Paddle Wheel Flow Sensor

measuring • monitoring • analyzing

DRH

- Compact Size
- 7 Material Combinations
- Flow Range: 0.05...0.2 GPM to 0.66...13.2 GPM
- Frequency or 4-20 mA Outputs
- Compact, Totalizing, or Dosing Electronics
- Operating Pressures up to 1450 PSIG
- Operating Temperatures up to 176°F

KOBOLD companies worldwide:

AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHINA, CZECHIA, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, SPAIN, SWITZERLAND, THAILAND, TUNISIA, TURKEY, USA, VIETNAM

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Paddle Wheel Flow Sensor Model DRH

Description

The KOBOLD DRH series paddle flow sensor offers seven material combinations, enabling it to stand up to virtually any liquid or aggressive chemical. Its compact design employs permanent magnets embedded in a rotating paddle wheel. A Hall effect sensor detects the magnet passing and provides an output which is proportional to flowrate. The DRH can be supplied with a frequency output, 4-20 mA output, or a versatile compact electronics package that provides an LED display, 4-20mA output, or programmable setpoint switches. The DRH is ideal for industrial or OEM applications.

Specifications

Linearity: ±2.5% of Full Scale
±5 % of full scale (DRH-...F300)

Output

Electrical Protection: IP65

Electrical Connection: Micro-DC Plug, 4-pin Male or DIN 43650 Plug

Sensor Pressure Drop: 14.5 PSI at 100% Rated Flow

Flow Orientation: Horizontal

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 M12 x 1

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 M12 x 1

Division ratio: 1...$^{1}/_{128}$, factory set

Analog Output (..L34x, ..L442)

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 M12 x 1
or DIN 43 650

Option: Plug-on Display (with Plug Connector DIN 43 650 and 4-20 mA Output Only), 2 Wire

Compact Electronics (..C3xx)

Display: 3-segment LED

Analog Output: (0)4-20 mA Adjustable, Max. 500 Ω

Switching Output: 1 (2) Semiconductor PNP or NPN, Factory Set

Contact Operation: N/C, N/O Contact, Frequency Programmable

Setting: With 2 Buttons

Supply: 24 V_{DC} ± 20 %, 3-Wire Technology, Approximately 100 mA

Electrical Connection: Plug Connector M12 x 1

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

Switch output: 2 relays, max. 30 $_{VAC/DC}$ / 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 $_{VAC/DC}$ / 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

No responsibility taken for errors;
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Electronic Weight

Electronics	Weight[LB]
Frequency Output	app. 0.08
Analog Output (..L3..)	app. 0.08
Analog Output (..L4..)	app. 0.22
Compact Electronics	app. 1.43
Counter Electronics	app. 0.55
Dosing Electronics	app. 0.55

Material Combinations

Material Combinations	DRH-11	DRH-12	DRH-14	DRH-15	DRH-17	DRH-18	DRH-19
Housing	Brass	Brass	316L SS	316L SS	POM	POM	PVDF
Housing Cover	Acrylic	Brass	Acrylic	316L SS	Acrylic	POM	PVDF
O-ring	NBR	NBR	FKM	FKM	NBR	NBR	FKM
Paddle	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Axle	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Axle Support	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Max. Temperature	176 °F	176 °F	176 °F	176 °F	176 °F	176 °F	176 °F
Max. Pressure	230 PSIG	1450 PSIG	230 PSIG	1450 PSIG	230 PSIG	230 PSIG	230 PSIG
Weight (3/8")	1.87 LB	2.20 LB	1.98 LB	2.31 LB	0.55 LB	0.55 LB	0.66 LB
Weight (1")	3.53 LB	4.41 LB	3.53 LB	4.41 LB	0.88 LB	0.88 LB	1.10 LB

* Please specify flow direction when ordering

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Order Details (Example: **DRH-1460N6 L343**)

Please specify flow direction of meter configured with any Compact, Counter, and Dosing electronic option. See flow direction diagram on pg. 8 for details.

