



LMP 331i



Precision Screw-in Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770: 0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 40 bar

Output signal

2-wire: 4 ... 20 mA 3-wire: 0 ... 10 V others on request

Product characteristics

- thermal error in compensated range -20 ... 80 °C: 0.2 % FSO TC 0.02 % FSO / 10K
- Turn-Down 1:10
- communication interface for adjusting offset, span and damping

Optional versions

- **IS-versions** Ex ia = intrinsically safe for gases and dusts
- adjustment of nominal pressure ranges (factory-provided)

The precision screw-in transmitter LMP 331i demonstrate the further development of our industrial pressure transmitters.

The signal processing of sensor signal is done by digital electronics with 16-bit analogue digital converter. Consequently, it is possible to conduct an active compensation and the transmitters with excellent measurements and exceptionally attractive price to offer on the market.

Preferred areas of use are



Chemical / petrochemical industry



Environmental engineering (water / sewage / recycling)



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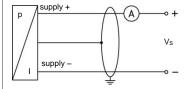
Nominal pressure Saray 2	Pressure ranges ¹								
Seage Absolute Earl U-4 1 2 4 10 20 40									
Level gauge		[har]	0.4	1	2	4	10	20	40
Overpressure Deart 2 5 10 20 40 80 105			4	10	20	40	100	200	400
Burst pressure Ibari 3 7.5 15 25 50 120 210					-	-			
On customer request we adjust the device within the turn-down-possibility by software on the required pressure range. Output signal / Supply Standard 2-wire: 4 20 mA / V _s = 12 36 V _{pc} Option IS-version 2-wire: 4 20 mA / V _s = 14 28 V _{pc} Option Sanalogue signal 2-wire: 4 20 mA / V _s = 14 36 V _{pc} 2- only possible with electrical connection Brader series 27.3 (7-pin) Performance Accuracy EC 60770 °; ≤ ≥ 1.1 % FSO performance after turn-down - 170 ≤ 1.5 no change of accuracy ⁴ 1 TD ≤ 1.5 no change of accuracy ⁴ 2 (0.1 + 0.015 x turn-down) ⁴ (FSO) FSO (x accuracy) ⁴ 4 (or calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 4): ≤ ≤ (0.1 + 0.015 x turn-down) ⁴ (FSO) 2 (0.1 + 0.015 x turn-down) ⁴ (FSO) x accuracy is ≤ ± 0.25 % FSO Permissible load current 2-wire: R _{max} = [(V ₂ - V ₂ min) / 0.02 Å] Ω Influence effects supply: 0.05 % FSO 10 v							-		
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$\begin{array}{c} \text{e.g. with a turn-down of 1:10 following accuracy is calculated:} \\ & \pm (0.1 + 0.015 \times 10) \% \text{ FSO} \text{ i.e. accuracy is } \leq \pm 0.25 \% \text{ FSO} \\ \hline \text{Permissible load} \\ \text{current 2-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \min] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \infty] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \infty] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \infty] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \infty] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \infty] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0 - V_0 \infty] / 0.02 \text{ A}] \ \Omega \\ \text{voltage } 3\text{-wire:} & R_{ma} = [V_0$			≤ ± [0.1 + 0.0	15 x turn-dow	n] % FSO	•	· ·		,
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Influence effects Supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ							% FSO		
Influence effects	Permissible load					02 A] Ω			
Long term stability ≤ ± (0.1 x turn-down) % FSO / year at reference conditions									
Long term stability	Influence effects								
Response time approx. 5 msec configuration of following parameters possible (interface / software necessary 5): - electronic damping: 0 100 sec - offset: 0 90 % FSO - turn down of span: max. 1:10 3 accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) 4 except nominal pressure ranges \$ 0.40 bar; for these calculation of accuracy is as follows: \$ \(\frac{2}{2} \) (0.14 to .02 x turn-down) \(\frac{1}{2} \) Software, interface, and cable have to be ordered separately (software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP) Thermal effects (Offset and Span) / Permissible temperatures Tolerance band \(\frac{1}{2} \) FSO \$ \div \(\frac{2}{2} \) turn-down \(\frac{1}{2} \) in compensated range \$ \cdot 20 \) 80 °C TC, average \(\frac{1}{2} \) FSO 5 \div \(\frac{2}{2} \) turn-down \(\frac{1}{2} \) in compensated range \$ \cdot 20 \) 80 °C Permissible temperatures medium: 25 \) 125 °C electronics / environment: 25 \) 85 °C storage: -40 \) 100 °C Electrical protection permanent P	Language at all 196								
