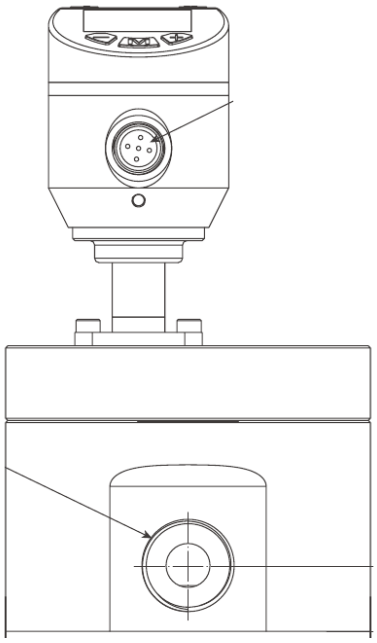
OCTOGON

MANUAL

QZKA

GEAR FLOWMETER

Installation and user manual



Document	Version	Date	Applies to
Installation and user manual	V00x	11/2026	QZKA, all sizes and versions

This manual describes the QZKA gear flowmeter with colour display: safety, working principle, technical data, dimensions, installation, electrical connection, operation and the menus of the output versions, and troubleshooting.

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1 About this manual

Read this manual before installing the flowmeter and keep it available for later use. Technical data, dimensions and order codes in this manual are those of the QZKA 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
Size	M2 · M2S · M4 · M6 · M10 · M15 · M25 (section 3.5)
Output	A3 two switches or pulses + one analogue · AR RS485 + analogue · SA analogue flow and temperature, switch, pulse, IO-Link
Seal	FKM · PTFE · EPDM
Body	aluminium · PP · stainless steel 304 or 316
Temperature	standard (below 120 °C) · T (below 140 °C)
Basic type	FM500

2 Safety

Warning Risk of personal injury - overpressure danger.

– Before installing the device, read this manual and make sure that the product is suitable for your application without any restriction.

– Failure to follow the operating instructions or the technical data may result in personal injury or damage to property.
– In every application, check that the materials of the product are compatible with the medium to be measured.
– Use the device correctly so that it operates stably in the long term, and make sure that the medium does not damage the wetted parts of the product.

Important The operator is responsible for deciding whether the sensor is suitable for the application. Improper installation and use of the sensor void warranty claims.

3 Product description

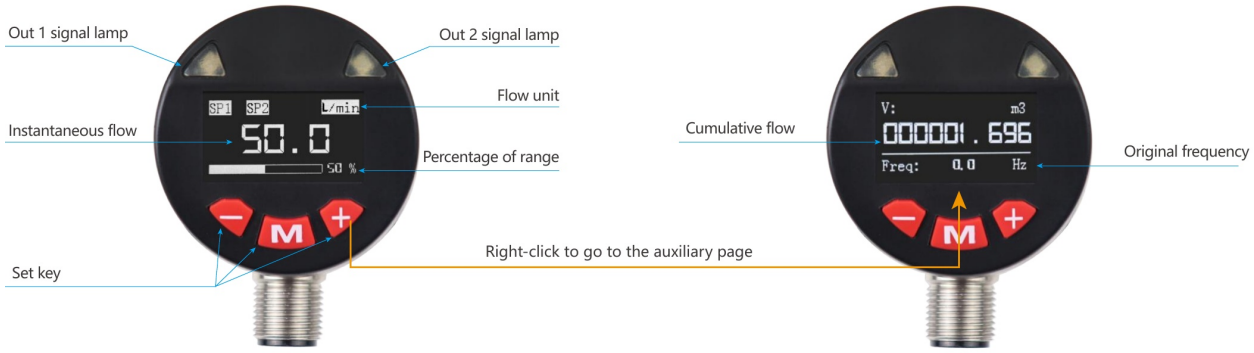
3.1 Working principle

The QZKA is a positive displacement flow sensor with two meshing precision gears. The volume displaced by the gears is used to calculate the volume of the medium passing through, so that even very small quantities can be measured. The flowmeter is used for precise continuous or intermittent measurement of liquid flow in pipes and of the instantaneous flow.

– Analogue and switching output (dual output); switching outputs PNP or NPN, selectable.
– Colour display.
– Pressure rating 10 ... 400 bar, depending on the body material.
– Measures various viscous media; high accuracy and repeatability.
– Communication function (version AR).
– Strong resistance to corrosion and fouling (acids and alkalis).

