

MADECO Liquid Turbine Flow Meter



Liquid Turbine Flow Meter

MDGY-N2 & A series



MDGY -E series



Operating Principle

Fluid entering the meter first passes through an inlet flow straightener that reduces its turbulent flow pattern. Fluid then passes through the turbine, causing the turbine to rotate at a speed proportional to fluid velocity. As each turbine blade passes through the magnetic field generated by the meter's magnetic pickup, an AC voltage pulse is generated. These pulses provide an output frequency that is proportional to volumetric flow.

Description

The liquid turbine flow meters in the serie MDBG are specially designed for usage in water, diesel, gasoline and other fluid measurement and control systems. They operate according to the turbine principle, i.e. the speed of an impeller turning in the fluid flow is measured and converted into pulse or 4-20mA signals

Technical Data

- Output: Pulse ; 4-20mA
- Accuracy: ± 1.0 of Rate ; $\pm 0.5\%$ of Rate
- Operating Temp.: $-20...+60^{\circ}\text{C}$
- Fluid Temp.: $-20...+150^{\circ}\text{C}$
- Body Material: SS304 ; SS316
- Rotor Material: 2Cr13 ; CD4MCu
- Bearing Material: Tungsten Carbide

Flow Range

Diameter (mm)	Standard Range (m ³ /h)	Extended Range (m ³ /h)
4	0.04-0.25	0.04-0.4
6	0.1-0.6	0.06-0.6
10	0.2-1.2	0.15-1.5
15	0.6-6	0.4-8
20	0.8-8	0.45-9
25	1-10	0.5-10
32	1.5-15	0.8-15
40	2-20	1-20
50	4-40	2-40
65	7-70	4-70
80	10-100	5-100
100	20-200	10-200
125	25-250	13-250
150	30-300	15-300
200	80-800	40-800

Model Selection

Model	Suffix Code									Description
MDGY-	1	2	3	4	5	6	7	8	9	Liquid Turbine Flowmeter
Diameter	XXX									Stand for diameter 004: DN4; 006: DN6 100: DN100; 200: DN200
Converter Type	N1									24V DC; Pulse output; No display
	N2									24V DC; Pulse output; No display; Ex
	A									24V DC; 4-20mA output; No display; Ex
	E1									Battery power supply; No output; Ex ; Digital display
	E2									24V DC; 2- wire 4-20mA output; Ex ; Digital display
	E3									24V DC; Pulse output; Ex; Digital display
	E4									24V DC; 0-20mA output; Ex; Digital display
	E5									24V DC; 3-wire 4-20mA / Pulse output; EX; Digital display
	G									220V AC; 4-20mA output; Ex; Digital display
	FE									FE: Fluidwell E series converter(Refer to page 23)
	FF									FF: Fluidwell F series converter(Refer to page 24)
	Notice:									1) Modbus RS485 is optional for E2, E3, E4, E5 and "E" type 2) Dual Power(24VDC+ Battery) is optional for E2, E3, E4, E5, G
Accuracy		10								± 1.0% of rate
		05								± 0.5% of rate
Flow Range			S							Standard Range
			E							Extended Range
Body Material				S4						SS304
				S6						SS316
Rotor Material					Cr					2Cr13
					CD					CD4MCu
Explosion Proof						BT				Exd II BT6
						NA				No explosion proof
Connection							THM			Male thread; Available from DN4...DN50
							THF			Female thread; Available from DN4...DN50
							WAF			Wafer connection
							DXX			D16: DIN PN16 Flange; D25: DIN PN25 Flange...
							AXX			A15: ANSI 150# Flange; A30: ANSI 300# Flange...
Temperature Rating								T1		-20...+80°C
								T2		-20...+120°C
								T3		-20...+150°C

Example:

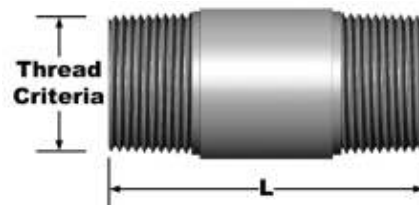
MDGY **050** **E5** **10** **S** **S4** **Cr** **BT** **D16** **T2**

- ① 050: DN50
- ② E5: 3- wire 4-20mA / Pulse output; 24V DC power supply
- ③ 10: 1.0% of rate accuracy
- ④ S: 0.2-1.2m3/h
- ⑤ S4: SS304 body material
- ⑥ Cr: 2Cr13 rotor
- ⑦ BT: Exd II BT6
- ⑧ D16: Flange DIN PN16
- ⑨ T2: -20...+120°C

