



Turbine Wheel Flow Meter for liquids



measuring
•
monitoring
•
analysing

DRB



- Measuring ranges:
5-30...50-750 l/min water
- Measuring accuracy:
±3% of full scale
- p_{\max} : 16 bar; t_{\max} : 80 °C
- Connection: G $\frac{1}{2}$...G 3 female
1/2" ... 3" NPT female
weld-on sleeves:
DN 25...DN 80
- Material: brass, stainless steel
- Viscosity range: low viscous
- Output:
pulses, 4-20 mA,
LED display, contacts

S4



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Description

The KOBOLD flow meter model DRB is used for measuring and monitoring liquids. The device works according to the well-known blade wheel principle. The four vane blade wheel is retained radially in a high quality sapphire bearing. The sensor is supplied ready-to-install with pipe fittings or with weld-on sleeves.

The blade wheel is set in motion by the flowing medium. Magnets are embedded hermetically sealed in the ends of the blade wheels. The magnets generate electrical pulses in a Hall-effect sensor mounted outside the flow area. Various electronics units can be used to display and monitor the volumetric flow.

Fields of Application

- cooling water monitoring
- general mechanical engineering
- waste water treatment
- heavy goods industry
- chemical industry

Technical Details

Measuring accuracy:	±3% of full scale
Process temperature:	max. 80 °C
Ambient temperature:	max. 80 °C
Max. operating pressure:	PN 16 / 20 °C
Max. pressure loss:	DRB-...05: 0.05 bar DRB-...10, DRB-...15: 0.03 bar DRB-...20: 0.04 bar DRB-...25: 0.02 bar DRB-...30: 0.01 bar
Protection:	IP65

Materials

Housing:	brass stainless steel 1.4581 stainless steel 1.3955 (DRB...W)
Seals:	brass version: NBR stainless steel version: FPM
Turbine wheel:	PVDF
Axle:	hard metal (DRB-11... and DRB-12..) ceramic (DRB-1300..)
Bearing:	ceramic (DRB-11... and DRB-12..) ceramic/PEEK (DRB-1300..)

Electronics

- **Frequency output (..F300)**
 - Power supply: 12 - 28 V_{DC}
 - Power consumption: 10 mA
 - Pulse output: PNP, open collector, max. 25 mA
 - Electrical connection: plug connector M12x1
- **Frequency output with frequency divider**
 - Power supply: 24 V_{DC} ±20%
 - Power consumption: 15 mA
 - Pulse output: PNP, open collector, max. 25 mA
 - Electrical connection: plug connector M12x1
 - Division ratio: 1...1/128, factory set
- **Analogue output (plug-on display option)**
 - Power supply: 24 V_{DC} ±20%
 - Output: 0-20 mA or 4-20 mA, 2- or 3-wire
 - Max. load: 500 Ω
 - Electrical connection: plug connector M12x1 or DIN 43 650
 - Option: plug-on display (with plug connec. DIN 43 650, 2-wire)



● Compact electronics

Display:	3-segment LED
Analogue output:	0(4)...20 mA adjustable, max. 500 W
Switching outputs:	1 (2) semiconductor PNP or NPN, factory set
Contact operation:	N/C/N/O contact programmable with 2 buttons
Setting:	24 V _{DC} ±20%, 3-wire technology, approx. 100 mA
Supply:	24 V _{DC} ±20%, 3-wire technology, approx. 100 mA
Electrical connection:	plug connector M12x1

● Pointer indicator with analogue output

Housing:	Aluminium
Display:	moving-coil instrument, 240° display
Power supply:	24 V _{DC} ±20%
Output:	4-20 mA or 0-20 mA/0-10 V, 3-wire
Max. load:	250 Ω
Electrical connection:	plug connector M12x1

● ADI electronics

Display:	bargraph, 5-digit digital display
Analogue output:	0(4)...20 mA, 0-10 V _{DC}
2 switching outputs:	relay /changeover contact, max. 250 V _{AC} /5 A resistive load, max. 30 V _{DC} / 5 A with 4 buttons
Setting:	100...240 V _{AC} ± 10% or 18...30 V _{AC} /10...40 V _{DC}
Power supply:	100...240 V _{AC} ± 10% or 18...30 V _{AC} /10...40 V _{DC}
Electrical connection:	pluggable terminal block via cable gland

