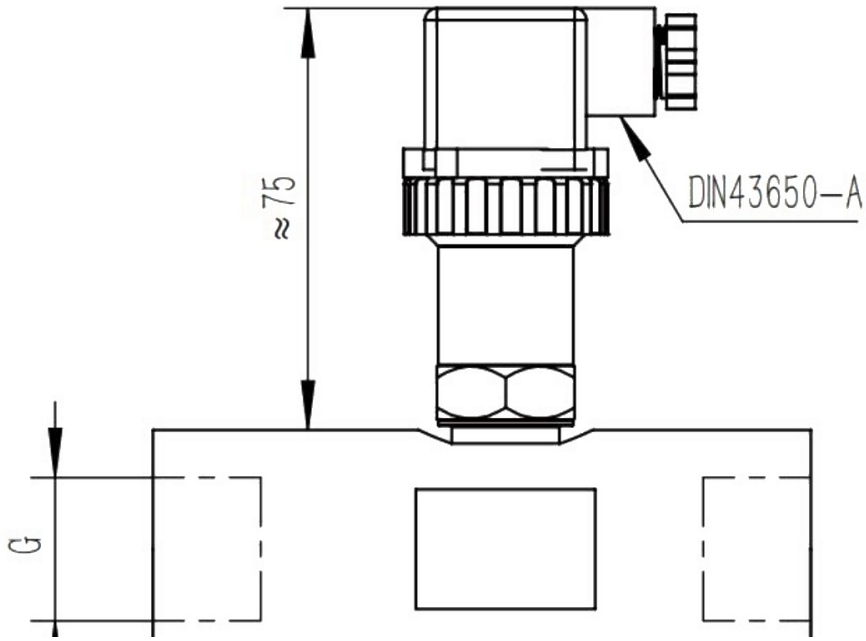
OCTOGON

MANUAL

QTKB

TURBINE FLOW SENSOR

Installation and user manual



Document	Version	Date	Applies to
Installation and user manual	V00x	11/2026	QTKB, all calibers, outputs and process connections

This manual describes the QTKB turbine flow sensor: working principle, technical data, dimensions, installation, electrical connection and troubleshooting.

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1 About this manual

Read this manual before installing the sensor and keep it available for later use. Technical data, dimensions and order codes in this manual are those of the QTKB datasheet.

1.1 Notices

Notice	Meaning
Warning	Risk of injury or of damage to property if the instruction is not followed.
Important	Pay particular attention to the following instruction.
Note	Further information.

1.2 Versions covered

Feature	Versions
Caliber	DN10 ... DN300 (010B = DN10 with straight pipe section)
Output	pulse (F) · 4 ... 20 mA, two-wire (A)
Process connection	external thread (M) or internal thread (K), up to DN50 · flange (F), from DN15 · sanitary clamp (H), up to DN100
Pressure rating	16 · 100 · 250 · 400 bar
Display	without · LED display unit (-1)
Temperature	standard · high-temperature type (-H)
Electrical interface	DIN 43650-A connector · cable · M12 × 1 connector
Basic type	FM100

2 Intended use

The QTKB measures the flow of liquids of low to medium viscosity (1 ... 100 cSt) in pipes - for measuring, batching and control. The medium must be free of impurities and must not be strongly corrosive. Use the sensor only within the technical data (section 3.2).

3 Product description

3.1 Working principle

The turbine flow sensor consists of a rotor and an externally mounted pulse detector. The liquid flowing through the sensor turns the rotor; because of the defined inner diameter, the rotor speed is directly proportional to the flow rate. The pulse detector converts the rotation of the rotor blades into a pulse signal proportional to the flow rate. The rotating impeller releases suspended impurities in the fluid, so they do not wind around the blades. The sensor is compact, modular, easy to install, accurate and repeatable; typical applications are water treatment, beverages, chemicals, pharmaceuticals and oil.

