

QFlow Coriolis Mass Flowmeter - QMASS 5506

Compact DN6 Coriolis meter for precision dosing, injection and skid applications.

Certifications

Quality Lab Solutions data sheet R4



Applications

- Oil and gas – chemical injection, small fuel and additive lines
- Chemical processing – catalyst, inhibitor and additive dosing on DN6 branches
- Food and beverage – flavour, colour and CIP chemical metering where mass and density matter
- Power and utilities – boiler treatment and conditioning chemical dosing
- General industrial – compact DN6 Coriolis measurement on skids, test rigs and pilot plants.

Special Features

- DN6 bent-tube Coriolis sensor for low to medium liquid flows up to 1200 kg/h
- High measuring performance with accuracy options down to ± 0.1 % of reading
- Compact hazardous-area transmitter with integrated OLED display and AC or DC power supply
- Versatile outputs including 4–20 mA, pulse and Modbus or HART
- SIL 2 in 1oo1 and SIL 3 in 1oo2 architectures.



QMASS 5506

Description

QFlow QMASS 5506 is a DN6 bent-tube Coriolis mass flow meter for low to medium flowrates up to 1200 kg/h in dosing, injection and small line measurement. It directly measures mass flow, density and process temperature, and provides calculated volume plus mass and volume totalisers. The compact sensor uses DN15 flanged process connections and the shared QMASS 5500 transmitter platform, fitting easily into skids and tight pipework without strict straight-run requirements. High accuracy options down to ± 0.1 % of reading, together with zero stability of 0.04 kg/h and wide pressure and temperature capability, support demanding chemical, energy and industrial duties on small lines.

Specifications

Performance Specifications	
Measurement Principle	Coriolis mass flow
Primary Measurement	Mass flow
Secondary Measurement	Density; Temperature; Volume flow; Mass and volume totalisers
Line Sizes	DN6 measuring tube; DN15 flanged process connections
Flow Range	0.04...1200 kg/h mass flow
Accuracy	Mass flow accuracy $\pm 0.1... \pm 0.5$ % of reading depending on calibration grade
Repeatability	Repeatability $\pm 0.05... \pm 0.25$ % of reading depending on selected grade
Zero stability	0.04 kg/h
Density Accuracy	± 0.002 g/cm ³
Temperature accuracy	± 1 °C ± 0.5 % of reading
Process & Environment	
Medium	Single-phase liquids and slurries; suitable for non-Newtonian fluids and suspensions; acceptable for clean or moderately contaminated process media
Pressure Rating	Max working pressure up to 100 bar depending on selected pressure rating (40 or 100 bar)
Medium Temperature	Medium $-70...+160$ °C or $-200...+60$ °C standard options; additional $-40...+200$ °C and $-40...+300$ °C variants available
Ambient Temperature	Ambient $-30...+60$ °C or $-40...+60$ °C depending on transmitter version
Mechanical/ Wetted Parts	
Process connections	DN15 flanged process connections with 40 or 100 bar pressure rating options
Wetted Parts	Measuring tubes and process connections in stainless steel 316L
Housing / Ingress Protection	IP65/IP67
Installation	Install so the sensor remains completely full; mount at the high point of gas lines and the low point of liquid lines; avoid strong vibration and mechanical stress; align flow arrow with actual process flow direction
Grounding	Normally grounded via process piping with additional M4 grounding screws on transmitter and junction box plus an internal grounding point inside the junction box
Gross Weight	9 kg
Electrical & I/O	
Power supply	Universal power supply 85...265 V AC or 12...24 V DC
Analogue Outputs	One or two 4–20 mA outputs; passive pulse or frequency output for flow; fixed-current and fixed-frequency test modes for loop checking
Communication	Modbus RS485; HART over 4–20 mA
Display	Integral OLED display with optical keys for local configuration, zeroing and diagnostics
Diagnostic	On-board diagnostics including sensor drive, temperature and signal-status monitoring plus totaliser and parameter backup functions
Approvals/Certification	
Hazardous area Approvals	ATEX and IECEx certified with Ex II 2G Ex db IIC T6..T1 Gb transmitter and compatible Ex ib IIC sensor for Zone 1 and Zone 2 gas atmospheres
General Approvals	CE marking; factory quality system certified to ISO 9001, ISO 14001 and ISO 45001
Functional Safety	Functional safety assessed to IEC 61508 with systematic capability SC 3. Suitable for SIL 2 in 1oo1 architecture (HFT = 0) and SIL 3 in 1oo2 architecture (HFT = 1) in low-demand mode, subject to SIF-level PFDavg and architectural constraint verification.
Metrological	Calibration laboratory accredited to ISO/IEC 17025
Warranty	2-year warranty