● DRB-...Exxx (Counter electronic)

Display:	LCD, 2 x 8 digit, illuminated total, part and flow quantities units selectable
Analogue output:	0(4)...20 mA adjustable
Load:	max. 500 Ω
Switching output:	2 relays, max. 250V/5A/1000 VA
Settings:	via 4 buttons
Functions:	reset, Min./Max. memory, flow monitor, monitoring for part and total quantity, language
Power supply:	24 V _{DC} ±20%, 3-wire
Power consumption:	approx. 170 mA
Electrical connection:	pluggable terminal block via cable gland

● DRB-...Gxxx (Dosing electronic)

Display:	LCD, 2 x 8 digit, illuminated total, part and flow quantities units selectable
Analogue output:	0(4)...20 mA adjustable
Load:	max. 500 Ω
Switching output:	2 relays, max. 250V/5A/1000 VA
Settings:	via 4 buttons
Functions:	dosing (relay S2), start, stop, reset, fine dosing, correction amount, flow switch, total quantity, language
Power supply:	24 V _{DC} ±20%, 3-wire
Power consumption:	approx. 170 mA
Electrical connection:	pluggable terminal block via cable gland

See data sheet ADI-1 for more technical details on ADI evaluating electronics.



Order Details (Example: DRB-1105 G4 F300)

Measuring range max. 3 m/s		Flow rate max. ca. 10 m/s	Model		Connection	
[l/min water]	approx. frequency [Hz] f. s.		Material brass	Material stainless steel	Standard female	Special female
5-30	40	100	DRB-1105..	DRB-1205..	..G4.. = G ½	..N4.. = ½" NPT
10-50	40	180	DRB-1110..	DRB-1210..	..G5.. = G ¾	..N5.. = ¾" NPT
20-80	65	230	DRB-1115..	DRB-1215..	..G6.. = G 1	..N6.. = 1" NPT
25-250	85	600	DRB-1120..	DRB-1220..	..G8.. = G 1 ½	..N8.. = 1 ½" NPT
30-350	80	1000	DRB-1125..	DRB-1225..	..G9.. = G 2	..N9.. = 2" NPT
50-750	70	1600	DRB-1130..	DRB-1230..	..GB.. = G 3	..NB.. = 3" NPT

With installation adapter not available with compact / ADI electronics					
Meas. range [m/s]	approx. frequency [Hz] at max. value	max. flow rate [m/s]	Model		Connection for nominal pipe size
			Material 1.3955 Hart metal axle	Material 1.3955 Ceramic axle	
0.7 - 3	50 (at DN 25)	10	DRB-1200..	DRB-1300..	..W6.. = DN 25
0.3 - 3	85 (at DN 40)				..W8.. = DN 40/DN 50
0.3 - 3	80 (at DN 50)				..WB.. = DN 80
0.2 - 3	70 (at DN 80)				

Evaluating electronics			
Frequency output			
..F300 = frequency output, plug connector M12 x 1			
..F320 = frequency divider 1: 2, plug connector M12 x 1			
..F340 = frequency divider 1: 4, plug connector M12 x 1			
..F390 = frequency divider 1...1/128, plug connector M12x 1			
Analogue output			
..L303 = 0-20 mA output, 3-wire, M12 x 1 plug connector			
..L342 = 4-20 mA output, 2-wire, M12 x 1 plug connector			
..L343 = 4-20 mA output, 3-wire, M12 x 1 plug connector			
..L442 = 4-20 mA output, 2-wire, plug connector DIN 43 650			
Compact electronic*			
..C30R = LED-display, 2 x open collector, PNP, plug connector M12 x 1			
..C30M = LED-display, 2 x open collector, NPN, plug connector M12 x 1			
..C34P = LED-display, 4-20 mA, 1 x open collector PNP, plug connector M12 x 1			
..C34N = LED-display, 4-20 mA, 1 x open collector NPN, plug connector M12 x 1			
Pointer indication, 240°**			
..Z300 = 240°-pointer indication, 0-20 mA, plug connector M12x1			
..Z340 = 240°-pointer indication, 4-20 mA, plug connector M12x1			
Counter electronics			
..E34R = LCD, 0(4)-20 mA, 2 x relays			
Dosing electronics			
..G34R = LCD, 0(4)-20 mA, 2 x relays			
ADI-electronics*			
Display	Supply	Output	Contacts
K = Bar-graph/Digital display	0 = 100-230 V _{AC/DC} 3 = 18-30V _{AC} , 10-40 V _{DC}	0 = without 4 = 0(4)-20 mA, 0-10 V	2 = 2 change-over contacts

