M-Zert
Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Differential Pressure Flow Meter/Monitor

KOBOLD

measuring
•
monitoring
•
analysing

RCD

- Measuring ranges:
  0.5 - 3.3 ... 300 - 2350 l/min water
  0.5 - 5.35 ... 300 - 2750 Nm^3/h air
- Accuracy: ± 3% of full scale
- p_{max} PN 40, t_{max} 100 °C
- Connection:
  G ½...G 3, ½" NPT ... 3" NPT
- Material:
  aluminum bronze and
  stainless steel

S5

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, RUSSIA, SPAIN, SWITZERLAND, THAILAND, TUNISIA, TURKEY, USA, VIETNAM

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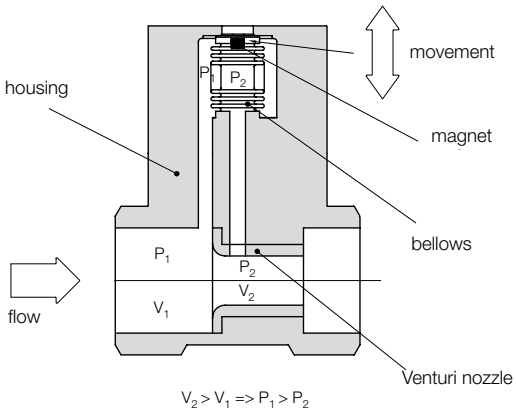
Description

The KOBOLD flow meter model RCD is used for measuring and monitoring liquid and gas flows. The device works on the well-known principle of the Venturi nozzle. A small pressure difference proportional to the flow is produced by the flowing medium at an orifice constriction (nozzle) in the device housing. The shape of the nozzle is based on the flow, whereby the flow characteristic remains constant over the entire measuring range. Drill holes are located in the housing fitting to absorb the resulting differential pressure and transfer it to a differential-pressure measuring cell fitted in the housing.



If the flow is exceeded the differential pressure measuring cell is protected by locking pins. On mechanical displays the flow rate measured by the pressure measuring cell is transferred via a pointer movement to the pointer indicator calibrated in l/min water or Nm^3/h air. On electronic displays the mechanical motion is converted to an electrical signal by a Hall-sensor. Various electronic modules are then used to display and monitor the volumetric flow.
Special scales are available for all media at any pressure and any temperature.

Areas of Application

- machinery and equipment manufacturing
- chemical and pharmaceutical industries
- heavy industry
- beverage and semi-luxury food industry

Special Advantages

- no moving parts
- mounting independant
- self-monitoring of measuring system
- easy to use

Technical Details

Measuring accuracy:	3 % of full scale
Repeatability:	1 % of full scale
Process temperature:	RCD... mechanical: -20... +100 °C RCD... electronic: -20... +80 °C
Ambient temperature:	max. 80 °C
Max. operating pressure:	25 bar (RCD-11 connection: G 3, 3" NPT) 40 bar (all others)
Pressure loss:	approx. 300 mbar
Minimum pressure:	0.6 bar
Protection:	IP 65

Materials:

Display case:	cast aluminum
Front cover:	polycarbonate
Body:	RCD-x1..: aluminum bronze RCD-x2..: stainless steel 1.4581
Differential pressure housing:	RCD-x1..: aluminum bronze RCD-x2..: stainless steel 1.4571
Pressure measuring cell:	stainless steel 1.4571
Venturi nozzle:	stainless steel 1.4571
Seals:	RCD-x1..: NBR RCD-x2..: FPM

Displays / electronics:

- Mechanical pointer indicator

Display:	270°
Option:	special scales for other gases and liquids. Please specify meas. medium, density, viscosity, operating pressure and temperature

- Compact electronics

Display:	3-digit LED
Analogue output:	(0)4...20 mA adjustable, max. 500 Ω
Switching outputs:	1 (2) semiconductor PNP or NPN factory set
Contact operation:	N/C / N/O contact programmable
Setting:	via 2 buttons
Supply:	24 V_{DC} ± 20%, 3-wire, approx. 100 mA
Electrical connection:	plug connector M12 x 1

- ADI electronics

Display:	bar graph and 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
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