Sensor model / line size

Sensor model code (QFlow)	DN (mm)	DN (inch)	Minimum mass flow (kg/h)	Maximum mass flow (kg/h)	Zero stability (kg/h)
5506	6	1/4"	0.04	1200	0.04

Design Pressure

Order code	Description / options
P2	Design pressure 40 bar (standard for QMASS 5506).
P9	Custom design pressure
P3	Design pressure 100 bar (high-pressure option for QMASS 5506)

Accuracy

Order code	Description / options
A1	±0.1 % of rate
A2	±0.15 % of rate
A3	±0.2 % of rate (standard configuration)
A5	±0.5 %

Medium Temperature Class

Order code	Description / options
T1	-70...+160 °C (standard tube temperature range)
T4	-200...+60 °C (cryogenic option)

Process connection

Order code	Connection
C2	DN15 flanged connection (EN/ASME – match pressure class to 40 Bar rating)
C9	Custom end connection (special flange / threaded / hygienic on request)

Wetted Material

Order code	Description / options
W1	316L stainless steel (standard for QMASS 5506)
W9	Custom wetted material (e.g. Hastelloy C276)

Transmitter

Order code	Description / options
TR1	CF1 field transmitter (standard for QMASS 5506)

Transmitter type

Order code	Description / options
I1	Remote transmitter (3 m cable standard)
I2	Compact mounting on sensor body

Display

Order code	Description / options
D0	Transmitter without local display
D1	Transmitter with local display (standard)

Power supply

Order code	Description / options
V1	85...265 VAC mains supply
V2	24 VDC (18...36 VDC)
V9	Custom supply (e.g. self-switching range)

Communication & Outputs

Order code	Description / options
O1	Pulse + Modbus RS-485
O2	4–20 mA + pulse + Modbus RS-485
O5	HART + 4–20 mA + pulse + Modbus RS-485

Cable Entry

Order code	Description / options
E1	M20×1.5 female cable entry
E9	Custom cable entry

Mounting Bracket

Order code	Description / options
B0	Without mounting bracket
B2	With mounting bracket supplied

Explosion Protection

Order code	Description / options
XG	ATEX/IECEx approval
XN	No Approvals

IP Rating

Order code	Description / options
I5	IP65 enclosure (standard)
I7	IP67 enclosure

Flow Direction

Order code	Description / options
FD1	Standard flow direction as per body arrow
FD2	Mechanically reversed flow direction

Ambient temperature

Order code	Description / options
TA1	–40...+60 °C (default)
TA3	Custom ambient temperature requirement

Documentation

Order code	Description / options
CE	CE Certificate
UK	UKCA Certificate
RO	RoHS

Measurement principle

The QMASS 5506 operates according to the Coriolis principle. During operation, the internal measuring tube is driven into a controlled vibration. When there is no flow, the upstream and downstream sections of the tube vibrate in phase. As mass flows through the vibrating tube, Coriolis forces act on the fluid and cause a measurable phase shift between these sections.

Pickoff sensors mounted on the tube detect this phase difference, which is proportional to mass flowrate. The transmitter processes the signals and outputs the mass flow value. At the same time, the natural vibration frequency of the tube is monitored and used to determine the flowing density, while an integrated temperature sensor provides process temperature. From these primary variables, the instrument can calculate additional quantities, such as volume flow and totalised mass or volume, according to user configuration.

Design and measuring system

The QMASS 5506 measuring system consists of:

- An intrinsically safe Coriolis sensor with a 6 mm U-shaped 316L stainless-steel tube and DN15 flanged process connections.
- A combined intrinsically safe / flameproof transmitter with OLED display and optical keys.
- An explosion-proof shielded cable linking the two when you choose the remote variant.

Figure 1 illustrates our two basic mechanical layouts: remote (sensor and transmitter separate) and compact (transmitter mounted directly on the sensor). In both cases the process connections carry the weight of the sensor; no additional external support is normally required, and the sensor itself must not be used to support pipework.

