

# Bourdon Tube Pressure Gauge

with e-Gauge®

Bayonet Ring Case, Stainless Steel



RCh / RChG  
100 -1/-3

## Application

e-Gauge® is a revolutionary "Worldwide Patent Pending" sensor accessory for analogue dial instruments such as pressure gauges and thermometers.

By use of the latest absolute encoding inductance technique, e-Gauge® converts almost every gauge or thermometer into a switch and transmitter.

The e-Gauge® is a non-contact device and converts a „normal“ indicating gauge NCS 100 with 100 mm stainless steel bayonet ring DIN case into a multifunctional instrument with 2 digital limit switches and an analogue output signal of 4-20 mA.

## New measuring principle

- non-contact device
- low moment of inertia, only a slight increased weight of the pointer by the electronic transponder
- no mechanical drag as in existing limit switches

## Robustness and reliability

- no mechanical components and therefore no mechanical wear in the e-Gauge®
- tamper proof switch points - factory set

## Technical Data e-Gauge®

### Output signal

4...20 mA (3 wire)

### Nominal rating

8...28 VDC, max. 50 mA, reverse polarity protection

### Load impedance [Ω]

(UB-8 V) / 0.02 A

### Accuracy of the output signal

± 1.0 % of full scale value

### Repeatability

< ±0.2 % of full scale value

### Resolution

12 bit

### Temperature ranges for e-Gauge with pressure gauge

Storing temperature: -40 °C...+70 °C (-40 °F...+158 °F)  
-20 °C...+70 °C (-4 °F...+158 °F)  
for glycerine filling

Ambient temperature: -30 °C...+60 °C (-22 °F...+140 °F)  
-20 °C...+60 °C (-4 °F...+140 °F)  
for glycerine filling

### Temperature influence

0.1% of full scale value / 10K  
in design temperature range: 0...50 °C (32...122°F)

### Switching outputs

2 NPN-outputs (Open Collector), short-circuit proof

### Switching function

Opening or closing circuit  
Please quote in order



## Limit values

coloured marks at the limit values on the dial

1. limit value: red
2. limit value: green

Please quote in order

Both limit values of the e-Gauge® can be set at the same point.

## Switching hysteresis

1% of span

## Switching capacity

max. 28 VDC, max. 50 mA

## Response time

0.1s default

## Electrical connection

1.5 m cable, not insulated wire ends, 8xAWG24

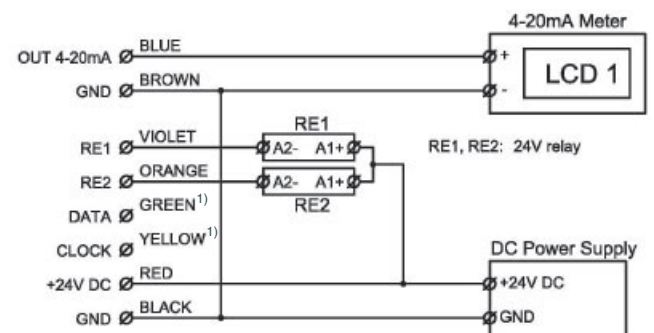
## EMC

EN 61326:2006

## CE mark

The instruments are CE-marked

## Closing Screen



<sup>1)</sup> green / yellow (DATA & CLOCK) do not connect - factory use only.

See page 2 for technical details of the pressure gauge



Sales and Export South, West, North

**ARMATURENBAU GmbH**

Manometerstraße 5 • D-46487 Wesel - Ginderich  
Tel.: +49(0) 28 03 / 91 30-0 • Fax: +49(0) 28 03 / 10 35  
armaturenbau.com • mail@armaturenbau.com

Subsidiary Company, Sales and Export East

**MANOTHERM Beierfeld GmbH**

Am Gewerbepark 9 • D-08344 Grünhain-Beierfeld  
Tel.: +49(0) 37 74 / 58-0 • Fax: +49(0) 37 74 / 58-545  
manotherm.com • mail@manotherm.com

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# Standard Versions Bourdon Tube Pressure Gauge

## Standard Versions Bourdon Tube Pressure Gauge

Information on general and metrological features (load limits, temperature limitations) and standard pressure ranges / scale divisions of bourdon tube model RCh100 and RChG 100 can be found on general information leaflet 1000. Detailed descriptions can be found on data sheet 1201.

### Technical Data Bourdon Tube Pressure Gauge

#### Accuracy (EN 837-1)

Class 1.0

#### Case

Bayonet ring, 1.4301 (304 stainless steel)

#### Case Protection Type (EN 60 529 / IEC 529)

IP 54

IP 55 for model RChG

#### Blow-out Device

Model RCh Blow-out plug in the back of the case,  
1" (Ø 25mm)

Model RChG 100 Blow-out plug in the back of the case,  
1½" (Ø 40mm)

#### Case Ventilation

Model RChG 100 without ventilation, but with internal pressure compensation by pressure equalizing membrane.