Flow Range (GPM)	Fitting (NPT)	Orifice Diameter (mm)	Material Combination							Output
			DRH-11...	DRH-12...	DRH-14...	DRH-15...	DRH-17...	DRH-18...	DRH-19...	
0.05...0.2	3/8"	1	**..55N3..**	**..55N3..**	**..55N3..**	**..55N3..**	**..55N3..**	**..55N3..**	**..55N3..**	**Frequency output** **..F300** = Frequency w/ Micro-DC Plug **..F390** = Frequency divider 1...$^{1}/_{128}$ plug connecter M12X1 **Analogue output** **..L342** = 4-20 mA, 2-wire Micro-DC Plug **..L343** = 4-20 mA, 3-wire Micro-DC Plug **..L442** = 4-20 mA, DIN 43650 Plug **Compact electronics** **..C34P** = Compact Electronic, 4-20mA, 1x PNP Switch **..C30R** = Compact Electronic, 2 PNP Switches **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 **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
0.05...0.53	1"	2	**..60N6..**	**..60N6..**	**..60N6..**	**..60N6..**	**..60N6..**	**..60N6..**	**..60N6..**	
0.08...0.75	3/8"	2	**..65N3..**	**..65N3..**	**..65N3..**	**..65N3..**	**..65N3..**	**..65N3..**	**..65N3..**	
0.07...1.3	1"	3	**..70N6..**	**..70N6..**	**..70N6..**	**..70N6..**	**..70N6..**	**..70N6..**	**..70N6..**	
0.13...1.6	3/8"	3	**..75N3..**	**..75N3..**	**..75N3..**	**..75N3..**	**..75N3..**	**..75N3..**	**..75N3..**	
0.26...4.0	1"	5	**..80N6..**	**..80N6..**	**..80N6..**	**..80N6..**	**..80N6..**	**..80N6..**	**..80N6..**	
0.26...4.2	3/8"	5	**..85N3..**	**..85N3..**	**..85N3..**	**..85N3..**	**..85N3..**	**..85N3..**	**..85N3..**	
0.26...6.8	3/8"	7	**..90N3..**	**..90N3..**	**..90N3..**	**..90N3..**	**..90N3..**	**..90N3..**	**..90N3..**	
0.53...9.5	1"	9	**..95N6..**	**..95N6..**	**..95N6..**	**..95N6..**	**..95N6..**	**..95N6..**	**..95N6..**	
0.66...13.2	1"	10	**..98N6..**	**..98N6..**	**..98N6..**	**..98N6..**	**..98N6..**	**..98N6..**	**..98N6..**	

Accessories:
Part Number **807.037** = Mating 4-PIN Micro-DC Plug with 6ft. Cable for Output F300, L342, & L343
Part Number **807.007** = Mating 5-PIN Micro-DC Plug with 6ft. Cable for Output C34P and C30R

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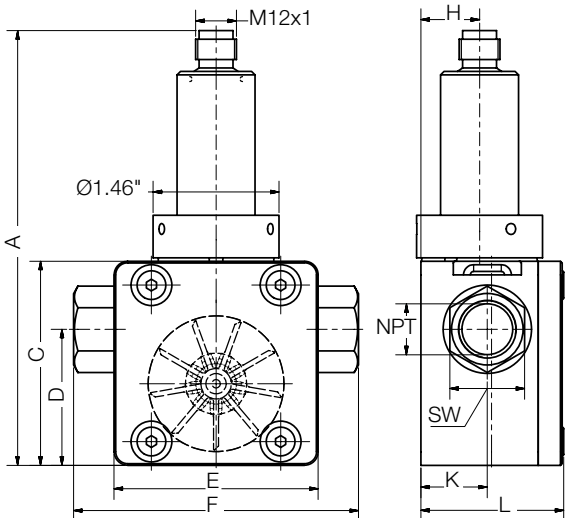
Order Details: Plug-on Display (Model DRH-..L442)