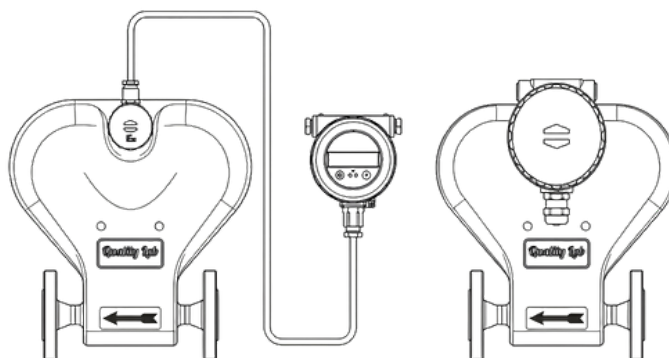


Figure 1

The transmitter housing includes:

- A circular OLED display and three touch-free optical keys (SET, STATUS, SELECT) for configuration and operation (see Figure 2 and Figure 3).

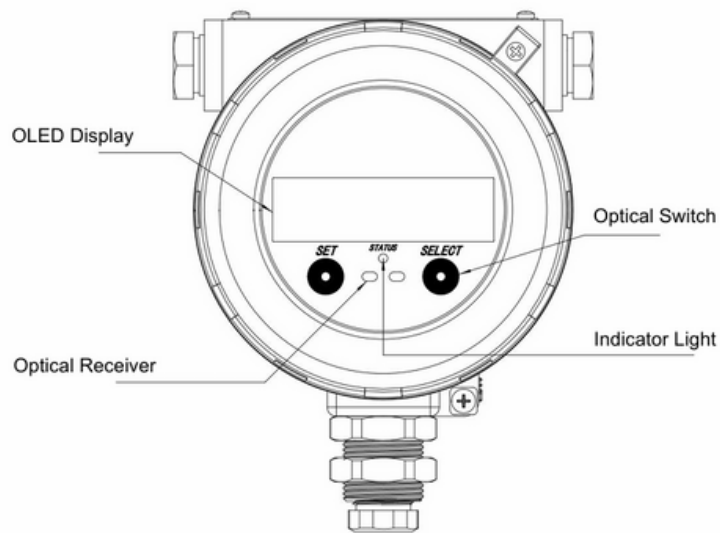


Figure 2

Interface 1				Interface 2		Interface 2	
Process Variables				Mass Total		M FlowRate	
TOTAL:		0.000 kg		0.000		0.000	
FLOW:		0.000 kg/min					
D: 0.000	g/cm3	T: 0.00	°C	M TOTAL: kg		M FLOW: kg/min	

Figure 3

- Cable entries for AC or DC power, 4...20 mA, pulse, RS-485 and grounding.
- External M4 grounding lugs on transmitter and junction box for reliable earthing (see Figure 3).

Ingress protection options up to IP67 are available, and ambient temperature options extend down to -40 °C and up to +60 °C, depending on the version you select.

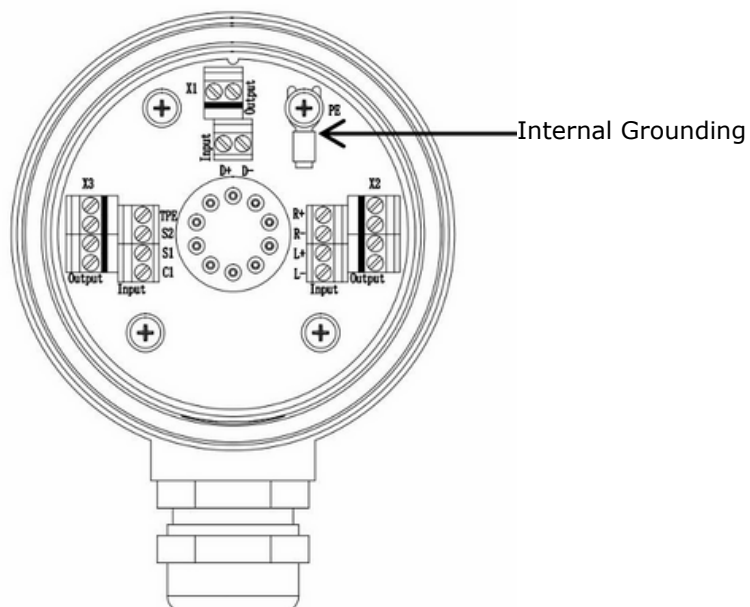


Figure 4

Performance characteristics

QMASS 5506 measures mass flow directly, then derives volume flow and volume totals using either real-time density or a fixed density value that you enter. This is particularly useful for gas applications, where you can enter the standard density of the gas and obtain standard volume totals while the display still shows "m³".

