

PLATE-MOUNTED GEAR FLOWMETER, 400 BAR



- SEVEN RANGES, 50 ML/MIN TO 350 L/MIN · 400 BAR · -30 ... +120 °C
- ± 0.5 % OF FULL SCALE · REPEATABILITY 0.2 %
- 4 ... 20 mA · PNP/NPN · PULSE · RS485 OR IO-LINK · COLOUR DISPLAY

KEY DATA

Property	Value	Property	Value
Measuring range	50 mL/min ... 350 L/min, seven steps	Accuracy	± 0.5 % of full scale
Output	4 ... 20 mA · PNP · NPN · pulse · RS485 · IO-Link	Repeatability	± 0.2 % of full scale
Supply voltage	16 ... 30 Vdc	Medium temperature	-30 ... +120 °C · +140 °C ordered separately
Pressure range	400 bar, stainless steel	Materials	Stainless · display stainless or plastic
Seal	FKM as standard	Mounting	On a machined plate

Two meshing gears turn once per known volume. It is mounted on a plate, not in a pipe.



MEASUREMENT

Measuring principle	Positive displacement — two meshing gears, each turn a known volume. The reading does not depend on the flow profile, so no straight inlet run is needed
Measuring range	Seven steps: 50 ... 2000 mL/min, 0.1 ... 4, 0.2 ... 20, 2 ... 70, 5 ... 150, 20 ... 250 and 30 ... 350 L/min
Accuracy	± 0.5 % of full scale
Repeatability	± 0.2 % of full scale
Media	Additive fuels, corrosion inhibitors, catalysts, emulsifiers, oils, fats, fragrances, adhesives, solvents, inks and insecticides · viscosity up to 10 000 Pa·s
Influence	Pressure and flow changes do not affect the accuracy
Pulse output	$Q = f \times 60 / K$, with f the output frequency in Hz and K the pulses per litre

MATERIALS AND PROCESS

Housing	Stainless steel · display housing stainless steel or engineering plastic
Seal	FKM as standard
Pressure range	400 bar with the stainless housing
Medium temperature	-30 ... +120 °C as standard · +140 °C with the T field of the order code
Mounting	On a machined plate. Two sealing grooves, 1.5 mm deep on the small sizes, 2 mm from 70 L/min and 2.5 mm on the 250 L/min size
Locking threads	4 × M6 on the small sizes, 4 × M8 at 70 L/min, 4 × M12 at 150 and 250 L/min, 8 × M14 on the 350 L/min size
Largest size	The 350 L/min version has a SAE 1¼ inch 6000 PSI flange face and an outside diameter of 220 mm

ELECTRICAL PROPERTIES

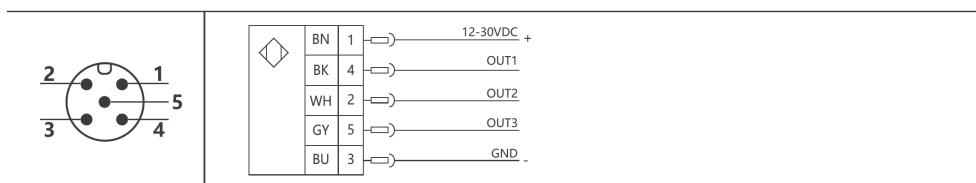
Supply voltage	16 ... 30 Vdc
Plug	M12 × 1, five pins: 1 BN supply +, 3 BU supply –, 4 BK OUT1, 2 WH OUT2, 5 GY OUT3
Output A3	Two switches and one analogue. OUT1 and OUT2 PNP or NPN, or a pulse — linear at 100 Hz full scale, original, or quantitative at a tenth of full scale. OUT3 is 4 ... 20 mA, 1 ... 5 V or 0 ... 10 V
Output AR	RS485 on OUT1 and OUT2 plus the same analogue on OUT3
Output SA	Flow or temperature as switch, pulse, analogue or IO-Link
Factory setting	PNP on OUT1 and OUT2, 4 ... 20 mA on OUT3

DISPLAY

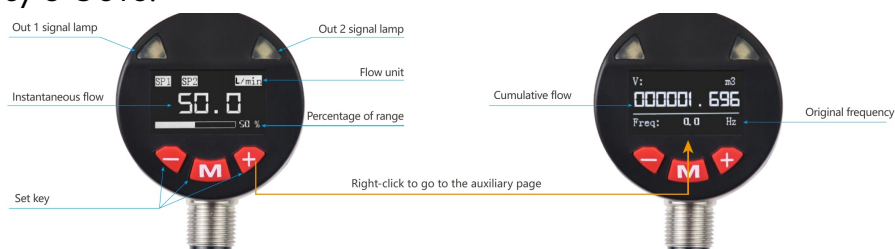
Display	Colour screen. Main page: instantaneous flow, unit, percentage of range and the two output lamps
Auxiliary page	Totalised volume and the raw frequency, reached with the right key
Keys	Three: minus, M and plus



WIRING AND DISPLAY



The five-pin M12 plug, drawn for the A3 version: brown 1 supply +, blue 3 supply -, black 4 OUT1, white 2 OUT2, grey 5 OUT3.

