

METAL TUBE VARIABLE AREA FLOWMETER



- VARIABLE AREA · WATER 1 ... 200 000 L/H · AIR 0.03 ... 4000 M³/H
- DN15 ... DN150 · UP TO 4.0 MPa · -80 ... +400 °C
- POINTER, NO POWER NEEDED · LCD · 4 ... 20 MA · IP65 · EX

KEY DATA

Property	Value	Property	Value
Flow range water	1 ... 200 000 L/h at 20 °C	Flow range air	0.03 ... 4000 m ³ /h at 20 °C, 0.1013 MPa
Nominal size	DN15 ... DN150	Turndown	10:1 (standard type)
Accuracy	1.5 % F.S.	Protection grade	IP65
Nominal pressure	4.0 MPa to DN50 · 1.6 MPa from DN80	Medium temperature	-80 ... +200 °C · up to +400 °C
Output	4 ... 20 mA · 0 ... 10 mA · alarm contact	Supply voltage	24 Vdc · 85 ... 265 Vac · battery

A variable-area meter: a float rides in a conical metal tube and its height is carried to the pointer by a magnetic coupling. In the simplest version the meter needs no power at all.



MEASUREMENT

Measuring principle	Variable area · float in a conical metal tube, magnetically coupled pointer
Flow range water	1 ... 200 000 L/h at 20 °C · by size, see the range table
Flow range air	0.03 ... 4000 m³/h at 20 °C and 0.1013 MPa
Turndown	10:1 for the standard type
Accuracy	1.5 % F.S.
Medium viscosity	DN15 < 5 mPa·s · DN25 < 250 mPa·s · DN50 ... DN150 < 300 mPa·s
Inlet run	5 × the nominal size
Outlet run	250 mm
Magnetic filter	100 mm, 150 mm on the larger sizes

MATERIALS AND PROCESS

Measuring system	316Ti · 321 · 316L · PTFE · titanium alloy — the second field of the order code
Media	Liquids and gases · water, air and oil are the three media of the order code
Process connection	Flange to GB/T 9119-2000 · sanitary clamp
Nominal pressure	DN15 ... DN50 4.0 MPa · DN80 ... DN150 1.6 MPa · sanitary clamp 1.6 MPa
Medium temperature	-80 ... +200 °C standard · 0 ... +85 °C with PTFE · up to +400 °C with the high-temperature version
Ambient temperature	-30 ... +85 °C
Overall height	250 mm
Jacket	Heat preservation or heat tracing jacket available
Mounting	Vertical, horizontal and other positions
Protection grade	IP65

ELECTRICAL PROPERTIES

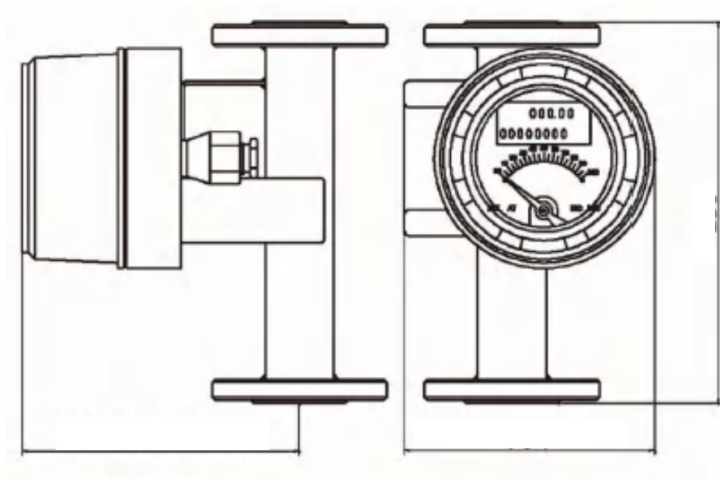
Supply voltage	24 Vdc two-wire, 4 ... 20 mA (10.8 ... 36 Vdc)
	85 ... 265 Vac, 50 Hz
	3.6 V / 4 Ah NiMH battery
Output	4 ... 20 mA · 0 ... 10 mA · digital communication
Alarm output	Upper or lower limit of the instantaneous flow · normally open contact or relay
Cable entry	M20 × 1.5
Explosion protection	Ex ia IIC T6 and Ex d IIC T6

INDICATOR VERSIONS

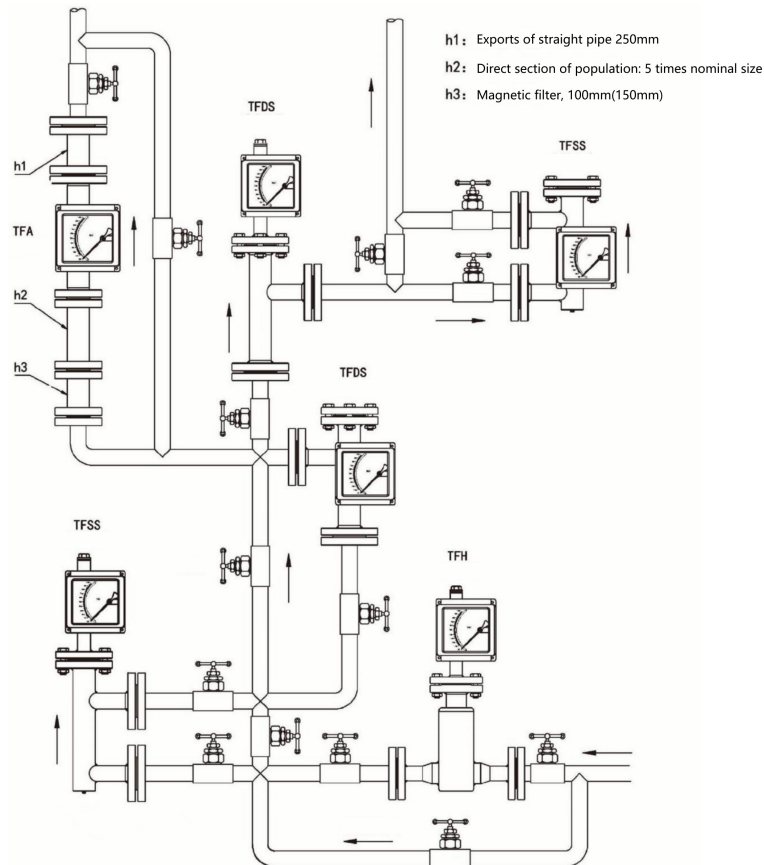
M1	Mechanical pointer · instantaneous flow only · no power needed
M2	Powered · pointer for the instantaneous flow and LCD for instantaneous and totalized flow
M3	Powered · no pointer · LCD for instantaneous and totalized flow
Parameters	Can be changed on site



