

Differential pressure and level transmitter

PASCAL Ci4 Delta P, highly overload protected

Type series CI4350



Application area

- General process engineering
- Chemical industry
- Petrochemical industry
- General process technology
- Power generation
- Environmental engineering
- Water / Waste water

Application

The digital differential pressure transmitter PASCAL Ci4 Delta P with diaphragm seal is suitable for pressure measurement of aggressive, high viscous and high-temperature media. Also available as an option is the operating software LAB4Level that allows the measuring of filling height, filling volume and filling weight (mass).

Features

- Differential pressure transmitter with diaphragm seal
- Simultaneous display of differential pressure and static pressure
- Reference accuracy 0.07 %
- Long-term stability 0,1 % within 5 years
- Nominal ranges 100 mbar to 16 bar
- Turndown up to 100:1
- Stainless steel case in sturdy design, degree of protection IP 65/67
- High-resolution display with intuitive 4-button operation and backlight
- Comprehensive parameterising functions
- Comprehensive simulation and diagnostic functions
- Quick access to device data
- Development according to SIL2
- Maximum working pressure 160 bar
- Measuring rate up to 50 Hz
- Output signal 4...20 mA with HART® protocol
- Media temperature -90...400 °C
- Configuration memory
- Digital communication via PDM, FDT/DTM, 375/475 Field Communicator
- Output functions: linear, invers, square root, table function with up to 64 support points
- Wetted parts stainless steel

Options

- Labom REconnect quick coupling device for easy and safe separation and connection of diaphragm seal systems; Type series MK1000, see data sheet DB_D6-022
- Approvals / Certificates
 - Explosion protection (ATEX/IECEx/UKEX) for gases and dust
 - Classification per SIL2 (in preparation)
 - Material certificate per EN 10204-3.1
 - Calibration certificate per EN 10204-3.1
- As per UKCA regulations
- Operating software LAB4Level for level measurements
- Removable display and control unit
- Degree of protection IP 69K
- Maximum working pressure 400 bar (upon request)

Technical data

Measuring ranges

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

Nominal range	Measuring span		Measuring limits		Static excess pressure and overload limit
	min. span	max. span	lower limit	upper limit	
100 mbar	1 mbar *	200 mbar	-100 mbar	100 mbar	160 bar
500 mbar	5 mbar *	1 bar	- 500 bar	500 mbar	160 bar
3 bar	30 mbar *	6 bar	-3 bar	3 bar	160 bar
16 bar	160 mbar	32 bar	- 16 bar	16 bar	160 bar

Minimum permissible static pressure: 5 mbar abs (at reference conditions)

* Recommended minimum measuring range with pressure transducers: 60 mbar. Please note the temperature error!

For information on definitions of terms regarding the Pressure Equipment Directive, see Technical Instruction TA_068.

Constructional design / case

Design:	Two-chamber case, continuously rotatable by $\pm 170^\circ$ Case surface blasted
Material case:	- Stainless steel mat.no. 1.4301/1.4305 (304/303) - Stainless steel mat.no. 1.4404 (316L)
Material front cover:	- Stainless steel mat.no. 1.4305 (303) - Stainless steel mat.no. 1.4404 (316L) - Polypropylene, black
Gaskets:	Silicone / NBR
Degree of protection per EN 60529:	IP 65 / IP 67 Option: IP 69K
Climatic category:	4K4H per EN 60721 3-4
Vibration resistance per EN 61298-3:	10...60 Hz: ± 0.35 mm 60...1000 Hz: 5 g
Material window:	- Non-splintering glass (requires front cover of stainless steel) - Polycarbonate
Elec. connection:	- 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 Further connections upon request
Terminal blocks:	- Spring clamp terminals up to 1.5 mm² - Pole terminals up to 2.5 mm² - Screw terminals up to 2.5 mm²
Weight:	approx. 2.9 kg
Type plate:	Laser marking

Process connection plus-sided

- Design:
- Diaphragm seal direct with distance tube
 - Diaphragm seal with stainless steel capillary and stainless steel protective tube

Design of diaphragm seals see order code.

Process connection minus-sided

- Design: **Process flange**
connection dimension per EN 61518, with mounting thread 7/16 – 20 UNF
- Process connection 1/4 – 18 NPT
 - Process connection 1/2 – 14 NPT via oval flange (see accessories)
- Material:
Stainless steel mat.-no. 1.4404 (316L)
- Ventilation:**
- without ventilation, with sealing plug 1/4" NPT
 - with ventilation valve 1/4" NPT
- Gasket:**
- EPDM, standard temperature range -40...85 °C
 - FKM temperature range -20...85 °C
- Diaphragm material:
Stainless steel mat.-no. 1.4404 (316L)
- Further connections and materials upon request.

- Design: **Diaphragm seal**
with stainless steel capillary and stainless steel protective tube

Design of diaphragm seals see order code.

Material wetted parts

- Stainless steel mat.-no. 1.4404/1.4435 (316L)
- Hastelloy C276
- Tantal
- PTFE coating, vacuum-resistant

Further materials upon request.

Measuring system

- Sensor: Piezoresistive measuring element
- System filling: ■ Silicone oil
■ Halocarbon oil upon request

Pressure transmission fluids

- Synthetic oil, free of silicon
- High temperature oil
- Halocarbon oil

Accuracy

- Reference cond. per EN 61298-1: $T_U = \text{const. (15...25) } ^\circ\text{C}$
 $\varphi = \text{const. (45...75) \% r.F.}$
 $p_U = \text{const. (860...1060) mbar}$
 $U_B = 24 \text{ V DC } (\pm 3 \text{ V DC})$
 $R_B = 50 \Omega, \text{ HART: } 250 \Omega$
 Ground connected
 Lower range value = 0 bar
- Calibration position: Diaphragm seal at the same height
- Reference accuracy:

Per EN 61298-2 incl. non-linearity, hysteresis and repeatability refer to the adjusted measuring span:

Nominal range	Turn-down < 10:1	Turndown > 10:1
100 mbar	$\leq 0.07 \%$	$\leq (0.01 \% \times \text{TD} - 0.0325 \%)$
500 mbar		$\leq (0.005 \% \times \text{TD} + 0.0175 \%)$
3 bar		$\leq (0.005 \% \times \text{TD} + 0.0175 \%)$
16 bar		$\leq (0.01 \% \times \text{TD} - 0.0325 \%)$

