

## CCA-P-331i / CCA-P-333i / CPA-P-331i



- precision pressure transmitter / screw-in level transmitter
- nominal pressure: from 0...400 mbar up to 0...600 bar
- output signals: 2-wire: 4...20 mA; 3-wire: 0...10 V (for CCA/CPA-P-331i)
- stainless steel sensor
- accuracy 0.1 % span
- thermal error in compensated range -20...80°C: 0.2 % span
- turn down 10:1
- communication interface for adjusting of offset, span and damping



The precision pressure transmitter **CCA-P-331i** and **CCA-P-333i** as well as the precision screw-in level probe **CPA-P-331i** demonstrate the further development of our industrial pressure transmitters. The signal of the sensor is processed by the intelligent digital electronics with 16-bit A/D converter which is able to do an active temperature compensation and linearization. Due to this we are able to offer the transmitters with excellent measurement parameters and exceptionally attractive price.

## PREFERRED AREAS OF USE ARE

for CCA-P-331i / CCA-P-333i



Laboratory Techniques



Energy production (gas consumption and thermal energy measurement)

for CPA-P-331i



Chemical / petrochemical industry



Environmental Engineering (water / sewage / recycling)

## TECHNICAL DATA

Pressure ranges CCA-P-331i<sup>1</sup>

Nominal pressure gauge / absolute	[bar]	0.4	1	2	4	10	20	40
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure	[bar]	3	7,5	15	25	50	120	210

<sup>1</sup> On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.

## Vacuum ranges

Nominal pressure	[bar]	-0.4 ... 0.4	-1 ... 1	-1 ... 2	-1 ... 4	-1 ... 10
Overpressure	[bar]	2	5	10	20	40
Burst pressure	[bar]	3	7.5	15	25	50

Pressure ranges CCA-P-333i<sup>1</sup>

Nominal pressure gauge / absolute	[bar]	60	100	200	400	600
Overpressure	[bar]	210	210	600	1000	1000
Burst pressure	[bar]	420	420	1000	1250	1250

<sup>1</sup> On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.

Pressure ranges CPA-P-331i<sup>1</sup>

Nominal pressure gauge	[bar]	0.4	1	2	4	10	20	40
Level gauge	[mH <sub>2</sub> O]	4	10	20	40	100	200	400
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure	[bar]	3	7.5	15	25	80	120	210

<sup>1</sup> 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 <sub>S</sub> = 12 ... 36 V <sub>DC</sub>
Options analog signal	2-wire: 4 ... 20 mA with communication interface <sup>2</sup>
	3-wire*: 0 ... 10 V / V <sub>S</sub> = 14 ... 36 V <sub>DC</sub>
	0 ... 10 V with communication interface <sup>2</sup>

\* only for CCA-P-331i and CPA-P-331i

<sup>2</sup> only possible with el. connection Binder series 723 (7-pin)



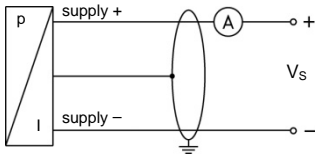
Performance	
Accuracy performance after turn-down - TD 5:1 - TD > 5:1	IEC 60770 <sup>3</sup> : $\pm 0.1$ % span  no change of accuracy <sup>4</sup> for calculation use the following formula (for nominal pressure ranges 0.40 bar see note 5): $\pm [0.1 + 0.015 \times \text{turn-down}]$ % span with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 10:1 following accuracy is calculated: $\pm (0.1 + 0.015 \times 10)$ % span i.e. accuracy is $\pm 0.25$ % span
Permissible load	current 2-wire: $R_{\max} = [(V_S - V_S \text{ min}) / 0.02 \text{ A}] \text{ W}$ voltage 3-wire: $R_{\min} = 10 \text{ kW}$
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kW
Long term stability	$\pm (0.1 \times \text{turn-down})$ % span / year
Response time	current output 4...20 mA (2-wire) 5ms voltage output 0...10 V 25 ms
Adjustability	configuration of following parameters possible (interface / software necessary <sup>5</sup> ): - electronic damping: 0...100 sec - o set: 0...90 % span - turn down of span: max. 10:1
<sup>3</sup> accuracy according to EN IEC 62828-2— limit point adjustment (non-linearity, hysteresis, repeatability)	
<sup>4</sup> except nominal pressure ranges 0.40 bar; for these calculation of accuracy is as follows: $\pm (0.1 + 0.02 \times \text{turn-down})$ % span e.g. turn-down of 3:1: $\pm (0.1 + 0.02 \times 3)$ % span i.e. accuracy is $\pm 0.16$ % span	
<sup>5</sup> 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 [% span]	$\pm (0.2 \times \text{turn-down})$ in compensated range -20...80 °C
TC, average [% span / 10 K]	$\pm (0.02 \times \text{turn-down})$ in compensated range -20...80 °C
Permissible temperatures	medium: -25...125 °C electronics / environment: -25...85 °C storage: -40...100 °C
Electrical protection	
Short-circuit 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)
Housing	stainless steel 1.4404 (316 L)
Option field housing	stainless steel 1.4301 (304); cable gland M16x1.5, brass, nickel plated (clamping range 2...8 mm)
Seals	CCA-P-331i / CPA-P-331i: FKM CCA-P-333i: NBR optional: welded version <sup>6</sup> others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm
<sup>6</sup> welded version only with pressure ports according to EN 837; welded version not available with pressure ranges 0.16 bar and > 40 bar	
Mechanical stability	
Vibration	10 g RMS (20...2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 11 msec according to DIN EN 60068-2-27
Miscellaneous	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 200 g
Installation position	any <sup>7</sup>
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) <sup>8</sup>
<sup>7</sup> 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 $P_N \leq 1$ bar.	
<sup>8</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar	