Dimensions

(1) Thread Connection

Diameter (mm)	L (mm)	Thread Criteria
4	270	G ½"
6	270	G ½"
10	390	G ½"
15	75	G 1"
20	80	G 1"
25	100	G 1-¼"
32	140	G 2"
40	140	G 2"
50	150	G 2-½"



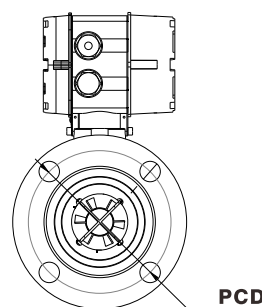
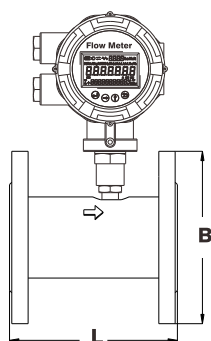
Male Thread Connection

Notice: Other thread criteria is available on request. (Female / Male thread is optional for G, NPT, BSP)

(2) Flange Connection

Notice: The standard flange is DIN PN16; but ANSI

Flange are available on request.



Diameter		L	B Flange Diameter	PCD Bolt Circle Diameter	Bolt Hole Quantity
(Inch)	(mm)	(mm)	(mm)	(mm)	
1/2"	15	75	95	60	4
3/4"	20	80	105	70	4
1"	25	100	115	79	4
1-1/4"	32	140	140	89	4
1-1/2"	40	140	150	99	4
2"	50	150	165	121	4
2-1/2"	65	170	185	140	4
3"	80	200	200	152	4
4"	100	220	220	191	8
5"	125	250	250	216	8
6"	150	300	285	241	8
8"	200	360	340	298	8

Notice: Dimensions above is for DIN PN16 Flange.

Sanitary Liquid Turbine Flow Meter



Description

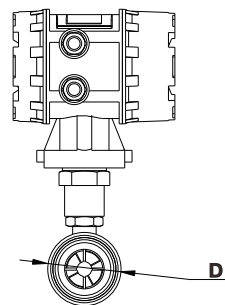
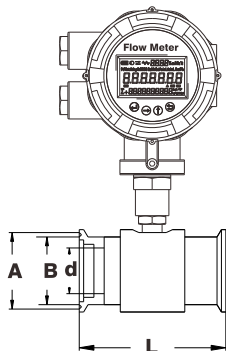
The sanitary liquid turbine flow meter is specifically designed for measurement of food liquids like milk, cream, juice of various fruits, pharma liquids etc. It is available with compact or remote version of transmitter can be installed either horizontally or vertically with a variety of optional end-fittings to meet your requirements.

- DN4-DN100
- Viscosity from 1 to 10 cst
- Pressure resistant to 10 bar
- Communication: Modbus RS485

Model Selection

Model	Suffix Code									Description
MDLS -	①	②	③	④	⑤	⑥	⑦	⑧	⑨	Sanitary Liquid Turbine Flowmeter
Diameter	XXX									Stand for diameter 004: DN4; 100: DN100
Converter Type		N1								24V DC; Pulse output; No display
		N2								24V DC; Pulse output; No display; Ex
		A								24V DC; 4-20mA output; No display; Ex
		E1								Battery power supply; No output; Ex; Digital display
		E2								24V DC; 2- wire 4-20mA output; Ex; Digital display
		E3								24V DC; Pulse output; Ex; Digital display
		E4								24V DC; 0-20mA output; Ex; Digital display
		E5								24V DC; 3- wire 4-20mA / Pulse output; EX; Digital display
		G								110-240V AC; 4-20mA output; Ex; Digital display
		FE								Fluidwell E series converter (Refer to page 23)
		FF								Fluidwell F series converter (Refer to page 24)
Notice:										1) Modbus RS485 is optional for E2, E3, E4, E5 and "E" type 2) Dual Power (24V DC+ Battery) is optional for E2, E3, E4, E5 and G
Accuracy		10								±1.0% of rate
		05								±0.5% of rate
Flow Range			S							Standard Range
			E							Extended Range
Body Material				S4						SS304
Rotor Material					Cr					2Cr13
					CD					CD4MCu
Explosion Proof							BT			Exd II BT6
							NA			None
Connection								TRC		Tri-clamp for sanitary connection
Temperature Rating								T1		-20...+80°C
								T2		-20...+120°C
								T3		-20...+150°C