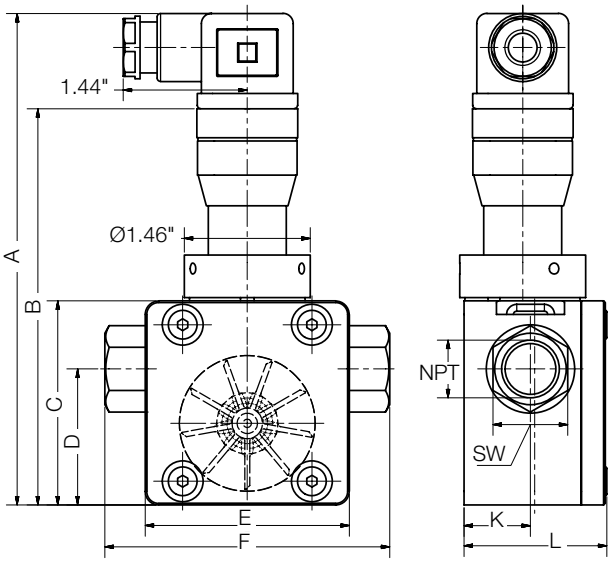
Description	Model Number
4 Digit LED DIN 43 650 Connector 2-Wire Supply Through Analog Output	**AUF-1000**
Same Specs as Above Additional Open Collector Output	**AUF-1001**

Dimensions

DRH-..F300, DRH-..L34x (Analog Output)



DRH-..L442 (Analog Output)



NPT	A	C	D	E	F	H	K	L	SW
3/8"	5.04"	2.36"	1.58"	2.36"	3.31"	0.70"	0.77"	1.65"	0.87"
1"	5.43"	2.76"	1.65"	2.76	4.33"	0.89"	0.89"	2.09"	1.61"

NPT	A	B	C	D	E	F	K	L	SW
3/8"	5.71"	4.61"	2.36"	1.57"	2.36"	3.31"	0.77"	1.65"	0.87"
1"	6.10"	5.0"	2.76"	1.65"	2.76"	4.33"	0.89"	2.09"	1.61"

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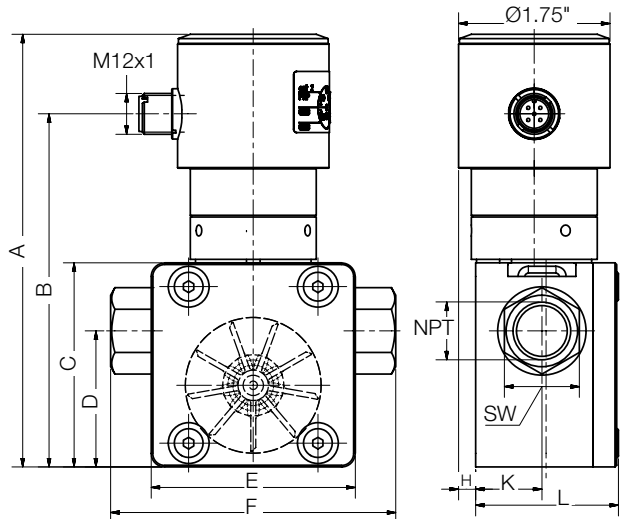
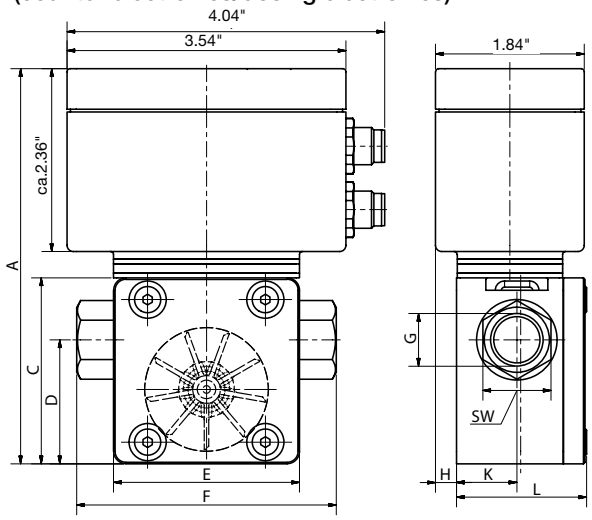
DRH-..C3xx (Compact Electronics)