3.2 Technical data

Item	Value
Measuring range	DN 10 ... DN 300
Accuracy of measurement	≤ 1.0 % F.S.
Repeatability	< 0.5 % F.S.
Measured medium	Liquid of low to medium viscosity
Viscosity range	1 ... 100 cSt
Nominal pressure PN	6.3 · 16 · 25 · 40* MPa to DN32 · 2.5 MPa to DN100 · 1.6 MPa to DN300
Max. pressure loss	0.05 MPa at DN10 · 0.035 MPa to DN32 · 0.025 MPa to DN300
Main body	Stainless steel 304
Runner	Stainless steel 304
Shaft	Hard alloy steel
Protection grade	IP65 with DIN 43650-A · IP67 with cable or M12x1 connector
Medium temperature	-20 ... +90 °C
Ambient temperature	-20 ... +70 °C
Storage temperature	-40 ... +80 °C
Supply voltage	12 ... 30 Vdc
Output signal	4 ... 20 mA, two-wire · pulse
No-load current	< 15 mA
Electrical interface	DIN 43650-A · cable · M12x1 connector

3.3 Flow range

DN (mm)	Q min (m³/h)	Q max (m³/h)	DN (mm)	Q min (m³/h)	Q max (m³/h)
10	0.2	1.2	65	8	80
12	0.4	4	80	10	100
15	0.6	6	100	20	222
20	0.8	8	125	25	250
25	1	10	150	40	400
32	1.5	15	200	80	800
40	2	20	250	120	1200
50	4	40	300	180	1800

3.4 Order code

Field	Code	Meaning
1 Series	QTKB	QTKB turbine flow sensor
2 Caliber	010 · 010B · 012 · 015 · 020 · 025 · 032 · 040 · 050 · 065 · 080 · 100 · 125 · 150 · 200 · 250 · 300	Measuring caliber DN10 ... DN300 · 010B is DN10 with straight pipe section
3 Output	F	Pulse output
	A	4 ... 20 mA output
4 Process	M	External thread connection, up to DN50
	K	Internal thread connection, up to DN50
	F	Flanged joint, from DN15

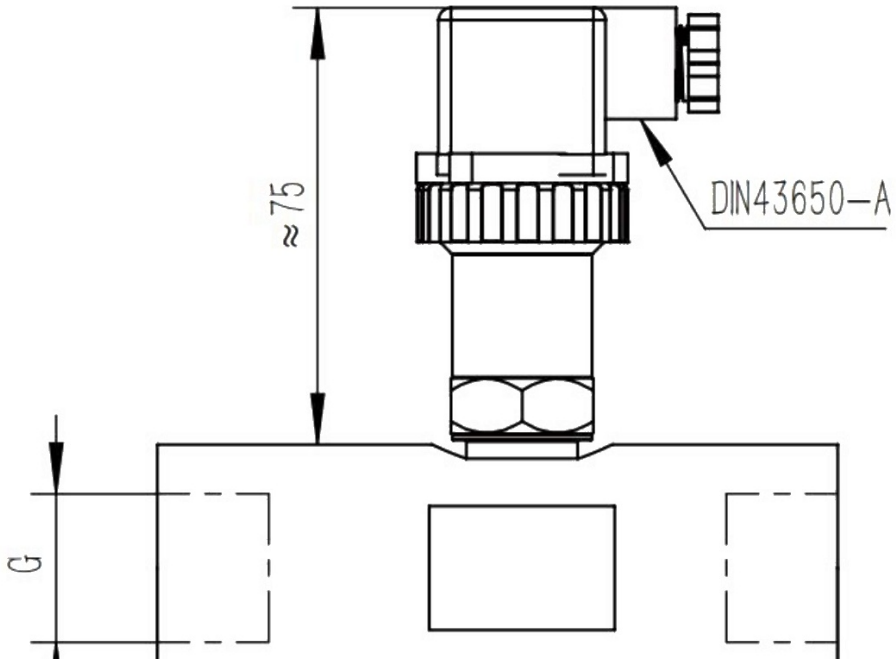
	H	Sanitary clamp connection, up to DN100
5 Pressure	016	Resistance to pressure 16 bar
	100	Resistance to pressure 100 bar
	250	Resistance to pressure 250 bar
	400	Resistance to pressure 400 bar
6 Display	—	No display
	-1	LED display unit — see the accessories
7 Temperature	—	Standard type
	-H	High temperature type · -30 … +150 °C

Example: QTKB-015 A M 016 - -. The electrical interface is chosen with the sensor.

