FLOW SERIES

☑ ONE-STOP SOLUTION ☑ ONE-STOP SERVICE

MASS FLOW METER

HUNAN MACSENSOR COMPANY LIMITED

MQF Mass Flow Meter

Mass flow meter MQF works based on the Coriolis principle, mass flowmeters enable direct, precise measurement of fluid mass flow without the need for conversions or corrections related to pressure, temperature, or density. The device consists of two main components: a sensor unit and a transmitter unit. Designed and manufactured in accordance with national standards for intrinsically safe, explosion-proof equipment, the flowmeter utilizes a core processor with a fully digital, adaptive drive circuit and a closed-loop DSP (Digital Signal Processor) signal processing system. Its unique structural design ensures high stability, excellent vibration resistance, rapid response times, high precision (with flow accuracy up to ±0.1%, density accuracy up to ±0.05%, and temperature accuracy up to ±1°C), and low pressure loss.

The instrument also offers multi-parameter measurement capabilities, simultaneously displaying instantaneous mass (or volume) flow, cumulative mass (or volume), density (including concentration, alcohol content, or sugar content), and temperature. It is capable of measuring a wide range of substances, including non-Newtonian fluids, slurries, suspensions, high-viscosity fluids, steam, gas-liquid two-phase flows, and other complex process media.





Product features

- Based on in-depth research in fluid mechanics and thermodynamics, vibrating measuring tubes with various structures are precisely designed. Equipped with nonlinear vibration suppression technology and smooth flow channel designs, the meters feature exceptional anti-interference capabilities, ensuring high sensitivity and a wide turndown ratio.
- The classic U-tube, refined triangle tube, micro S-tube, and compact V-tube can adapt to a wide variety of operating conditions.
- Touchscreen operation, along with engineer and operator passwords, simplifies meter configuration and adjustments.
- Parameters such as response time, damping factor, and low-flow cut-off can be customized.
- It supports multi-language switching & offers multiple communication options, including Modbus RTU, HART, FF (Foundation Fieldbus), & PROFIBUS PA protocols.
- The all-digital closed-loop control function and DSP digital processing circuitry deliver high stability, enabling precise metering for two-phase flows & complex operating conditions. Featuring dynamic vibration balance matching technology and dynamic accuracy correction, it effectively reduces systematic errors during intermittent operations.
- The flow transmitter can be directly paired with a wireless transmitter to enable 4G or 5G transmission capabilities. It can also be matched with a batch controller to print receipts directly, achieving quantitative batch control or flow rate regulation.
- With performance capabilities covering ultra-low temperatures down to -273°C, ultra-high pressures up to 100 MPa, and ultra-high temperatures up to 450°C, it provides an ultra-wide turndown ratio, allowing custom orders for high-accuracy segments across any flow range for the same pipe diameter upon request.