Every meter is calibrated on our own flow rigs in a dedicated calibration laboratory with an uncertainty of 0.05 %. Each instrument carries a factory calibration factor, and there is a separate user calibration factor that you can adjust via the transmitter interface or configuration software when you replace a transmitter or when you have verified a difference between meter reading and a reference. Together with the small zero stability and no-moving-parts design, this gives a very stable and repeatable low-flow performance.

Operating and installation conditions

QMASS 5506 is certified for use in explosive gas atmospheres in Zones 1 and 2, gas group IIC. Installation must follow the relevant rules for electrical equipment in explosive environments. We supply the sensor and transmitter as a matched pair; always ensure that the serial numbers on the sensor and transmitter match before putting the meter into service.

To achieve reliable measurement:

- Install the meter so that the tube remains completely filled during operation. For liquids and slurries, a low point in the line is preferred; for gases, a high point is often better. Figure 5 shows the preferred orientations for gas, liquid and slurry.

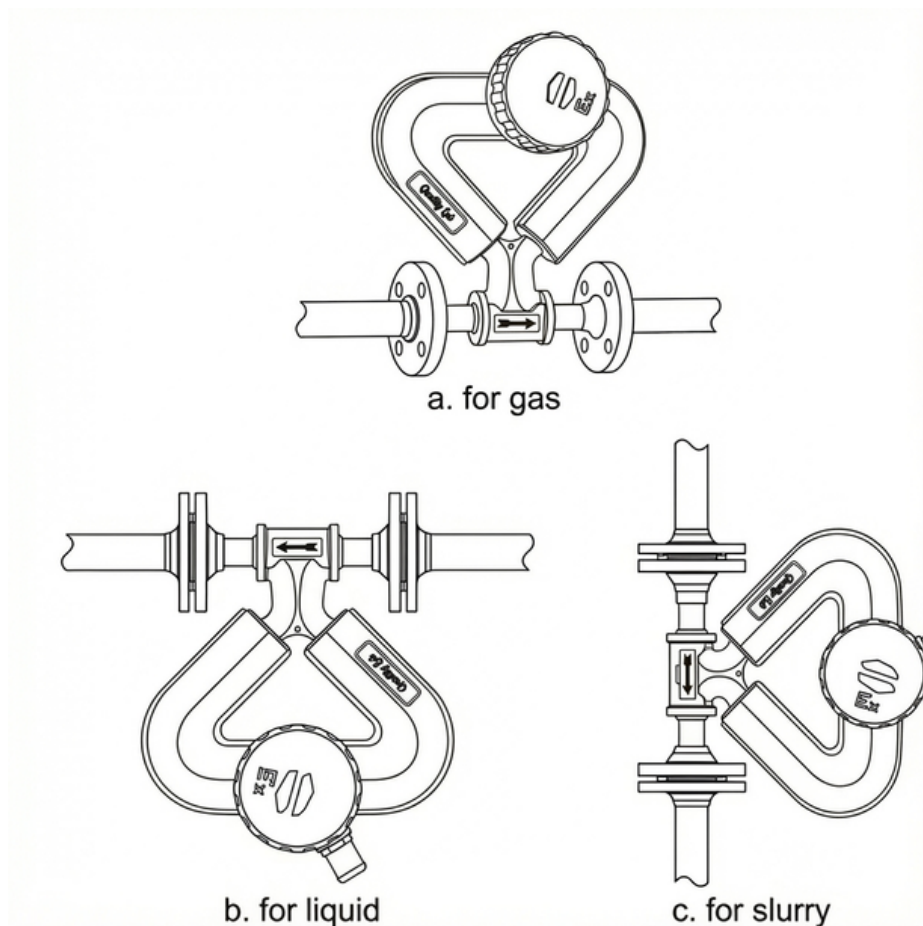


Figure 5

- Keep the meter away from direct sunlight, rain, corrosive liquids, strong vibration and sudden temperature changes.
- Respect our specified limits for external magnetic fields and do not place the sensor close to strong magnets.
- Ensure upstream piping is clean and free of welding debris or foreign objects.
- Align the pipework independently and then bolt the meter in; do not use the sensor to pull misaligned flanges together.
- Minimise torque and bending loads on the process connections, and avoid rigid contact between the sensor casing and nearby structures.