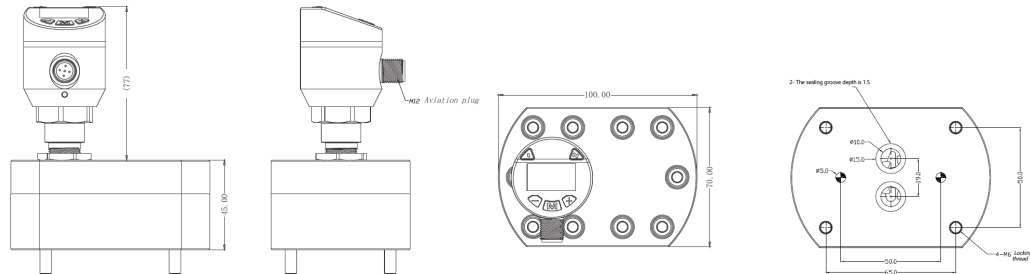


The two pages of the colour display. The main page carries the instantaneous flow, the percentage of the range and the two output lamps; the right key changes to the auxiliary page with the totalised volume and the raw frequency.

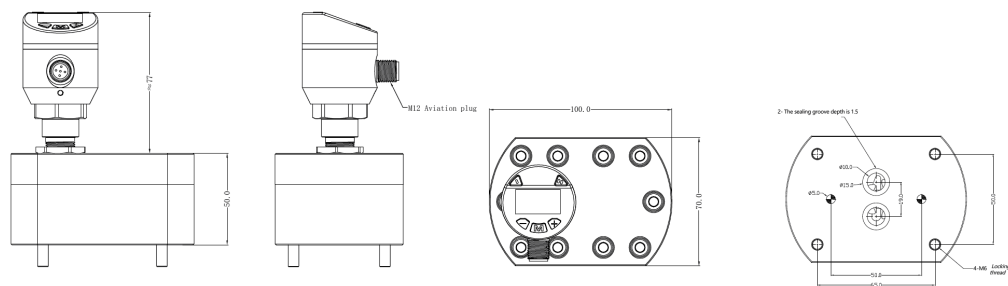


DIMENSIONS (mm)