Specification

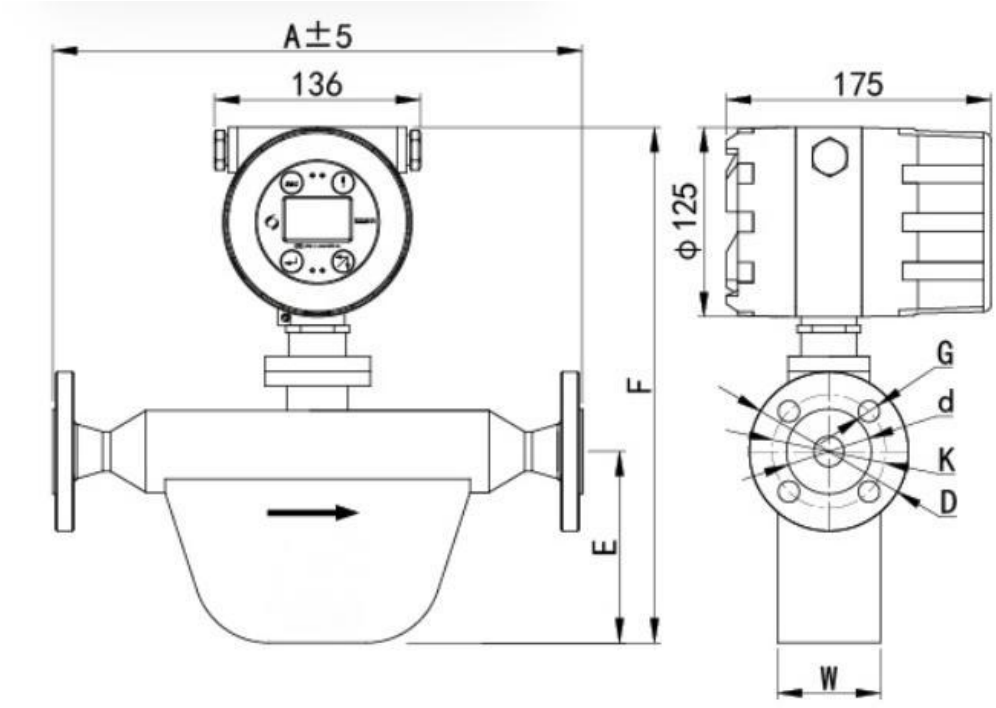
Item	Specification
Applicable Media	Suitable for liquids, gases, solids, liquid-solid, gas-solid, gas-liquid (gas present as tiny bubbles), etc.
Measuring Tube Material	316LSS, nickel-based alloy, C4 steel, high-nickel alloy, copper-nickel alloy, titanium, tantalum, zirconium, or other materials upon customer request
Transmitter Housing Material	Cast aluminum + painted coating; 316SS; 316LSS
Pressure Rating	1.6 MPa, 4 MPa, 10 MPa, 20 MPa or custom pressure rating, up to 100 MPa
Display	Instantaneous flow: 4 digits before decimal, 2 digits after decimal; Totalized flow: 6 digits before decimal, 2 digits after decimal
Power Supply	24 VDC or 220 VAC; 24 VDC and 220 VAC universal power supply
Output Signal	4–20 mA, 0–10 kHz pulse equivalent output
Communication Signal	Modbus RTU, HART, FF (Foundation Fieldbus), PROFIBUS PA, etc.
Ingress Protection	IP66, IP67
Flow Accuracy	Mass Flow / Volume Flow: • Accuracy Class: ±0.1% ~ ±0.5% • Repeatability: ≤ ±0.05%
Density Performance	Liquid Resolution: ±0.0005 g/cm³ (0.5 kg/m³) Repeatability: ±0.0002 g/cm³ (0.2 kg/m³) Measurement Accuracy: ±0.002 g/cm³ (2 kg/m³) or ±0.001 g/cm³ (1 kg/m³)
Temperature Accuracy	±1°C ± 0.05% of measured value (°C)
Viscosity Compensation	When the viscosity is greater than 400 cP, it must be specified at the time of ordering for viscosity correction/compensation.
Temperature Range	Medium Temperature:-273~100°C; -200~100°C; -50~150°C; -50~250°C; -50~350°C; -50~450°C Ambient Temperature: -41°C ~ 80°C; -20°C ~ 50°C