- Long-term drift: Refer to nominal range
 $\leq 0.1 \% \text{ within 5 years}$

Temperature influence of ambient temperature:

Refer to measuring range (per IEC 61298-3):	
Nominal range	Temperature range: -10...60 °C
100 mbar	$\leq \pm(0.15 \% + 0.15 \% \times \text{TD})$
500 mbar	$\leq \pm(0.15 \% + 0.05 \% \times \text{TD})$
3 bar	$\leq \pm(0.15 \% + 0.05 \% \times \text{TD})$
16 bar	$\leq \pm(0.15 \% + 0.15 \% \times \text{TD})$
Nominal range	Temperature range: -40...80 °C
100 mbar	$\leq \pm(0.15 \% + 0.2 \% \times \text{TD})$
500 mbar	$\leq \pm(0.2 \% + 0.06 \% \times \text{TD})$
3 bar	$\leq \pm(0.2 \% + 0.06 \% \times \text{TD})$
16 bar	$\leq \pm(0.15 \% + 0.2 \% \times \text{TD})$

Temperature influence output (-40...80 °C):
 $\leq \pm(0.04 \% / 10 \text{ K})$

Temperature influence diaphragm seal: Depends on design and profile of requirements.
 We provide a detailed error analysis upon request.

Indication

- Display:
- High-resolution graphic display with backlight
 - 4-button operation
 - Freely configurable display modes
 - continuously rotatable
 - Optional: Remote display and control unit (max. 10 m)
- Configuration memory:
- All parameterisation data can be copied from the device into the configuration memory in the display module. The data is permanently stored there, even in the event of power failure.
 - The parameters can be transferred simply and quickly to other devices.

Output

Signal:	2-wire technology	4...20 mA
	Lower limit	3.8...4 mA
	Upper limit	20...21 mA
	Lower alarm current	< 3.6 mA
	Upper alarm current	> 21 mA
	Current limitation	22 mA
	Operational availability	< 12 s
	Response time t_{90} at current output	typically 200 ms
	Digitale communication	HART® protocol, version 7
	Communication via:	
	■ Siemens PDM	
	■ Pactware or compatible systems (FDT/DTM)	
	■ 375 / 475 Field Communicator	
Function:	■ 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:	50 Hz	
Resolution:	0.5 μ A	
Current sensing func.	3.55...21.5 mA selectable in steps of 0.001 mA	
Load R:	$R \leq (U-12V \text{ DC})/0.022 \text{ A } [\Omega]$ U = supply voltage for HART communication: $R \geq 230 \Omega$	

Supply voltage

Functional range:	12...30 V DC, protected against polarity reversal
Ripple:	< 5 %

Temperature ranges

Ambient:	-40...80 °C (Display visibility is limited at temperatures below - 30 °C)
Measuring cell:	-40...85 °C
Media:	-90...400 °C The temperature range of the pressure transmission fluid has to be observed.
Storage:	-40...80 °C

Tests and certificates

Ex approvals

ATEX:	TÜV 13 ATEX 120264 X Ⓔ II 1/2G Ex ia IIC TX Ga/Gb Ⓔ II 1/2D Ex ia IIIC Txx °C Da/Db Ⓔ II 2G Ex ia IIC TX Gb Ⓔ II 2D Ex ia IIIC Txx °C Db
IECEx:	IECEx TUN 13.0018X Ex ia IIC TX Ga/Gb Ex ia IIIC Txx °C Da/Db Ex ia IIC TX Gb Ex ia IIIC Txx °C Db
UKEX:	CML 21UKEX21179X Ⓔ II 1/2G Ex ia IIC TX Ga/Gb Ⓔ II 1/2D Ex ia IIIC Txx °C Da/Db Ⓔ II 2G Ex ia IIC TX Gb Ⓔ II 2D Ex ia IIIC Txx °C Db

For more detailed information see Ex Safety Instruction XA_022.

EMC :	per EN 61326-1, NAMUR NE21
SIL2:	In preparation: Functional safety per EN 61508, classification per SIL2.

Parameterisation, simulation and adjustment

Parameterisation

	Standard device	Device with operating software LAB4Level	
Parameter	Values	Values	Default setting
device ID	16 digits, freely selectable		LABOM PASCAL Ci4
lower range value	at any value within nominal range		0 bar
upper range value	at any value within nominal range		end of nominal range
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
static pressure unit ¹	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
filling height unit		mm, cm, m, ft, in, yd	m
volume unit		l, hl, m ³ , in ³ , ft ³ , gal	l
weight unit (mass)		g, kg, t, lb	kg
density unit		g/cm ³ , kg/cm ³ , t/m ³ , kg/l, lb/in ³ , lb/ft ³	g/cm ³
temperature unit	°C, °F, °R, K		°C
lighting	on, off		on
language	English, German		German
	English, Chinese		as ordered
	English, Spanish, French		as ordered
	English, Polish, German		as ordered
	English, Turkish, German		as ordered

	Standard device	Device with operating software LAB4Level	
decimal point	auto, x.xxxx, xx.xxx, xxx.xx, xxxx.x, xxxxx		auto
display mode (Δp)	five values, four values, three values, two values, big display		4 value
display mode (level)		level 4 values, level 2 values, five values, four values, three values, two values, big display	level 4 value
main value (Δp)	pressure (Δp), current in %, current in mA		pressure
main value (level)		filling height, volume, weight, pressure (Δp), current in %, current in mA	filling height
secondary values (Δp)	pressure (Δp), static pressure, current in %, current in mA, sensor temperature, device ID, HART-TAG, HART-Descriptor, <leer>		current in %, current in mA, device ID
secondary values (level)	filling height, volume, weight, pressure (Δp), static pressure, current in %, current in mA, sensor temperature, density, device ID, HART-TAG, HART-Descriptor, <leer>		current in %, current in mA, device ID
level			
density		0,1...20 g/cm ³	1 g/cm ³
offset height		max 99.999 m	0 m
tank shape table		on, off	off
Table function (Δp)	64 support points (% from measuring range/current)		
Table function (level)		64 support points (filling height/volume)	
Current output			
measured value (Δp)	pressure		pressure
measured value (level)		height, volume, weight, pressure	height
output function (Δp)	linear, invers, square root, table function		linear
output function (level)		linear, tank function	linear
lower current limit	3.8...4.0 mA		3.8 mA
upper current limit	20...21 mA		2.5 mA
alarm 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

¹The static pressure will be displayed as absolute pressure by default, adjusted to 0 bar abs.

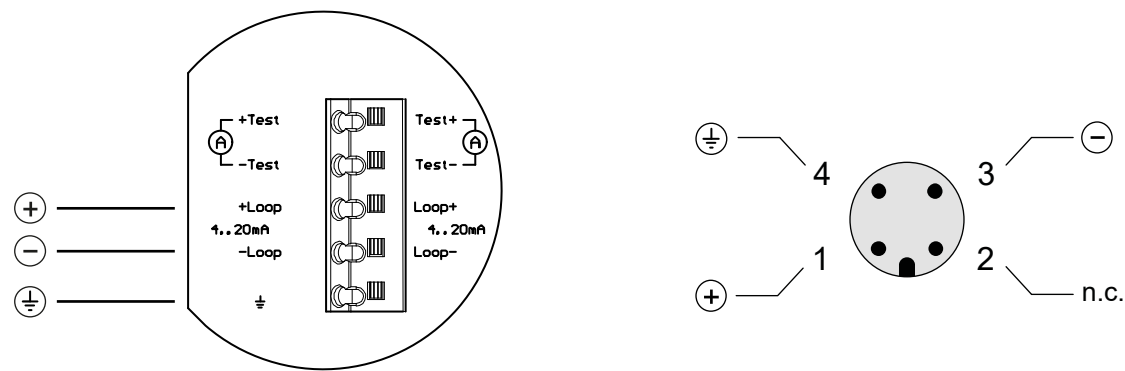
Diagnostic functions

	Standard device	Device with operating software LAB4Level	
Self-diagnosis	Description		Value range
RAM-Test	Permanent check of the read/write memory		/
ROM-Test	Permanent check of the checksum via the program memory		/
Bridge circuit test	Permanent check of the bridge circuit		/
CRC parameterisation test	Permanent check of the checksum via the parameter memory		/
Electronics temperature monitoring	Permanent check of the electronics temperature		/
Process diagnostics			
Maintenance timer	Check of the maintenance cycles		/
Operating hours counter	Capture of operating hours		/
Min/Max values	Check of minimum and maximum process pressure and sensor temperature		/
Measuring circuit diagnostics			
simulation function	pressure (Δp), current	pressure (Δp), filling height, volume, weight (mass), current	

Adjustment

Type	Description
zero point correction (Δp)	adjusts reading to 0 bar at same pressure on both connections
position correction (Δp)	adjusts reading of 0 bar at same pressure on both connections and installed conditions
lower adjustment (Δp)	adjusts reading to applied pressure (affects zero point)
upper adjustment (Δp)	adjusts reading to applied pressure (affects span only)
current adjustment	adjusts current output to achieve 4 resp. 20 mA at the end of the measurement chain
zero point correction (static pressure)	adjusts Pstat. to 0 bar relative

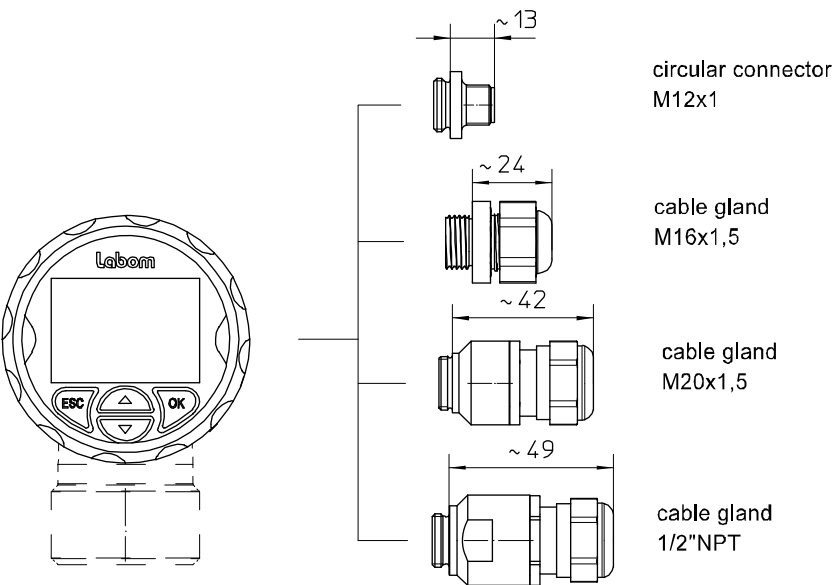
Connection diagram



Cable gland

Circular connector M12 x 1

Electrical connection



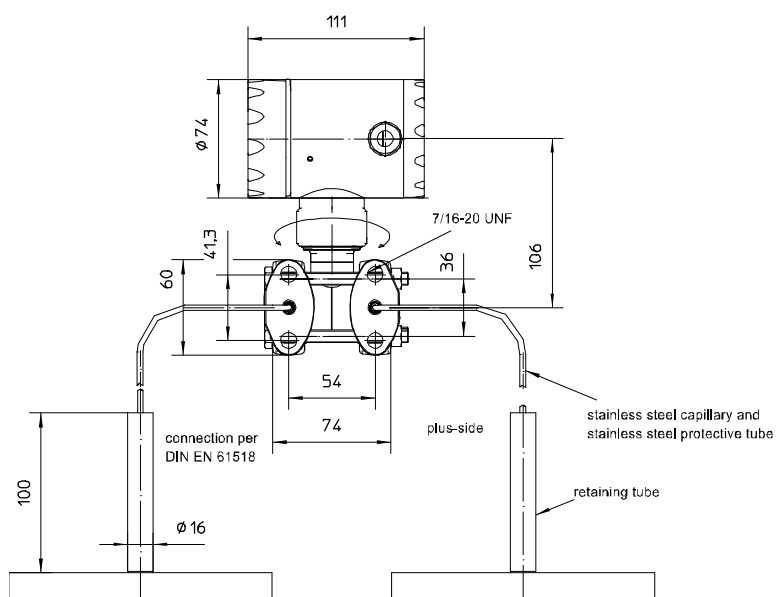
All dimensions are in mm.

Dimensions

Case and design

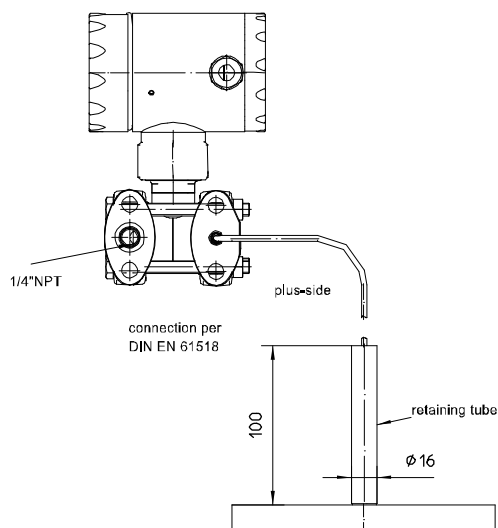
Capillary connection double-sided

(see order code variation A)



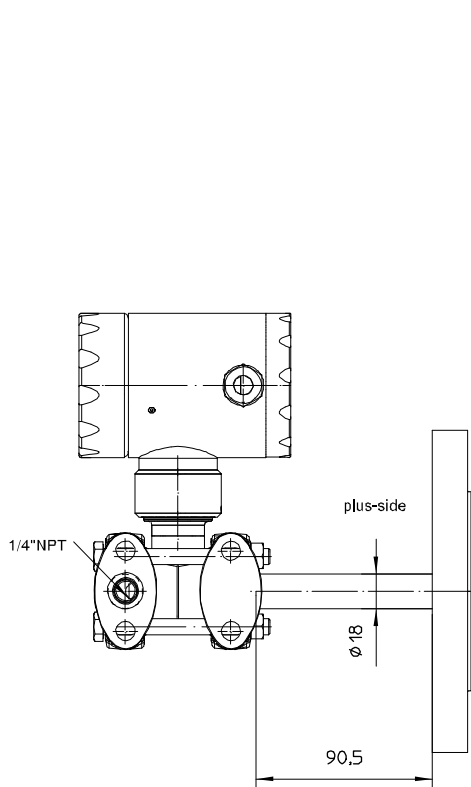
Capillary connection plus-sided

(see order code variation B)



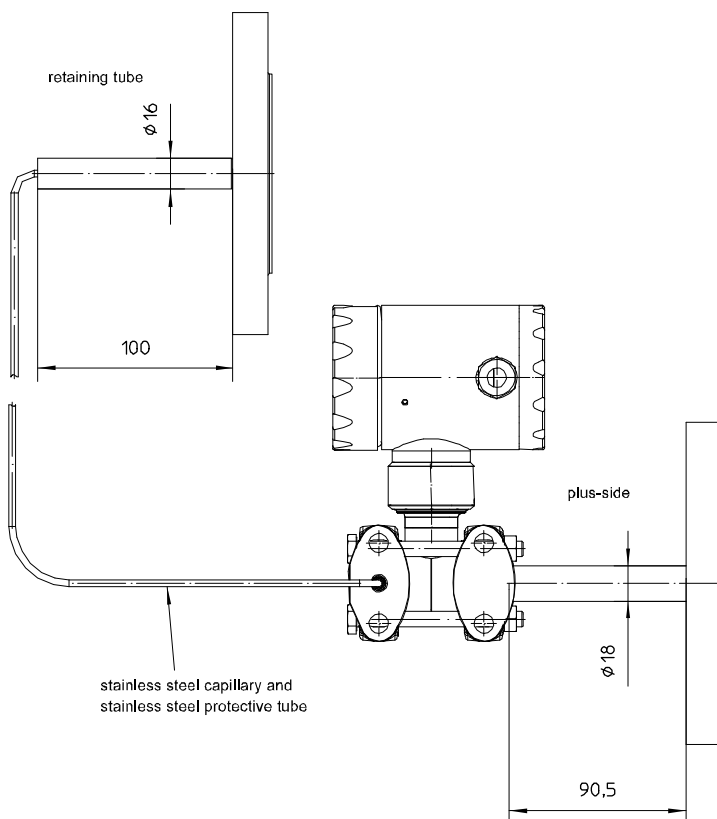
Direct connection plus-sided with distance tube

(see order code variation C)



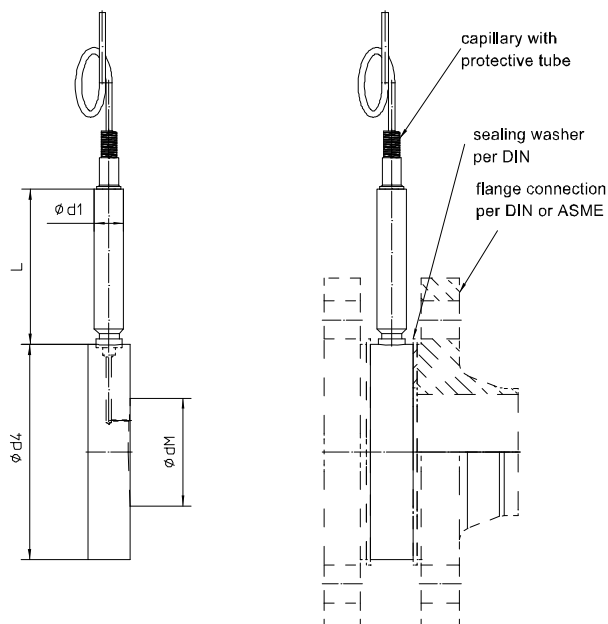
Direct connection plus-sided with distance tube, capillary connection minus-sided

(see order code variation D)



Process connections

Cell diaphragm seal



Dimensions (mm) following EN 1092-1

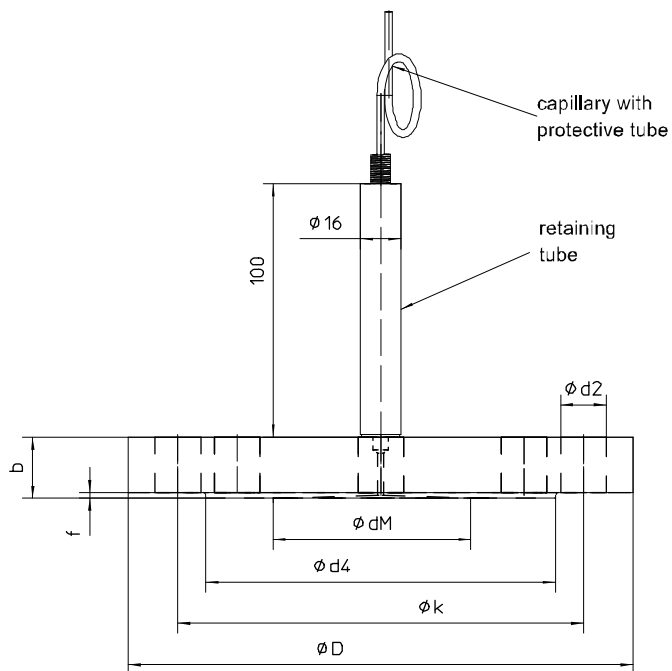
DN	PN	d4	dM	b	L	d1
50	16...400	102	51	20	73.5	14
80	16...400	138	86	20	73.5	14
100	16...400	158	86	20	73.5	14

Dimensions (mm) following ASME B 16.5

DN	Class	d4	dM	b	L	d1
2"	150...2500	100	51	22	73.5	14
3"	150...2500	134	86	22	73.5	14
4"	150...2500	158	86	20	73.5	14

Optionally available with extended diaphragm

Flange-type diaphragm seal



Dimensions (mm) following EN 1092-1

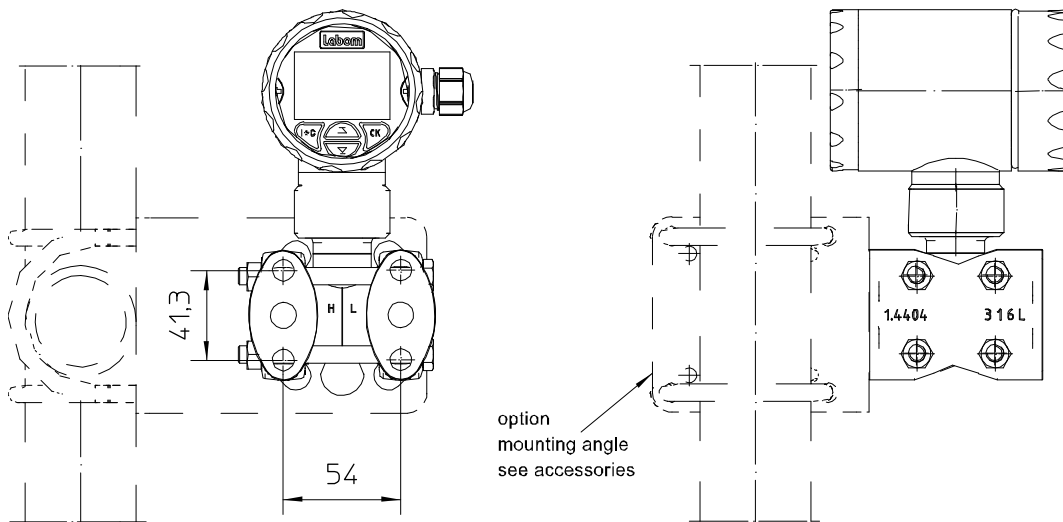
DN	PN	D	dM	d4	k	d2	bore holes	b	f	Weight approx.
50	10...40	165	51	102	125	18	4	20	2	3.2 kg
50	100	180	51	102	135	22	4	26	2	4.0 kg
80	10...40	200	86	138	160	18	8	24	2	5.0 kg
80	100	215	86	138	170	22	8	28	2	5.6 kg
100	10...16	220	86	158	180	18	8	20	2	6.0 kg

Dimensions (mm) following ASME B 16.5

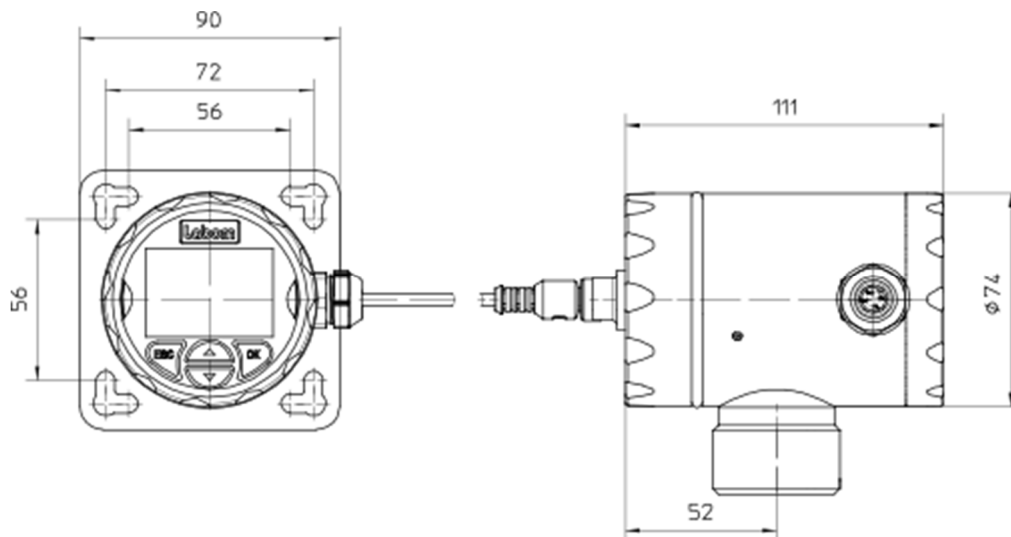
DN	Class	D	dM	d4	k	d2	bore holes	b	f	Weight approx.
2"	150	150	51	92	120.7	19	4	19.5	2	3.2 kg
2"	300	165	51	92	127.0	19	8	22.7	2	4.1 kg
3"	150	190	86	127	152.4	19	4	24.3	2	5.2 kg
3"	300	210	86	127	168.3	22	8	29.0	2	5.7 kg
4"	150	230	116	158	190.5	19	8	24.3	2	7.0 kg
4"	300	255	116	158	200.0	22	8	32.2	2	11.0 kg

Optionally available with extended diaphragm

Mounting

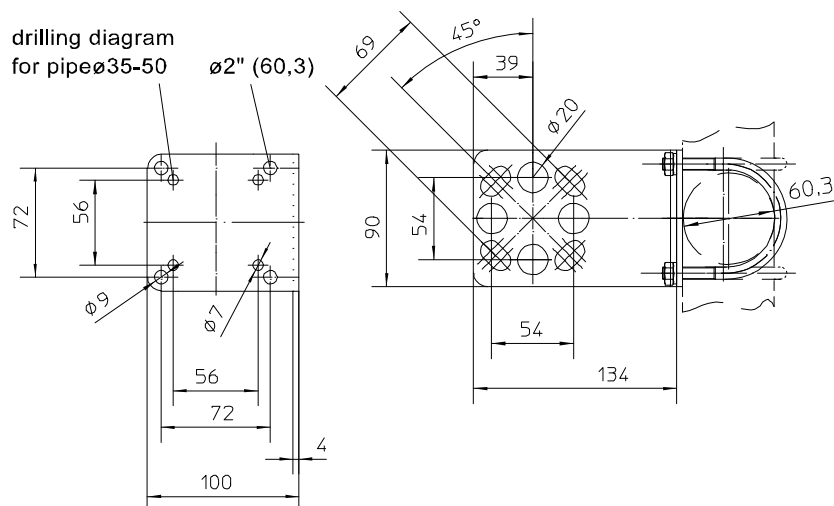


Remote display and control unit (Type series MC1140)



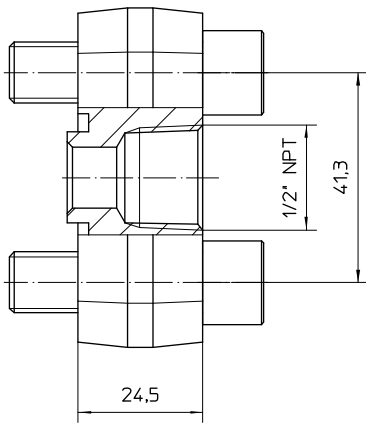
All dimensions are in mm

Mounting angle for wall and pipe-mounting (Type series MM1500)



All dimensions are in mm

Oval flange (Type series MC1060)



All dimensions are in mm

Order details

Pressure and level transmitter PASCAL Ci4 Delta P, highly overload protected					
CI4350	Pressure and level transmitter PASCAL Ci4 Delta P, highly overload protected				
A1008.2	nominal range	100 mbar	turndown up to 100:1 please note the min. measuring span	static overload and overload limit up to 160 bar	
A1573.2		500 mbar			
A1618.2		3 bar			
A1059.2		16 bar			
F1	parameterisation	factory settings (standard)			
F2		as per customer's specification			
H21	output signal pressure	4...20 mA, with HART-protocol			
Y1.	material case	stainless steel mat.-no. 1.4301/1.4305 (304/303)			
Y2.		stainless steel mat.-no. 1.4404 (316L)			
1	material front cover	polypropylene (black), window Polycarbonate			
2		stainless steel (see case), window non-splintering glass			
3		stainless steel (see case), closed, without window			
			default language	available language	
	display	High-resolution graphic display with backlight, intuitive 4-button operation, quick access to device data	German (Standard)	English, German	
M21.1			English		
M22.1			English	English, Chinese	
M22.2			Chinese		
M23.1			English	English, Spanish, French	
M23.2			Spanish		
M23.3			French		
M25.1			English	English, Polish, German	
M25.2			Polish		
M25.3			German		
M26.1			English	English, Turkish, German	
M26.2			Turkish		
M26.3			German		
M1			without display		
T20.	electrical connection	cable gland	M16 x 1.5 polyamide, for cable Ø 4.5-10 mm		
T22.			M16 x 1.5 stainless steel, for cable Ø 5-9.5 mm		
T15.			M20 x 1.5 polyamide, for cable Ø 7-13 mm		
T17.			M20 x 1.5 stainless steel, for cable Ø 8-13 mm		
T27.			1/2" NPT polyamide, for cable Ø 6-12 mm		
0		cable clamps	spring clamp terminals up to 1.5 mm²(Standard)		
5			pole terminals 2.5 mm²		
6			screw terminals 2.5 mm²		
T30		circular connector M12 x 1 (4-polig)			

Additional features (to be indicated in case of need, only):				
S62	Ex marking ¹	ATEX	 II 1/2G, II 2G Ex ia IIC TX Ga/Gb, Gb	
			 II 1/2D, II 2D Ex ia IIIC Txx °C Da/Db, Db	
S77		IECEX	Ex ia IIC TX Ga/Gb, Gb	
			Ex ia IIIC Txx °C Da/Db, Db	
S87		UKEX	 II 1/2G, II 2G Ex ia IIC TX Ga/Gb, Gb	
			 II 1/2D, II 2D Ex ia IIIC Txx °C Da/Db, Db	
T4	degree of protection	IP 69K ¹		
X4	software LAB4Level for level application			
W1020	material certificate	per EN 10204-3.1, wetted parts		
W1201	calibration certificate	per EN 10204-3.1, 5 measuring points		
W2602	functional safety per EN 61508, classification per SIL2 (in preparation)			
W2660	as per UKCA regulations			

¹ requires front cover of stainless steel

Process connection variation A: Capillary connection double-sided					
Diaphragm seals identical on both sides					
DA1...	design per EN 1092-1	raised face	model B1		
DA2...			model B2 (necessary in case of special materials)		
420	nominal width/nominal pressure	DN 50, PN 10...40			
450		DN 50, PN 100			
620		DN 80, PN 10...40			
650		DN 80, PN 100			
710		DN 100, PN 10...16			
DA51...	flange-type per ASME B16.5	raised face	RF 125-250 AA		
DA5...			RFSF (necessary in case of special materials)		
310	nominal width/class	DN 2", class 150			
320		DN 2", class 300			
510		DN 3", class 150			
520		DN 3", class 300			
610		DN 4", class 150			
620		DN 4", class 300			
DC4...	cell-type per EN 1092-1	raised face	model B1		
DC1...			model B2 (necessary in case of special materials)		
480	nominal width/nominal pressure	DN 50, PN 16...400			
680		DN 80, PN 16...400			
780		DN 100, PN 16...400			
DC31...	cell-type per ASME B16.5	raised face	RF 125-250 AA		
DC3...			RFSF (necessary in case of special materials)		
310	nominal width/class	DN 2", class 150...2500			
510		DN 3", class 150...2500			
610		DN 4", class 150...2500			
B52...	measuring device connection	diaphragm seale with capillary and stainless steel protective tube			
11		capillary length	1 m		
12			1,6 m		
13			2,5 m		
14			4 m		
15			6 m		
16			8 m		
17			10 m		
22			12 m		
1	material wetted parts	stainless steel mat.-no. 1.4404/1.4435 (316L)			
3		Hasteloy			
2		Tantal			
62		stainless steel 316L with PTFE coating (max. PN 40), high vacuum-resistant, max. temperature 260 °C			
		<u>pressure transmission fluid</u>	<u>design temperature process</u>		
L22	system filling	synthetic oil, free of silicone FD1	-10...140 °C	standard	
L23			-50...230 °C		
L31		vacuum- and high temperature oil FV3H	-10...400 °C		
L10			Low temperature oil FM5		-90...160 °C
L30			Halocarbon oil FC		-30...190 °C
	ambient temperature	-40...80 °C (Please note the temperature limits of the pressure transmission fluid)			
U2		-10...50 °C			
U...		different ambient temperature, please specify in writing			

Process connection variation B: Capillary connection plus-sided				
Diaphragm seal plus-sided				
DA1...	flange-type per EN 1092-1	raised face	model B1	
DA2...			model B2 (necessary in case of special materials)	
420	nominal width/nominal pressure	DN 50, PN 10...40		
450		DN 50, PN 100		
620		DN 80, PN 10...40		
650		DN 80, PN 100		
710		DN 100, PN 10...16		
DA51...	flange-type per ASME B16.5	raised face	RF 125-250 AA	
DA5...			RFSF (necessary in case of special materials)	
310	nominal width/class	DN 2", class 150		
320		DN 2", class 300		
510		DN 3", class 150		
520		DN 3", class 300		
610		DN 4", class 150		
620		DN 4", class 300		
DC4...	cell-type per EN 1092-1	raised face	model B1	
DC1...			model B2 (necessary in case of special materials)	
480	nominal width/nominal pressure	DN 50, PN 16...400		
680		DN 80, PN 16...400		
780		DN 100, PN 16...400		
DC31...	cell-type per ASME B16.5	raised face	RF 125-250 AA	
DC3...			RFSF (necessary in case of special materials)	
310	nominal width/class	DN 2", class 150...2500		
510		DN 3", class 150...2500		
610		DN 4", class 150...2500		
B52...	measuring device connection	diaphragm seal with capillary and stainless steel protective tube		
11		capillary length	1 m	
12			1,6 m	
13			2,5 m	
14			4 m	
15			6 m	
16			8 m	
17			10 m	
22			12 m	
1	material wetted parts	stainless steel mat.-no. 1.4404/1.4435 (316L)		
3		Hasteloy		
2		Tantal		
62		stainless steel 316L with PTFE coating (max. PN 40), high vacuum-resistant, max. temperature 260 °C		
		<u>pressure transmission fluid</u>	<u>design temperature process</u>	
L22	system filling	synthetic oil, free of silicone FD1	-10...140 °C	standard max. design temperature, please specify different temperatures. Code T...
L23			-50...230 °C	
L31		vacuum- and high temperature oil FV3H	-10...400 °C	
L10		Low temperature oil FM5	-90...160 °C	
L30		Halocarbon oil FC	-30...190 °C	
	ambient temperature	-40...80 °C (Please note the temperature limits of the pressure transmission fluid)		
U2		-10...50 °C		
U...		different ambient temperature, as in writing		
Process flange minus-sided				
K511..	process flange	stainless steel 316L, connection per DIN EN 61518 process connection 1/4 – 18 NPT mounting thread 7/16 – 20 UNF		
3	ventilation	without, with sealing plug of stainless steel 316L		
4		with vent valve of stainless steel 316L		
2	gasket	EPDM, temperature range -40...85 °C		
1		FKM, temperature range -20...85 °C		
G1	diaphragm material	stainless steel mat.-no. 1.4404 (316L)		

Process connection variation C: Direct connection plus-sided with distance tube				
Diaphragm seal plus-sided				
DA1...	flange-type per EN 1092-1	raised face	model B1	
DA2...			model B2 (necessary in case of special materials)	
420	nominal width/nominal pressure	DN 50, PN 10...40		
450		DN 50, PN 100		
620		DN 80, PN 10...40		
650		DN 80, PN 100		
710		DN 100, PN 10...16		
DA51...	flange-type per ASME B16.5	raised face	RF 125-250 AA	
DA5...			RFSF (necessary in case of special materials)	
310	nominal width/class	DN 2", class 150		
320		DN 2", class 300		
510		DN 3", class 150		
520		DN 3", class 300		
610		DN 4", class 150		
620		DN 4", class 300		
1	material wetted parts	stainless steel mat.-no. 1.4404/1.4435 (316L)		
3		Hasteloy		
2		Tantal		
62		stainless steel 316L with PTFE coating (max. PN 40), high vacuum-resistant, max. temperature 260 °C		
		<u>pressure transmission fluid</u>	<u>design temperature process</u>	
L22	system filling	synthetic oil, free of silicone FD1	-10...140 °C	standard max. design temperature, please specify different temperatures. Code T...
L23			-50...230 °C	
L31		vacuum- and high temperature oil FV3H	-10...400 °C	
L10		Low temperature oil FM5	-90...160 °C	
L30		Halocarbon oil FC	-30...190 °C	
	ambient temperature	-40...80 °C (Please note the temperature limits of the pressure transmission fluid)		
U2		-10...50 °C		
U...		different ambient temperature, as in writing		
Process flange minus-sided				
K511..	process flange	stainless steel 316L, connection per DIN EN 61518, process connection 1/4 – 18 NPT mounting thread 7/16 – 20 UNF		
3	ventilation	without, with sealing plug of stainless steel 316L		
4		with vent valve of stainless steel 316L		
2	gasket	EPDM, temperature range -40...85 °C		
1		FKM, temperature range -20...85 °C		
G1	diaphragm material	stainless steel mat.-no. 1.4404 (316L)		

Process connection variation D: Direct connection plus-sided with distance tube, capillary connection minus-sided				
Diaphragm seal plus-sided				
DA1...	flange-type per EN 1092-1	raised face	model B1	
DA2...			model B2 (necessary in case of special materials)	
420	nominal width/nominal pressure	DN 50, PN 10...40		
450		DN 50, PN 100		
620		DN 80, PN 10...40		
650		DN 80, PN 100		
710		DN 100, PN 10...16		
DA51...	flange-type per ASME B16.5	raised face	RF 125-250 AA	
DA5...			RFSF (necessary in case of special materials)	
310	nominal width/class	DN 2", class 150		
320		DN 2", class 300		
510		DN 3", class 150		
520		DN 3", class 300		
610		DN 4", class 150		
620		DN 4", class 300		
A413..	measuring device connection	Direct diaphragm seal with distance tube 90,5 mm		
1	material wetted parts	stainless steel mat.-no. 1.4404/1.4435 (316L)		
3		Hasteloy		
2		Tantal		
62		stainless steel 316L with PTFE coating (max. PN 40), high vacuum-resistant, max. temperature 260 °C		
		<u>pressure transmission fluid</u>	<u>design temperature process</u>	
L22	system filling	synthetic oil, free of silicone FD1	-10...140 °C	standard max. design temperature, please specify different temperatures. Code T...
L23			-50...230 °C	
L31		vacuum- and high temperature oil FV3H	-10...400 °C	
L10		Low temperature oil FM5	-90...160 °C	
L30		Halocarbon oil FC	-30...190 °C	
	ambient temperature	-40...80 °C (Please note the temperature limits of the pressure transmission fluid)		
U2		-10...50 °C		
U...		different ambient temperature, as in writing		

Diaphragm seal plus-sided with capillary				
DA1...	flange-type per EN 1092-1	raised face	model B1	
DA2...			model B2 (necessary in case of special materials)	
420	nominal width/nominal pressure	DN 50, PN 10...40		
450		DN 50, PN 100		
620		DN 80, PN 10...40		
650		DN 80, PN 100		
710		DN 100, PN 10...16		
DA51...	flange-type per ASME B16.5	raised face	RF 125-250 AA	
DA5...			RFSF (necessary in case of special materials)	
310	nominal width/class	DN 2", class 150		
320		DN 2", class 300		
510		DN 3", class 150		
520		DN 3", class 300		
610		DN 4", class 150		
620		DN 4", class 300		
DC4...	cell-type per EN 1092-1	raised face	model B1	
DC1...			model B2 (necessary in case of special materials)	
480	nominal width/nominal pressure	DN 50, PN 16...400		
680		DN 80, PN 16...400		
780		DN 100, PN 16...400		
DC31...	cell-type per ASME B16.5	raised face	RF 125-250 AA	
DC3...			RFSF (necessary in case of special materials)	
310	nominal width/class	DN 2", class 150...2500		
510		DN 3", class 150...2500		
610		DN 4", class 150...2500		
B52...	measuring device connection	diaphragm seale with capillary and stainless steel protective tube		
11		capillary length	1 m	
12			1,6 m	
13			2,5 m	
14			4 m	
15			6 m	
16			8 m	
17			10 m	
22			12 m	
1	material wetted parts	stainless steel mat.-no. 1.4404/1.4435 (316L)		
3		Hasteloy		
2		Tantal		
62		stainless steel 316L with PTFE coating (max. PN 40), high vacuum-resistent, max. temperature 260 °C		
		<u>pressure transmission fluid</u>	<u>design temperature process</u>	
L22	system filling	synthetic oil, free of silicone FD1	-10...140 °C	Standard max. design temperature, please specify different temperatures. Code T...
L23			-50...230 °C	
L31		vacuum- and high temperature oil FV3H	-10...400 °C	
L10		Low temperature oil FM5	-90...160 °C	
L30		Halocarbon oil FC	-30...190 °C	
	ambient temperature	-40...80 °C (Please note the temperature limits of the pressure transmission fluid)		
U2		-10...50 °C		
U...		different ambient temperature, as in writing		

Accessories		
MM1500-A11	mounting angle	for wall and pipe-mounting Ø 35-50 mm of stainless steel, incl. screws 7/16-20 UNF
MM1500-A12		for wall and pipe-mounting Ø 2" of stainless steel, incl. screws 7/16-20 UNF
MC1060-A134	oval flange	oval flange 1/2-14 NPT per EN 61518, modal A of stainless steel mat.-no. 1.4404 (316L), incl. 2 screws 7/16-20 UNF, material stainless steel, incl. gasket EPDM
MC1060-A133		oval flange 1/2-14 NPT per EN 61518, modal A of stainless steel mat.-no. 1.4404 (316L), incl. 2 screws 7/16-20 UNF, material stainless steel, incl. gasket FKM
MC1140	wall bracket	PASCAL Ci4 remote display and control unit including device holder material stainless steel, incl. front ring with seal and blind cap with circular connector M12x1
A1.	connection cable	length: 10 m, material: PUR, with circular connector M12 x1, completely wired
1	internal cable clamps	spring clamp terminals up to 1.5 mm ²
2		pole terminals 2.5 mm ²
3		screw terminals 2.5 mm ²
T4	degree of protection	IP 69 K ¹

Order code (example): CI4350 – A1008.2 – F1 – H21 – Y12 – T200 – DA1620 - B52111 - L22