



Rotating Vane Flowmeter for liquids



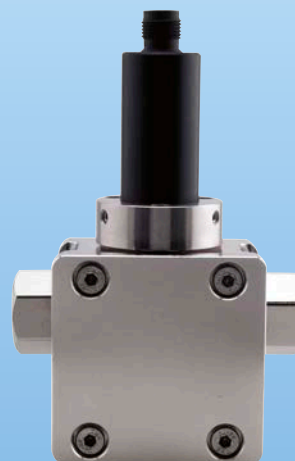
measuring
•
monitoring
•
analysing

DRH

Model: DRH-...E/...G



Model: DRH-...L



Model: DRH-...C



- Measuring ranges:
0.2 - 0.8 ... 2.5 - 50 l/min water
- Linearity:
±2.5 % of full scale
- p_{\max} : 100 bar; t_{\max} : 80 °C
- Connection:
G 3/8, G 1 female,
3/8" NPT, 1" NPT female
- Material:
brass, stainless steel, POM, PVDF
- Viscosity range: low viscous
- Output:
pulses, 4 - 20 mA,
switching outputs
- Counter/batcher



S4

KOBOLD companies worldwide:

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Description

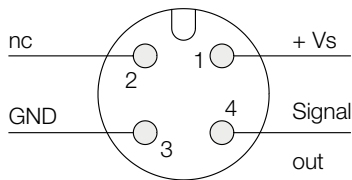
KOBOLD rotating vane flowmeters series DRH are used for measuring and monitoring low viscous liquids. Series DRH flowmeters are working according the well-known rotating vane principle. A magnet fitted in the vane and hermetically sealed from the medium transfers non-contacting the rotary motion to a Hall-effect sensor mounted in the housing. The sensor converts the rotary motion which is proportional to the flow to a frequency signal. A series-connected electronics unit converts the signal to an analogue output, limit contacts or display. These devices can be adapted to prevailing plant conditions with the 360° rotatable screw connections.

Fields of Application

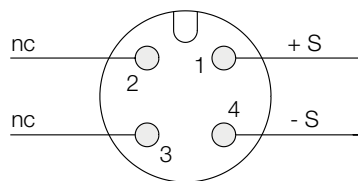
- Cooling water monitoring
- Agricultural machinery
- PCB board industry

Electrical Connection

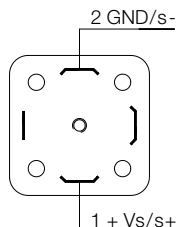
DRH-...F., DRH-...L3... 3-wire



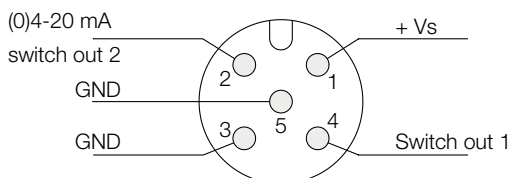
DRH-...L342... 2-wire



DRH-...L4...



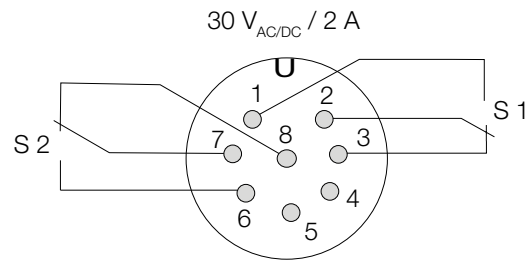
DRH-...C...



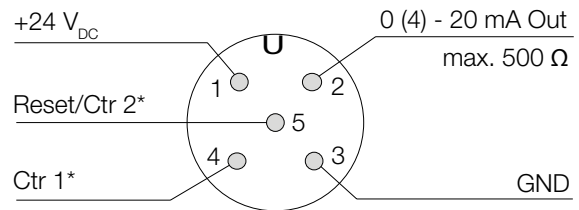
DRH-...E14R, DRH-...G14R cable connection

| Wire number | DRH-...E14R Counter electronics | DRH-...G14R Dosing electronics |
|-------------|---------------------------------|--------------------------------|
| 1 | +24 V _{DC} | +24 V _{DC} |
| 2 | GND | GND |
| 3 | 4-20 mA | 4-20 mA |
| 4 | GND | GND |
| 5 | do not connect | Control 1* |
| 6 | Reset part quantity | Control 2* |
| 7 | Relay S1 | Relay S1 |
| 8 | Relay S1 | Relay S1 |
| 9 | Relay S2 | Relay S2 |
| 10 | Relay S2 | Relay S2 |