Applications: resins and adhesives; hydraulic oil, lubricating oil and grease; fuel oil; inks and asphalt; liquid nitrogen, refrigerants and solvents; edible oil and fish oil; fluids with chemical and corrosion-resistance requirements.

3.2 Display and keys



Main interface **Auxiliary interface**

Left: main screen with instantaneous flow, flow unit, percentage of range and the lamps of output 1 and output 2. Right: auxiliary screen with cumulative flow and original frequency, reached with the right key (+).

Element	Function
Out 1 / Out 2 signal lamp	state of switching output 1 / 2 (SP1, SP2 on the screen)
Main screen	instantaneous flow, flow unit, percentage of range
Auxiliary screen	cumulative flow (V) and original frequency (Freq, Hz)
Keys –, M, +	setting keys (chapter 7); + on the main screen opens the auxiliary screen

3.3 Technical data

Item	Value
Measuring principle	Positive displacement — two meshing gears, a fixed volume per revolution
Measuring range	Seven sizes from 5 mL/min to 150 L/min, see the range table
Accuracy	± 0.5 % of full scale
Repeatability	± 0.2 % of full scale
K-factor	Pulses per litre, roughly 70 to 34 000 by size. Q = f × 60 / K, with Q in L/min and f in Hz
Media	Oils, fats, fuels, resins, adhesives, solvents, inks and refrigerants · viscosity up to 10 000 Pa·s

Filter	Finer than 100 mesh, ahead of the meter and never after it
Body material	Aluminium (40 bar) · 304 stainless (100 · 250 · 400 bar) · 316 stainless (100 · 250 · 400 bar) · PP (10 bar)
Shell and display	Shell aluminium or stainless steel · display housing stainless steel or engineering plastic
Seal	FKM ≤ 200 bar · PTFE above 200 bar · EPDM
Pressure rating	10 … 400 bar by body material · M2S ≤ 150 bar
Medium temperature	-30 … +120 °C standard · +140 °C with code T. Aluminium and PP do not support the high-temperature option
Process connection	G1/4 · G3/8 · G1/2 · G3/4 · G1″ by size · two mounting threads M5, M6 or M8
Supply voltage	12 … 30 Vdc, M12 × 1 five-pin plug
Version A3	Two switches plus one analogue: OUT1 and OUT2 switch PNP or NPN, OUT1 also pulse; OUT3 is 4 … 20 mA, 1 … 5 V or 0 … 10 V
Version AR	RS485 plus analogue: OUT1 is RS485(B), OUT2 is RS485(A), OUT3 the analogue output
Version SA	Analogue for flow AND temperature, plus switch, pulse and IO-Link: OUT2 the flow, OUT3 the temperature
Factory setting	OUT1 and OUT2 flow switch PNP, OUT3 4 … 20 mA
Connector	M12 × 1 five-pin, standard cable 2 m PVC
Display	Colour screen. Main page: flow, unit, percentage of range and the two output lamps. Auxiliary page: totalized volume and the raw pulse frequency
Operation	Three keys, minus, M and plus · the right key opens the auxiliary page

3.4 Ranges and K-factors

Size	Measuring range	K-factor (pulses/L)
M2	50 … 2000 mL/min	≈ 3500
M2S	5 … 2000 mL/min	≈ 34000
M4	0.1 … 4 L/min	≈ 2450
M6	0.15 … 8 L/min	≈ 1650
M10	0.5 … 20 L/min	≈ 1500
M15	2 … 50 L/min	≈ 430
M25	5 … 150 L/min	≈ 70