NPT	A	B	C	D	E	F	H	K	L	SW
3/8"	5.04"	4.09"	2.36"	1.57"	2.36"	3.31"	0.20"	0.77"	1.65"	0.87"
1"	5.43"	4.49"	2.76"	1.65"	2.76"	4.33"	-	0.89"	2.09"	1.61"

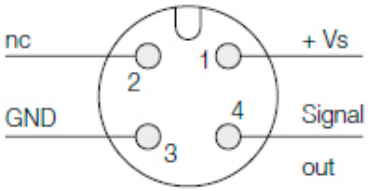
Typ DRH-...Exxx/Gxxx
(counter electronics/dosing electronics)



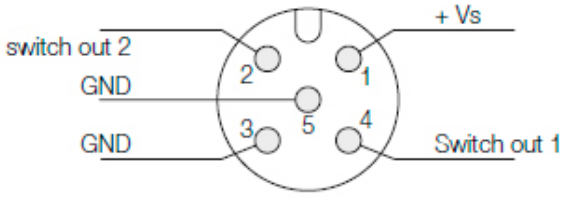
NPT	A	C	D	E	F	H	K	L	SW
3/8"	5.04"	2.36"	1.57"	2.36"	3.31"	0.28"	0.77"	1.65"	0.87"
1"	5.43"	2.76"	1.65"	2.76"	4.33"	0.08"	0.89"	2.09"	1.61"

Electrical Connection

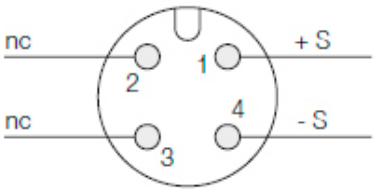
DRH-..F300, DRH-..L343 3-wire



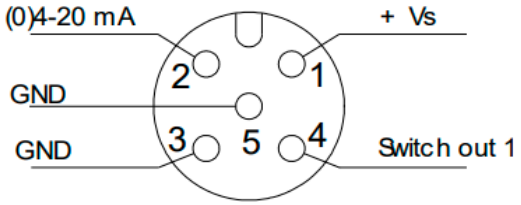
DRH-..C30R



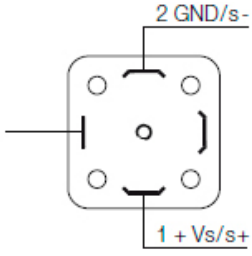
DRH-..L342 2-wire



DRH-..C34P



DRH-..L442



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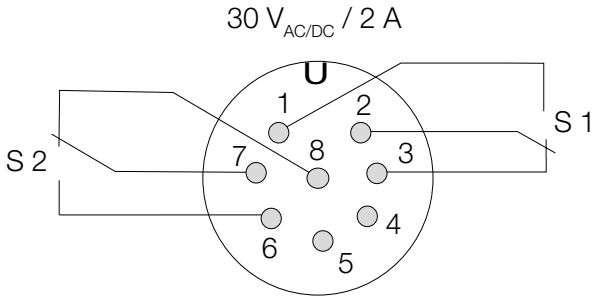
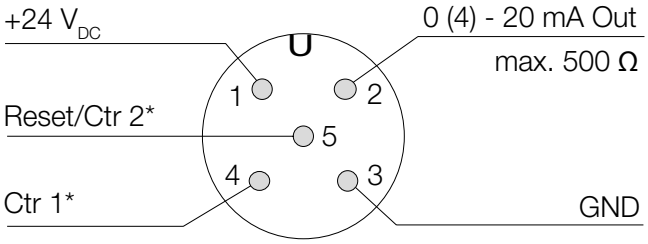
DRH-...E14R, DRH-...G14R Cable Connection

