- Explosion proof according ATEX, IECEx and CSA/CSA-US.
- 7 digit flow rate / total and 11 digit accumulated total display.
- 16 point linearization of the flow curve - with interpolation.
- High and low flow rate alarms.
- Clear flashing LED backlight for alarm notification.
- Power options: Loop powered, battery and 9 - 27V<sub>DC</sub>.
- Integrated HART 7 communication protocol.
- Isolated, loop powered 4 - 20mA output.
- Four configurable digital outputs for high and low flow rate alarms or scaled pulse retransmission of the linearized accumulated total.

\*\* Please contact your local SmartMeasurement application engineer  
You also need to provide the following information:

TYPE OF LIQUID	Please provide the name of your liquid, including operating density and viscosity
FULL SCALE FLOW	Maximum and minimum flow rates, units must be volumetric such as LPM or GPM
LINE SIZE	Please indicate pipe size as well connection type (flange, threaded, etc..)
PROCESS PRESSURE AND TEMPERATURE	We will calibrate your flowmeter as close to your operating conditions as possible
PRESSURE DROP	Please indicate the maximum pressure drop (see graph) that your process can withstand
TYPE OF ELECTRONICS	Indicate if you want integral, remote panel or remote wall mounted electronics
POWER REQUIREMENTS	Please specify your power requirements such as 24 V <sub>DC</sub> or 115 V <sub>AC</sub> or 230 V <sub>AC</sub>

MODEL SELECTION GUIDE				ALTM-T-	**	**	**	**	**	**	DESCRIPTION
1/8" (DN4)	0.04~0.25 m <sup>3</sup> /hr, 1% accuracy	0.04~0.4 m <sup>3</sup> /hr, 1.5% accuracy	004	Internal Dia.							
3/16" (DN6)	0.1~0.6 m <sup>3</sup> /hr, 1% accuracy	0.06~0.6 m <sup>3</sup> /hr, 1.5% accuracy	006								
3/8" (DN10)	0.2~1.2 m <sup>3</sup> /hr, 1% accuracy	0.15~1.5 m <sup>3</sup> /hr, 1.5% accuracy	010								
1/2" (DN15)	0.6~6 m <sup>3</sup> /hr, 0.5% accuracy	0.5~5 m <sup>3</sup> /hr, 1% accuracy	015								
3/4" (DN20)	0.8~8 m <sup>3</sup> /hr, 0.5% accuracy	0.45~9 m <sup>3</sup> /hr, 1% accuracy	020								
1" (DN25)	1.0~10 m <sup>3</sup> /hr, 0.5% accuracy	0.5-10 m <sup>3</sup> /hr, 1% accuracy	025								
1 1/4" (DN32)	1.5~15 m <sup>3</sup> /hr, 0.5% accuracy	0.8~15 m <sup>3</sup> /hr, 1% accuracy	032								
1 1/2" (DN40)	2.0~20 m <sup>3</sup> /hr, 0.5% accuracy	1.0~20 m <sup>3</sup> /hr, 1% accuracy	040								
2" (DN50)	4.0~40 m <sup>3</sup> /hr, 0.5% accuracy	2.0~40 m <sup>3</sup> /hr, 1% accuracy	050								
2 1/2" (DN65)	7.0~70 m <sup>3</sup> /hr, 0.5% accuracy	5.0~70 m <sup>3</sup> /hr, 1% accuracy	065								
3" (DN80)	10~100 m <sup>3</sup> /hr, 0.5% accuracy	7~100 m <sup>3</sup> /hr, 1% accuracy	080								
4" (DN100)	20~200 m <sup>3</sup> /hr, 0.5% accuracy	10~200 m <sup>3</sup> /hr, 1% accuracy	100								
5" (DN125)	25~250 m <sup>3</sup> /hr, 0.5% accuracy	13~250 m <sup>3</sup> /hr, 1% accuracy	125								
6" (DN150)	30~300 m <sup>3</sup> /hr, 0.5% accuracy	15~300 m <sup>3</sup> /hr, 1% accuracy	150								
8" (DN200)	80~800 m <sup>3</sup> /hr, 0.5% accuracy	40~800 m <sup>3</sup> /hr, 1% accuracy	200								
Basic type - pulse output, blind, 24V <sub>DC</sub>				N	Transmitter style						
Basic type - two wire 4-20mA output, blind, 24V <sub>DC</sub>				A							
Battery type - with display and no outputs				B							
Standard type - two wire 4-20mA output, display, 24V <sub>DC</sub>				C							
Smart type - Contact Factory for details				**							
Standard Temp -4 ~ 176°F (-20 ~ +80°C)				S	Working Temperature						
Extended Temp - up to 248°F (120°C)				M							
High Temperature - up to 300°F (150°C)				H							
Other Temperature - please contact factory				**							
232 psi (1.6 Mpa)				1.6	Working Pressure						
362 psi (2.5 Mpa) - up to 3" (DN80)				2.5							
580 psi (4.0 Mpa) - up to 1 1/2" (DN40)				4.0							
913 psi (6.3 Mpa) - up to 1" (DN25)				6.4							
Other Pressure - please contact factory				**							
NPT male thread - For 1/8" ~ 2" (DN4~DN50)				N	Connection						
DIN PN16 flange - For 1/2" ~ 8" (DN15~DN200)				D							
ANSI 150# flange - For 1/2" ~ 8" (DN15~DN200)				F1							
ANSI 300# flange - For 1/2" ~ 8" (DN15~DN200)				F2							
Other connection - please contact factory				**							
SS # 304				G	Flowbody material						
SS # 316				316							
Other material				OM							
NONE				NN	Digital Communication						
RS485 - only for standard counter				485							
None option				NN	Option						
Exd proof - ExdIIBT6				EX							
Flow computer				FC							