#### Case Filling

for model RChG: glycerine

#### Nominal Case Size

100 (mm) (4")

#### Wetted Parts

Type –3: Connection: 1.4571 (316 stainless steel)  
Bourdon tube: 1.4571 (316 stainless steel),  
argon arc welding,  
≤ 40 bar (600 psi) c-form,  
≥ 60 bar (800 psi) helical,  
1,600 bar (20,000 psi) NiFe-alloy, helical

Type –1: Connection: brass  
Bourdon tube: ≤ 40 bar (600 psi) = bronze, c-form,  
soft-soldered,  
≥ 60 bar (800 psi) = 1.4571 (316 stainless  
steel), silver brazed,  
helical

#### Case Configuration

Connection: screwed

Position of the connection: bottom connection,  
optional lower back connection (r)

#### Pressure Ranges (EN 837-1)

0-0.6 bar (0-10 psi) to 0-1,600 bar (0-20,000 psi) for type –3

0-0.6 bar (0-10 psi) to 0-1,000 bar (0-15,000 psi) for type –1

#### Process Connection

G ½ B (½" BSP)

#### Window

Polycarbonate (PC)

#### Movement

Stainless steel for type –3

Brass / German silver for type –1

#### Dial

Aluminum, black figures, white background

#### Pointer

Aluminum, black

#### Safety Category according to EN 837-1

NCS 100: S1 pressure gauges with blow-out device

#### Accessory:

Chemical seals: see catalogue-heading 7

Other accessory : see catalogue-heading 11

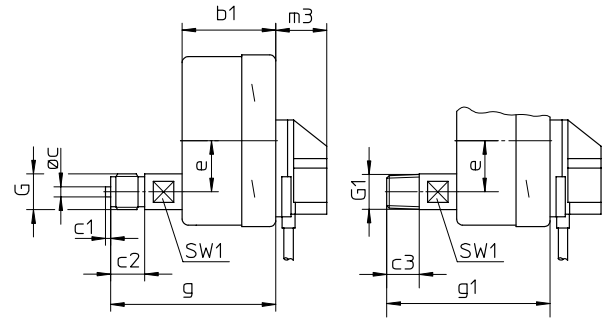
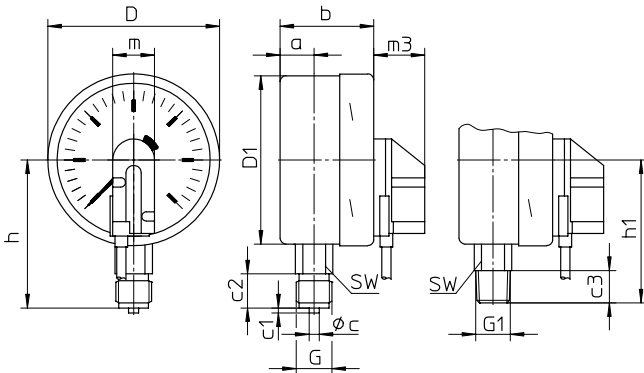
# Case Configurations, Code Letters, Dimensional Data and Weights, Blow-out Device

## Bottom connection Lower back connection

### No mounting device

(no additional code letter)

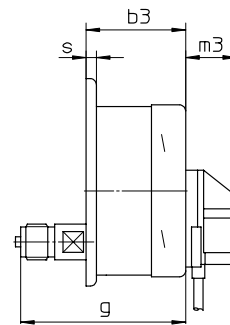
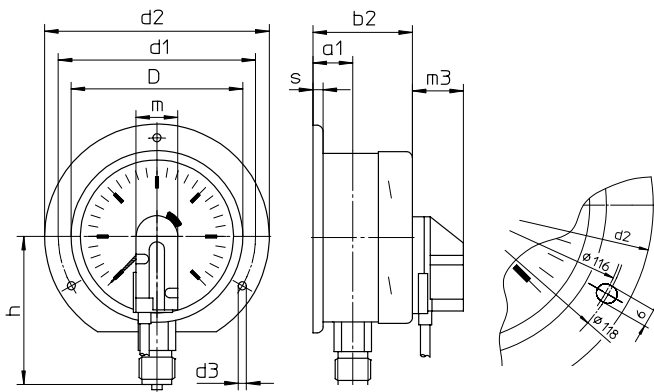
code letters: r



### with mounting device

back flange for surface mounting  
code letters: Rh

back flange for surface mounting  
code letters: rRh



back flange for surface mounting  
optional available with slotted  
holes according to EN 837-1

(available upon request, but according to  
EN 837-1 not recommended)