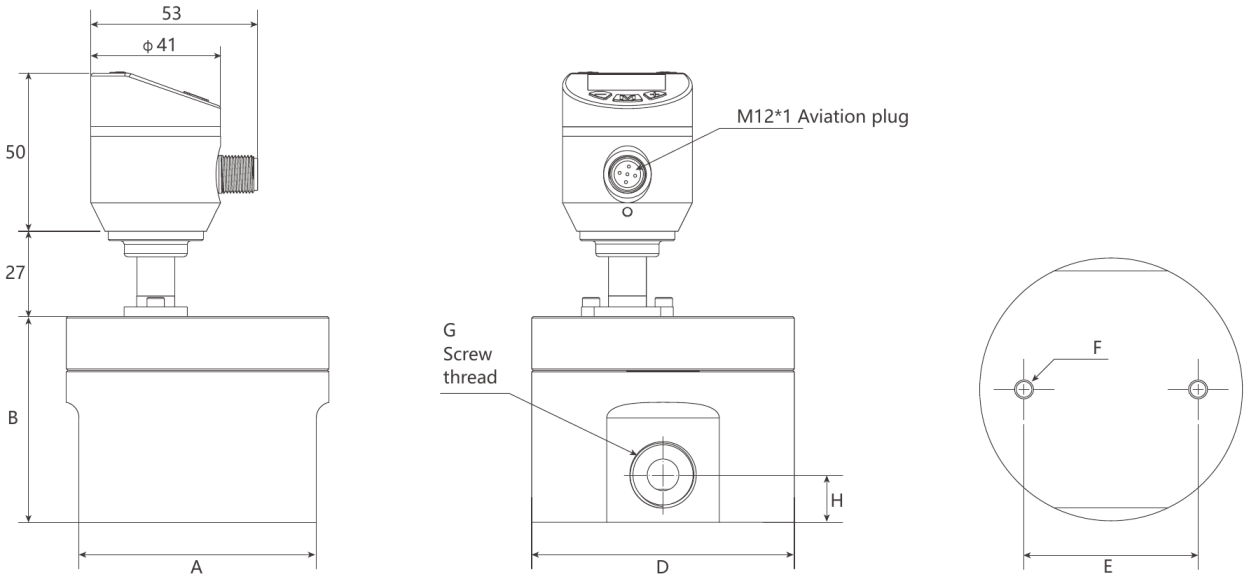
Flow from the pulse output: Q = f × 60 / K (Q in L/min, f output frequency in Hz, K pulses per litre).

3.5 Order code

Field	Code	Meaning
1 Series	QZKA	QZKA gear flowmeter
2 Size	M2 · M2S	50 … 2000 mL/min · 5 … 2000 mL/min, the latter ≤ 150 bar
	M4 · M6	0.1 … 4 L/min · 0.15 … 8 L/min
	M10 · M15	0.5 … 20 L/min · 2 … 50 L/min
	M25	5 … 150 L/min
3 Output	A3	Two switches or pulses plus one analogue output
	SA	Analogue flow and temperature, switch, pulse, frequency, IO-Link
	AR	RS485 plus analogue
4 Seal	F · P · E	FKM, ≤ 200 bar only · PTFE, above 200 bar · EPDM
5 Body	L · P	Aluminium 40 bar · PP 10 bar
	S · S1 · S2	304 stainless 100 · 250 · 400 bar
	S3 · S4 · S5	316 stainless 100 · 250 · 400 bar
6 Temperature	— · T	Below 120 °C · below 140 °C, not for aluminium or PP

Example: QZKA-M10-A3-F-S-—.

4 Dimensions

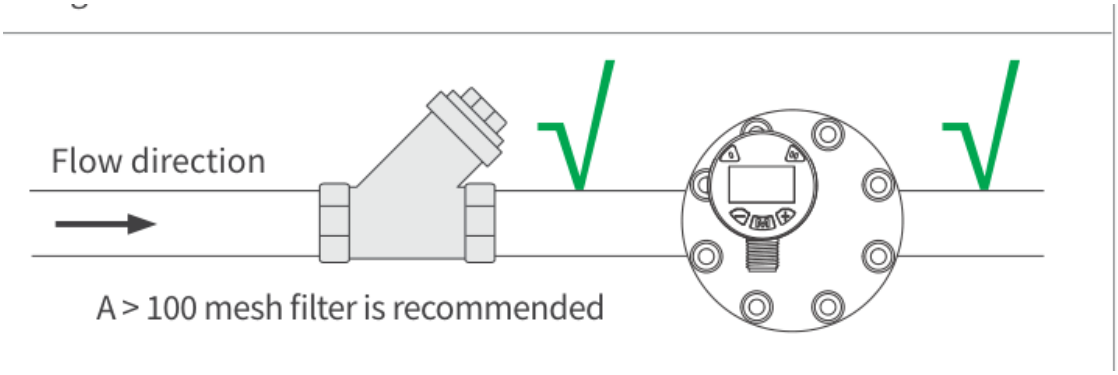


Side view, front view and view from below. A body width, B body height, D depth over the ports, H port height above the base, E spacing of the two mounting threads F, G process thread. Display 50 mm high, neck 27 mm, Ø 41 mm, 53 mm across the flats - the same for every size. Dimensions in mm.

