Differential Pressure Flow Meter / Monitor

- Measuring ranges:
  3-27 to 300-2300 l/min. water
  6-42 to 500-2800 Nm³/h air
- p_{max}: PN 40
- t_{max}: 100 °C
- Connection:
  G 1/2 to G 3, 1/2 NPT to 3 NPT
- Material:
  aluminium bronze and
  stainless steel

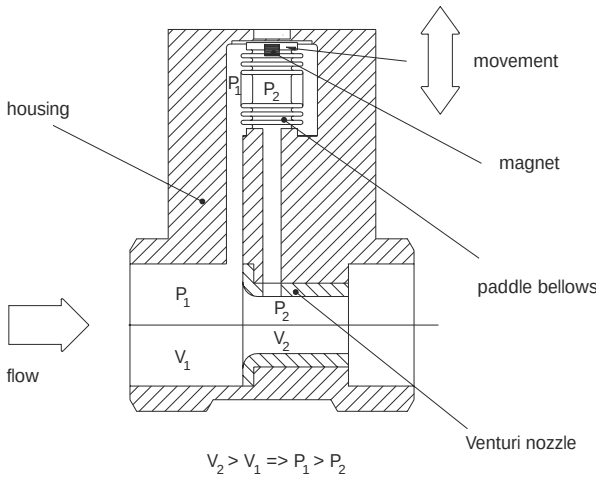
KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
☎ (06192) 299-0
Fax (06192) 23398
E-mail: info.de@kobold.com
Internet: www.kobold.com

Model:
RCD

01 / 11204 / Ko / 10

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 display case. 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% f.s.
Repeatability:	1% f. meas. value
Process temperature:	RCD...mechanical: 100 °C RCD...electronic: 80 °C
Ambient temperature.:	max. 80 °C
Max. operating pressure:	25 bar (RCD-1155.. - RCD-1165...) PN 40/20 °C (all others)
Protection:	IP 65
Materials:	
Display case:	cast aluminium
Front cover:	polycarbonate
Fluidic casing:	RCD-x1..: aluminium bronze RCD-x2..: stainless steel 1.4581
Differential pressure housing:	RCD-x1..: aluminium 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 measured 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 / frequency 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, 3.5-digit digital-display
Analogue output:	(0)4 - 20 mA, 0-10 V, scalable pulse output 0-1000 Hz
Two switching outputs:	two relay/changeover contacts max. 230 V_{AC}, 5 A resistive load max. 30 V_{DC} / 5 A
Option	two optocouplers max. 35 V_{DC}, I = 10 - 50 mA
Setting:	via 3 buttons
Supply:	230 / 115 / 48 / 24 V_{AC}, 24 V_{DC}
Electrical connection:	pluggable terminal block via PG cable gland

See brochure Z2 for more technical details on ADI evaluating electronics

01/1204/Ko/10

Order details (example: RCD 1105H G4 B 0 0 0)

Measuring range L/min Water	Model		Connection	
	Material Aluminium bronze	Material stainless steel	Standard	Special
3-27	RCD 1105H..	RCD 1205H..	G4= G 1/2	N4= 1/2 NPT
5-40	RCD 1110H..	RCD 1210H..		
10-65	RCD 1115H..	RCD 1215H..	G5= G 3/4	N5= 3/4 NPT
10-80	RCD 1120H..	RCD 1220H..		
20-130	RCD 1125H..	RCD 1225H..	G6= G 1	N6= 1 NPT
20-160	RCD 1130H..	RCD 1230H..		
30-270	RCD 1135H..	RCD 1235H..	G8= G 1 1/2	N8= 1 1/2
60-420	RCD 1140H..	RCD 1240H..		
100-700	RCD 1145H..	RCD 1245H..	G9= G 2	N9= 2 NPT
100-900	RCD 1150H..	RCD 1250H..		
100-1000	RCD 1155H..	RCD 1255H..	GB= G 3	NB= 3 NPT
200-1500	RCD 1160H..	RCD 1260H..		
300-2300	RCD 1165H..	RCD 1265H..	GB= G 3	NB= 3 NPT

Evaluating electronics

Mechanical pointer indicator

Display	Flow direction	Locat. of display
Z= pointer indicator, 270°	L= from left R= from right B= from bottom	L= left R= right T= top B=bottom

ADI electronics**

Display	Supply	Output	Contacts
K= Bargr./digital	0= 230 V_{AC} 4= 115 V_{AC} 2= 24 V_{AC} 1= 48 V_{AC} 3= 24 V_{DC}	0= without F= scalable frequency 1= 0-10 V 2= 0-20 mA 4= 4-20 mA	0= without 2= 2 change-over contacts 6= 2 opto-couplers

Compact electronics**

Display	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 coll. PNP 4N= 4-20 mA; 1 x open coll. NPN

Order details (example: RCD 1105L G4 B 0 0 0)

Measuring range Nm³/h* air	Model		Connection	
	Material Aluminium bronze	Material stainless steel	Standard	Special
6-42	RCD 1105L..	RCD 1205L..	G4= G 1/2	N4= 1/2 NPT
10-65	RCD 1110L..	RCD 1210L..		
15-95	RCD 1115L..	RCD 1215L..	G5= G 3/4	N5= 3/4 NPT
20-115	RCD 1120L..	RCD 1220L..		
30-190	RCD 1125L..	RCD 1225L..	G6= G 1	N6= 1 NPT
30-220	RCD 1130L..	RCD 1230L..		
75-375	RCD 1135L..	RCD 1235L..	G8= G 1 1/2	N8= 1 1/2
100-600	RCD 1140L..	RCD 1240L..		
150-900	RCD 1145L..	RCD 1245L..	G9= G 2	N9= 2 NPT
200-1100	RCD 1150L..	RCD 1250L..		
250-1300	RCD 1155L..	RCD 1255L..	GB= G 3	NB= 3 NPT
300-2000	RCD 1160L..	RCD 1260L..		
500-2800	RCD 1165L..	RCD 1265L..	GB= G 3	NB= 3 NPT