Control 1 <-> GND: Start-Dosing
 Control 2 <-> GND: Stop-Dosing
 Control 1 <-> Control 2: Reset-Dosing



Plug Connection





Technical Details

| | |
|--------------------------|---|
| Material combinations: | see order details |
| Max. operating pressure: | see order details |
| Max. temperature: | see order details |
| Linearity: | ±2.5% of full scale ±5% of full scale (DRH-...F300) |
| Electrical connection: | plug connector DIN 43 650, plug connector M12x1, cable |
| Pressure loss: | max. 1 bar at max. range |
| Protection: | IP 65 |

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 (Option plug-on display)

| | |
|------------------------|---|
| Power supply: | 24 V _{DC} ±20% |
| Output: | 0 - 20 mA or 4 - 20 mA, 2-wire or 3-wire |
| Max. load: | 500 Ω |
| Electrical connection: | plug connector M12x1 or DIN 43650 |
| Option: | plug-on display (with plug connector DIN 43650 and output 4 - 20 mA only), 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 frequency programmable |
| Setting: | with 2 buttons |
| Power supply: | 24 V _{DC} ±20%, 3-wire technology approx. 100 mA |
| Electrical connection: | plug connector M12x1 |

* uncalibrated signal output

DRH-...Exxx (Counter electronics)

| | |
|-------------------------|---|
| Display: | LCD, 2 x 8 digit, illuminated total, part and flow quantities, units selectable |
| Quantity meter: | 8-digit |
| Analogue output: | (0)4...20 mA adjustable |
| Load: | max. 500 Ω |
| Switching output: | 2 relays, max. 30 V _{AC/DC} /2 A/60 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. 150 mA |
| Electrical connections: | cable connection or M 12 plug |

More technical details see data sheet ZED

DRH-...Gxxx (Dosing electronics)

| | |
|------------------------|---|
| Display: | LCD, 2 x 8 digit, illuminated dosing-, total-, and flow quantity, units selectable |
| Quantity meter: | 8-digit |
| Dosage: | 5-digit |
| Analogue output: | (0)4...20 mA adjustable |
| Load: | max. 500 Ω |
| Switching output: | 2 relays, max. 30 V _{AC/DC} /2 A/60 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. 150 mA |
| Electrical connection: | cable connection or M12 plug |

More technical details see data sheet ZED



Order Details (Example: DRH-1 1 05 N3 F300)

| Measuring range | | Orifice diameter [mm] | Model | Connection | | Evaluating electronics |
|------------------|---|--------------------------|------------|-----------------|------------------|---|
| Water [l/min] | Frequency [Hz] at F.S. ³⁾ | | | Standard female | Special female | |
| 0.2-0.8 | 63 | 1 | DRH-1X05.. | ..G3..=G% | ..N3..= 3/8" NPT | Frequency output ..F300 = Frequency output, plug connector M12x1 ..F320 = Frequency divider 1:2, plug connector M12x1 ..F340 = Frequency divider 1:4, plug connector M12x1 ..F390 = Frequency divider 1...1/128, plug connector M12x1 |
| 0.2-2.0 | 50 | 2 | DRH-1X10.. | ..G6..=G1 | ..N6..= 1" NPT | Analogue output ..L303 = 0-20 mA output, 3-wire, M12x1 plug connector ..L342 = 4-20 mA output, 2-wire, M12x1 plug connector ..L343 = 4-20 mA output, 3-wire, M12x1 plug connector ..L442 = 4-20 mA output, 2-wire, plug connector DIN 43 650 |
| 0.3-2.8 | 123 | 2 | DRH-1X15.. | ..G3..=G% | ..N3..= 3/8" NPT | Compact electronics¹⁾ ..C30R = LED display, 2 x open Collector, PNP, plug connector M12x1 ..C30M = LED display, 2 x open Collector, NPN, plug connector M12x1 ..C34P = LED display, 4-20 mA, 1 x open Collector PNP, plug connector M12x1 ..C34N = LED display, 4-20 mA, 1 x open Collector NPN, plug connector M12x1 |
| 0.25-5.0 | 78 | 3 | DRH-1X20.. | ..G6..=G1 | ..N6..= 1" NPT | |
| 0.5-6.0 | 166 | 3 | DRH-1X25.. | ..G3..=G% | ..N3..= 3/8" NPT | Counter electronics ..E14R = LCD, 0(4)-20 mA, 2 x relay, 1.5 m cable ..E34R = LCD, 0(4)-20 mA, 2 x relay, M12 plug ..E94R = LCD, 0(4)-20 mA, 2 x relay, cable >1.5 m ²⁾ |
| 1.0-15 | 145 | 5 | DRH-1X30.. | ..G6..=G1 | ..N6..= 1" NPT | |
| 1.0-16 | 225 | 5 | DRH-1X35.. | ..G3..=G% | ..N3..= 3/8" NPT | Dosing electronics ..G14R = LCD, 0(4)-20 mA, 2 x relay, 1.5 m cable ..G34R = LCD, 0(4)-20 mA, 2 x relay, M12 plug ..G94R = LCD, 0(4)-20 mA, 2 x relay, cable >1.5 m ²⁾ |
| 1.0-26 | 240 | 7 | DRH-1X40.. | ..G3..=G% | ..N3..= 3/8" NPT | |
| 2.0-36 | 228 | 9 | DRH-1X45.. | ..G6..=G1 | ..N6..= 1" NPT | |
| 2.5-50 | 220 | 10 | DRH-1X50.. | ..G6..=G1 | ..N6..= 1" NPT | |