Dimensions

Unit, mm

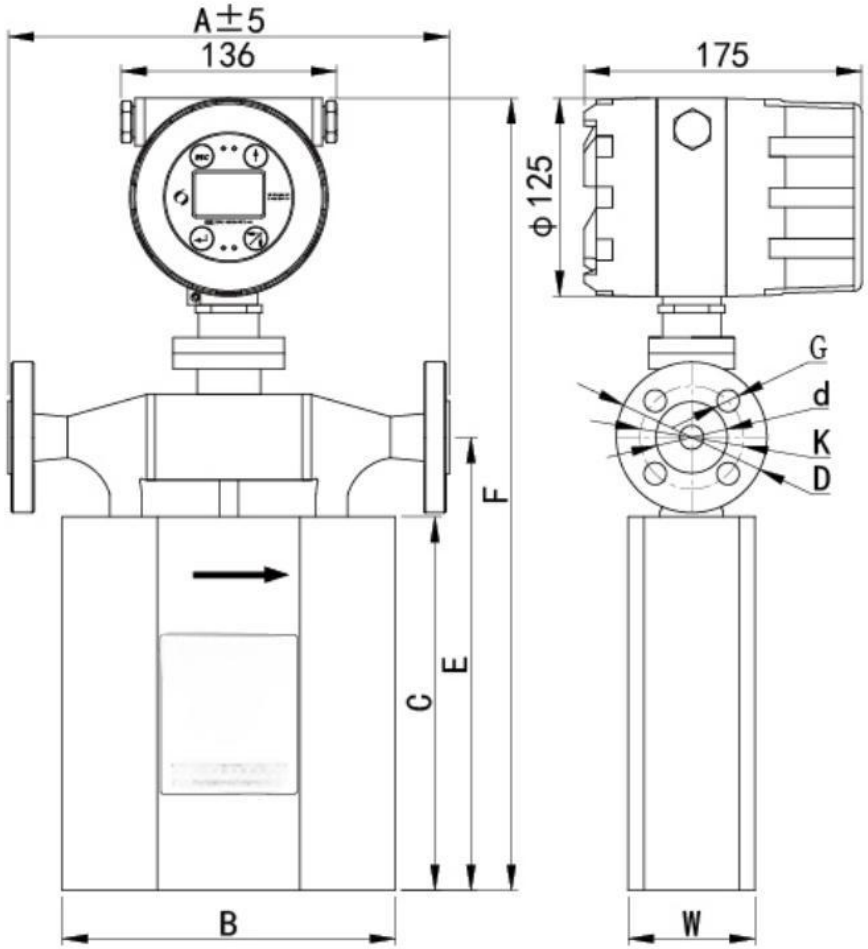
The below tables are for integrated type only

- **V shape A series**



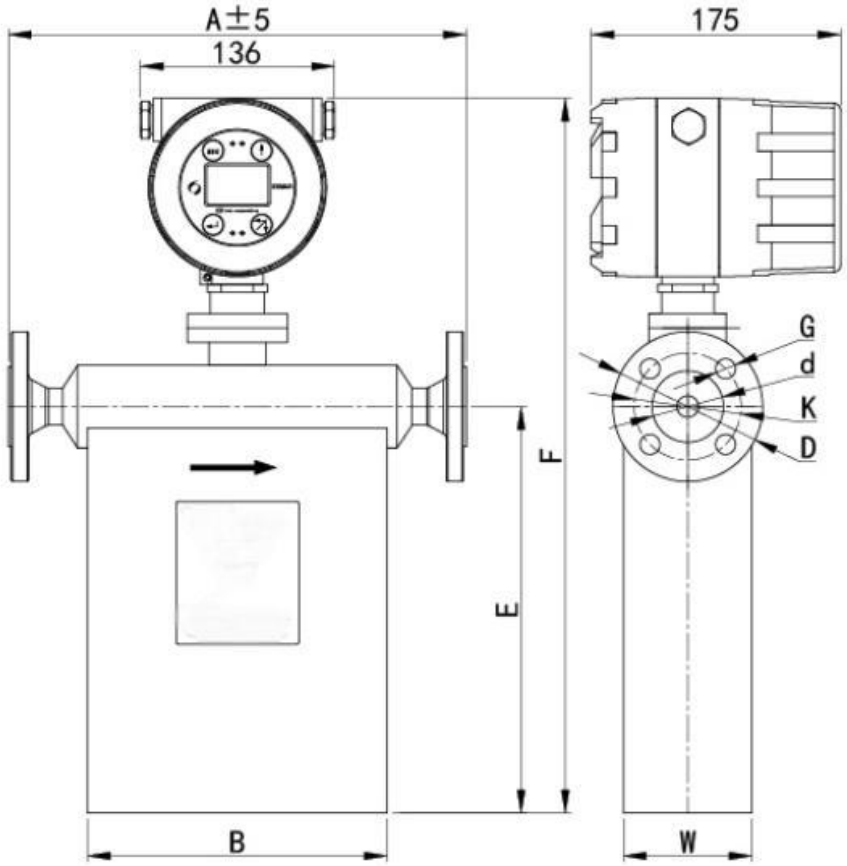
Model	DN	Pressure MPa	A	E	F	W	G	K	d	D
MQF-1-V10	10	4	480	150	375	68	14	60	40	90
MQF-1-V15	15	4	480	150	375	68	14	65	45	95
MQF-1-V20	20	4	620	189	413	68	14	75	58	105
MQF-1-V25	25	4	721	205	435.5	85	14	85	68	115
MQF-1-V40	40	4	923	285	536.5	123	18	110	88	150
MQF-1-V50	50	4	925	285	536.5	123	18	125	102	165
MQF-1-V65	65	4	990	320	584.5	150	18	145	122	185
MQF-1-V80	80	1.6	1060	270	535	150	18	160	138	200
MQF-1-V100	100	1.6	1192	280	558	185	18	180	158	220
MQF-1-V125	125	1.6	1200	280	558	185	18	210	188	250
MQF-1-V150	150	1.6	1320	360	638	185	22	240	212	285
MQF-1-V200A	200	1.6	1584	380	675	218	22	295	268	340
MQF-1-V200B	200	1.6	1903	465	800	265	22	295	268	340
MQF-1-V250	250	1.6	1931	490	838	320	26	355	320	405
MQF-1-V300	300	1.6	2006	520	893	360	26	410	378	460