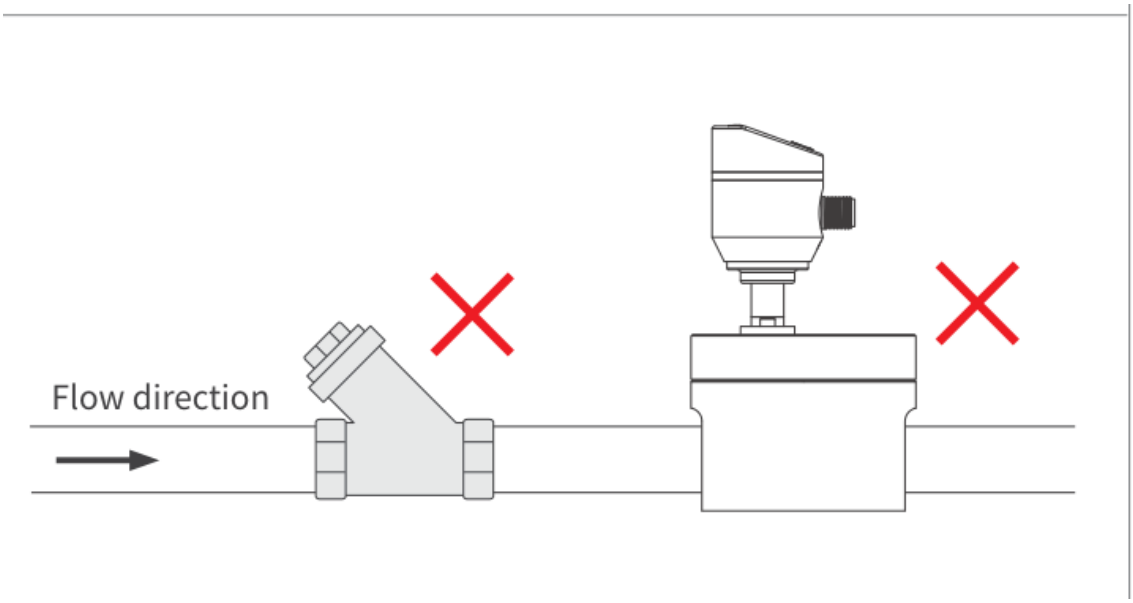
Size	A	B	D	H	E	F thread	G port
M2	83	45	88	15	40	2 × M6	G1/4
M2S	83	43	88	10	44	2 × M5	G1/4
M4	80	55	83	15	55	2 × M6	G3/8
M6	80	55	83	15	55	2 × M6	G1/2
M10	80	55	83	15	55	2 × M6	G1/2
M15	110	65	113	28	90	2 × M6	G3/4
M25	124	70	138	29	100	2 × M8	G1″

5 Installation

– Install the flowmeter so that the medium flows in the flow direction.
– Install a strainer upstream of the flowmeter (never downstream). A filter finer than 100 mesh is recommended.
– Install the flowmeter in a horizontal pipe with the display head pointing horizontally (view onto the display, see figure).
Do not install it with the display head pointing vertically upward.



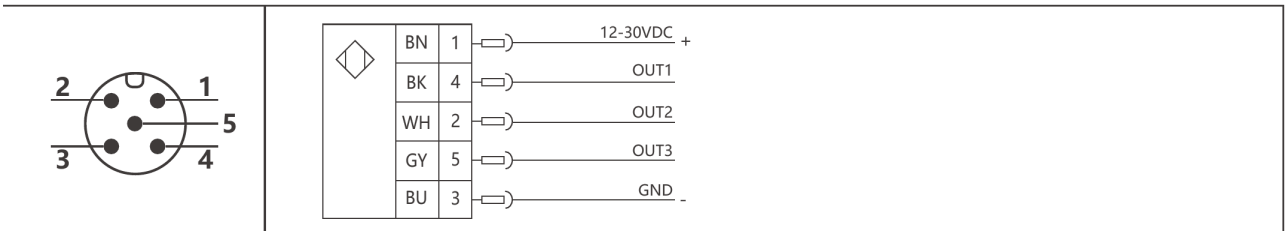
Correct: strainer upstream, flowmeter with the display head pointing horizontally.



Wrong: flowmeter with the display head pointing vertically upward.