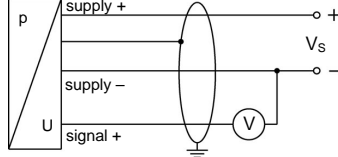
ELECTRICAL CONNECTION

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



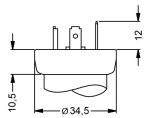
Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723/423 (7-pin)	M12x1/ metal (4-pin)	field housing	Bayonet MIL-C-26482 (10-6)		cable colours (DIN 47100)
						2-wire	2-wire	
supply + supply - signal + (only for 3-wire)	1 2 3	3 4 1	3 1 6	1 2 3	Vs + Vs - S +	A B -	A D B	wh (white) bn (brown) gn (green)
shield	ground pin	5	2	4	GND	pressure port		gn/ye (green/yellow)
Communication interface <sup>9</sup>	RxD TxD GND	- - -	- - -	4 5 7	- - -	- - -	- - -	- - -

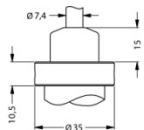
<sup>9</sup> may not be transmitted directly with the PC (the suitable adapter is available as accessory)

Electrical connections (dimensions in mm)

standard

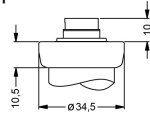


ISO 4400 (IP 65)

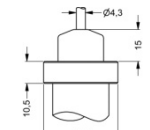


cable outlet with ventilation tube (IP 68) <sup>10</sup>

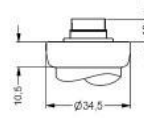
option



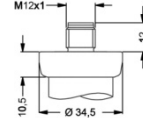
Binder Series 723 5-pin (IP 67)



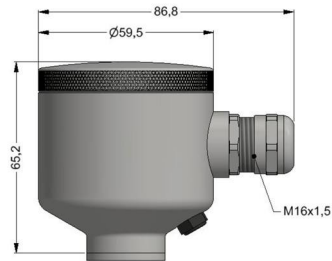
cable gland PG7/cable length specify (IP 67) <sup>11</sup>



Binder Series 723 7-pin (IP 67)



M12x1 4-pin (IP 67)



field housing (IP 67)

<sup>10</sup> different cable types and lengths available, permissible temperature depends on kind of cable

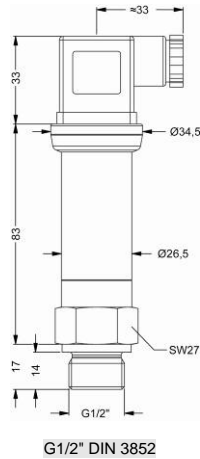
<sup>11</sup> standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)