- **U shape B series**



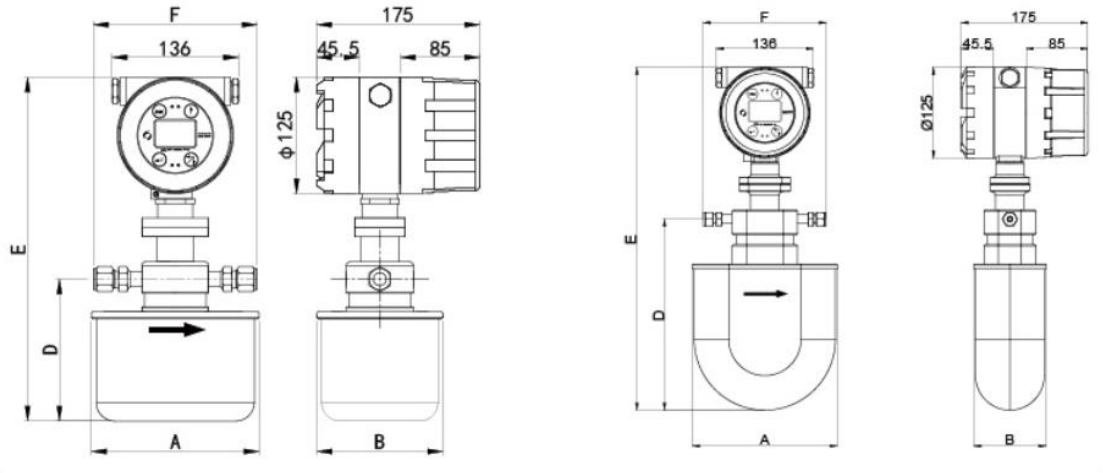
Model	DN	Pressure MPa	A	B	C	E	F	W	G	K	d	D
MQF-1-U10	10	4	278	210	236	286	500	80	14	60	40	90
MQF-1-U15	15	4	284	210	276	326	540	80	14	65	45	95
MQF-1-U20	20	4	304	230	326	376	590	90	14	75	58	105
MQF-1-U25	25	4	410	300	443	500	716	120	14	85	68	115
MQF-1-U40	40	4	450	360	483	563	787	130	18	110	88	150
MQF-1-U50	50	4	500	370	530	610	834	140	18	125	99	165
MQF-1-U65	65	1.6	530	410	601	691	928	150	18	145	122	185
MQF-1-U80	80	1.6	660	450	611	701	938	160	18	160	132	200
MQF-1-U100	100	1.6	620	510	740	858	1113	260	18	180	158	220
MQF-1-U125	125	1.6	628	510	740	858	1113	260	18	210	188	250
MQF-1-U150	150	1.6	645	510	740	917	1194	260	22	240	212	285
MQF-1-U200	200	1.6	786	670	970	1150	1425	280	22	295	268	340
MQF-1-U250	250	1.6	1120	950	922	1107	1432	405	26	355	320	405
MQF-1-U300	300	1.6	1120	950	922	1107	1432	405	26	410	378	460