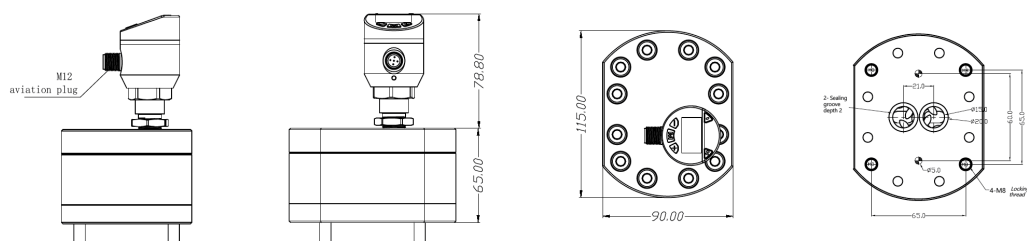
Measuring range: 2000mL/4L



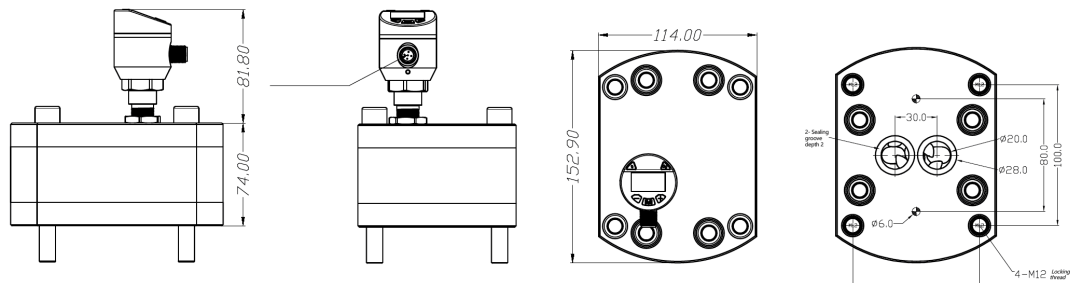
Measuring range: 20L



Measuring range: 70L



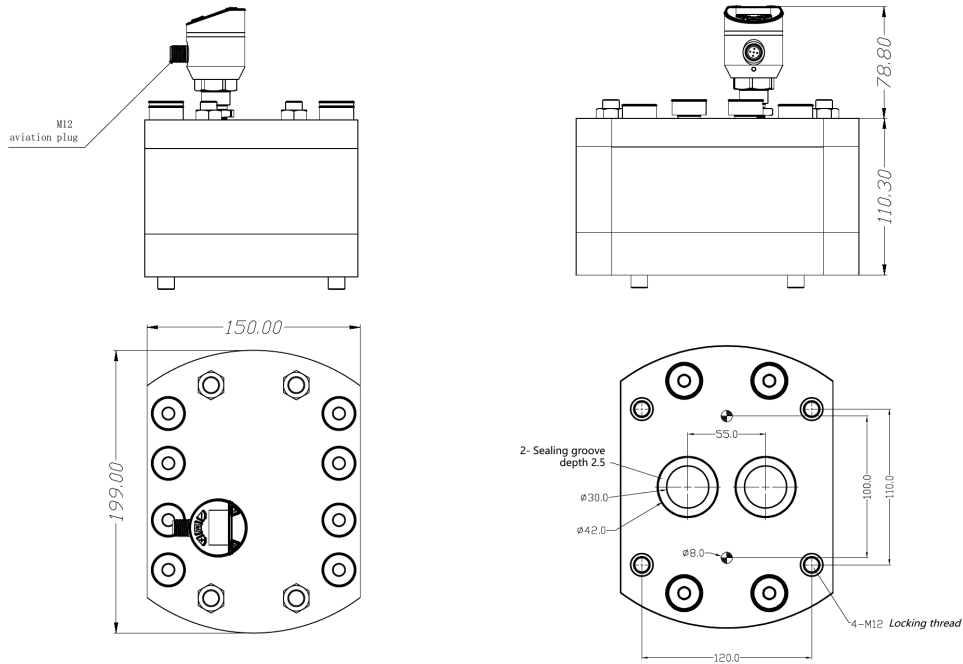
Measuring range: 150L



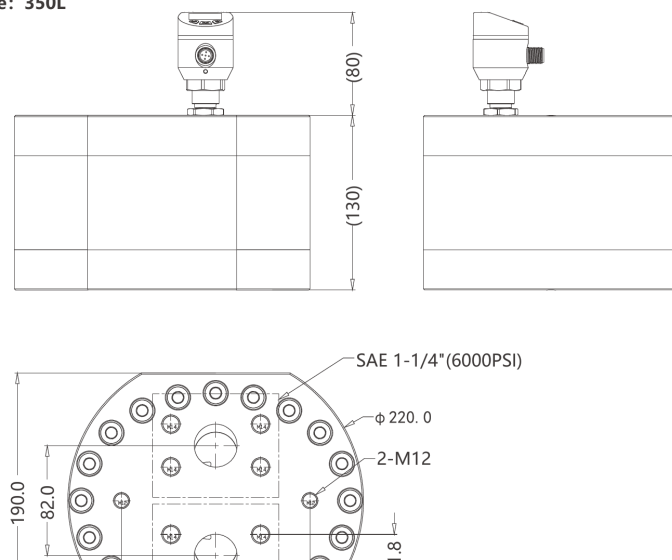
The five smaller sizes in four drawings — 2000 mL/min and 4 L/min share one —, each in four views: from the side, from the plug side, from above and onto the sealing face. The fourth view is the drawing for the customer's plate: it carries the sealing grooves, the two ports and the locking threads.