Adjustability (with option communication interface RS232) configuration of following parameters possible (interface / software necessary ⁵): - electronic damping: 0 100 sec - offset: 0 90 % FSO - turn down of span: max. 1:10 ³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) ⁴ except nominal pressure ranges ≤ 0.40 bar, for these calculation of accuracy is as follows: ≤ ± (0.1 + 0.02 x turn-down) % FSO e.g. turn-down of 1:3: ≤ ± (0.1 + 0.02 x 3) % FSO l.e. accuracy is ≤ ± 0.16 % FSO ⁵ software, interface, and cable have to be ordered separately (software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP) Thermal effects (Offset and Span) / Permissible temperatures Tolerance band [% FSO] ≤ ± (0.2 x turn-down) in compensated range -20 80 °C TC, average [% FSO / 10 K] ± (0.02 x turn-down) in compensated range -20 80 °C Permissible temperatures medium: -25 125 °C electrical protection Reverse polarity protection permanent Reverse polarity protection no damage, but also no function Electromagnetic compatibility emission and immunity according to EN 61326 Materials Pressure port stainless steel 1.4404 (316 L) Option compact field housing stainless steel 1.4404 (316 L) Option compact field housing stainless steel 1.4405 (316L) Department Stainless steel 1.4405 (316L) Media wetted parts Pressure port, seals, diaphragm Stainless steel 1.4405 (316L) Webchanical stability Vibration 10 g RMS (20 2000 Hz) according to DIN EN 60068-2-6					O / year at ref	erence condition	ons		
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- offset: 0 90 % FSO turn down of span: max. 1:10 3 accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) 4 except nominal pressure ranges ≤ 0.40 bar; for these calculation of accuracy is as follows: \$\frac{2}{2} \cdot 0.1 + 0.02 \times \text{turn-down} \text{ is 2} \cdot 0.1 + 0.02 \times \text{turn-down} \text{ is 2} \cdot 0.1 + 0.02 \times \text{ turn-down} \text{ is 2} \cdot 0.1 + 0.02 \times \text{ turn-down} \text{ is 2} \cdot 0.1 + 0.02 \times \text{ turn-down} \text{ is 3} \text{ FSO} \text{ is accuracy is \$\leq 0.16 \times \text{ FSO}} \text{ or higher, and XP} \text{ Permissible temperatures} \text{ Tolerance band [% FSO] } \frac{\leq \cdot 0.2 \times \text{ turn-down}}{\leq \cdot 0.2 \times \text{ turn-down}} \text{ in compensated range } \text{ -20 \ldot 80 \cdot C} \text{ Tolerance band [% FSO] } \frac{\leq \cdot 0.2 \times \text{ turn-down}}{\leq \cdot 0.2 \times \text{ turn-down}} \text{ in compensated range } \text{ -20 \ldot 80 \cdot C} \text{ turn-down} \text{ medium: } \text{ -25 \ldot 125 \cdot C} \text{ electrical protection} \text{ medium: } \text{ -25 \ldot 125 \cdot C} \text{ electrical protection} \text{ permanent} \text{ medium: } \text{ -25 \ldot 85 \cdot C} \text{ storage: } \text{ -40 \ldot 100 \cdot C} \text{ Electrical protection} \text{ permanent} \text{ modum: } \text{ modum: } \text{ according to EN 61326} \text{ Materials} \text{ Materials} \text{ modum: } \text{ stainless steel 1.4404 (316 L)} \text{ table gland M12x1.5, brass, nickel plated (clamping range 2 \ldot 8 mm)} \text{ Seals } \text{ FKM } \text{ others on request} \text{ table gland M12x1.5, brass, nickel plated (clamping range 2 \ldot 8 mm)} \text{ Mechanical stability} \text{ Vibration} \text{ 10 g RMS (20 \ldot 2000 Hz) according to DIN EN 60068-2-6}		2)				sible (interrace	e / sonware ne	cessary):	
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Electromagnetic compatibility emission and immunity according to EN 61326 Materials Pressure port stainless steel 1.4404 (316 L) Housing stainless steel 1.4404 (316 L) Option compact field housing stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 8 mm) Seals FKM others on request Diaphragm stainless steel 1.4435 (316L) Media wetted parts pressure port, seals, diaphragm Mechanical stability Vibration 10 g RMS (20 2000 Hz) according to DIN EN 60068-2-6			no damage, l	out also no fur	nction				
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Seals FKM others on request Diaphragm stainless steel 1.4435 (316L) Media wetted parts pressure port, seals, diaphragm Mechanical stability Vibration 10 g RMS (20 2000 Hz) according to DIN EN 60068-2-6						M12x1 5 bras	ss. nickel plate	d (clamping ran	ge 2 8 mm)
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Mechanical stability Vibration 10 g RMS (20 2000 Hz) according to DIN EN 60068-2-6									
Vibration 10 g RMS (20 2000 Hz) according to DIN EN 60068-2-6			pressure pur	., ocais, diapri	iagiii				
			10 a DMC (0	0 2000 11-1	ooosiding to	DIN EN COO	20.26		
Shock Too g / 11 lises. according to DIN EN 00000-2-21									
· · · · · ·	GHOCK		100 g / 11 III	JUU.	according to	אווט צוו אווט כ	JU-Z-Z1		