- **U shape C series**



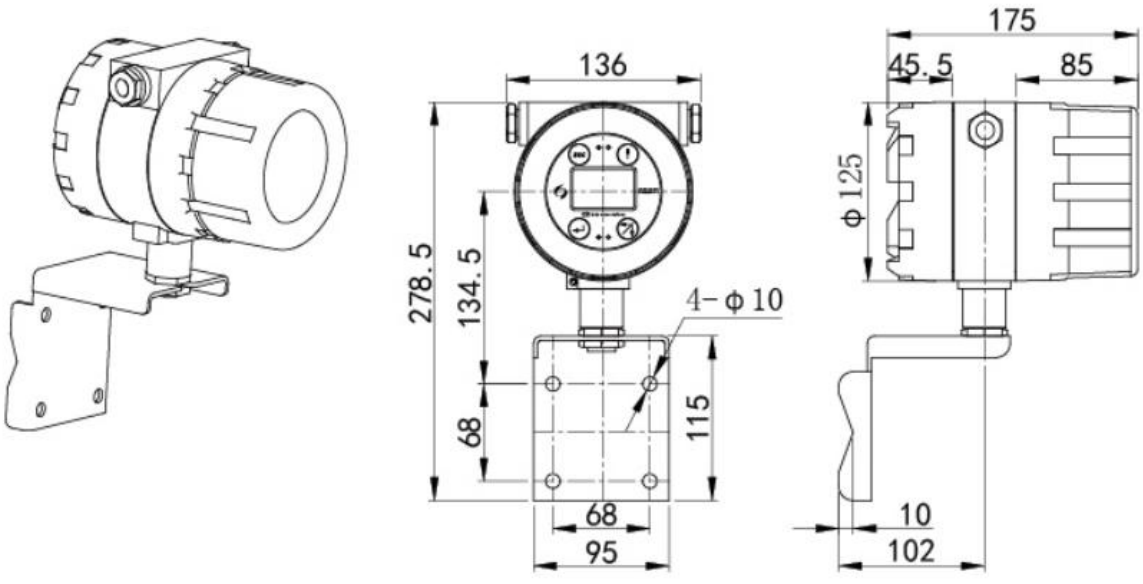
Model	DN	Pressure MPa	A	B	E	F	W	G	K	d	D
MQF-1-U10	10	4	321	210	235	451	90	14	60	40	90
MQF-1-U15	15	4	321	210	285	501	90	14	65	45	95
MQF-1-U20	20	4	340	230	340	556	90	14	75	58	105
MQF-1-U25	25	4	420	300	455	679	100	14	85	68	115
MQF-1-U40	40	4	445	320	510	740	110	18	110	88	150
MQF-1-U50	50	4	475	350	560	802	110	18	125	102	165
MQF-1-U65	65	1.6	540	410	650	907	125	18	145	122	185
MQF-1-U80	80	1.6	575	450	660	917	135	18	160	138	200

- **S shape**



Model	Outside dia. of connection pipe	MPa	A	B	D	E	F
MQF-1-S01	6	0~20	170	120	137	353.5	146
MQF-1-S02	6	0~20	170	120	137	353.5	146
MQF-1-S03	8	0~20	180	135	152	368.5	152
MQF-1-S06	8	0~20	200	100	263	472	170