The flow direction arrow on the sensor body must match the desired forward flow direction. In the transmitter you can then choose whether to count only forward flow, only reverse flow, the absolute sum of both, or a bidirectional total that increases in one direction and decreases in the other.

The transmitter and junction box have cover grooves for optional sealing devices. When sealing is fitted, the enclosures cannot be opened without tools, which protects the Ex integrity; see Figure 6.

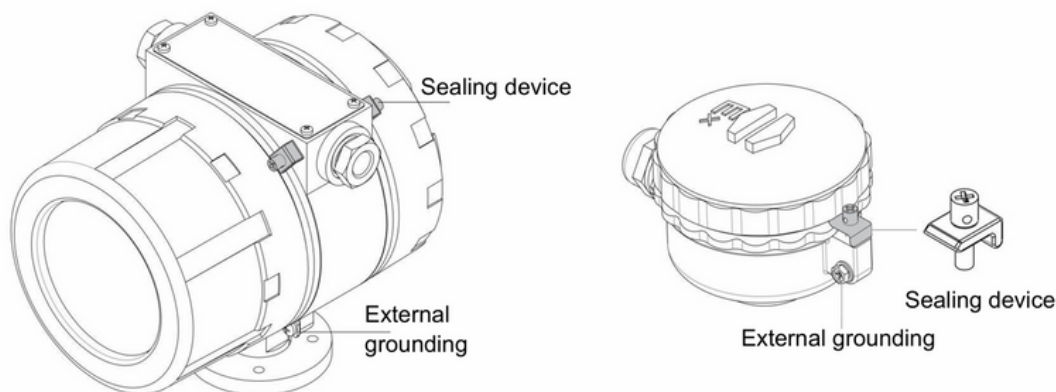


Figure 6

To reduce the risk of condensation, avoid mounting the transmitter or junction box with cable entries pointing upwards. A clamp allows you to rotate the junction box by 180° where access requires it.

Ambient operating conditions for the transmitter include temperature ranges down to -30 °C or -40 °C and up to +60 °C (depending on variant), relative humidity up to 95% non-condensing and atmospheric pressure from 86 to 106 kPa, as given in the transmitter specifications.

Process conditions and medium limitations

The QMASS 5506 is intended for single-phase liquids and slurries, including many non-Newtonian fluids and suspensions, and is suitable for clean or slightly contaminated process media.

Across the range, typical process limits include:

- Medium pressure rating up to 40 bar as standard, with higher 100 bar pressure variants.
- Process temperature capability from $-200...+300$ °C depending on tube temperature class.
- Ambient temperature ranges of $-40...+60$ °C for the field transmitter, with relative humidity up to 95 % non-condensing and atmospheric pressure from 86 to 106 kPa.
- Wetted parts in 316L stainless steel and DN15 flanged process connections, with sensor and transmitter enclosures rated to IP65/IP67.
- Always verify that pressure, temperature, corrosion resistance and erosion risk are compatible with your process conditions and local regulations.

Grounding and potential equalization

Good grounding is essential for both measurement stability and explosion protection.

- The sensor is normally grounded through the process piping. In addition, we provide M4 external grounding screws on the transmitter housing and on the junction box; see Figure 6.
- Inside the sensor junction box, the terminal board has a dedicated internal grounding point, where the shield of the sensor cable is connected; see Figure 4.
- The multi-core shielded cable between sensor and transmitter uses colour-matched cores at both ends to simplify correct wiring of drive coils, pick-offs, temperature sensor and shielding.
- During installation, connect all grounding points to the plant earth in line with your site standards. During maintenance, periodically check that all external and internal grounding screws are tight and free of corrosion.
- On non-conductive piping or where additional equipotential bonding is required, ensure that the flanges and meter body are reliably connected to earth, consistent with the Ex-protection requirements.

Electrical connections, outputs and communication

You can power QMASS 5506 from either AC or DC supplies:

- AC supply: 85...265 VAC (L, N, PE terminals)
- DC supply: 12...24 VDC (V+ and V– terminals)

We also offer supply variants that accept both a defined DC range and a high-voltage AC range automatically. Typical DC and AC wiring examples are shown in Figure 7.

