

## OEM Turbine Flow Sensor for Liquids



measuring  
•  
monitoring  
•  
analyzing

DRS



- Flow Range 0.6...10.5 GPM
- Accuracy  $\pm 1.5\%$  of Full Scale
- PPO Plastic, Brass, or Stainless Steel Construction
- Pulse, 4-20 mA, or Switching Outputs
- Low Cost



Order from: **C A Briggs Company**  
622 Mary Street; Suite 101; Warminster, PA 18974  
Phone: 267-673-8117 - Fax: 267-673-8118  
[Sales@cabriggs.com](mailto:Sales@cabriggs.com) - [www.cabriggs.com](http://www.cabriggs.com)

KOBOLD Instruments, Inc.  
1801 Parkway View Drive  
Pittsburgh, PA 15205



Description

The KOBOLD DRS series offers a compact, quality solution with a low price tag. It features a vane-axial turbine design with embedded permanent magnets and a Hall effect sensor. This allows both clear and opaque liquids to be metered. The vane is sapphire-supported: this ensures a high degree of linearity and long service life. The turbine bodies are available in PPO, brass, or stainless steel. Signal outputs available are frequency or 4-20mA. Compact electronics and an integrated temperature sensor are available as options. Common applications include: the beverage industry, washing machines, vehicles, farm equipment, photography developing machines, and the printed-circuit board industries.



Model Summary

- **DRS-0..K000**  
OEM Version (without CE Mark)  
Direct Output from Hall-sensor Signal  
No Optional Temperature Sensor Available
- **DRS-..F300, F500**  
Pulse Output
- **DRS-..L..**  
Analog Output 4-20 mA / 2-wire or 3-wire
- **DRS-..C30R**  
With Compact Electronics, 3-digit LED Display,  
Limit Contacts, No Optional Temperature Sensor Available
- **DRS-..C34P**  
With Compact Electronics  
3-digit LED Display, Limit Contact, Analog Output  
No Optional Temperature Sensor Available

Technical Details

**Measuring Range:** 0.6...10.5 GPM (Water)  
**Sensor Pulse Output:** 384 Hz at 10.5 GPM,  
Metal Sensor (DRS-180..; DRS-280..)  
352 Hz at 10.5 GPM  
Plastic Sensor (DRS-380..)

<b>Max. Operating Pressure:</b>	2900 PSIG (DRS-180; DRS-280) 230 PSIG (DRS-380)
<b>Temperature:</b>	-4... 176 °F (-4...300 °F with DRS-...S)
<b>Wetted Materials</b>	
<b>Plastic Version:</b>	PPO, PEI, NBR, Sapphire, 316 SS
<b>Brass Version:</b>	Brass, PEI, NBR, Sapphire, 316 SS
<b>SS Version:</b>	304 SS, PEI, FKM, Sapphire, 316 SS
<b>Measuring Accuracy:</b>	± 1.5% of Full Scale ± 5% of Full Scale (DRS-..K0000)
<b>Linearity:</b>	± 0.5% of Full Scale
<b>Repeatability:</b>	± 0.1% of Full Scale
<b>Electrical Connection:</b>	Plug Connector M12x1 1.5 m Cable (DRS-0 only) 2 m Cable (DRS-..F5 only)
<b>Protection:</b>	IP 65 (Plug Conn.), IP 66 (Cable)
<b>Weight</b>	
<b>Sensor:</b>	Approx. 0.18 lb (DRS-..380) Approx. 1.22 lb (DRS-..180; DRS-..280)
<b>Electronics:</b>	Approx. 0.13 lb (DRS-..K..; DRS-..F.; DRS-..L3...) Approx. 0.22 lb (DRS-..L442) Approx. 1.44 lb (DRS-..C..)