3.5 Options

Option	Order code	Data
LED display unit	-1	Ordered with the sensor as field 6 of the order code. Digital display of the sensor signal, display range set with two keys, free programming via the processor, no field setup required. For sensors with 4 … 20 mA output. Protection level IP55
Straight pipe section	010B	DN10 only · body length 345 mm instead of 65 mm
High temperature type	-H	Medium temperature -30 … +150 °C

4 Dimensions



Head with DIN 43650-A connector, about 75 mm high above the process connection; G = process thread. Dimensions in mm.

4.1 Thread and clamp

DN	External thread G	L external thread	Internal thread G	L internal thread	Clamp Ø	L clamp
10	G1/2	65	1/2	80	50.5	50
12	G3/4	65	1/2	80	50.5	50
15	G1 (33.2)	75	1/2	110	50.5	75
20	G1 (33.2)	85	3/4	115	50.5	85
25	G1-1/4 (41.9)	100	1	140	50.5	100
32	G1-1/2 (47.8)	120	1-1/4	172	50.5	120
40	G2 (59.6)	140	1-1/2	180	64	140
50	G2-1/2 (75.1)	150	2	200	78	150
65	G3	175	2-1/2	235	91	175
80		200	3	260	106	200
100		220			119	220

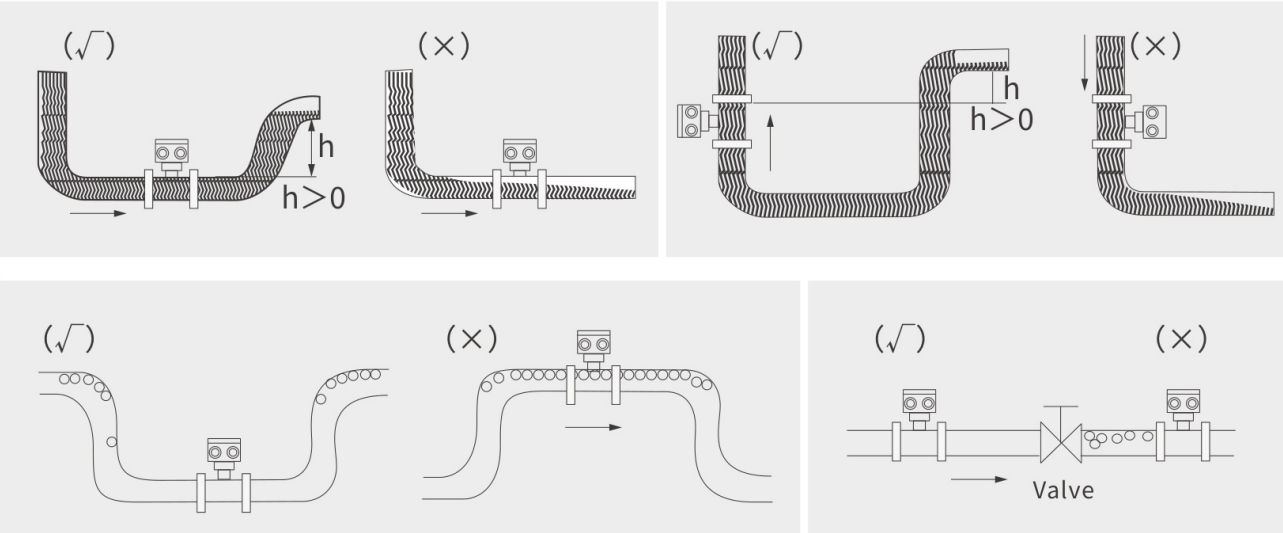
4.2 Flange

DN	Flange Ø	Bolt circle	Hole Ø	Holes	Thickness	Body length L
12	95	65	14	4	14	65
15	95	65	14	4	14	75
20	105	75	14	4	16	85
25	115	85	14	4	16	100
32	140	100	18	4	18	120
40	150	110	18	4	18	140
50	165	125	18	4	20	150
65	185	145	18	8	20	175
80	200	160	18	8	20	200
100	220	180	18	8	22	220
125	250	210	18	8	22	250
150	285	240	22	8	24	300
200	340	295	22	12	26	360
250	400	355	26	12	28	400
300	460	410	26	12	32	500

With the straight pipe section (order code 010B) the body length of DN10 is 345 mm instead of 65 mm. Flange connection to PN 1.6 MPa; the flanged joint is available from DN15.