Evaluating electronics

Mechanical needle indication

Display	Flow direction	Locat. of display
Z= pointer indicator, 270°	L= from left R= from right B= from bottom	L= left R= right T= top B= bottom

ADI electronics**

Display	Supply	Output	Contacts
K=Bargr./Digital	0= 230 V_{AC} 4= 115 V_{AC} 2= 24 V_{AC} 1= 48 V_{AC} 3= 24 V_{DC}	0= without F= scalable frequency 1= 0-10 V 2= 0-20 mA 4= 4-20 mA	0= without 2= 2 change-over contacts 6= 2 opto-couplers

Compact electronics**

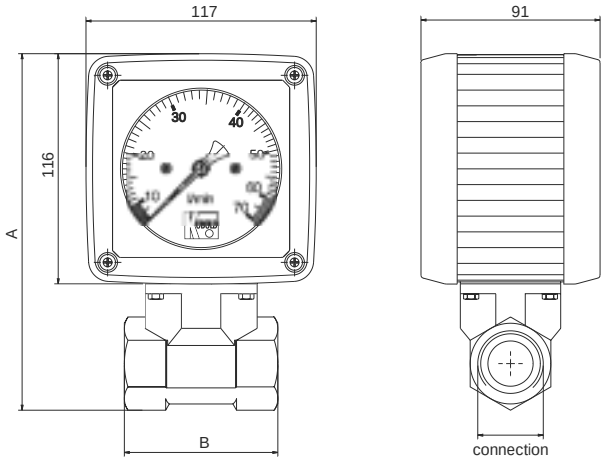
Display	Supply	Output / contacts
C= Digital	3= 24 V_{DC}	0R= 2 x open collector, PNP 0M= 2 x open collector, NPN 4P= 4-20 mA, 1 x open coll. PNP 4N= 4-20 mA; 1 x open coll. NPN

* 20 °C, 0 bar rel.

** Please specify flow direction (not from top to bottom) in plain text.

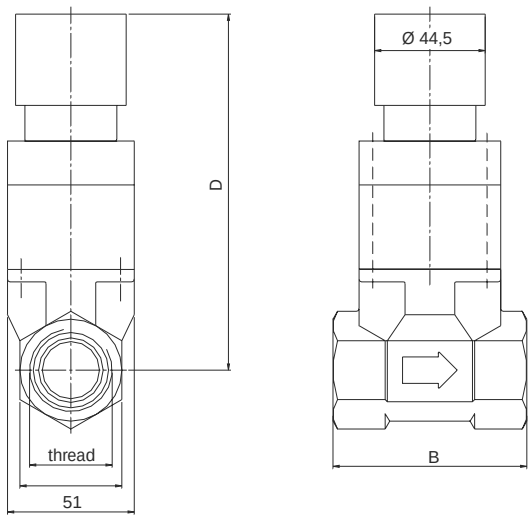
Dimensions

RCD...Z with mechanical display



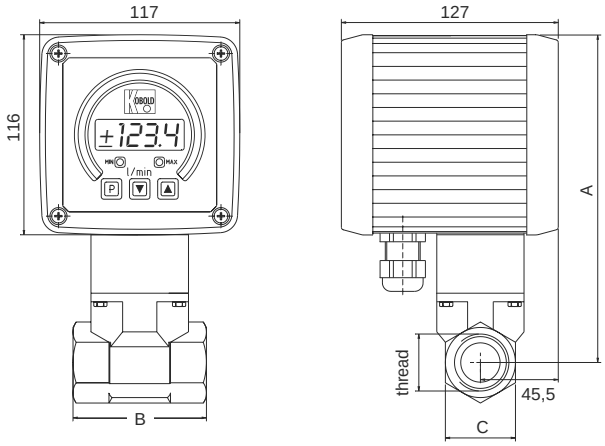
Thread	A	B	C	D	Weight
G 1/2	191	78	hex 27	143	app. 2.0 kg
G 3/4	191	78	hex 41	143	app. 2.3 kg
G 1	191	78	hex 41	143	app. 2.2 kg
G 1 1/2	206	78	hex 55	158	app. 2.6 kg
G 2	204	81	hex 70	156	app. 2.8 kg
G 3	221	106	hex 100	173	app. 5.1 kg

DPT...C with compact electronics



Thread	A	B	C	D	Weight
G 1/2	191	78	hex 27	143	app. 2.1 kg
G 3/4	191	78	hex 41	143	app. 2.4 kg
G 1	191	78	hex 41	143	app. 2.2 kg
G 1 1/2	206	78	hex 55	158	app. 2.6 kg
G 2	204	81	hex 70	156	app. 2.9 kg
G 3	221	106	hex 100	173	app. 5.2 kg

RCD...K with ADI electronics



Thread	A	B	C	D	Weight
G 1/2	191	78	hex 27	143	app. 3.4 kg
G 3/4	191	78	hex 41	143	app. 3.7 kg
G 1	191	78	hex 41	143	app. 3.6 kg
G 1 1/2	206	78	hex 55	158	app. 3.9 kg
G 2	204	81	hex 70	156	app. 4.2 kg
G 3	221	106	hex 100	173	app. 6.5 kg

01 / 1204 / Ko / 10