Differential Pressure Flowmeters

for Water or Water-like Liquids

KOBOLD

measuring • monitoring • analyzing

RCD

- Measuring Ranges:
  0.2...0.88 to 100...600 GPM (Water)
- Accuracy: ± 3% of Full Scale
- Max. Pressure: 580 PSIG
- 1/2" to 3" Line Sizes
- Materials: Brass and
  316L Stainless Steel
- Digital Indicator, Transmitters,
  and Switches Available

KOBOLD companies worldwide:

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KOBOLD Instruments, Inc.
1801 Parkway View Drive
Pittsburgh, PA 15205
Main Office:
1.800.998.1020
1.412.788.4890
info@koboldusa.com
www.koboldusa.com

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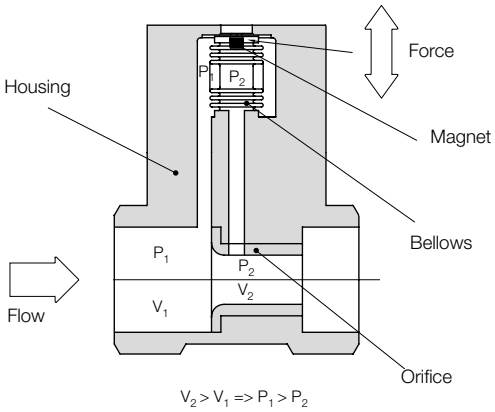
Description

The RCD series differential pressure flowmeter measures flows of water and water-like liquids using the orifice principle. The orifice, located in the flow body, generates a differential pressure which varies with the rate of flow. The differential pressure is applied to a measuring bellows. This is then linked to a Hall effect sensor, which is input to a compact or full featured electronic display and controller. This unique design, using a single measuring bellows, enables the accuracy to be unaffected by fluctuations in pressure. The meter movement is a single fulcrum lever design, with a minimal number of wear components, that is simple and reliable. It is available with brass or 316L stainless steel bodies ranging in size from 1/2" NPT to 3" NPT. The various electronic displays and control units offer a variety of options such as digital or bargraph displays, adjustable switches, and flow transmitters.



Areas of Application

- Machinery Manufacturing
- Chemical Industry
- Heavy Industry
- Process Equipment

Technical Details

Measuring Accuracy:	3 % of Full Scale
Repeatability:	1 % of Full Scale
Process Temperature:	32...176 °F
Ambient Temperature:	Max. 176 °F
Max. Pressure:	360 PSIG (RCD-11 Connection: 3" NPT) 580 PSIG (All Others)
Pressure Loss:	Approx. 5 PSI
Minimum Pressure:	10 PSIG
Protection:	IP 65
Materials	
Display Case:	Cast Aluminum or Stainless Steel
Body:	RCD-x1..: Brass RCD-x2..: 316L Stainless Steel
Differential Pressure Housing:	RCD-x1..: Brass RCD-x2..: 316L Stainless Steel
Pressure Meas. Cell:	316L Stainless Steel
Orifice:	316L Stainless Steel
Seals:	RCD-x1..: NBR RCD-x2..: FKM

Display/Electronics:

- **Compact Electronics: RCD-C**

Display:	3-Digit LED
Analog Output:	4...20 mA Adjustable, Max. 500 Ω
Switching Outputs:	1 (2) Semiconductor PNP or NPN, Factory Set
Contact Operation:	N/C / N/O Programmable
Setting:	Via 2 Buttons
Supply:	24 V_{DC} ± 20%, 3-wire, Approx. 100 mA
Electrical Conn.:	Plug Connector M12 x 1

- **ADI-1 Electronics: RCD-K**

Display:	Bar Graph and 5-Digit Digital Display
Analog Output:	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
Setting:	Via 4 Buttons
Supply:	100...240 V_{AC} ± 10 % or 18...30 V_{AC} / 10...40 V_{DC}
Electr. Connection:	Pluggable Terminal Block Via Cable Gland

No responsibility taken for errors;
subject to change without prior notice.