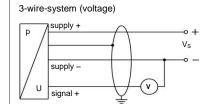
Explosion protection (only for	4 20 mA / 2-wire)
Approvals DX19-LMP 331i	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X
	zone 0: II 1G Ex ia IIC T4 Ga
	zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical max. values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i \approx 0 \text{ nF}, L_i \approx 0 \mu\text{H},$
-	the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for	in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar
environment	in zone 1 or higher: -40/-20 65 °C
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1 μH/m
Miscellaneous	
Current consumption	signal output current: max. 25 mA
	signal output voltage: max. 7 mA
Weight	approx. 200 g
Installation position	any ⁶
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU
6 Pressure transmitters are calibrated	in a vertical position with the pressure connection down. If this position is changed on installation there can be slight

⁶ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar.

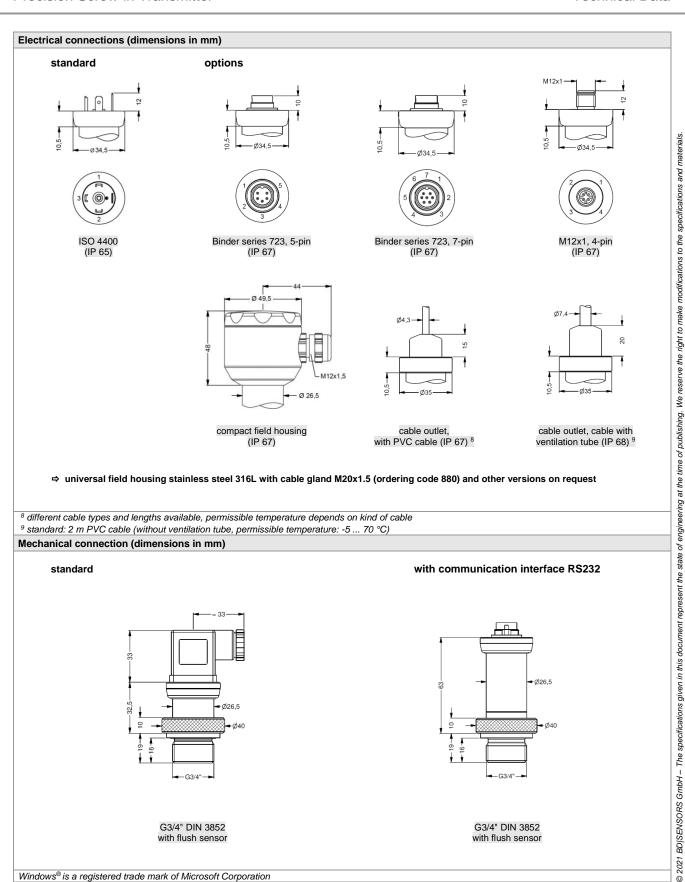
Wiring diagrams

2-wire-system (current)





Pin configuration						
Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/ metal (4-pin)	compact field housing	cable colours (IEC 60757)
supply +	1	3	3	1	IN +	WH (white)
supply –	2	4	1	2	IN –	BN (brown)
signal + (only for 3-wire)	3	1	6	3	OUT +	GN (green)
shield	ground pin 😩	5	2	4	(GNYE (green-yellow)
Communication RxD	-	-	4	-	-	-
interface ⁷ TxD	-	-	5	-	-	-
GND	-	-	7	-	-	-
⁷ may not be transmitted directly with the	e PC (the suitable a	dapter is available as	s accessory)			



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G3/4" DIN 3852 with flush sensor

LMP331i E 080121

G3/4" DIN 3852

with flush sensor

Tel.:

Fax:



	Ordering code	LMP 33	1i	
LMP 331i]-Ⅲ-	Ш-0-Ш]
Pressure in bar	4 2 2			
in mH₂O	4 3 0 4 3 1			
nput [mH ₂ O] [bar] 4 0.4	4 0 0 0			
10 1.0 20 2.0	1 0 0 1 2 0 0 1 4 0 0 1			