The installation figures are for reference only.

6 Electrical connection



M12 × 1 plug, 5-pin. Supply voltage: see the technical data (section 3.3).

Wire colours: 1 BN brown (supply +), 2 WH white (OUT2), 3 BU blue (supply –), 4 BK black (OUT1), 5 GY grey (OUT3). What OUT1 to OUT3 carry depends on the output version.

6.1 Version A3 - two switches + one analogue

Wire	Pin	Function
BN	1	supply +
BU	3	supply –
BK	4 (OUT1)	flow switch PNP (factory setting) · flow switch NPN · linear pulse (100 Hz at full scale) · original pulse · quantitative pulse (full scale × 0.1)
WH	2 (OUT2)	flow switch PNP (factory setting) · flow switch NPN
GY	5 (OUT3)	flow analogue: 4 ... 20 mA (factory setting) · 1 ... 5 V · 0 ... 10 V

6.2 Version AR - RS485 + analogue

Wire	Pin	Function
BN	1	supply +
BU	3	supply –
BK	4 (OUT1)	RS485 (B)
WH	2 (OUT2)	RS485 (A)
GY	5 (OUT3)	flow analogue: 4 ... 20 mA (factory setting) · 1 ... 5 V · 0 ... 10 V

6.3 Version SA - analogue flow/temperature, switch, pulse, IO-Link

Wire	Pin	Function
BN	1	supply +
BU	3	supply –
BK	4 (OUT1)	flow switch PNP · flow switch NPN · temperature switch PNP · temperature switch NPN · linear pulse (100 Hz at full scale) · original pulse · quantitative pulse (full scale × 0.1) · IO-Link
WH	2 (OUT2)	flow analogue: 4 ... 20 mA (factory setting) · 1 ... 5 V · 0 ... 10 V
GY	5 (OUT3)	temperature analogue: 4 ... 20 mA (factory setting) · 1 ... 5 V · 0 ... 10 V

7 Operation and menus

7.1 Operating the menu

Key	In the item list	In the value display
M	opens the selected item (on the main screen: opens level 1)	confirms the value and returns to the item list
–	moves to the previous item	decreases the value
+	moves to the next item	increases the value

- Press **M** on the main screen to open level 1 of the menu.
- Level 1 ends with the item **Menu 2 Set**: press **M** to open level 2, or press **+** to return to the main screen.
- After the last item of level 2, **+** returns to the main screen.
- **Factory Reset**: the display shows **5S**; hold **M** for 5 s to restore the factory settings.
- Each item shows its name in two languages on the display; this manual uses the English name.

7.2 Menu of version A3

Level 1

Item	Function
SP1 Set	switching point of switch 1
RP1 Set	reset point of switch 1
SP2 Set	switching point of switch 2
RP2 Set	reset point of switch 2
F-URV	range: full scale of the flow
Menu 2 Set	opens level 2

Level 2

Item	Function
Factory Reset	restores the factory settings (hold **M** for 5 s)
OUT1 Set	output mode of OUT1: **W-NC** window, normally closed · **W-NO** window, normally open · **H-NC** hysteresis, normally closed · **H-NO** hysteresis, normally open · **S-Hz-OUT** set pulse output · **F-Hz-OUT** original pulse output
OUT2 Set	output mode of OUT2: **W-NC** · **W-NO** · **H-NC** · **H-NO**
dS1 Set	switching delay of switch 1
dR1 Set	reset delay of switch 1
dS2 Set	switching delay of switch 2
dR2 Set	reset delay of switch 2
Unit Set	flow unit: L/min · mL/min · m^3/h
F-L-data	historical minimum of the flow
F-H-data	historical maximum of the flow
F-PACE	filter damping
Low flow cut	low-flow cut-off: flow values below the set value are suppressed
PNP/NPN Set	switching outputs PNP or NPN
A0-Mode	analogue output signal: 4 … 20 mA · 1 … 5 V · 0 … 10 V (1)
d-P-set	decimal places of the reading
Digit colour	colour of the main reading
BG colour	background colour of the main screen
SCRN-Set	screen-off setting value (s); example display **NO**

7.3 Menu of version AR

Level 1

Item	Function	Example display
485 ID	RS485 address	1
Baud set	baud rate	9600
parity set	parity bit	None
stop bit set	stop bits	1 bit
F-URV	range: full scale of the flow	–
Menu 2 Set	opens level 2	–