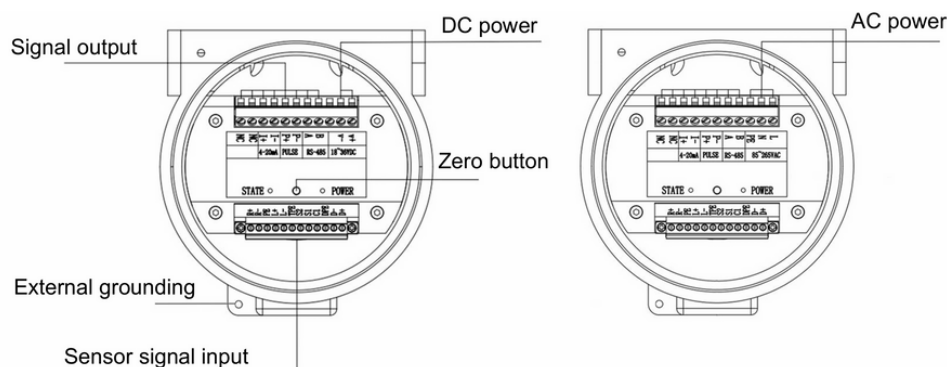


Figure 7

Between sensor and transmitter, a shielded multi-core cable carries all drive, pick-off, temperature and grounding signals. The manual provides full terminal and colour coding for both ends, so you can verify every connection. The maximum cable cross-section and a maximum cable length of 300 m are defined to preserve signal integrity and intrinsic safety. Unused cable entries must always be sealed using suitable Ex-approved plugs.

QMASS 5506 supports a wide range of outputs:

- 4...20 mA analogue output (active by default)
 - Assignable to mass flow, density or temperature.
 - Configurable upper and lower range limits.
 - Damping options and a fixed-current test mode to simplify loop checking.
 - Typical wiring is shown in Figure 8.

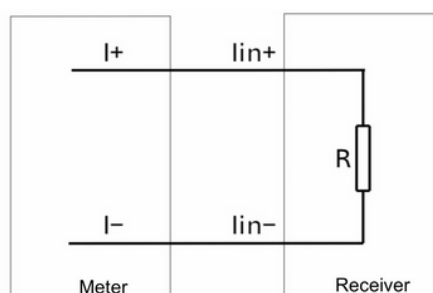


Figure 8

- Pulse / frequency output
 - Passive output, configurable for mass or volume.
 - Adjustable pulse equivalent so you can balance receiver resolution and maximum counting frequency.
 - Max. pulse frequency setting and a fixed-frequency test mode are included to verify receiver performance.
 - Pulse wiring examples are shown in Figure 9

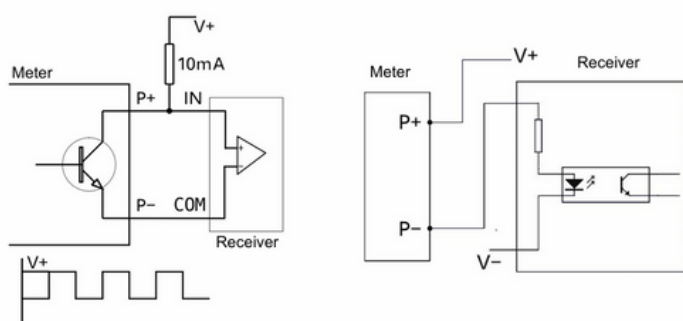


Figure 9

- Digital communication
 - Modbus RS-485 interface with configurable address, baud rate, parity, stop bits and float format.
 - HART communication available as an option on the 4...20 mA loop in specific output configurations.

Output configurations in our ordering structure combine these functions in different ways, for example:

- Pulse + Modbus RS-485
- 4...20 mA + pulse + Modbus RS-485
- Dual 4...20 mA + pulse
- 4...20 mA + pulse + HART

PC-based configuration is available using a USB-to-RS-485 converter. Connect A+ to A+, B- to B- and GND to GND, select the correct COM port and then connect from the software. From there you can access the same output, communication and meter-setup menus as on the local display.

For batching duties, QMASS 5506 can be combined with our explosion-protected batch controller. The controller runs on 24 VDC or 220 VAC and provides relay outputs for valve and pump control, allowing you to build a complete batching station around the flowmeter.

The following tables provide comprehensive definitions for the terminal connections and wiring configurations of the device. Table 1 outlines the general terminal definitions, detailing the function of each connection point. Subsequent tables, Table 2 and Table 3, offer specific wiring definitions for the transmitter and sensor ends, respectively, including color codes and corresponding functions to ensure accurate and reliable installation.

