

Датчики давления LHCR-51

Технические характеристики

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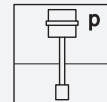
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Pressure Transmitter

LHCR-51



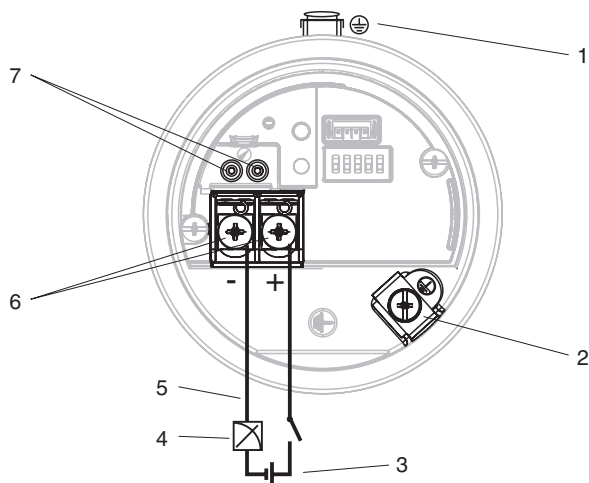
- Device for hydrostatic pressure measurement in liquids or paste-like media
- Rod version
- Modular probe program to ensure optimum process adaptation
- Temperature range up to 85 °C (185 °F)
- Pressure range up to 10 bar (150 psi)
- Easy commissioning without the need for an operating tool
- Configurable by PACTware



Function

The device is used for level and pressure measurement in liquids or paste-like media. The device has a hermetically sealed hydrostatic measuring cell. Due to its weight, a liquid column creates hydrostatic pressure. This pressure is measured by the hydrostatic measuring cell. The hydrostatic measuring cell works on the principle of the gauge pressure sensor. Thanks to the hermetic sealing of the measuring element, the hydrostatic measuring cell is absolutely insensitive to condensate/condensation and aggressive gases. The pressure applied is transferred from the process isolating diaphragm to the measuring element by means of an oil without any loss in pressure. The data is transmitted to the control via analog signal, HART protocol or PROFIBUS PA. The device is easily configured by the use of keypad or with the PACTware configuration software. The device is designed modular and offers a variety of process connections, a replaceable display and a universal electronics.

Connection



- 1 External grounding terminal
- 2 Internal grounding terminal
- 3 Supply voltage
- 4 4 mA to 20 mA for HART devices
- 5 For HART devices: With a handheld terminal, all the parameters can be configured anywhere along the bus line via menu operation.
- 6 Terminals
- 7 Test terminals for HART devices

Technical Data

General specifications		
Construction type		device with rod probe
Series		LHCR
Supply		
Rated voltage	U _r	versions for safe area: 11.5 ... 35 V DC, HART, 2-wire 9 ... 32 V DC, PROFIBUS PA version for hazardous area see safety information (SI)
Input		
Measured variable		hydrostatic pressure , relative pressure