¹⁾ Please specify flow direction in writing

²⁾ Please specify cable length in writing

³⁾ Frequency deviation at F. S. (uncalibrated output): ±3 %

Material Combinations (Please enter order code instead of X "model")

| Device parts | Order code: 1 | Order code: 2 | Order code: 4 | Order code: 5 | Order code: 7 | Order code: 8 | Order code: 9 |
|--------------------|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|
| Housing | Brass, nickel-pl. | Brass, nickel-pl. | 1.4404 | 1.4404 | POM | POM | PVDF |
| Housing cover | PMMA | Brass, nickel-pl. | PMMA | 1.4404 | PMMA | POM | PVDF |
| Seal | NBR | NBR | FPM | FPM | NBR | NBR | FPM |
| Rotating vane | PTFE | PTFE | PTFE | PTFE | PTFE | PTFE | PTFE |
| Axle | Ceramic | Ceramic | Ceramic | Ceramic | Ceramic | Ceramic | Ceramic |
| Bearing | PTFE | PTFE | PTFE | PTFE | PTFE | PTFE | PTFE |
| p _{max} : | 16 bar | 100 bar | 16 bar | 100 bar | 16 bar | 16 bar | 16 bar |
| t _{max} : | 80°C | 80°C | 80°C | 80°C | 80°C | 80°C | 80°C |
| Weight (¾") | 850 g | 1000 g | 900 g | 1050 g | 250 g | 250 g | 300 g |
| Weight (1") | 1600 g | 2000 g | 1600 g | 2000 g | 400 g | 400 g | 500 g |

Weight

Weight (Sensor)
+ Weight (electronics)
Total weight

Sensor Weight

See material combination

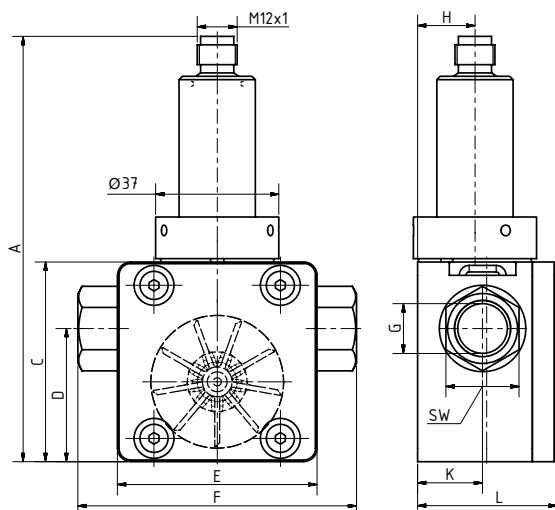
Electronic Weight

Frequency output: approx. 35 g
Analogue output (...L3...): approx. 35 g
Analogue output (...L4...): approx. 100 g
Compact electronics: approx. 650 g
Counter electronics: approx. 250 g
Dosing electronics: approx. 250 g