*Additional Information Required for Order:

To ensure proper operation, this product requires a completed application guide form to be submitted with any order. Please refer to the end of this datasheet in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

Order Details: (Example: **RCD 1106G N5 C34P**)

Meas. Range Water (GPM)	Orifice Ø (mm)	Model / Body Material		Connection
		Brass	Stainless Steel	
0.2...0.88	2.80	**RCD 1195G..**	**RCD 1295G..**	**..N4..** = ½" NPT
0.2...1.1	3.15	**RCD 1100G..**	**RCD 1200G..**	
0.2...1.3	3.50	**RCD 1190G..**	**RCD 1290G..**	
0.3...1.8	4.00	**RCD 1191G..**	**RCD 1291G..**	
0.3..2.2	4.50	**RCD 1101G..**	**RCD 1201G..**	
0.3...2.8	5.00	**RCD 1192G..**	**RCD 1292G..**	
0.5...3.5	5.60	**RCD 1102G..**	**RCD 1202G..**	**..N4..** = ½" NPT **..N5..** = ¾" NPT
0.5...4.4	6.30	**RCD 1103G..**	**RCD 1203G..**	
1.0...5.6	7.10	**RCD 1104G..**	**RCD 1204G..**	
1.0...7.0	8.00	**RCD 1106G..**	**RCD 1206G..**	**..N4..** = ½" NPT **..N5..** = ¾" NPT **..N6..** = 1" NPT
1.0...9.0	9.00	**RCD 1109G..**	**RCD 1209G..**	
2.0...11	10.00	**RCD 1110G..**	**RCD 1210G..**	
2.0...15	11.20	**RCD 1114G..**	**RCD 1214G..**	**..N5..** = ¾" NPT **..N6..** = 1" NPT
3.0...17	12.50	**RCD 1115G..**	**RCD 1215G..**	
3.0...22	14.00	**RCD 1116G..**	**RCD 1216G..**	
4.0...30	16.00	**RCD 1117G..**	**RCD 1217G..**	**..N6..** = 1" NPT **..N8..** =1½" NPT
5.0...35	17.50	**RCD 1125G..**	**RCD 1225G..**	
5.0...44	19.20	**RCD 1130G..**	**RCD 1230G**	
10...70	26.00	**RCD 1135G..**	**RCD 1235G..**	**..N8..** = 1 ½" NPT **..N9..** = 2" NPT
15...90	28.00	**RCD 1137G..**	**RCD 1237G..**	
20...110	31.00	**RCD 1139G..**	**RCD 1239G..**	
20...140	33.50	**RCD 1141G..**	**RCD 1241G..**	
30...180	40.00	**RCD 1145G..**	**RCD 1245G..**	**..N9..** = 2" NPT **..NB..** = 3" NPT
30...240	43.50	**RCD 1150G..**	**RCD 1250G..**	
30...280	51.00	**RCD 1155G..**	**RCD 1255G..**	**..NB..** = 3" NPT
50...400	60.00	**RCD 1160G..**	**RCD 1260G..**	
100...600	67.00	**RCD 1165G..**	**RCD 1265G..**	

Order Details: Continued

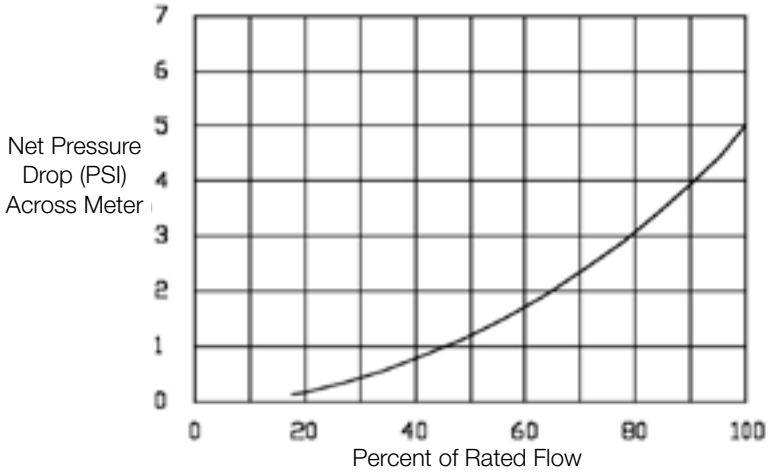
Compact Electronic*		
Indication	**Supply**	**Output/Contacts**
..C.. = Digital	**..3..** = 24 V_{DC}	**..0R** = 2x Open Collector, PNP **..0M** = 2x Open Collector, NPN **..4P** = 4-20 mA, 1x Open Collector, PNP **..4N** = 4-20 mA; 1x Open Collector, NPN