Technical Data

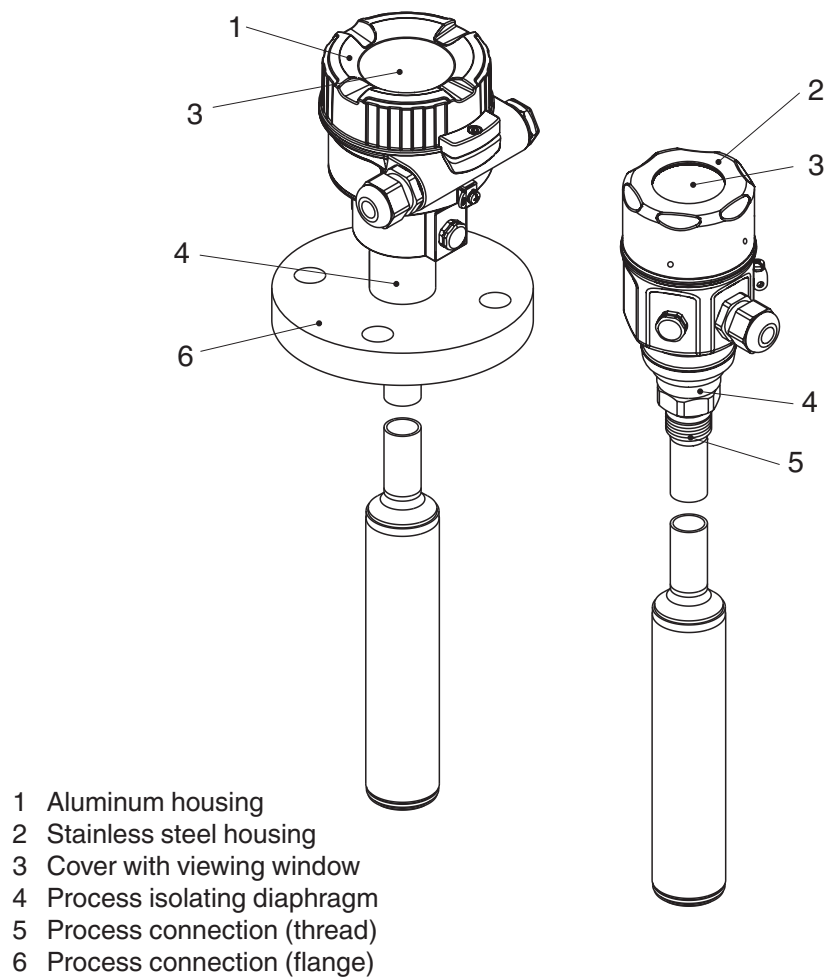
Measurement range	0.1 ... 10 bar max. turn down: 100:1
Output	
Output signal	4 ... 20 mA with superimposed digital communication protocol HART 6.0, 2-wire digital communication signal PROFIBUS PA (Profile 3.02)
Communication	4 ... 20 mA HART (standard) PROFIBUS PA (option)
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2006 , EN 61326-2-3:2006 , EN 61326-2-5:2006
Low voltage	
Directive 2014/35/EU	EN 61010-1:2010
Conformity	
Degree of protection	IEC 60529:2001
Measurement accuracy	
Accuracy	reference accuracy: 0.2 % (standard), 0.1 % (platinum) The reference accuracy comprises the non-linearity according to limit point setting, hysteresis and non-reproducibility acc. to IEC 60770. The data refer to the calibrated span.
Long-term drift	up to 0.05 % of upper range limit (URL)/year up to 0.125 % of upper range limit (URL)/5 years
Operating conditions	
Process conditions	
Process temperature	-40 ... 85 °C (-40 ... 185 °F)
Ambient conditions	
Ambient temperature	-40 ... 85 °C (-40 ... 185 °F) with display : -20 ... 70 °C (-4 ... 158 °F)
Storage temperature	-40 ... 90 °C (-40 ... 194 °F)
Mechanical specifications	
Degree of protection	IP66, NEMA 4X IP68, NEMA 6P (24 hours in water 1.83 m (6 ft) deep) IP69K (with separate housing and FEP cable)
Connection	gland M20 thread M20, G1/2, NPT1/2 device plug M12 HAN7D Harting connector, angled valve connector acc. ISO 4400, cable 5 m
Material	process connections: AISI 316L (1.4435 or 1.4404), Alloy C276 (2.4819) housing: - die-cast aluminum with protective powder-coating on polyester base, housing F31 - stainless steel AISI 316L (1.4404), housing F15 rod: AISI 316L (1.4404) or Alloy C276 (2.4819) process isolating diaphragm: Alloy C276 (2.4819), Rhodium Gold Alloy C276, Platinum Gold Alloy C276 sealing measuring cell: welded measuring cell or FKM Viton, EPDM, Kalrez
Process connection	threads ISO 228: G1-1/2, threads ANSI: NPT1/2 flanges EN 1092-1: DN 40 ... DN 100, flanges ANSI 16.5: 2 ... 4 in, flanges JIS B2220
Data for application in connection with hazardous areas	
EU-type examination certificate	see instruction manuals (SI)
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 , EN 60079-31:2009
International approvals	
FM approval	see instruction manuals (SI)
CSA approval	see instruction manuals (SI)
IECEx approval	see instruction manuals (SI)
Certificates and approvals	
Drinking water approval	NSF61 approval
Overspill protection	see approval (ZE)
General information	

Technical Data

Supplementary documentation	technical information (TI) manuals, brief instructions (BA, KA) instruction manuals (SI) control drawings (ZD) approval (ZE)
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Accessories	
Designation	see technical information (TI)

Assembly



Type Code

This overview does not mark options which are mutually exclusive.
Option with ** = multiple options can be selected

L	H	C	R	-	5	1	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	-	(13)	+	(14)	.	L
LHCR-51		Device																						
LHCR-51		Pressure transmitter with hydrostatic measuring cell, rod version																						
(1)		Sensor range																						
		Sensors for gauge pressure																						
1		100 mbar/10 kPa/1.5 psi relative, 1 m H ₂ O/3 foot H ₂ O/40 inch H ₂ O overload: 4 bar/400 kPa/60 psi																						
2		400 mbar/40 kPa/6 psi relative, 4 m H ₂ O/13 foot H ₂ O/160 inch H ₂ O overload: 8 bar/800 kPa/120 psi																						
3		1.2 bar/120 kPa/18 psi relative, 12 m H ₂ O/40 foot H ₂ O/480 inch H ₂ O overload: 24 bar/2.4 MPa/350 psi																						
4		4 bar/400 kPa/60 psi relative, 40 m H ₂ O/133 foot H ₂ O/1600 inch H ₂ O overload: 24 bar/2.4 MPa/350 psi																						
5		10 bar/1 MPa/150 psi relative, 100 m H ₂ O/333 foot H ₂ O/4000 inch H ₂ O overload: 40 bar/4 MPa/600 psi																						
Y		Special version																						

Type Code

(2)	Calibration, unit
1	Sensor range in mbar/bar
2	Sensor range in kPa/MPa
3	Sensor range in mm/m H ₂ O
4	Sensor range in inch H ₂ O/foot H ₂ O
5	Sensor range in psi
A	Sensor range in %
J	Customized pressure unit (see additional specification)
K	Customized level unit (see additional specification)
Y	Special version

(3)	Reference accuracy
D	Platinum
G	Standard
Y	Special version

(4)	Process connection
A	2 inch, 150 lbs RF, 316/316L, flange ANSI B16.5
B	3 inch, 150 lbs RF, 316/316L, flange ANSI B16.5
C	4 inch, 150 lbs RF, 316/316L, flange ANSI B16.5
F	DN40 PN10/16 B1, 316L, flange EN1092-1
G	DN50 PN10/16 B1, 316L, flange EN1092-1
J	DN80 PN10/16 B1, 316L, flange EN1092-1
H	DN100 PN10/16 B1, 316L, flange EN1092-1
D	Thread ISO228 G1-1/2, 316L, flush-mounted
I	Thread ISO228 G1-1/2, AlloyC, flush-mounted
E	Thread ANSI MNPT1-1/2, 316L, flush-mounted
X	Special version

(5)	Probe connection
0	Length L in mm, rod, 316L, 400 mm to 4000 mm
1	Length L in mm, rod, AlloyC, 400 mm to 4000 mm
5	Length L in inch, rod, 316L, 16 inch to 160 inch
6	Length L in inch, rod, AlloyC, 16 inch to 160 inch

(6)	Material of the process isolating diaphragm
4	Process isolating diaphragm and body AlloyC
5	Process isolating diaphragm and body AlloyC, coating gold > rhodium
6	Process isolating diaphragm and body AlloyC, coating gold > platinum
X	Special version

(7)	Fill fluid
2	Inert oil
3	Synthetic oil FDA
9	Special version

(8)	Seal
1	FKM Viton
4	EPDM
7	Kalrez 6375
U	None, welded measuring cell

(9)	Housing
I	Aluminum housing F31
J	Aluminum housing F31; glass window
Q	Stainless steel housing F15, hygienic version
R	Stainless steel housing F15, hygienic version; glass window
S	Stainless steel housing F15, hygienic version; plastic window
X	Special version

(10)	Output
H	4 mA to 20 mA Smart electronics, HART protocol
P	PROFIBUS-PA electronics P3.0
9	Special version

(11)	Electrical connection
A	Gland M20, IP66/68 NEMA4X/6P
C	Thread G1/2, IP66/68 NEMA4X/6P

Type Code

(11)	Electrical connection
D	Thread NPT1/2, IP66/68 NEMA4X/6P
I	Connector M12, IP66/68 NEMA4X/6P
M	Connector 7/8 inch, IP66/68 NEMA4X/6P
P	Connector Han7D, 90deg., IP65
V	Valve connector ISO4400 M16, IP64
Y	Special version

(12)	Display, operation
1	LCD, push buttons on display electronics
2	W/o LCD, push buttons on electronics
9	Special version

(13)	Approval
CD	CSA C/US Cl. II, III Div. 1 Gr. E-G, US: Zone 21,22
CG	CSA General Purpose
CU	CSA C/US IS Cl. I, II, III Div. 1 Gr. A-G; CSA C/US IS Cl. I Div. 2 Gr. A-D, Ex ia; C: Zone 0, 1, 2/US: Zone 0, 1, 2, 20, 21, 22
E1	ATEX II 2G Ex ia IIC T6
E2	ATEX II 3G Ex nA IIC T6
E3	ATEX II 3G Ex ic IIC T6
ES	ATEX II 1/2D Ex t IIIC
EX	ATEX II 1/2G Ex ia IIC T6
FD	FM DIP Cl. II, III Div. 1 Gr. E-G, Zone 21,22
FM	FM IS Cl. I, II, III Div. 1 Gr. A-G, AEx ia; FM NI Cl. I Div. 2 Gr. A-D; FM IS: Zone 0, 1, 2, 20, 21, 22/FM NI: Zone 2
FN	FM NI Cl. I Div. 2 Gr. A-D, Zone 2
I1	IEC Ex ia IIC T6 Ga/Gb und Ex ia IIIC Da/Db
IA	IEC Ex ia IIC T6 Ga/Gb
ID	IEC Ex t IIIC Da/Db
IE	IEC Ex ic IIC T6 Gc
NA	Version for non-hazardous area
SX	ATEX II 1/2G Ex ia IIC T6 und ATEX II 1/2D Ex iaD

Additional Options

(14)	Additional operation language
A	English
B	German
C	French
D	Spanish
E	Italian
K	Chinese simplified
L	Japanese

(14)	Calibration
1	Factory calibration certificate, 5-point

(14)	Service **
F	Oil and grease removed

(14)	Test, certificate **
3	Material certification, metallic parts in contact with medium, EN 10204-3.1 inspection certificate

(14)	Other approvals **
W	WHG overfill prevention

(14)	Separate housing **
6	Cable PE, 2 m/80 inch and housing mounting bracket, wall/pipe, 304
7	Cable PE, 5 m/200 inch and housing mounting bracket, wall/pipe, 304
8	Cable PE, 10 m/400 inch and housing mounting bracket, wall/pipe, 304
9	Cable FEP, 5 m/200 inch IP69K and housing mounting bracket, wall/pipe, 304

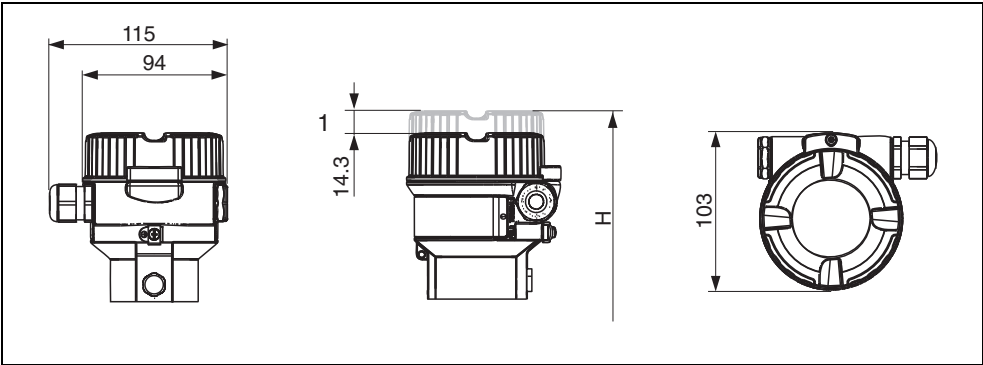
(14)	Firmware version
M	01.00.zz, PROFIBUS PA, DevRev01
N	01.00.zz, HART, DevRev01

(14)	Marking **
O	Measuring point (TAG), see additional specification
P	Bus address, see additional specification

Dimensions

Housing F31, aluminum (versions I, J)

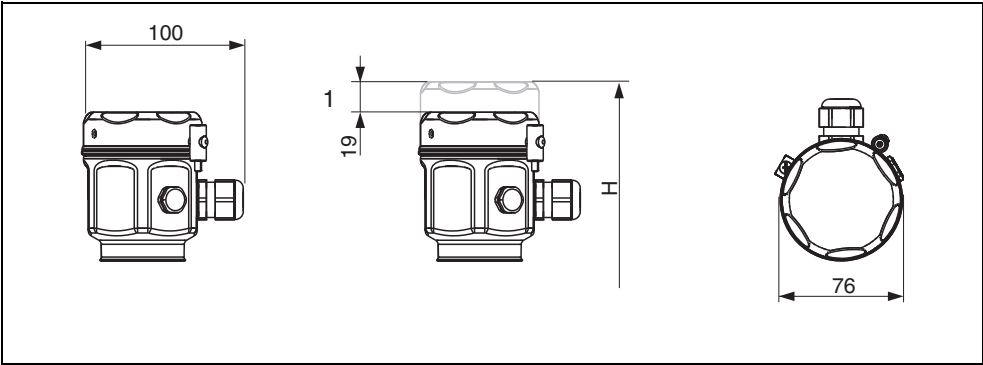
Dimensions in mm (in)



1 The cover with viewing window is 15 mm (0.59 in) higher than the cover without viewing window.

Housing F15, stainless steel (versions Q, R, S, hygienic)

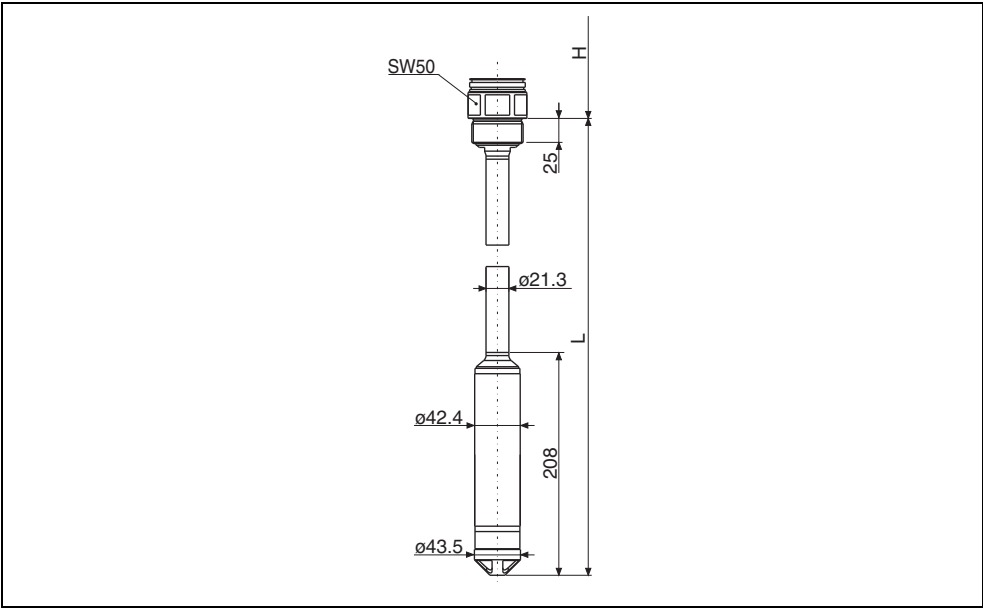
Dimensions in mm (in)



1 The cover with viewing window is 19 mm (0.75 in) higher than the cover without viewing window.

Process connections with thread

Dimensions in mm (in)

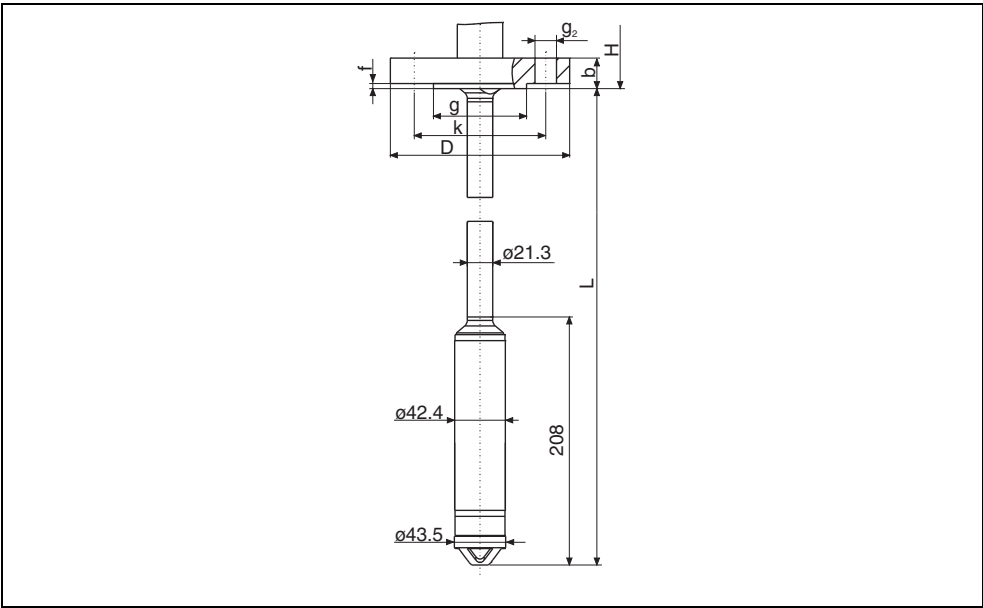


Rod version with thread G1-1/2 or 1-1/2 NPT
L Probe length L = 0.4 m to 4 m (1.3 ft to 13 ft)

	F31 housing (I, J)	F15 housing (Q, R, S)
Height H	156 mm (6.14 in)	148 mm (5.83 in)

Process connections with EN/DIN and ANSI flanges

Dimensions in mm (in)



Rod version with flange
L Probe length L = 0.4 m to 4 m (1.3 ft to 13 ft)

Description	F31 housing (I, J)	F15 housing (Q, R, S)
Height H	165 mm (6.5 in)	157 mm (5.18 in)



For further information see technical information.

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