**Electrical Data**

**DRS-0..K0000; DRS-0..S0000**

**Supply:** 6-16 V<sub>DC</sub>  
**Output Pulse:** Rectangular Pulse Signal,  
 Open Collector NPN, Max. 10 mA

**DRS-..F300; DRS-..F500**

**Supply:** 12-28 V<sub>DC</sub>  
**Power Consump.:** 10 mA  
**Pulse Output:** PNP, Open Collector, Max. 20 mA  
**Option:** Pt 100, 3-wire

**DRS-..L..**

**Supply:** 24 V<sub>DC</sub> ± 20 %  
**Output:** 4-20 mA, 2-wire or 3-wire  
**Max. Load:** 500 Ω  
**Option:** Pt 100 (2-wire only)  
**Response Time:** t<sub>90</sub> = 25 s (DRS-91../-92..)   
 t<sub>90</sub> = 100 s (DRS-93..)

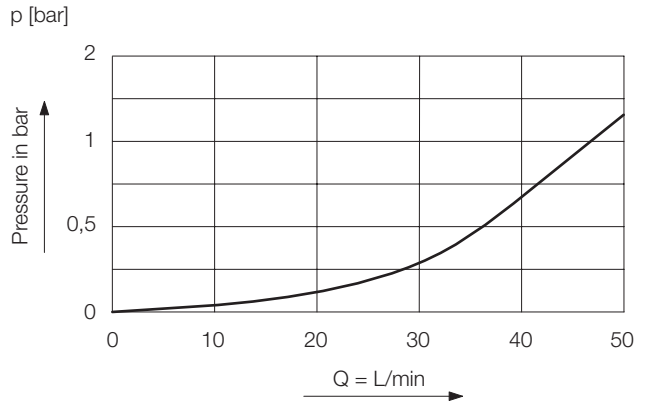
**DRS-..C30R: Compact Electronics**

**Display:** 3-digit LED  
**Switching Outputs:** 2 Semiconductor PNP or NPN,  
 (Factory Set)  
**Contact Operation:** N/C / N/O Contact Frequency,  
 Programmable  
**Setting:** with 2 Buttons  
**Supply:** 24 V<sub>DC</sub> ±20%, 3-wire  
**Electrical Connect.:** Plug Connector M12x1

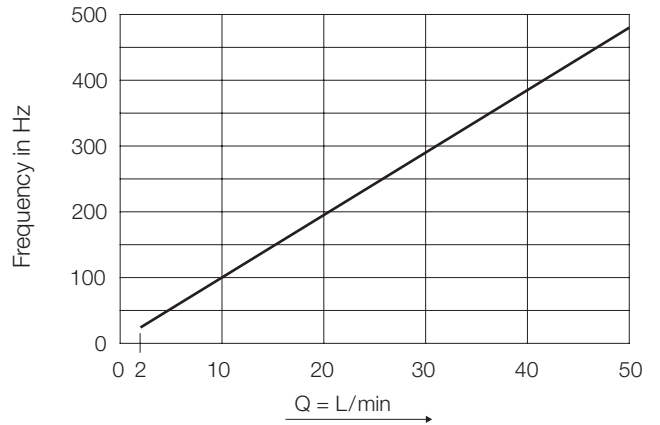
**DRS-..C34P: Compact Electronics**

**Display:** 3-digit LED  
**Output:** 4...20 mA Adjustable  
**Switching Outputs:** 1 Semiconductor PNP or NPN,  
 (Factory Set)  
**Contact Operation:** N/C / N/O Contact / Frequency,  
 Programmable  
**Setting:** with 2 Buttons  
**Supply:** 24 V<sub>DC</sub> ±20%, 3-wire  
**Power Consump.:** Approx. 100 mA  
**Electrical Connect.:** Plug Connector M12x1

**Pressure Loss**



**Frequency Diagram (DRS-..180, DRS-..280)**





OEM Turbine Flow Sensor Model DRS

Order Details for Standard Versions (Example: DRS-9180 N5 F300)