Table 1 - Terminal Definitions

Terminal	Definition
A(+), B(-)	RS-485
I+, I-	HART/ 4-20mA (optional)
P+, P-	Pulse
NC	Empty, reserved for future function
L, N, PE	AC power
V+, V-	DC power

Table 2 - Transmitter Terminal Definitions

Code	R+	R-	PE	L+	L-	TPE	S2	S1	C1	DPE	D-	D+
Color	White	Yellow	Black (Shield)	Gray	Purple	Transparent (Shield)	Brown	Green	Orange	Black (Shield)	Red	Blue
Function	Right pickoff detection			Left pickoff detection			Temp. detection			Coil Drive		

Table 3 - Sensor Terminal Definitions

Code	R+	R-	L+	L-	TPE	S2	S1	C1	D-	D+	PE
Color	White	Yellow	Grey	Purple	Transparent (shield)	Brown	Green	Yellow	Red	Blue	Black (shield)
Function	Right pickoff detection		Left pickoff detection			Temp. detection			Coil drive		Grounding

Diagnostics and verification functions

QMASS 5506 includes integrated diagnostics to help you identify issues quickly:

- The transmitter displays error codes at the top of the screen if it detects a problem, such as a sensor error, temperature sensor out-of-range, zero-calibration failure or transmitter initialisation.
- A front-panel status indicator shows green in normal operation and red when any error is active.
- In the configuration software, a dedicated status screen gives you the same information remotely.

Tables 4 and 5 show resistance and voltage ranges for all sensor terminals (left and right pick-off coils, drive coil and temperature elements). With a simple multimeter you can confirm whether the sensor is within these ranges, which greatly speeds up troubleshooting. The left and right coil values should be close to each other; if not, the sensor may be damaged.

Table 4 - Resistance of the Sensor Terminal

Name	Cable color	Terminal	Normal value (Ω)
Left coil	Grey & purple	L-, L+	70~200
Right coil	Yellow & white	R-, R+	70~200
Drive coil	Red & blue	D-, D+	10~200
Temp. 1	Green & black	S1, S2	100-110
Temp. 2	Orange & black	C1, TPE	100-110

Table 5 - Voltage of the Sensor Terminal

Name	Cable color	Terminal	Normal value (V)
Left coil	Grey & purple	M-, L+	0.1~0.35
Right coil	Yellow & white	R-, R+	0.1~0.35
Drive coil	Red & blue	D-, D+	0.3~5

Several functions support commissioning, adjustment and verification:

- Zero calibration – guided procedure via the transmitter or software. You simply warm up the meter, stabilise process temperature, ensure the sensor is fully filled and at zero flow, then run the zero calibration. The status LED flashes green while the procedure is active.
- Density calibration and density cut-off – dedicated menu items for fine-tuning density performance when justified, including low and high density settings and calibration times.
- Flow cut-off – independent cut-offs for mass and volume to suppress residual counts when the flow is effectively zero.
- Fixed-frequency pulse test and fixed-current test – simulation of stable pulse or current outputs to check the receiving instruments without running the process.
- Parameter backup and restore – allows you to store a complete configuration set in the transmitter and restore it after service or replacement.

The optical keys on the front panel are operated by holding a finger a short distance from the glass. Short and long activations are used to navigate menus, change parameters, reset totals and return to the main screen. Figure 2 and 3 show the key locations and example display layouts.

Certifications and Approvals

The QMASS 5506 is part of a mass flowmeter family manufactured under a certified quality-management system. The platform is supported by ISO 9001, ISO 14001 and ISO 45001 certifications, as well as relevant production and metrology approvals. The calibration laboratory used for flow calibration is accredited to ISO 17025:2005 and operates with an uncertainty of 0.05%.

At product level, the DN 6 variant carries a range of approvals. The certificates listed for this size include ATEX, IECEx, SIL functional safety and CE conformity. Explosion protection is implemented using a combination of intrinsic safety for the sensor and flameproof protection with intrinsic safety interfaces in the transmitter.

The associated Ex markings for the system include designations such as II 2G Ex db [ib] IIC T1...T6 Gb, aligned with the detailed markings in the transmitter and sensor documentation. The device is designed and tested in accordance with the applicable EN and IEC standards for electrical equipment in explosive atmospheres and for Coriolis mass flowmeters. Copies of the specific ATEX, IECEx, SIL and CE certificates, together with production licences and other approvals, are available as separate documents for project documentation and regulatory compliance files.