* Please specify flow direction in writing.



Turbine Wheel Flow Meter Model DRB

Plug-on display for model DRB...L442
(2-wire, 4-20 mA output and DIN connector)

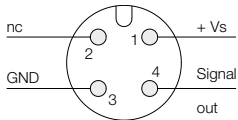
Description	Order number
4-digit LED, connector DIN 43650, 2-wire, supply through analogue output	AUF-1000
as above however with additional open collector output	AUF-1001

Weights

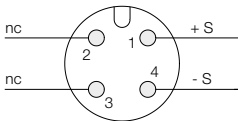
Sensor		Electronics	
Model	Weight	Model	Weight
1/2"	approx. 750 g	Frequency output	25 g
3/4"	approx. 1050 g	Analogue output	25 g
1"	approx. 900 g	Compact electronic	approx. 600 g
1 1/2"	approx. 1200 g	Pointer indication	450 g
2"	approx. 1500 g	ADI electronics	1400 g
3"	approx. 3000 g	E/G electronics	1400 g

Electrical connection

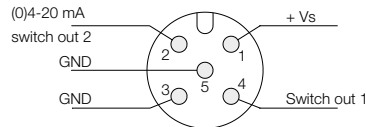
DRB-..F., DRB-..Z., DRB-..L3..3-wire



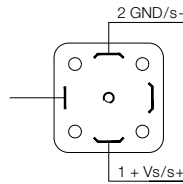
DRB-..L342 2-wire



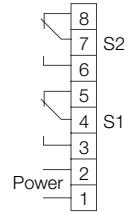
DRB-..C..



DRB-..L442



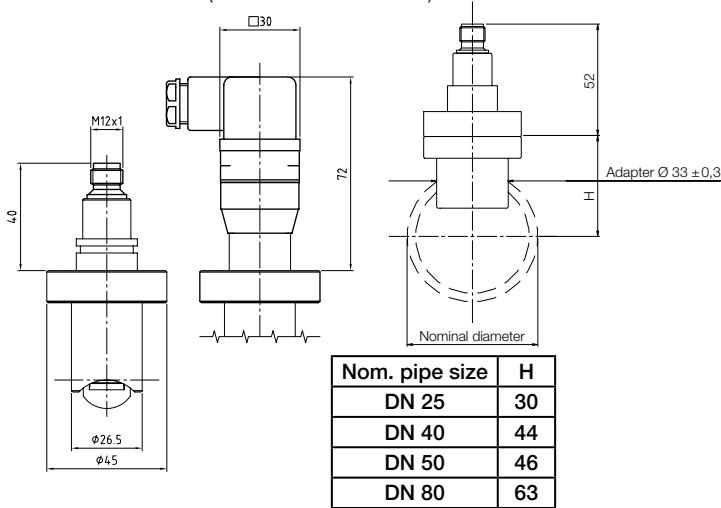
- 14 — Control 1
- 13 — Control 1 - GND
- 12 — Control 2
- 11 — Analogue GND
- 10 — Analogue 10 V
- 9 — Analogue 20 mA
- 8 —
- 7 —
- 6 —
- 5 —
- 4 — GND
- 3 — f-Input Namur
- 2 — f-Input NPN
- 1 — f-Input PNP