Full Size Display/Controller*			
Indication	**Power Supply**	**Output**	**Switches**
..K.. = Bargraph/ Digital LED Display	**..0..** = 100-240 $V_{AC/DC}$ **..3..** = 18-30 V_{AC}, 10-40 V_{DC}	**..0..** = None **..4..** = 4-20 mA, 0-10 V_{DC}	**..2** = 2 SPDT Relays

* Please Specify Flow Direction in the Order (Except from Top to Bottom)

Accessory	
807.007	Mating Micro-DC plug with 6 ft. Cable for Compact Electronic
807.007/5M	Mating Micro-DC plug with 16 ft. Cable for Compact Electronic
807.007/10M	Mating Micro-DC plug with 32 ft. Cable for Compact Electronic

RCD Head Loss vs. Flow Rate



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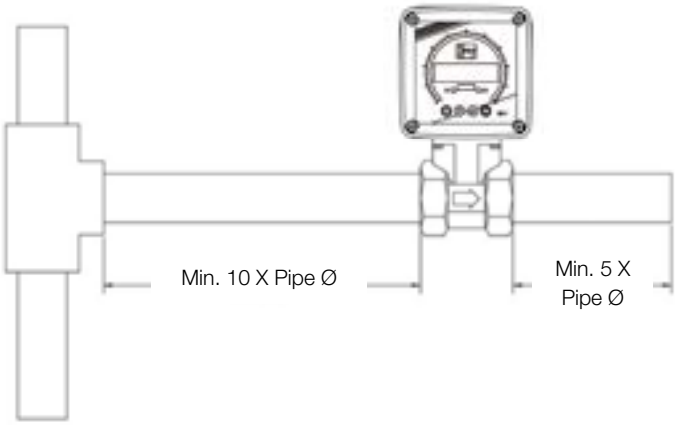
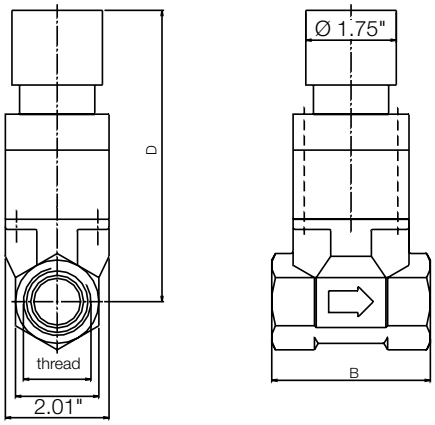
RCD Installation Piping Requirements



In order to guarantee accurate readings, the RCD series must be installed with a minimum of 10 diameters of straight piping at the inlet and 5 diameters of straight piping at the outlet. This straight piping must be the same diameter as the flowmeter fittings and should have no bends, elbows, tees, or valves.