### Dimensional data (mm / inches) and weights (kg / lb)

NCS	a	a1	b	b1	b2	b3	c	c1	c2	c3	D	D1	d1	d2	d3	e	G	G1	g	g1	h <sup>±1</sup>	h1 <sup>±1</sup>
100	20	23.5	55	55	58.5	58.5	6	3	20	19	101	99	116	132	4.8	30	G 1/2 B	1/2" NPT	97	96	87	84
4"	.79	.93	2.17	2.17	2.3	2.3	.24	.12	.79	.75	3.98	3.9	4.57	5.2	.19	1.18	1/2" BSP M 20 x 1.5		3.82	3.78	3.43	3.31

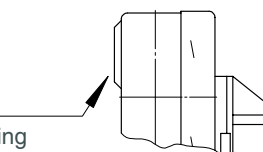
m	m3	s	SW	SW1	approx. weight <sup>1)</sup>	
					RCh	RChG
24.5	5.5	6	22	17	0.67	0.95
.96	.22	.24	.87	.67	1.47	2.2

<sup>1)</sup> Information for version without mounting device

### Blow-out device

Blow-out plug

- Ø 1" (25 mm) for model RCh 100
- Ø 1 1/2" (40 mm) for model RChG 100
- with pressure equalizing membrane



## Options

Options: e-Gauge®	
Marking of the switch points by coloured clips at the bayonet ring	
Accuracy of the output signal $\pm 0.5\%$ of full scale value	
Non linear scales, e. g. : flow measurement	
Output signal 20...4 mA	
Response time in 0.01s steps, from 0.01s to 20s	
Switching hysteresis deviating 1%, in 0.1% steps, from 0 to 25% of full scale value	
Deactivation of the switch points	
Programming provided by the customer	
e-Gauge calibrator, software CD and USB-cable	upon request
for connection to the PC, preferably laptop (provided by the customer),	
voltage source 24 VDC (provided by the customer)	

(order at the moment still as cleartext)

Options: Pressure Gauge	
other process connections upon request, e. g. high pressure connection with external thread	
other pressure ranges and / or special scales, e. g. double scale bar/psi, coloured fields or areas, dial inscriptions, negative scales etc.	
version as refrigeration gauge with temperature scale	
receiver gauge 0.2-1 bar, scale 0-100%	linear
	square
indication accuracy grade 2A ( $\pm 0.5\%$ ) according to ASME B 40.1	
special alignment (reference points = odd values, e. g. 100 KN = 8.735 bar)	
movement	stainless steel for type -1 (for -3 and -6 standard)
	silicone damped brass / polyacetal
case ventilation no. 22 for outdoor installation	
case parts 316 L (1.4404) upon request	
case polished	
bayonet ring polished	
density examination with helium-leak detection up to of the elastic element $10^{-9}$ mbar l/s for models -3 and -6	
wetted parts,	
free of grease and oil, up to 0-600 bar	adjustment $\leq 250$ bar (3,000 psi) with dry air, $\geq 400$ bar (5,000 psi) with distilled water, dial marking: symbol cancelled oil can
oxygen version, up to 0-600 bar <sup>1)</sup>	free of grease and oil, additional restrictor screw in the inlet port, orifice $\varnothing 0.3$ mm, dial inscription: oxygen no version according to EN 837-1 <sup>2)</sup>
silicone-free version	
Position of the connection radial at 3:00, 9:00, 12:00 (others upon request) or position of installation deviating from vertical ( $90^\circ$ )	
restrictor screw in the inlet port	orifice $\varnothing 0.8$ mm (0.03")
	orifice $\varnothing 0.6$ mm (not Monel) (0.02")
material: as process connection brass, stainless steel or Monel	orifice $\varnothing 0.3$ mm (not Monel) (0.01")
measuring point marking	stainless steel-plate 12 mm x 55 mm (0.47" x 2.17"), wire mounting or sticker on case coverage
Deflagration volume-protection Adapt FS	version 5 according to DS 11001
GOST-version for Russia, Ukraine, Kazakhstan	

(order at the moment still as cleartext)

Ordering Information (Model Construction)			
Please quote in your order:	basic model pressure gauge	e.g. RChG 100-1, Rh, 0-6 bar, G $\frac{1}{2}$ B	
		switching function	e. g. eG 12
		limit values	1. limit value 1.5 bar 2. limit value 4.0 bar
	pressure gauge with e-gauge®	e.g. RChG 100-1, Rh, 0-6 bar, G $\frac{1}{2}$ B	eG 12
<b>If you desire options, please quote these in the cleartext</b>			

<sup>1)</sup> for instruments without case filling

<sup>2)</sup> EN 837-1 in connection with oxygen-version requires safety category S3

Technical changes, replacement of materials and errors excepted