- **Split type dimensions**



How to Order

Micro-bend	Nominal Diameter	Measuring Range
V10	Meter Size: 10 mm	0–1.5 t/h
V15	Meter Size: 15 mm	0–3 t/h
V20	Meter Size: 20 mm	0–7 t/h
V25	Meter Size: 25 mm	0–13 t/h
V40	Meter Size: 40 mm	0–22 t/h
V50	Meter Size: 50 mm	0–33 t/h
V65	Meter Size: 65 mm	0–60 t/h
V80	Meter Size: 80 mm	0–100 t/h
V100	Meter Size: 100 mm	0–160 t/h
V125	Meter Size: 125 mm	0–230 t/h
V150	Meter Size: 150 mm	0–300 t/h
V200A	Meter Size: 200 mm	0–400 t/h
V200B	Meter Size: 200 mm	0–500 t/h
V250	Meter Size: 250 mm	0–800 t/h
V300	Meter Size: 300 mm	0–1500 t/h
U-Shape	**Nominal Diameter**	**Measuring Range**
S01	Meter Size: 1 mm	0–10 kg/h
S02	Meter Size: 2 mm	0–40 kg/h
S03	Meter Size: 3 mm	0–100 kg/h
S06	Meter Size: 6 mm	0–200 kg/h
U10	Meter Size: 10 mm	0–1500 kg/h
U15	Meter Size: 15 mm	0–3000 kg/h
U20	Meter Size: 20 mm	0–7000 kg/h
U25	Meter Size: 25 mm	0–13 t/h
U40	Meter Size: 40 mm	0–22 t/h
U50	Meter Size: 50 mm	0–33 t/h
U65	Meter Size: 65 mm	0–60 t/h
U80	Meter Size: 80 mm	0–100 t/h
U100	Meter Size: 100 mm	0–160 t/h
U125	Meter Size: 125 mm	0–230 t/h
U150	Meter Size: 150 mm	0–300 t/h
U200	Meter Size: 200 mm	0–400 t/h

U250	Meter Size: 250 mm	0–800 t/h
U300	Meter Size: 300 mm	0–1500 t/h
Triangle Type	**Nominal Diameter**	**Measuring Range**
3CLS10	Meter Size: 10 mm	0–1.5 t/h
3CLS15	Meter Size: 15 mm	0–3 t/h
3CLS20	Meter Size: 20 mm	0–7 t/h
3CLS25	Meter Size: 25 mm	0–13 t/h

Category	Code	Specification
Accuracy Class	A	±0.5% Mass Flow (Standard for Gas)
	N	±0.2% Mass Flow (Standard for Liquid)
	M	±0.15% Mass Flow
	H	±0.1% Mass Flow
Medium Temp. Range(Remote type for >250°C or <-50°C)	A	-50 to 150°C
	B	-50 to 250°C
	C	-50 to 350°C
	D	-50 to 450°C
	E	-200 to 100°C
	F	-273 to 100°C
Ambient Temperature	E	-20 to 50°C
	F	-41 to 80°C
Pressure Rating	16	1.6 MPa (16 bar)
	40	4 MPa (40 bar)
	100	10 MPa (100 bar)
	200	20 MPa (200 bar)
	400	40 MPa (400 bar)
	1000	100 MPa (1000 bar)
	X	Custom pressure rating, max. up to 100 MPa
Sensor Material	A	Measuring tube: 316LSS, Flange: 304SS (Standard)
	B	Wetted parts: 316LSS, Flange: 316LSS
	C	Wetted parts: Hastelloy
	D	Wetted parts: High-nickel alloy
	E	Wetted parts: Titanium (ASTM B265)
	F	Wetted parts: Tantalum (ASTM B708)
	G	Wetted parts: C4 steel (ASTM A600TI2004)

	H	Wetted parts: Copper-nickel alloy
	I	Wetted parts: Nickel-based alloy
	J	Other custom materials (subject to technical confirmation)
Sensor Housing Material	K	304SS (Standard)
	L	304LSS
	M	316LSS
	N	Other custom materials and surface treatments
Process Connection	A	HG/T 20592-2009 (Standard)
	B	ANSI B16.5
	C	Sanitary Tri-clamp
	D	Threaded connection
	E	Others by customized
Connection Type	A	Compact type (Integral)
	B	Remote type (Split)
Transmitter Housing Material	A	Cast aluminum + Painted coating
	B	316SS
	C	316L
Output Type	A	RS485 Modbus RTU
	B	RS485 Modbus RTU HART
	C	FOUNDATION Fieldbus (FF)
	D	PROFIBUS PA
Language	A	Chinese
	B	English
	C	Russian
	D	German
	E	Spanish
Electrical Interface	L	M20×1.5
	K	1/2" NPT
	M	3/4" NPT
Power Supply	A	220 VAC
	D	24 VDC
	F	Universal / Auto-sensing
Ingress Protection	A	IP67
	B	IP66