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

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Order Details (example: **RCD 1195H G4 K 0 0 2**)

Meas. range water [l/min]	Orifice Ø [mm]	Model		Connection	
		Material Alu. bronze	Material st. steel	G-thread	NPT
0.5...3.3	2.80	**RCD 1195H**	**RCD 1295H**	**G4** = G ½	**N4** = ½" NPT
0.5...4.2	3.15	**RCD 1100H**	**RCD 1200H**		
0.5...5.2	3.50	**RCD 1190H**	**RCD 1290H**		
1.0...6.8	4.00	**RCD 1191H**	**RCD 1291H**		
1.0...8.6	4.50	**RCD 1101H**	**RCD 1201H**		
1.0...10.6	5.00	**RCD 1192H**	**RCD 1292H**		
2.0...13.2	5.60	**RCD 1102H**	**RCD 1202H**	**G4** = G ½ **G5** = G ¾	**N4** = ½" NPT **N5** = ¾" NPT
2.0...16.8	6.30	**RCD 1103H**	**RCD 1203H**		
2.0...21.4	7.10	**RCD 1104H**	**RCD 1204H**		
3.0...27.0	8.00	**RCD 1106H**	**RCD 1206H**	**G4** = G ½ **G5** = G ¾ **G6** = G 1	**N4** = ½" NPT **N5** = ¾" NPT **N6** = 1" NPT
5.0...34.5	9.00	**RCD 1109H**	**RCD 1209H**		
5.0...42.5	10.00	**RCD 1110H**	**RCD 1210H**		
10.0...58.0	11.20	**RCD 1114H**	**RCD 1214H**	**G5** = G ¾ **G6** = G 1	**N5** = ¾" NPT **N6** = 1" NPT
10.0...66.0	12.50	**RCD 1115H**	**RCD 1215H**		
10.0...85.0	14.00	**RCD 1116H**	**RCD 1216H**		
20.0...118	16.00	**RCD 1117H**	**RCD 1217H**	**G6** = G 1 **G8** = G 1½	**N6** = 1" NPT **N8** =1½" NPT
20.0...132	17.50	**RCD 1125H**	**RCD 1225H**		
20.0...148	18.00	**RCD 1126H**	**RCD 1226H**		
20.0...168	19.20	**RCD 1130H**	**RCD 1230H**	**G8** = G 1 ½ **G9** = G 2	**N8** = 1 ½" NPT **N9** = 2" NPT
30.0...275	26.00	**RCD 1135H**	**RCD 1235H**		
50.0...350	28.00	**RCD 1137H**	**RCD 1237H**		
50.0...435	31.00	**RCD 1139H**	**RCD 1239H**		
100...700	40.00	**RCD 1145H**	**RCD 1245H**	**G9** = G 2 **GB** = G 3	**N9** = 2" NPT **NB** = 3" NPT
100...910	43.50	**RCD 1150H**	**RCD 1250H**		
100...1060	51.00	**RCD 1155H**	**RCD 1255H**	**GB** = G 3	**NB** = 3" NPT
200...1540	60.00	**RCD 1160H**	**RCD 1260H**		
300...2350	67.00	**RCD 1165H**	**RCD 1265H**		

Evaluating electronics Mechanical pointer indication		
Indication	**Flow direction**	**Location of indication**
Z = pointer indicator, 270°	**L** = from left **R** = from right **B** = from bottom	**L** = left **R** = right **T** = top **B** = bottom

ADI-electronics**			
Indication	**Supply**	**Output**	**Contacts**
K = bargraph/ digital	**0** = 100-240 $V_{AC/DC}$ **3** = 18-30V_{AC}, 10-40 V_{DC}	**0** = without **4** = 0(4)-20 mA, 0-10V	**2** = 2 changeover contacts

Compact electronics**		
Indication	**Supply**	**Output/Contacts**
C = digital	**3** = 24 V_{DC}	**0R** = 2 x open collector, PNP **0M** =2 x open collector, NPN **4P** = 4-20 mA, 1 x open collector PNP **4N** = 4-20 mA; 1 x open collector NPN