Device versions and configuration options

QQMASS 5506 is a DN6 micro-line member of our Coriolis mass flowmeter family. The range extends through multiple nominal diameters and flow capacities, up to large line sizes handling hundreds of thousands of kilograms per hour. All sizes share the same basic measuring principle, transmitter concept and configuration philosophy, which makes it easy to standardise across a plant.

For QMASS 5506:

- Nominal diameter: 6 mm
- End connection: DN15 flange
- Tube and splitter material: 316L stainless steel
- Maximum working pressure: 40 Bar or 100 Bar, depending on the selected pressure rating (4 MPa or 10 MPa)
- Process temperature options: from cryogenic (-200.+60 °C) through -70.+160 °C and -40.+200 °C up to high-temperature (-40.+300 °C) variants
- Ambient temperature options: down to -40 °C and up to +60 °C
- Ingress protection: IP65 or IP67, depending on the configuration code

Across the broader range, you can choose:

- Different pressure ratings (for example, 40 Bar, 70 Bar, 100 Bar and 250 Bar, size-dependent).
- Alternative wetted materials such as Hastelloy C-276 for enhanced corrosion resistance on selected sizes.
- Various process connections (flanged, threaded nut and custom solutions).
- Compact or remote transmitter installation, with optional mounting brackets and extra cable protection (hose, bellows or stainless-steel coverings on larger sizes).
- Output and communication combinations including pulse, Modbus RS-485, 4.20 mA (single or dual) and HART.

On the functional side, every meter offers:

- Mass and volume totals plus a separate inventory total.
- Flexible flow-direction handling (forward only, reverse only, absolute value or bidirectional counting).
- A wide selection of engineering units for mass, volume, flow, temperature and density.
- Multi-language display options (Chinese, English, Russian, Spanish and Portuguese).
- Customisable display layout (mass, volume or both on the main screen) and adjustable screen timeout.

Order Guide

Segment	Order code	Options
Product family	QMASS	QMASS Coriolis mass flowmeters
Sensor model / line size	5506	DN6 bent-tube Coriolis sensor
Design pressure / MWP	P2 / P9 / P3	P2 = 40 Bar standard; P9 = custom design pressure; P3= 100 bar
Medium temperature class	T1 / T4	T1 = -70...+160 °C; T4 = -200...+60 °C
Mass-flow accuracy grade	A1 / A2 / A3 / A5	±0.1 / ±0.15 / ±0.2 / ±0.5 % of rate
Process connection	C2 / C9	C2 = DN15 flanged; C9 = custom connection
Wetted material	W1 / W9	W1 = 316L stainless steel; W9 = custom material
Transmitter type	TR1	TR1 = CF1 field transmitter
Display	D0 / D1	D0 = no local display; D1 = with local display
Power supply	V1 / V2 / V9	V1 = 85...265 VAC; V2 = 24 VDC; V9 = custom supply
Communication & outputs	O1 / O2 / O5	O1 = pulse + Modbus; O2 = 4–20 mA + pulse + Modbus; O5 = HART + 4–20 mA + pulse + Modbus
Cable entry	E1 / E9	E1 = M20x1.5; E9 = custom
Mounting bracket	B0 / B2	B0 = without bracket; B2 = with bracket
Transmitter installation	I1 / I2	I1 = remote transmitter; I2 = compact mounting
Explosion protection	XG / XN	XG = ATEX/IECEX
Ingress protection	I5 / I7	I5 = IP65; I7 = IP67
Flow direction	FD1 / FD2	FD1 = default arrow; FD2 = reversed flow direction
Ambient temperature class	TA1 / TA3	TA1 = -40...+60 °C default; TA3 = custom ambient
Documentation	CE/UK/RO	CE = CE cert; UK= UKCA Cert; RO=RoHS

Ordering Example DN6 bent-tube Coriolis, 40 bar, -70...+160 °C, ±0.2 % of rate, DN15 flanged, 316L, CF1 transmitter with local display, 4–20 mA + pulse + Modbus RS-485, 24 VDC, ATEX/IECEX, IP67, CE.

Product family	Sensor model / line size	Design pressure / MWP	Medium temperature class	Mass-flow accuracy grade	Process connection	Wetted material	Transmitter type	Display	Power supply	Communication & outputs	Cable entry	Mounting bracket	Transmitter installation	Explosion protection	Ingress protection	Flow direction	Ambient temperature class	Documentation
QMASS	5506	P2	T1	A3	C2	W1	TR1	D1	V2	O2	E1	B2	I1	XG	I7	FD1	TA1	CE

Notes

Ensure media compatibility with wetted parts.