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**

DRH-...E34R, DRH-...G34R M12 Plug Connection





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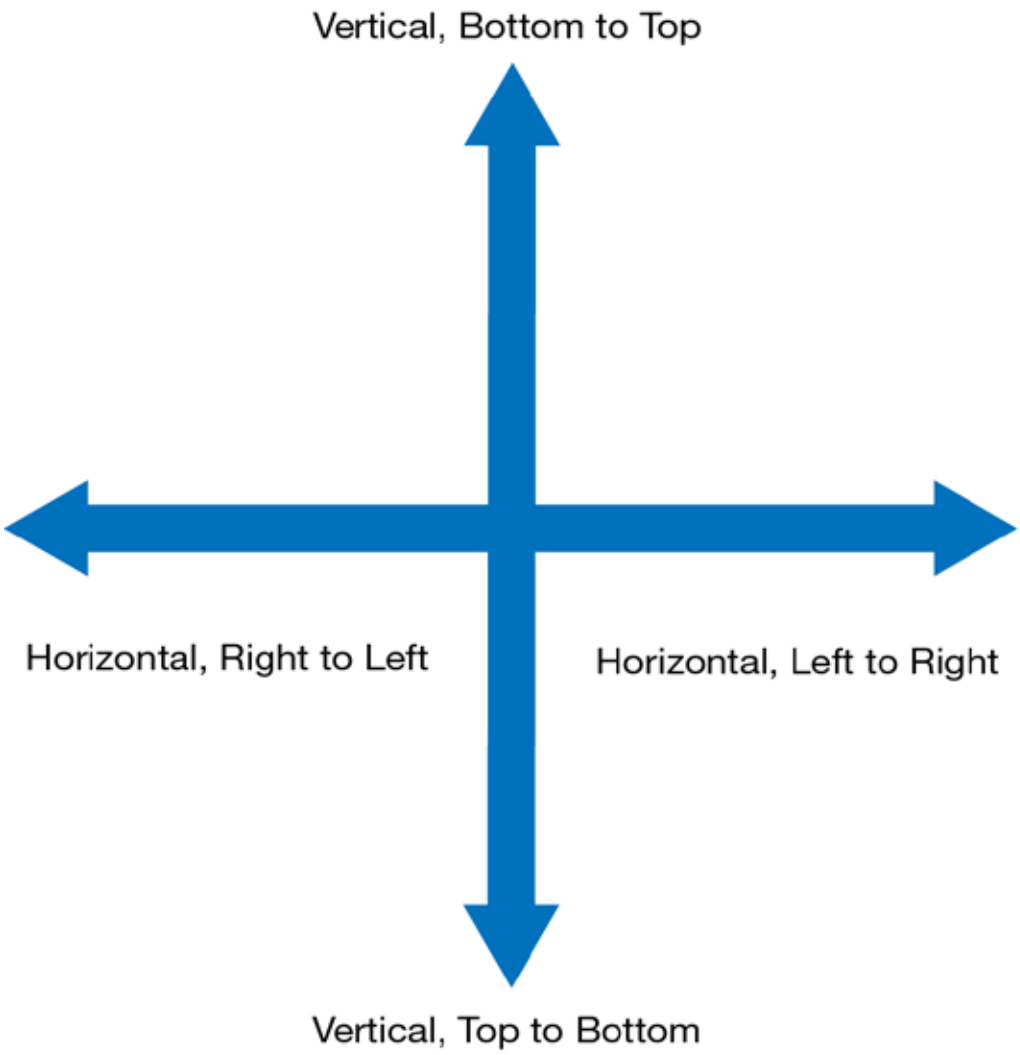
Flow Direction Diagram



Flow is in the direction of the arrow. Orientation is indicated as directly facing the flowmeter with flow direction aligned with the diagram. The meter must be installed with the rotor axle in the horizontal plane, consider this when specifying the unit. For horizontal flows, the display is on top the top of the meter.

Example: Vertical flow, bottom to top

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