Dimensions



Diameter (mm)	L (mm)	A (mm)	B (mm)	d (mm)	D (mm)
4	50	Φ46	Φ40.5	4	Φ50
6	50	Φ46	Φ40.5	6	Φ50
10	50	Φ46	Φ40.5	10	Φ50
15	100	Φ46	Φ40.5	15	Φ50
20	100	Φ46	Φ40.5	20	Φ50
25	100	Φ46	Φ40.5	25	Φ50
32	120	Φ46	Φ40.5	32	Φ50
40	140	Φ59	Φ53.5	40	Φ64
50	150	Φ73.5	Φ68	50	Φ78
65	170	Φ86	Φ80.5	65	Φ91
80	200	Φ100.5	Φ94	80	Φ106
100	220	Φ113	Φ106	100	Φ119



Mini Turbine Flow Meter



Description

Mini flow meter is based on turbine theory and designed for measuring micro-flow. This meter has extremely high accuracy especially under the condition of high temperature and high pressure. The Electronic pulse transmitter is also integrated in this min flow meter. It can maintain the 2% accuracy and 0.25% repeatability. Because of smart structure design, no debris can store in the working process and it's clear after work.

- 55*40*47mm dimension
- About 300g
- NSF, CE authentication
- Coffee machine application

Technical Data

Items	Diameter	Measuring Range	K-Factor
	(mm)	(L/min)	(Ml/imp)
Measuring Range	1.15	0.035-1.6	0.5
	1.3	0.01-1.86	0.6
	1.5	0.045-2.08	0.67
	2	0.085-2.32	1.02
	2.5	0.12-2.4	1.44
	3.7	0.15-3.0	2.28
Pressure	Maximum 20.0 bar		
Temperature	-10°C to 100°C		
Accuracy Level	±2%		
Repeatability Accuracy	±0.25%		
Connection	G 1/4 female thread (ordered to meet need from customers)		
Material	Shell: Green Brass(lead-free brass)		
	Bearing: INO*18/8(1.4305) stainless steel		
	Turbine: PVDF (polyvinylidene fluoride)		
	Magnets: SrFeO ceramics		

Compare with others

**VS**

Feature 1 : Rotor Difference.

We use finish-milling rotor instead of welding rotor .

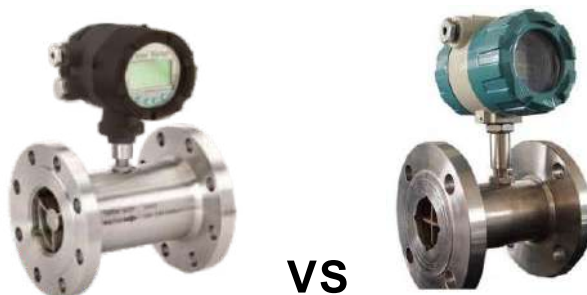
finish-milling rotor : Integral material processing, curved impeller, good dynamic balance, good linearity.

welding rotor : Low price, Flat impeller, bad dynamic balance, bad linearity.

**VS**

Feature2: Material difference

MADECO instrument use the real material , but some company use SS202 instead of SS304

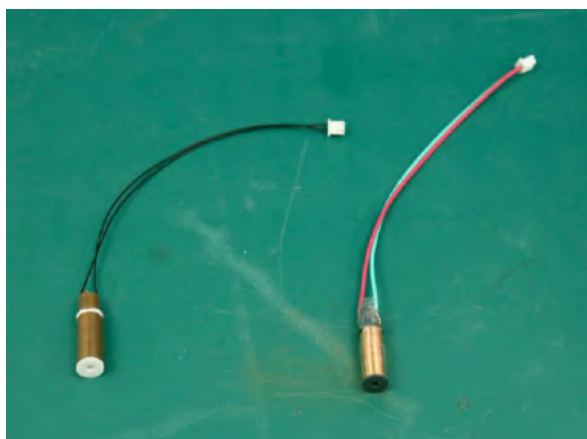


SS304: Price is higher than SS202, not magnetism , necessary material for liquid turbine meter.

SS302: Price is low, magnetism, this material will cause some signal lost.

Feature3: Coil difference

We use high –temperature coil which can stand up to 150C. But some company use usual coil instead



Feature4: EMC performance test match national standard (9 Items patents)

Our flow meter performance in lightening, surging , EFT (electrical fast transient) , ESD(electrostatic discharge), PMFM(power frequency magnetic field) match or better than national standards. But other companies products maybe not .

Test medium	National standard	National standard and our company standard	Some other companie flow meter performance
lightening, surging	GB/T 17626.5-2008	Level B , 1KV	Level C , 0.5KV
EFT	GB/T 17626.4-2008	Level B , 1KV	Level C , 0.5KV
ESD	GB/T 17626.2-2006	Level B , 6KV	Level C , 4KV