Measuring range: 250L

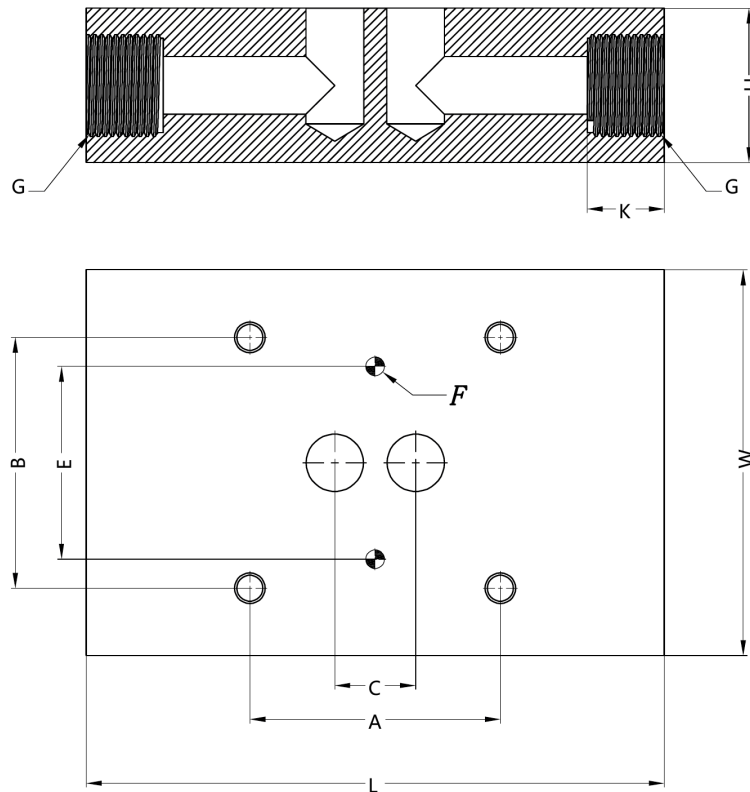


Measuring range: 350L



The two largest sizes. The 350 L/min size is not a plate mounting like the others: it has a SAE 1¼ inch 6000 PSI flange face, eight M14 locking threads and an outside diameter of 220 mm.





The mounting plate that can be ordered with the meter, with the letters of the table below.

Six drawings for the seven sizes, in three or four views. The table below gives the main dimensions; the port positions, the bolt circles and the sealing bores are dimensioned in the drawings. The 350 L/min size has a SAE 1¼ inch 6000 PSI flange face and eight M14 locking threads.

OVERALL DIMENSIONS (mm)

Size	Plan mm	Note
2000 mL/min and 4 L/min	100 × 70	Height 45 · plug height about 77
20 L/min	100 × 70	Height 50 · plug height about 77
70 L/min	115 × 90	Height 65 · plug height 78.8
150 L/min	152.9 × 114	Height 74 · plug height 81.8
250 L/min	199 × 150	Height 110.3 · plug height 78.8
350 L/min	Ø220	Height about 130 · plug height about 80
Sealing grooves	1.5 · 2 · 2.5	Depth, by size
Locking threads	4×M6 · 4×M8 · 4×M12 · 8×M14	By size



COMPLIANCE AND CERTIFICATION

Measuring principle	Positive displacement, two meshing gears
Accuracy	± 0.5 % of full scale
Repeatability	± 0.2 % of full scale
Supply voltage	16 ... 30 Vdc
Pressure rating	400 bar with the stainless housing
Medium temperature	-30 ... +120 °C as standard, +140 °C as order field T
Viscosity	Media up to 10 000 Pa·s
Wetted materials	Stainless steel housing, FKM seal

ACCESSORIES AND ORDER CODE

Accessories

- Two kinds of accessory: the M12 cables and sockets below, and the mounting plate, which is a field in the order code rather than a part number.



Pressure
400 bar

Accuracy
 ± 0.5 % F.S.

ZL05-PC02G, two metres of PVC, is the factory standard. The same cables are also offered as a shielded version.

ELECTRICAL ACCESSORIES

Electrical accessory	Material	Straight (G)	Angled (W)
M12 × 1, 5-pin, 2 m	PUR	ZL05-PU02G	ZL05-PU02W
M12 × 1, 5-pin, 5 m	PUR	ZL05-PU05G	ZL05-PU05W
M12 × 1, 5-pin, 10 m	PUR	ZL05-PU010G	ZL05-PU010W
M12 × 1, 5-pin, 2 m	PVC	ZL05-PC02G	ZL05-PC02W
M12 × 1, 5-pin, 5 m	PVC	ZL05-PC05G	ZL05-PC05W
M12 × 1, 5-pin, 10 m	PVC	ZL05-PC010G	ZL05-PC010W
Self-wiring socket	Pg7 / Pg9 gland	GL04	WL04

The mounting plate, when it is ordered with the meter. E is 50, 60, 80 and 100 mm down the four rows and F, the locating hole, is Ø5, Ø5, Ø6 and Ø8.



MOUNTING PLATE (mm)

Range L/min	L	W	H	A	B	C	K	Pipe thread
20	120	91	40	65	50	19	20	G1/2
70	150	100	40	65	65	21	20	G3/4
150	155	165	50	90	100	30	25	G1
250	200	200	80	120	110	55	25	G1 1/2

Example: QZKB-20-A3—F.

ORDER CODE

Field	Code	Meaning
1 Series	QZKB	QZKB plate-mounted gear flowmeter
2 Range	02 · 04	50 ... 2000 mL/min · 0.1 ... 4 L/min
	20 · 70	0.2 ... 20 L/min · 2 ... 70 L/min
	150 · 250	5 ... 150 L/min · 20 ... 250 L/min
	350	30 ... 350 L/min · SAE flange face, not a plate like the others
3 Output	A3	Two switches or pulses plus one analogue, five-core
	SA	Flow or temperature as analogue, switch, pulse or IO-Link, four-core
	AR	RS485 plus one analogue, five-core
4 Temperature	— · T	≤ 120 °C · ≤ 140 °C
5 Mounting	— · F	Without · with the mounting plate

