

GEAR FLOWMETER FOR SMALL AND VISCOUS FLOWS



- POSITIVE DISPLACEMENT · 5 ML/MIN ... 150 L/MIN
- ± 0.5 % F.S. · 10 ... 400 BAR · -30 ... +140 °C
- 4 ... 20 MA · PNP/NPN · PULSE · RS485 · IO-LINK

KEY DATA

Property	Value	Property	Value
Measuring range	5 mL/min ... 150 L/min in seven sizes	Accuracy	± 0.5 % of full scale
Repeatability	± 0.2 % of full scale	Output	4 ... 20 mA · PNP/NPN · pulse · RS485 · IO-Link
Supply voltage	12 ... 30 Vdc	Medium temperature	-30 ... +120 °C · +140 °C with code T
Pressure rating	10 · 40 · 100 · 250 · 400 bar by body material	Viscosity	Up to 10 000 Pa·s
Body material	Aluminium · 304 or 316 stainless steel · PP	Process connection	G1/4 · G3/8 · G1/2 · G3/4 · G1" by size

Two meshing gears displace a fixed volume per revolution, so the reading does not depend on density or viscosity — which is what puts oils, resins, inks and adhesives within reach.



MEASUREMENT

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. $Q = f \times 60 / K$, 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

MATERIALS AND PROCESS

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

ELECTRICAL PROPERTIES

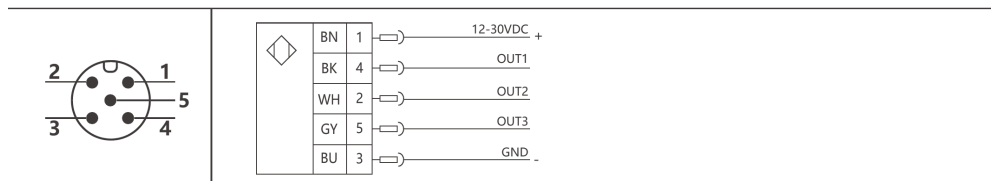
Supply voltage	12 ... 30 Vdc, M12 × 1 five-pin plug
Version A3	Two switches plus one analogue: OUT1 and OUT2 switch PNP or NPN, OUT1 also pulse; OUT3 is 4 ... 20 mA, 1 ... 5 V or 0 ... 10 V
Version AR	RS485 plus analogue: OUT1 is RS485(B), OUT2 is RS485(A), OUT3 the analogue output
Version SA	Analogue 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 ZL05-PC02G, 2 m PVC

DISPLAY AND OPERATION

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



WIRING AND DISPLAY



The M12 × 1 five-pin plug seen from the front and the five conductors: BN 1 supply plus, BK 4 OUT1, WH 2 OUT2, GY 5 OUT3, BU 3 supply minus. What OUT1 to OUT3 carry depends on the output version A3, AR or SA.



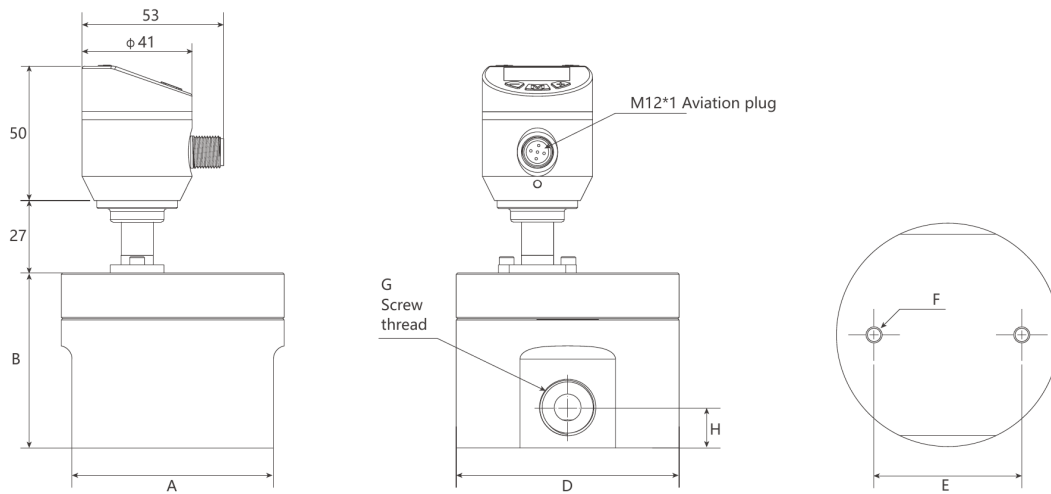
The main page: flow in the chosen unit, the lamps SP1 and SP2 above and the percentage of range as a bar.



The auxiliary page, reached with the right key: totalized volume above, raw pulse frequency below.



DIMENSIONS (mm)



Side view with A, B and the display above it, front view with D, H and the process thread G, top view with the two mounting threads F at the spacing E.

A is the body width, B the body height, D the depth over the ports, H the port height above the base, E the spacing of the two mounting threads F, and G is the process thread. The overall height above the body is 50 mm for the display and 27 mm for the neck, the display is $\phi 41$ mm and 53 mm across the flats — the same for every size.

OVERALL DIMENSIONS (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"



The K-factor is in pulses per litre; $Q = f \times 60 / K$ gives litres per minute from the pulse frequency in hertz.

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



COMPLIANCE AND CERTIFICATION

Measuring principle	Positive displacement, two meshing gears
Accuracy	± 0.5 % of full scale
Repeatability	± 0.2 % of full scale
Pressure rating	10 · 40 · 100 · 250 · 400 bar by body material
Wetted materials	Aluminium, 304 and 316 stainless, PP; seals FKM, PTFE or EPDM

ORDER CODE

Accessories

- The connecting cable with an M12 × 1 five-pin socket comes in PUR or PVC and in 2, 5 or 10 m, straight or angled, shielded or not — ZL05-PC02G, 2 m PVC straight, is the factory standard. Self-wiring connectors are listed as GL05 and WL05 (five-pin) and GL04 and WL04 (four-pin). A protective cover for the colour-screen version has the order number KTCS33661.



Connector
M12 × 1 · 5-pin

Cover
KTCS33661

Example: QZKA-M10-A3-F-S—.

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