Body Materials	Model Number	Mechanical Connection	Output / Electronics	Options
Brass	DRS-9180..	..N4.. = 1/2" NPT Female ..N5.. = 3/4" NPT Male ..I4.. = G 1/2 Female ..G4.. = G 1/2 Male/Female ..G5.. = G 3/4 Male	..F300 = PNP Frequency Output, Micro-DC Plug ..F500 = PNP Frequency Output, 6 Ft. PVC Cable ..L342 = 4-20 mA, 2-wire, Micro-DC Plug ..L343 = 4-20 mA, 3-wire, Micro-DC Plug ..L442 = 4-20 mA, 2-wire DIN 43650 Plug	..P = Pt-100, 3-wire RTD (only for output options F300, F500 or L343)
Stainless Steel	DRS-9280..	..N5.. = 3/4" NPT Male ..G4.. = G 1/2 Male/Female ..G5.. = G 3/4 Male	..C30R <sup>1)</sup> = Compact Electronics 2 PNP Switch ..C34P <sup>1)</sup> = Compact Electronics, 4-20 mA + 1 PNP Switch	
PPO Plastic	DRS-9380..	..N5.. = 3/4" NPT Male ..G4.. = G 1/2 Male/Female ..G5.. = G 3/4 Male		

Accessories:

807.037 = Mating 4 PIN Micro-DC Connector with 6 ft. Cable for Output Types F300, F500, L342, & L343

807.007 = Mating 5 PIN Micro-DC Connector with 6 ft. Cable for Output Types C34P & C30R

<sup>1)</sup>Please specify flow direction in writing

Order Details for OEM Versions (Example: DRS-0380 N5 K0000)

Body Materials	Model Number	Mechanical Connection	Output Type
Brass	DRS-0180..	..N5.. = 3/4" NPT Male	..K0000 = NPN Frequency Output, 5 ft. PUR Cable, Black, without CE ..S0000 = 1.5 m Silicone Cable, NPN, OEM without CE, Max 300 °F (not for DRS-0380)
Stainless Steel	DRS-0280..	..G4.. = G 1/2 Male/Female	..S000P = 1.5 m Silicone Cable, NPN, OEM without CE, Pt 100, Max 300 °F (not for DRS-0380)
PPO Plastic	DRS-0380..	..G5.. = G 3/4 Male	

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

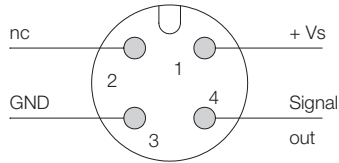
Description	Model Number
4 Digit LED DIN 43 650 Connector 2-Wire Supply Through Analog Output	AUF-1000
Same Specs as Above with Additional Open Collector Output	AUF-1001



**Electrical Connections**

**DRS-..F., DRS-..L3.. (3-wire without Pt 100)**

**Plug**

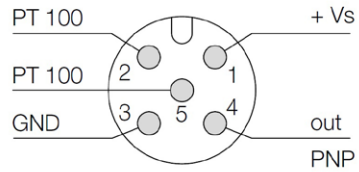


**Cable**

Brown: +Vs  
Blue: GND  
Black: Signal

**DRS-..F., DRS-..L3.. (3-wire with Pt 100)**

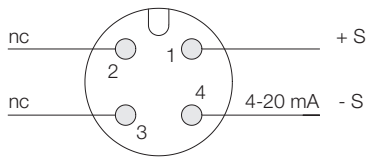
**Plug**



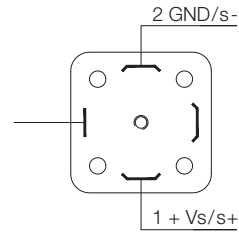
**Cable**

Brown: +Vs  
Blue: GND  
Black: Signal  
White: Pt 100 2-wire  
Grey: Pt 100 2-wire

**DRS-..L342 (2-wire)**



**DRS-..L442..**



**DRS-..C3..**