5 Installation

Important Upstream and downstream of the flowmeter there must be sufficiently long straight pipe sections: 10 × DN upstream and 5 × DN downstream.



√ correct, × wrong. Top left: the pipe must stay full at the flowmeter (outlet rising, h > 0). Top right: in a vertical pipe the flow must rise through the flowmeter. Bottom left: do not install at a high point where gas collects. Bottom right: install the flowmeter upstream of a valve, not downstream of it.

– Before installing the flowmeter in a new pipeline, blow and clean the pipeline to prevent foreign objects from damaging the flowmeter.

– When welding flanges, do not weld with the flowmeter installed. After welding, remove welding slag and burrs from inside the pipe.

– Observe the direction: the arrow on the flowmeter must match the flow direction of the medium.

– When installed outdoors, provide good waterproofing. If the cable comes from above the housing, route the signal cable first downwards and then upwards into the housing, so that rainwater cannot run along the cable into the housing.

– Avoid places with strong electromagnetic interference (e.g. high-power frequency converters, motors). Lay power and signal cables separately.

– Avoid pipelines subject to mechanical vibration; if unavoidable, provide vibration damping, e.g. a hose transition or shock-absorbing pads.

– Avoid long overhead pipelines in which sagging of the pipe could cause leakage at the seals between flowmeter and flange; if unavoidable, support the pipe close upstream and downstream of the flowmeter.

6 Electrical connection



DIN 43650-A connector, terminal numbers.

Terminal	Two-wire 4 … 20 mA	Pulse
U+	1	1
U–	2	2
S+	—	3

The two-wire 4 … 20 mA version uses terminals 1 and 2, the pulse version terminals 1, 2 and 3. Supply voltage: see the technical data (section 3.2). The pin assignment of the cable and M12 × 1 versions is not given in this manual; please contact octogon.

6.1 Pulse output

Set the correct instrument coefficient K in the PLC or totalizer; the coefficient is on the nameplate. Instantaneous flow:

$Qv = f / K \times 3600$

Qv volume flow in m^3/h, f output frequency in Hz, K instrument coefficient of the flowmeter in pulses per m^3.

6.2 4 ... 20 mA output

The upper range value, i.e. the maximum flow Qmax, is on the nameplate or the verification certificate. Instantaneous flow:

$Q = (I - 4) / 16 \times Qmax$

Q instantaneous flow, I output current in mA, Qmax maximum flow.

7 Troubleshooting

Fault	Possible cause	Remedy
Flow passes through, but the indicated instantaneous flow is zero	1. Wiring error. 2. Parameters of the evaluating instrument changed. 3. Signal pick-up coil damaged; the signal does not reach the evaluating instrument. 4. Impeller stuck.	1. Check the wiring. 2. Check the parameters against the verification certificate. 3. Check the pick-up coil by passing a magnetic screwdriver along it. 4. Check the impeller.
No flow, but an instantaneous flow is indicated	1. Severe vibration of the pipeline. 2. Flowmeter not properly earthed. 3. Magnetic interference on site, e.g. frequency converters, motors, solenoid valves (50 Hz mains interference). Calculated value of the mains interference: Q = 3600 f / K (f = 50 Hz, K = instrument coefficient). 4. Shut-off valve of the pipeline not fully closed.	1. Add vibration damping. 2. Check the earthing. 3. Compare with the calculated value to find out whether mains interference is present; change the installation position. 4. Check the valve.
Measuring normally, but the measured value is inaccurate	1. Problem with the parameters of the evaluating instrument. 2. Pipeline does not meet the requirements: gas in the medium or viscosity too high. 3. Problem with the measuring element: when the flowmeter is removed, the impeller should turn quickly when blown at.	1. Check the parameters against the verification certificate. 2. Follow the installation instructions in chapter 5 strictly. 3. If the impeller is damaged, contact octogon.