Order Details (example: **RCD 1195L G4 K 0 0 2**)

Meas. range air 1bar abs./20 °C [Nm^3/h]*	Orifice Ø [mm]	Model		Connection	
		Material Alu. bronze	Material st. steel	G-thread	NPT
0.50...5.35	2.80	**RCD 1195L**	**RCD 1295L**	**G4** = G ½	**N4** = ½" NPT
1.00...6.70	3.15	**RCD 1100L**	**RCD 1200L**		
1.00...8.30	3.50	**RCD 1190L**	**RCD 1290L**		
1.00...10.9	4.00	**RCD 1191L**	**RCD 1291L**		
2.00...13.8	4.50	**RCD 1101L**	**RCD 1201L**		
2.00...17.0	5.00	**RCD 1192L**	**RCD 1292L**		
2.00...21.4	5.60	**RCD 1102L**	**RCD 1202L**	**G4** = G ½ **G5** = G ¾	**N4** = ½" NPT **N5** = ¾" NPT
3.00...27.0	6.30	**RCD 1103L**	**RCD 1203L**		
5.00...34.5	7.10	**RCD 1104L**	**RCD 1204L**		
5.00...43.5	8.00	**RCD 1106L**	**RCD 1206L**	**G4** = G ½ **G5** = G ¾ **G6** = G 1	**N4** = ½" NPT **N5** = ¾" NPT **N6** = 1" NPT
10.0...55.0	9.00	**RCD 1109L**	**RCD 1209L**		
10.0...68.0	10.00	**RCD 1110L**	**RCD 1210L**		
10.0...78.0	11.20	**RCD 1114L**	**RCD 1214L**	**G5** = G ¾ **G6** = G 1	**N5** = ¾" NPT **N6** = 1" NPT
10.0...97.0	12.50	**RCD 1115L**	**RCD 1215L**		
20.0...116	14.00	**RCD 1116L**	**RCD 1216L**		
20.0...158	16.00	**RCD 1117L**	**RCD 1217L**	**G6** = G 1 **G8** = G 1½	**N6** = 1" NPT **N8** =1½ NPT
20.0...188	17.50	**RCD 1125L**	**RCD 1225L**		
20.0...198	18.00	**RCD 1126L**	**RCD 1226L**		
30.0...225	19.20	**RCD 1130L**	**RCD 1230L**	**G8** = G 1 ½ **G9** = G 2	**N8** = 1 ½" NPT **N9** = 2" NPT
50.0...375	26.00	**RCD 1135L**	**RCD 1235L**		
50.0...515	28.00	**RCD 1137L**	**RCD 1237L**		
100...630	31.00	**RCD 1139L**	**RCD 1239L**		
100...910	40.00	**RCD 1145L**	**RCD 1245L**	**G9** = G 2 **GB** = G 3	**N9** = 2" NPT **NB** = 3" NPT
200...1160	43.50	**RCD 1150L**	**RCD 1250L**		
200...1360	51.00	**RCD 1155L**	**RCD 1255L**	**GB** = G 3	**NB** = 3" NPT
400...2000	60.00	**RCD 1160L**	**RCD 1260L**		
300...2750	67.00	**RCD 1165L**	**RCD 1265L**		
special meas. range	on request	**RCD 11XXX*****	**RCD 12XXX*****	on request	on request

Evaluating electronics Mechanical pointer indication		
Indication	**Flow direction**	**Location of indication**
Z = pointer indicator, 270°	**L** = from left **R** = from right **B** = from bottom	**L** = left **R** = right **T** = top **B** = bottom

ADI-electronics**			
Indication	**Supply**	**Output**	**Contacts**
K = bargraph/ digital	**0** = 100-240 $V_{AC/DC}$ **3** = 18-30V_{AC}, 10-40 V_{DC}	**0** = ohne **4** = 0(4)-20 mA, 0-10V	**2** = 2 changeover contacts