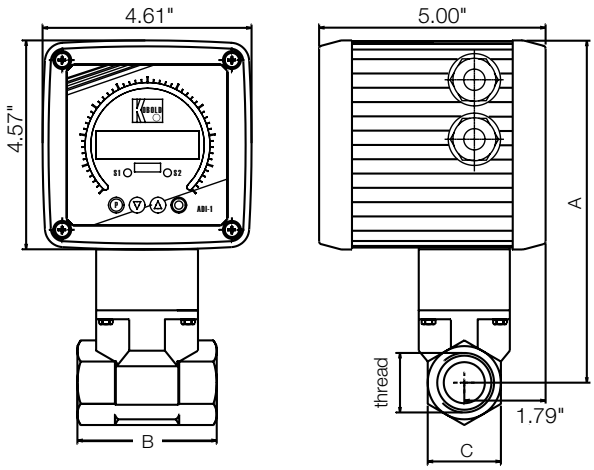
Dimensions

RCD...C with Compact Electronics



Connection	A	B	C (mm)	D	Weight
1/2" NPT	7.52"	3.07"	SW 27	5.63"	4.63 lb
3/4" NPT	7.52"	3.07"	SW 41	5.63"	5.29 lb
1" NPT	7.52"	3.07"	SW 41	5.63"	4.85 lb
1-1/2" NPT	8.11"	3.07"	SW 55	6.22"	5.73 lb
2" NPT	8.03"	3.14"	SW 70	6.14"	6.39 lb
3" NPT	8.70"	4.17"	SW 100	6.81"	11.46 lb

RCD...K with ADI-1 Electronics



Connection	A	B	C (mm)	D	Weight
1/2" NPT	7.52"	3.07"	SW 27	5.63"	7.50 lb
3/4" NPT	7.52"	3.07"	SW 41	5.63"	8.16 lb
1" NPT	7.52"	3.07"	SW 41	5.63"	7.94 lb
1-1/2" NPT	8.11"	3.07"	SW 55	6.22"	8.60 lb
2" NPT	8.03"	3.14"	SW 70	6.14"	9.26 lb
3" NPT	8.70"	4.17"	SW 100	6.81"	14.30 lb

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RCD Application Guide

Rev 09/18/18

General Information

Contact Name:_____

Company Name:_____

Phone:_____

Email:_____

Quote Number (if already quoted):_____

Date:_____

Part Number:_____

Calibrated Range:_____

Number of Pieces Required:_____

☐ This has not been quoted yet and pricing is required.

Design Conditions

Accurate design pressure and temperature are essential to ensure the flowmeter will be built to operate without damage. Please fill out accurately and completely.

1. Pressure: Maximum _____ PSIG
2. Temperature: Maximum _____ °F

Calibration Conditions for Liquid Flow Applications

1. Type of Liquid: _____
2. Normal Operating Temperature: _____ °F
3. Viscosity at Normal Operating Temperature: _____
4. Specific Gravity (at Normal Operating Temp): _____
5. Desired Measuring Range and Units: _____

Note: Items 3 & 4 not required for water flow

Calibration Conditions for Gas Flow Applications

1. Type of Gas: _____
2. Normal Operating Temperature: _____ °F
3. Normal Pressure at Outlet Fitting: _____ PSIG
4. Specific Gravity (required for gas mixtures): _____
5. Desired Measuring Range and Units: _____

Note: The calibration pressure required is the pressure that the meter sees at its outlet fitting.

Flowmeter Options

1. Body Material: ☐ Brass with NBR Seal ☐ 316L SS with FKM Seal
2. NPT Fitting Size: ☐ 1/2" ☐ 3/4" ☐ 1" ☐ 1-1/2" ☐ 2" ☐ 3"
3. Flow Direction: ☐ Left to Right ☐ Right to Left ☐ Flow Up, Dial on the Right ☐ Flow Up, Dial on the Left ☐ Flow Down, Dial on the Right ☐ Flow Down, Dial on the Left

Indicator Options

1. ☐ RCD-Z Mechanical Indicator
2. ☐ RCD-C Compact Electronics: ☐ 2 PNP Switches ☐ 2 NPN Switches ☐ 4-20 mA, 1 PNP ☐ 4-20 mA, 1 NPN
3. ☐ RCD-K Digital Display/Controller

   Input Power: ☐ 100-240 VAC/VDC ☐ 18-30 VAC/10-40

   Output: ☐ None ☐ 4-20 mA

Special Requirements or Additional Considerations: