



Application area

- Machinery construction
- Chemical and petrochemical industry
- General process technology

Features

- Pressure transmitter for the measuring of relative and absolute pressures of gases, vapors and liquids
- High-resolution graphic display with backlight
- Intuitive 4-button operation
- Comprehensive parameterizing functions
- Comprehensive simulation and diagnostic functions
- Quick access to device data
- Development according to SIL2
- Nominal range 0.25 bar to 400 bar
- Turndown 100:1
- Measuring rate up to 100 Hz
- Accuracy 0.1 %
- Output signal 4...20 mA with HART® protocol
- Digital communication via PDM, FDT/DTM, 375/475 Field Communicator
- Table function with up to 64 support points
- Output functions: linear, invers, square root extracted, table function
- Stainless steel case in sturdy design, degree of protection IP 65/67
- Medium temperature -40...100 °C
- Wetted parts stainless steel
- Process connections: screw-in thread with internal diaphragm

Options

- Approvals/Certificates
 - GOST-R certificate of conformity and declaration
 - Certificate of measuring equipment for Russian Federation
 - material per DIN EN 10204
 - calibration certificate per DIN EN 10204
- Display and control unit can be used up to 10 m away from measuring point
- Degree of protection IP 69K
- Front cover of stainless steel with window of non splintering glass

Application

The digital pressure transmitter PASCAL Ci4 is suitable for measuring the relative and absolute pressure of gases, vapors and liquids. Due to the design the transmitter is suitable for highest requirements. The 4 operation buttons allow an easy and fast parameterization.

Technical data

Measuring ranges

Up to a turndown of 100:1 the measuring span can be freely selected

Nominal range	Measuring range	Measuring span		Overload capacity	Type of sensor
		minimal span	maximal span		
0.25 bar rel.	-0.25...0.25 bar rel.	0.0025 bar	0.5 bar	1 bar rel.	Piezoresistive
1 bar rel.	-1...1 bar rel.	0.01 bar	2 bar	3 bar rel.	Piezoresistive
4 bar rel.	-1...4 bar rel.	0.04 bar	5 bar	10 bar rel.	Piezoresistive
16 bar rel.	-1...16 bar rel.	0.16 bar	17 bar	60 bar rel.	Piezoresistive
40 bar rel.	-1...40 bar rel.	0.4 bar	41 bar	100 bar rel.	Piezoresistive
100 bar rel.	-1...100 bar rel.	1 bar	101 bar	200 bar rel.	Thin film
400 bar rel.	-1...400 bar rel.	4 bar	401 bar	750 bar rel.	Thin film
1 bar abs.	0...1 bar abs.	0.01 bar abs.	1 bar abs.	3 bar abs.	Piezoresistive
4 bar abs.	0...4 bar abs.	0.04 bar abs.	4 bar abs.	10 bar abs.	Piezoresistive
16 bar abs.	0...16 bar abs.	0.16 bar abs.	16 bar abs.	60 bar abs.	Piezoresistive

Long-term vacuum measurements at temperatures above 50° C may cause changes in the properties of the measurement device. Vacuum-proof designs are available upon request.

Constructional design / case

Design:	Two-chamber case, continuously rotatable by $\pm 170^\circ$
Material case:	Stainless steel mat.no. 1.4301 (304) Case surface blasted
Material front cover:	<ul style="list-style-type: none"> ■ Polypropylene, black ■ Stainless steel
Degree of protection:	<ul style="list-style-type: none"> ■ IP 65 / IP 67 per DIN EN 60529 ■ IP 69K
Material window:	<ul style="list-style-type: none"> ■ Macrolon ■ Non splintering glass (requires front cover of stainless steel)
Elec. connection:	<ul style="list-style-type: none"> ■ Circular connector M12 ■ Cable gland M16x1.5, PA black ■ Cable gland M16x1.5, stainless steel ■ Cable gland M20x1.5, PA black ■ Cable gland M20x1.5, stainless steel ■ 1/2" NPT, PA black
Terminal blocks:	<ul style="list-style-type: none"> ■ Spring clip terminals up to 1.5 mm² ■ Screwless terminals 2.5 mm² ■ Screwed terminals 2.5 mm²
Weight:	Approx. 1.4 kg
Type plate:	Laser marking

Process connection

Design:	<ul style="list-style-type: none"> ■ G 1/2 B per DIN EN 837-1 ■ G 1/4 B per DIN EN 837-1 ■ G 1/4 A per DIN 3852 Form E ■ 1/2 " NPT ■ 1/4 " NPT ■ Further process connections upon request
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Material wetted parts

Sensor :	Piezoresistive	Thin film
Sensor diaphragm:	1.4404/1.4435 (316L)	1.4542 (630)
Socket:	1.4404/1.4435 (316L)	1.4301/1.4404 (304/316L)

Measuring system

Sensor:	Piezoresistive	Thin film
Sensor filling:	Foodstuff oil as per FDA	without

Accuracy

Reference cond.:	Per DIN EN 60770-1	
Calibration position:	Vertical mounting position, bottom connection	
Deviation of characteristic:	Refer to the adjusted measuring span (Limit point method per DIN 16086)	
	Nominal range 1-400 bar, 1-16 bar abs.	
	Turndown 5:1	0.1 %
	Turndown > 5:1	0.02 % x TD
	Nominal range 0,25 bar	
	Turndown 5:1	0.2 %
	Turndown > 5:1	0.04 % x TD
Long-term drift:	Refer to nominal range ≤ 0.1 %/year	

Temperature influence case:

Refer to nominal range

Ambient temperature -20...80 °C:

Nominal range 1- 400 bar 0.1 % of n.r./10K ,
max. 0.3 % of n.r.

Nominal range 0.25 bar 0.2 % of n.r./10K,
max. 0.6 % of n.r.

Ambient temperature -40...-20 °C:

Typical 0.2 % of n.r./10K

Indication

- Display:
- High-resolution graphic display with backlight
 - 4-button operation
 - Freely configurable display modes
 - continuously rotatable by ± 170 (detent every 90°)
 - Optional: Display and control unit can be used up to 10 m away from measuring point

Output

Signal:	2-wire technology	4...20 mA
	Lower limit	3.8 mA
	Upper limit	21 mA
	Malfunction lower limit	< 3.6 mA
	Malfunction upper limit	> 21 mA
	Current limitation	22 mA
	Digital communication:	HART ® protocol, version 7

Communication via:

- PDM version 6 and 8
- Pactware or compatible systems (FDT/DTM)
- 375 / 475 Field Communicator

Function: Adjustable:

- Linear
- Inverse response
- By square root
- Table function with up to 64 support points

Turndown: Max. 100:1

Damping: 0...999.9 s selectable in steps of 0.1 s

Measuring rate: 20 Hz, switchable to 100 Hz

Resolution: 1 μ A

Current sensing func. 3.55...21.5 mA selectable in steps of 0.01 mA

Load R_B : $R_B \leq (U_V - 12V DC) / 22mA$ [Ohm]
 U_V = supply voltage

Supply

Functional range: 12...30 V DC

Temperature ranges

Environment: -40...80 ° C

Medium: -40...100 ° C

Storage: -40...80 ° C

Tests and certificates

EMC: Per EN 61326

SIL 2: Development according to SIL 2

- GOST:
- GOST-R certificate of conformity and declaration
 - Certificate of measuring equipment for Russian Federation

Parameterization, simulation and calibration

Parameterization

Parameter	Values	Default setting
Device		
device ID	16 digits, freely selectable	LABOM PASCAL Ci4
lower range value	at any value within nominal range	start of nominal range
upper range value	at any value within nominal range	end of nominal range
measuring rate	20 Hz, 100 Hz	20 Hz
damping	0.0...999.9 s	0.0 s
Display and control unit		
pressure unit	mbar, bar, Pa, hPa, kPa, MPa, g/cm ² , kg/cm ² , psi, atm, torr, mmH ₂ O, mH ₂ O, inH ₂ O, ftH ₂ O, mmHg, inHg	bar
temperature unit	°C, °F, °R, K	°C
lighting	on, off	on
language	german, english	german
decimal point	auto, X.XXXX, XX.XXX, XXX.XX, XXXX.X, XXXXX	auto
display mode	five values, four values, three values, two values, big display	four values
main value	pressure, pressure (mA), pressure (%), temperature	pressure
secondary values	pressure, pressure (mA), pressure (%), temperature, device ID, HART-TAG, HART descriptor	pressure (mA), pressure (%), device ID, <empty>
Current output		
output function	linear, inverse response, by square root, table function	linear
lower current limit	3.8...4.0 mA	3.8 mA
upper current limit	20...21 mA	20.8 mA
residual current	low (<3.6 mA), high (> 21.0 mA)	low (<3.6 mA)
position correction (mounting position)	on, off	off
Maintenance counter		
maintenance interval	0...9999 days	0 days
status	on, off	off
HART data		
HART address	0...63	0
number of response preambels	5...20	5
current mode	proportional, constant	proportional

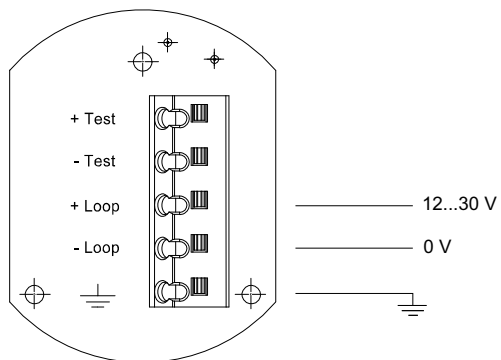
Simulation

Type	Description	Value range
loop-test	adjustment of fixed output signal	3.55...2.5 mA
pressure simulation	assumes constant pressure value, contrary to loop-test the tablefunction is also taken into consideration	nominal range

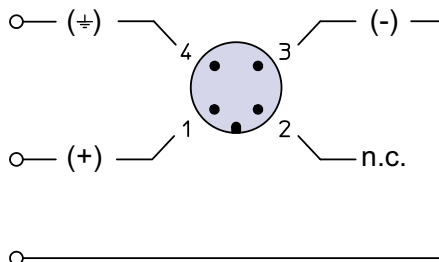
Calibration

Type	Description
zero point offset	adjusts reading to zero at ambient pressure
position correction	adjusts reading of mounted instrument to zero at ambient pressure
lower offset	adjusts reading to applied pressure (affects zero point + span)
upper offset	adjusts reading to applied pressure (affects span only)
current output	adjusts current output to achieve 4 resp. 20 mA at the end of the measurement chain

Connection diagram

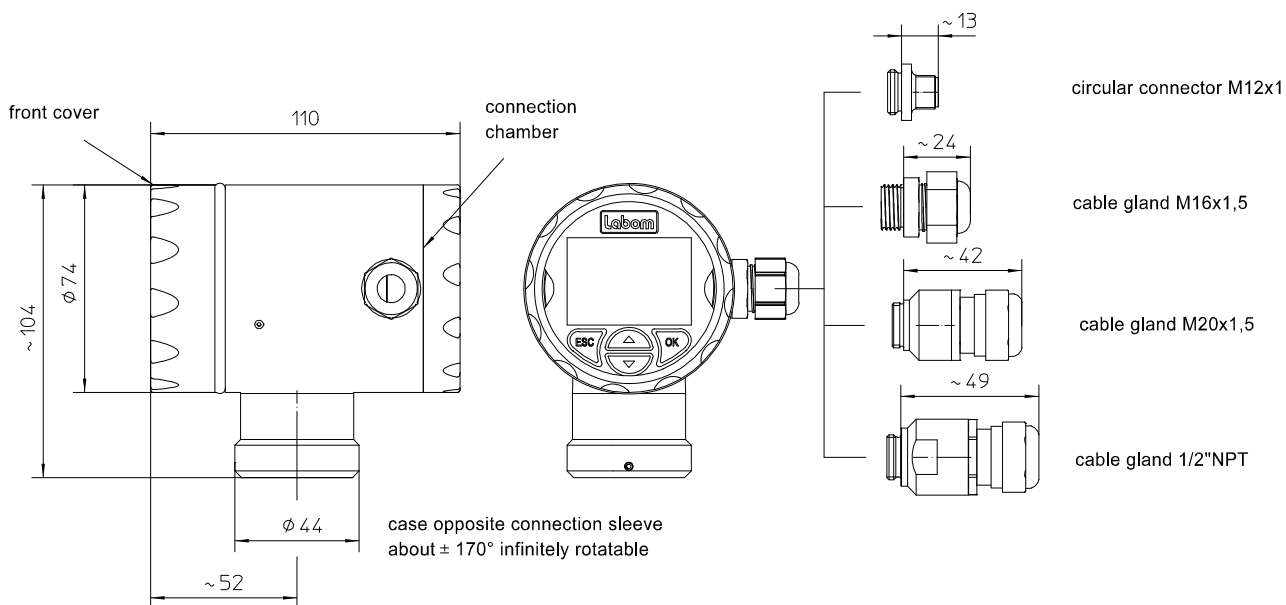


Circular connector M12 x 1

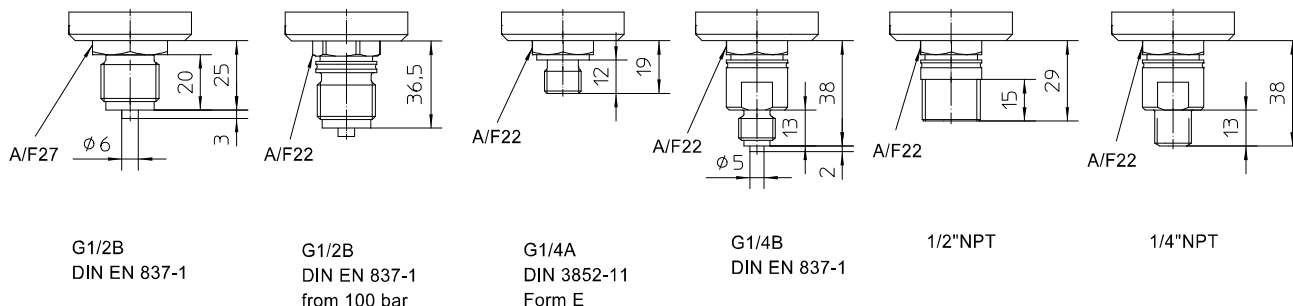


Dimensions

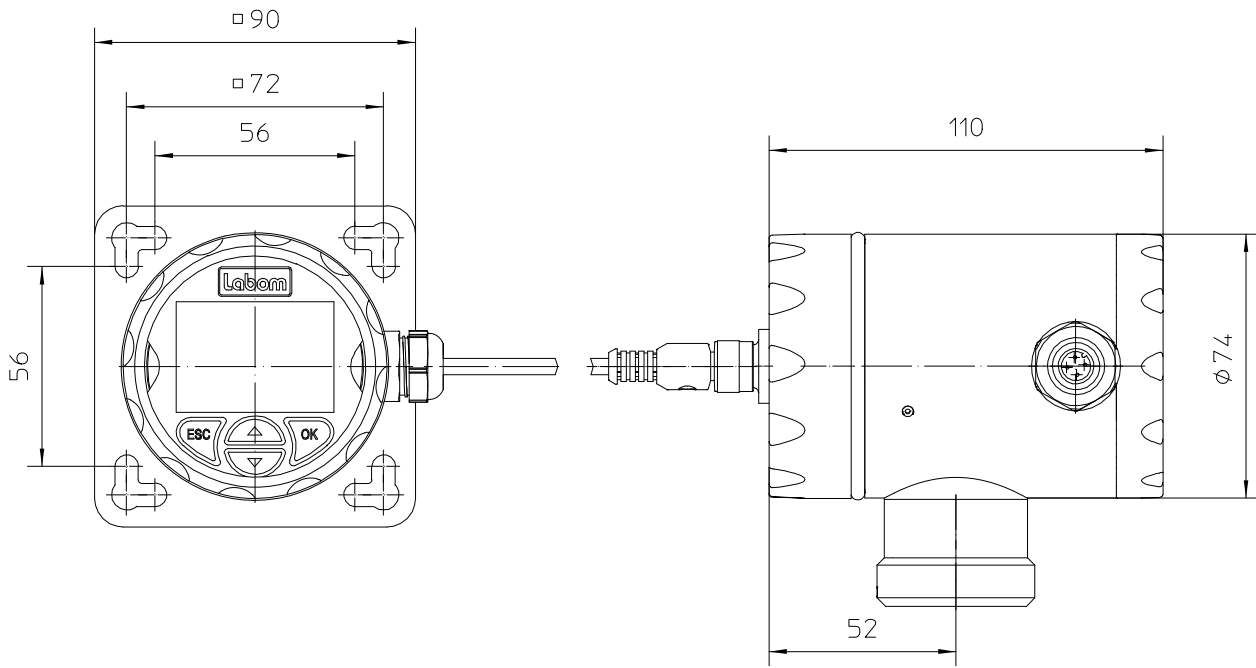
Case



Process connections



Display and control unit can be used up to 10 m away from measuring point



Order details

Pressure transmitter PASCAL Ci4 for general application Type series CI4100

Order details PASCAL CI4100					
CI4100	pressure transmitter PASCAL Ci4 for general application				
	measuring range	nominal range	overload limit [bar]	sensortyp	
A1078		0.25 bar	1	piezoresistive	
A1053		1 bar	3		
A1056		4 bar	10		
A1059		16 bar	60		
A1061		40 bar	100		
A3063		100 bar	200		thin film
A3066		400 bar	750		
B1053		1 bar abs.	3	piezoresistive	
B1056		4 bar abs.	10		
B1059		16 bar abs.	60		
F1		parameterization	factory settings (standard)		
F2			as per customer's specification (pls. specify)		
H21	output signal pressure	4...20 mA, with HART-Protokoll			
Y1.	material case	stainless steel mat.-no. 1.4301 (304)			
1	material front cover	polypropylene (black), window Macrolon			
2		stainless steel, window non splintering glass			
T20.	electrical connection	cable gland M16 x 1.5 polyamide, for cable Ø 4.5-10			
T22.		cable gland M16 x 1.5 stainless steel, for cable Ø 5-9.5			
T15.		cable gland M20 x 1.5 polyamide, for cable Ø 7-13			
T17.		cable gland M20 x 1.5 stainless steel, for cable Ø 8-13			
T27.		cable gland 1/2" NPT polyamide, for cable Ø 6-12			
0		cable clamps	spring clip terminals up to 1.5 mm ²		
5			screwless terminals 2.5 mm ²		
6			screwed terminals 2.5 mm ²		
T30		circular connector M12 x 1 (4 pin)			
K1010		process connection	G1/2 B per DIN EN 837-1		
K1002	G1/4 B per DIN EN 837-1				
K1024	G1/4 A per DIN 3852 Form E				
K1070	1/2" NPT				
K1072	1/4" NPT				
K9999	as per indication				

Additional features (to be indicated in case of need, only)		
T4	degree of protection	IP 69K
M3	display	display and control unit can be used up to 10 m away from measuring point
W2670	GOST	GOST-R certificate of conformity and declaration
W2672		certificate of measuring equipment for Russian Federation

Accessories		
MC1020	HART-Modem	RS 232 -interface
MC1040		USB-interface

Order code (example): CI4100 – A1056 – F1 – H21 – Y12 – T200 – K1010 - ...