40 4.0	4 0 0 1			
100 10 200 20	1 0 0 2 2 2 0 0 2			
400 40	4 0 0 2			
customer Output	9 9 9 9			consult
4 20 mA / 2-wire intrinsic safety 4 20 mA / 2-wire	1 E			
0 10 V / 3-wire	3			
customer Accuracy (at nominal pressure)	9			consult
0.1 % FSO customer		1 9		consult
Electrical connection				Consuit
male and female plug ISO 4400 male plug Binder series 723 (5-pin)		1 0 0 2 0 0		
male and female plug Binder series 723 (7-pin)		A 0 0		
male plug M12x1 (4-pin) / metal		M 1 0		
for analog output male plug M12x1 (4-pin) / metal				
for digital output cable outlet with PVC cable (IP67) 1		M 1 3 T A 0		
cable outlet,		T A 0 T R 0		
cable with ventilation tube (IP68) ² compact field housing				
stainless steel 1.4301 (304)		8 5 0		
customer Mechanical connection		9 9 9		consult
G3/4" DIN 3852 with flush sensor			K 0 0	
customer			9 9 9	consult
Seals FKM			1	
customer Special version			9	consult
standard communication interface RS232 ³			1 1 1 1 2 1	
customer			9 9 9	consult
standard: 2 m PVC cable without ventilation tube (permi code TR0 = PVC cable, cable with ventilation tube availation tube availation tube availation interface RS232 only possible with el. of Software, Interface and cable for LMP 331 i with option FOrdering code: CIS-G; Software appropriate for Window Windows® is a registrated trademark of Microsoft Corporation in the property of	able in different types and lengths connection Binder serie 723 (7-pin) RS-232 have to be order separately ws [®] 95, 98, 2000, NT Version 4.0 or newer a			

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

² code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

³ Communication interface RS232 only possible with el. connection Binder serie 723 (7-pin) Software, Interface and cable for LMP 331i with option RS-232 have to be order separately (Ordering code: CIS-G; Software appropriate for Windows $^{\tiny \textcircled{0}}$ 95, 98, 2000, NT Version 4.0 or newer and XP)