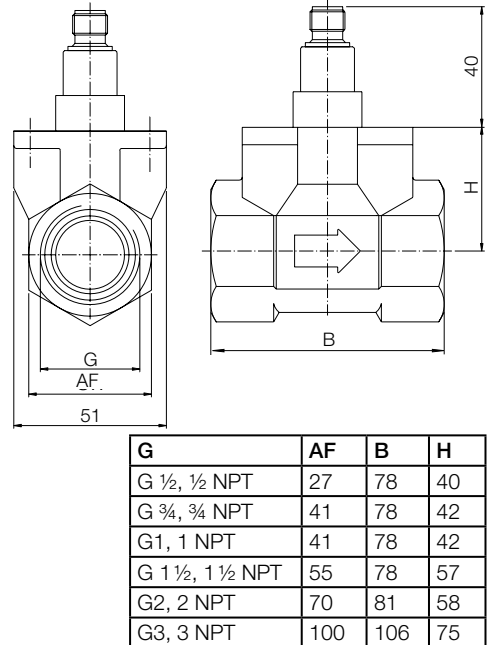


Dimensions

Model: DRB-...W... (with weld-on sleeves)

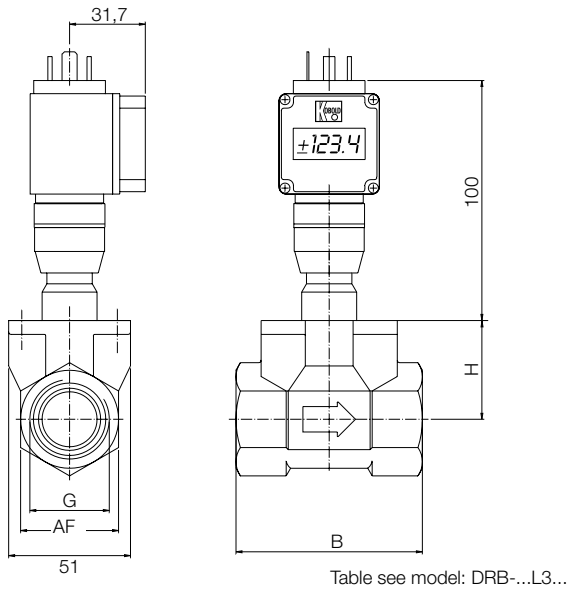


Model: DRB-...L3... (with analogue output)

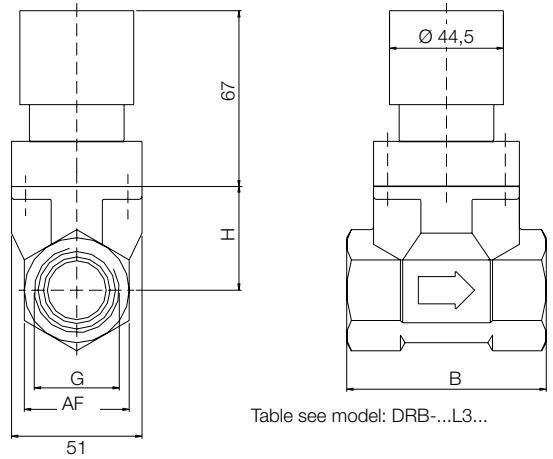


Model: DRB-...L4...

(with analogue output and plug-on display option)

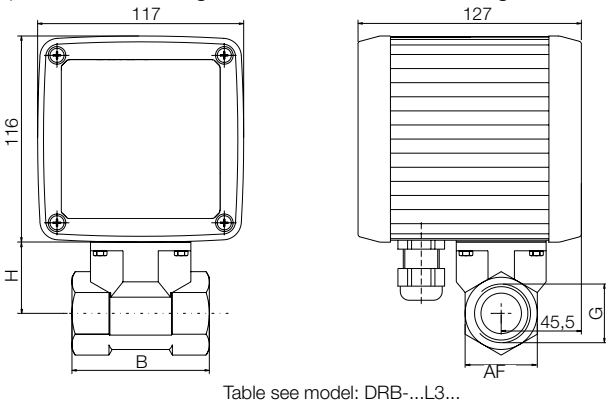


Model: DRB-...C... (with compact electronics)



Model: DRB-..K., ..G., ..E..

(with ADI evaluating electronic, counter or dosing electronic)



Model: DRB-...Z... (with pointer indication)