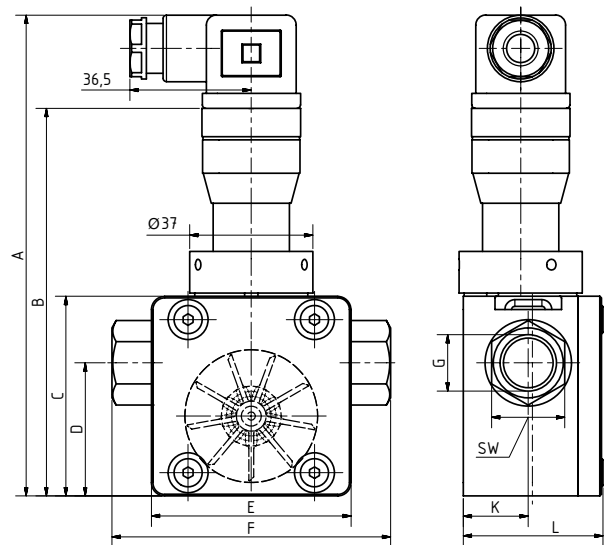
Dimensions

Model: DRH-F3..., DRH-...L (with analogue output)

Model: DRH-...L442 (with analogue output)

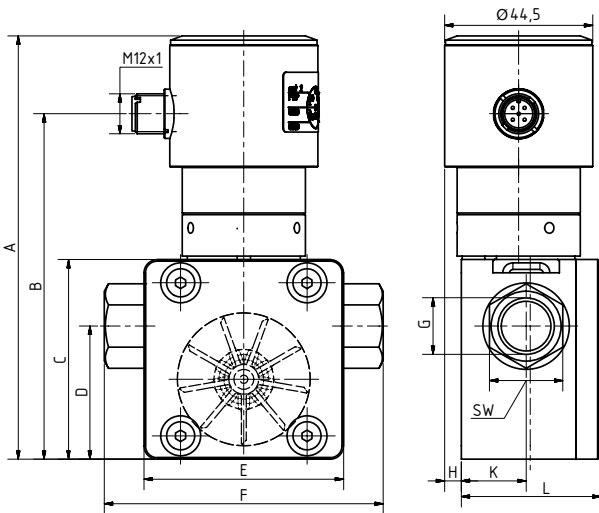


| G | A | C | D | E | F | H | K | L | SW |
|---|-----|----|----|----|-----|------|------|----|----|
| ¾ | 128 | 60 | 40 | 60 | 84 | 17,5 | 19,5 | 42 | 22 |
| 1 | 138 | 70 | 42 | 70 | 110 | 22,5 | 22,5 | 53 | 41 |



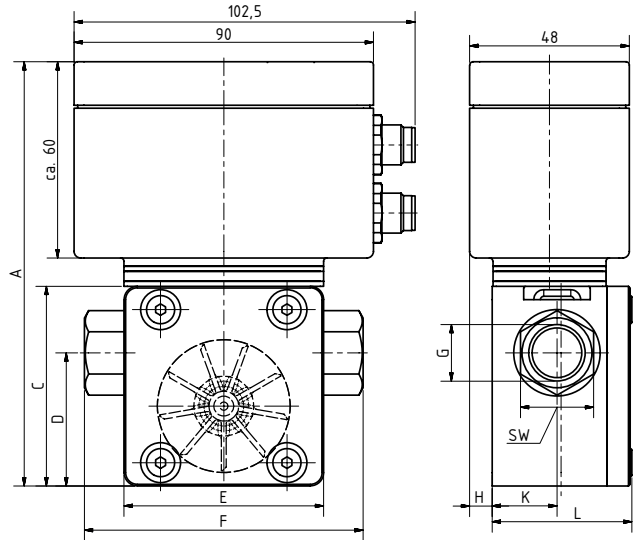
| G | A | B | C | D | E | F | K | L | SW |
|---|-----|-----|----|----|----|-----|------|----|----|
| ¾ | 145 | 117 | 60 | 40 | 60 | 84 | 19,5 | 42 | 22 |
| 1 | 155 | 127 | 70 | 42 | 70 | 110 | 22,5 | 53 | 41 |

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



| G | A | B | C | D | E | F | H | K | L | SW |
|-----|-----|-----|----|----|----|-----|---|------|----|----|
| 3/8 | 128 | 104 | 60 | 40 | 60 | 84 | 5 | 19,5 | 42 | 22 |
| 1 | 138 | 114 | 70 | 42 | 70 | 110 | - | 22,5 | 53 | 41 |

Typ DRH-...E/G
(counter electronics / dosing electronics)



| G | A | C | D | E | F | H | K | L | SW |
|-----|-----|----|----|----|-----|---|------|----|----|
| 3/8 | 128 | 60 | 40 | 60 | 84 | 7 | 19,5 | 42 | 22 |
| 1 | 138 | 70 | 42 | 70 | 110 | 2 | 22,5 | 53 | 41 |