Level 2

Item	Function
Factory Reset	restores the factory settings (hold **M** for 5 s)
Unit Set	flow unit: L/min · mL/min · m^3/h
F-L-data	historical minimum of the flow
F-H-data	historical maximum of the flow
F-PACE	filter damping
Low flow cut	low-flow cut-off: flow values below the set value are suppressed
A0-Mode	analogue output signal: 4 ... 20 mA · 1 ... 5 V · 0 ... 10 V (1)
d-P-set	decimal places of the reading
Digit colour	colour of the main reading
BG colour	background colour of the main screen
SCRN-Set	screen-off setting value (s); example display **NO**

The register map of the RS485 interface is not part of this manual; please request it from octogon.

7.4 Menu of version SA

Level 1

Item	Function
SP1 Set	switching point of switch 1
RP1 Set	reset point of switch 1
T-LRV	lower limit of the temperature range
T-URV	upper limit of the temperature range
F-URV	flow range
Menu 2 Set	opens level 2

Level 2

Item	Function
Factory Reset	restores the factory settings (hold **M** for 5 s)
OUT1 Set	output mode of OUT1: **F-W-NC** flow window, normally closed · **F-W-NO** flow window, normally open · **F-H-NO** flow hysteresis, normally open · **F-H-NC** flow hysteresis, normally closed · **T-W-NC** · **T-W-NO** · **T-H-NO** · **T-H-NC** the same for the temperature · **F-Hz-OUT** flow pulse output
OUT2 Set	output mode of OUT2: **F-A-OUT** flow analogue output · **T-A-OUT** temperature analogue output
dS1 Set	switching delay of switch 1
dR1 Set	reset delay of switch 1
T-ofst	temperature offset (°C)
Flow-C	flow coefficient value
Unit Set	flow unit: L/min · mL/min · m^3/h
F-L-data	historical minimum of the flow
F-H-data	historical maximum of the flow
F-PACE	filter damping
Low flow cut	low-flow cut-off: flow values below the set value are suppressed
PNP/NPN Set	switching output PNP or NPN

A0-Mode	analogue output signal: 4 ... 20 mA · 1 ... 5 V · 0 ... 10 V (1)
d-P-set	decimal places of the reading
Digit colour	colour of the main reading
BG colour	background colour of the main screen
SCRN-Set	screen-off setting value (s); example display **NO**

(1) The menu also offers 0 ... 20 mA, 0 ... 5 V and 2 ... 10 V; the analogue signals of this flowmeter are those of chapter 6.

8 Troubleshooting

Fault	Possible cause	Remedy
No output signal after switching on	1. No medium flow, or the flow is below the starting flow. 2. Supply connected to an output wire. 3. Display circuit damaged.	1. Increase the flow, or use a flowmeter of a smaller size that suits the flow range. 2. Connect the cables correctly. 3. Replace the flowmeter.
Output signal although there is no flow	1. Poor earthing of the flowmeter; interference from power lines and other earth lines. 2. Amplifier sensitivity too high, or self-excitation. 3. Unstable supply, poor filtering or other electrical interference.	1. Earth correctly to eliminate the interference. 2. Replace the preamplifier. 3. Repair or replace the power supply to eliminate the interference.
Unstable instantaneous flow reading	1. Unstable medium flow. 2. Amplifier sensitivity too high or too low; extra or missing pulses. 3. Debris in the housing. 4. Poor earthing. 5. Flow below the lower limit. 6. Foreign matter in the line disturbing the flow.	1. Test again when the flow is stable. 2. Replace the preamplifier. 3. Remove the dirt. 4. Check the earth connection.
Indicated cumulative flow does not match the actual volume	1. Wrong meter coefficient entered. 2. The operating flow is below or above the flow range of the selected flowmeter. 3. The flowmeter itself is out of tolerance.	1. Enter the correct coefficient after recalibration. 2. Adjust the flow, or choose a flowmeter of suitable size. 3. Recalibrate.
Key fault	Poor contact of a key, or a key is locked.	Replace the display board.

9 Accessories

Connecting cables with M12 × 1 five-pin socket in PUR or PVC, 2, 5 or 10 m, straight or angled, shielded or unshielded - the factory standard is 2 m PVC, straight. Self-wiring connectors (five-pin and four-pin) and a protective cover for the colour-screen version are available.

Accessories are ordered by description; order numbers: see the datasheet.