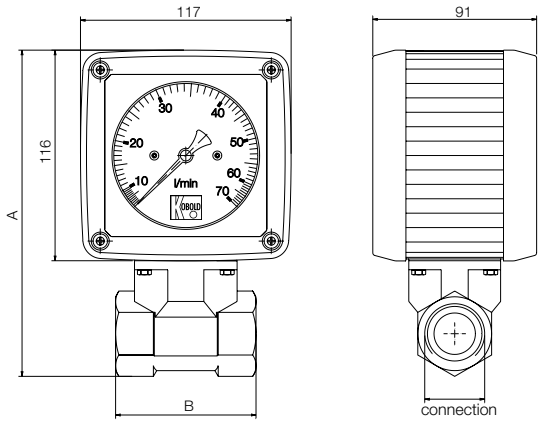
Compact electronics**		
Indication	**Supply**	**Output/Contacts**
C = digital	**3** = 24 V_{DC}	**0R** = 2 x open collector, PNP **0M** =2 x open collector, NPN **4P** = 4-20 mA, 1 x open collector PNP **4N** = 4-20 mA; 1 x open collector NPN

* Nm^3/h correspond to a flow rate at 0°C; 1013 mbar ** Please specify flow direction in the order (except from top to bottom)
*** Please specify medium, operating temperature and pressure in clear text

Please specify the operating conditions in the order.

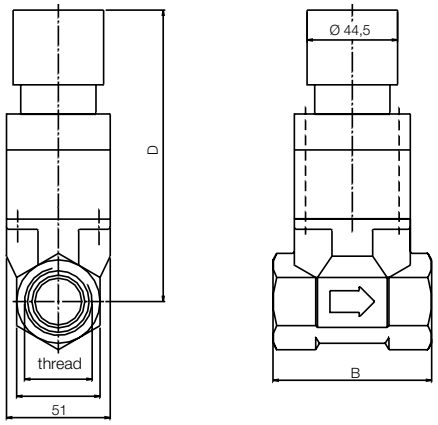
Dimensions [mm]

RCD...Z with mechanical display



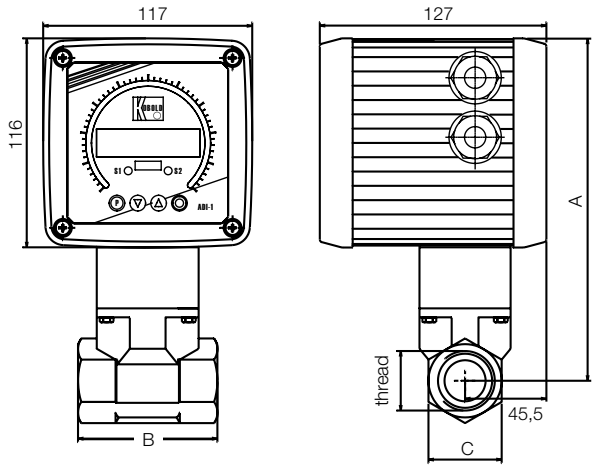
Thread	A	B	C	D	Weight
G ½	191	78	27 AF	143	approx. 2.0 kg
G ¾	191	78	41 AF	143	approx. 2.3 kg
G 1	191	78	41 AF	143	approx. 2.2 kg
G 1½	206	78	55 AF	158	approx. 2.6 kg
G 2	204	81	70 AF	156	approx. 2.8 kg
G 3	221	106	100 AF	173	approx. 5.1 kg

RCD...C with compact electronics



Thread	A	B	C	D	Weight
G ½	191	78	27 AF	143	approx. 2.1 kg
G ¾	191	78	41 AF	143	approx. 2.4 kg
G 1	191	78	41 AF	143	approx. 2.2 kg
G 1½	206	78	55 AF	158	approx. 2.6 kg
G 2	204	81	70 AF	156	approx. 2.9 kg
G 3	221	106	100 AF	173	approx. 5.2 kg

RCD...K with ADI-electronics



Thread	A	B	C	D	Weight
G ½	191	78	27 AF	143	approx. 3.4 kg
G ¾	191	78	41 AF	143	approx. 3.7 kg
G 1	191	78	41 AF	143	approx. 3.6 kg
G 1½	206	78	55 AF	158	approx. 3.9 kg
G 2	204	81	70 AF	156	approx. 4.2 kg
G 3	221	106	100 AF	173	approx. 6.5 kg

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