OUTLINE AND INSTALLATION



The outline of the meter, side and front.



Six installation arrangements. h1 is the outlet run of 250 mm, h2 the inlet run of five times the nominal size, h3 the magnetic filter.



FLOW RANGES

The letter in the second column is the flow range of the size; it is not a field of the order code, which only carries the size (F15A ... F150A) and refers to this table. Water is stated for 20 °C, air for 20 °C and 0.1013 MPa. Δp is the pressure loss at full scale.

FLOW RANGE TABLE

Size	Code	Water (L/h)	Water, anti-corrosion (L/h)	Air (m³/h)	Δp water (kPa)	Δp air (kPa)
DN15	A	2.5 ... 25	—	0.07 ... 0.7	6.5	7.1
	B	4.0 ... 40	2.5 ... 25	0.11 ... 1.1	6.5	7.2
	C	6.3 ... 63	4.0 ... 40	0.18 ... 1.8	6.6	7.3
	D	10 ... 100	6.3 ... 63	0.28 ... 2.8	6.6	7.5
	E	16 ... 160	10 ... 100	0.40 ... 4.0	6.8	8
	F	25 ... 250	16 ... 160	0.7 ... 7.0	7.2	10.8
	G	40 ... 400	25 ... 250	1.0 ... 10	8.6	10
	H	63 ... 630	40 ... 400	1.6 ... 16.0	11.1	14
DN25	A	100 ... 1000	63 ... 630	3 ... 30	7	7.7
	B	160 ... 1600	100 ... 1000	4.5 ... 45	8	8.8
	C	250 ... 2500	160 ... 1600	7 ... 70	10.8	12
	D	400 ... 4000	250 ... 2500	11 ... 110	15.8	19

FLOW RANGE TABLE · CONTINUED

Size	Code	Water (L/h)	Water, anti-corrosion (L/h)	Air (m³/h)	Δp water (kPa)	Δp air (kPa)
DN40	A	500 ... 5000	—	12 ... 120	10.8	9.8
	B	600 ... 6000	—	16 ... 160	12.6	16.5
DN50	A	630 ... 6300	400 ... 4000	18 ... 180	8.1	8.6
	B	1000 ... 10 000	630 ... 6300	25 ... 250	11	10.4
	C	1600 ... 16 000	1000 ... 10 000	40 ... 400	17	15.5
DN80	A	2500 ... 25 000	1600 ... 16 000	60 ... 600	8.1	12.9
	B	4000 ... 40 000	2500 ... 25 000	80 ... 800	9.5	18.5
DN100	A	6300 ... 63 000	4000 ... 40 000	100 ... 1000	15	19.2
DN150	A	20 000 ... 100 000	—	600 ... 3000	19.2	20.3



COMPLIANCE AND CERTIFICATION

Protection grade	IP65
Explosion protection	Ex ia IIC T6 and Ex d IIC T6
Measuring principle	Variable area with magnetic coupling
Accuracy	1.5 % F.S.
Wetted materials	Measuring system in 316Ti, 321, 316L, PTFE or titanium alloy
Pressure rating	4.0 MPa to DN50, 1.6 MPa from DN80

Example: QHKA-A-T6-H-F15A-B-M1—S—.

ORDER CODE

Field	Code	Meaning
1 Series	QHKA	QHKA metal tube variable area flowmeter
2 Flow path	A	Down in, up out
	B	Bottom in and top out
	C	Bottom in, horizontal out
	D	Right in, left out
	E	Left in, right out
3 Material	T6 · S1	316Ti (0Cr18Ni2Mo2Ti) · 321 (1Cr18Ni9Ti)
	S6 · PT · T1	316L · PTFE · titanium alloy
4 Medium	H · A · W	Water · air · oil (state the type of oil when ordering)
5 Size	F15A · F25A · F40A	DN15 · DN25 · DN40 — the range from the table above
	F50A · F80A	DN50 · DN80
	F100A · F150A	DN100 · DN150
6 Type	B · T	Standard · clamp model
	Z · G · Y	Damping · high temperature · high pressure
7 Indicator	M1	Local pointer, instantaneous flow, no power needed
	M2	Powered · pointer + LCD instantaneous and totalized
	M3	Powered · LCD only, instantaneous and totalized
8 Power	—	For M1 only, no power
	A · B	220 Vac with 4 ... 20 mA · battery, no output
	C · D	24 Vdc two-wire 4 ... 20 mA · 24 Vdc three- or four-wire 4 ... 20 mA
9 Ex	S · E	No explosion protection · explosion-proof version
10 Alarm	— · K1	No alarm or pulse output · upper limit
	K2 · K3	Lower limit · upper and lower limit