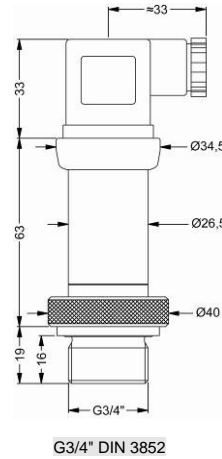
DIMENSION DRAWINGS

standard

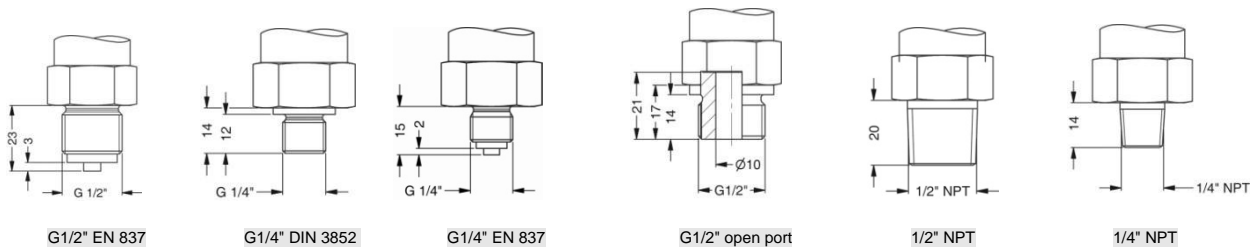
CCA-P-331i / CCA-P-333i \*



CPA-P-331i



option for CCA-P-331i and CCA-P-333i



\_ metric threads and others on request

ORDER CODE for CCA-P-331i

CCA-P-331i- [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

<b>Pressure</b>	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Gauge (0,4...40 bar)	1	1	0							
Absolute (0,4...40 bar)	1	1	1							
<b>Input [bar]</b>										
0 ... 0,4				4	0	0	0			
0 ... 1				1	0	0	1			
0 ... 2				2	0	0	1			
0 ... 4				4	0	0	1			
0 ... 10				1	0	0	2			
0 ... 20				2	0	0	2			
0 ... 40				4	0	0	2			
-0,4 ... 0,4				S	4	0	0			
-1 ... 1				S	1	0	2			
-1 ... 2				V	2	0	2			
-1 ... 4				V	4	0	2			
-1 ... 10				V	1	0	3			
Customer				9	9	9	9			
Customer - underpressure				X	X	X	X			
<b>Output</b>										
4...20 mA / 2-wire								1		
0...10 V / 3-wire								3		
Customer								9		
<b>Accuracy</b>										
0,1 % - standard range									1	
0,1 % - standard range including Calibration Certificate									P	
0,1 % - customer range									I	
0,1 % - customer range including Calibration Certificate									H	
0,2 % (P <sub>N</sub> < 0,1 bar)									B	
0,2 % (P <sub>N</sub> < 0,1 bar) including Calibration Certificate									Q	
Customer									9	



CCA-P-331i-       -  -  -

Electrical connection									
Connector DIN 43650 (ISO 4400) (IP 65)	1	0	0						
Connector Binder 723 5-pin (IP 67)	2	0	0						
Cable gland PG7 / cable length specify (IP 67)	4	0	0						
+ PVC cable / 1 m									
Connector Buccaneer (IP 68)	5	0	0						
Field housing stainless steel, cable gland M 16 x 1,5 (IP 67)	8	0	0						
Field housing stainless steel, cable gland M 20 x 1,5 (IP 67)	8	8	0						
Connector Binder 723 and 423 7-pin (IP 67) (for Interface RS 232)	A	0	0						
Connector DIN 43650 (ISO 4400) - potting compound inside (IP 67)	E	0	0						
Connector M12 x 1, 4-pin (IP 67)	M	0	0						
Connector M12 x 1, 4-pin (IP 67) - metal	M	1	0						
Cable outlet, cable with ventilation tube (IP68) <sup>1</sup>	T	R	0						
+ PVC cable / 1 m									
Customer	9	9	9						
Mechanical connection									
G 1/2" DIN 3852				1	0	0			
G 1/2" EN 837				2	0	0			
G 1/4" DIN 3852				3	0	0			
G 1/4" EN 837				4	0	0			
M 20 x 1,5 DIN 3852				5	0	0			
M 12 x 1 DIN 3852				6	0	0			
M 10 x 1 DIN 3852				7	0	0			
M 20 x 1,5 EN 837				8	0	0			
G 1/2" DIN 3852 with flush sensor diaphragm <sup>2</sup>				F	0	0			
M 20 x 1,5 DIN 3852 with flush sensor diaphragm				F	0	4			
1/2" NPT				N	0	0			
1/4" NPT				N	4	0			
Customer				9	9	9			
Seals									
Viton (FKM)							1		
Without seals - welded (only with EN 837-1/-3) <sup>2,3</sup>							2		
EPDM							3		
Viton (FKM) up to -40°C							F		
Customer							9		
Special version									
Standard								1	1
Temperature compensation -30 ... 80°C (only with seals "F" or welded "2")								1	1
Interface RS 232 (only for connector Binder 723/423 7-pin) <sup>4</sup>								1	2
Customer								9	9
Software for set up on site									
Communication module ADAPT-6 (RS 232 / USB for CCA-P-331i/333i) + software									
Software for CCA-P-331i/333i									
Update									503498
Accessories									
Adapt 1 with RS232 connecting cable for PC (CIS 510-RS232)									
Adapt 5 with USB connecting cable for PC (CIS 510-USB)									

1 - code TR0 = PVC cable, cable with ventilation tube available in different types and lengths; cable not included in the price

2 - only possible for CCA-P-331i and P<sub>N</sub> 40 bar

3 - welded version only with pressure ports according to EN 837

4 - communication interface RS-232 only possible with el. connection Binder serie 723/423 (7pin)

Software, Interface and cable for CCA-P-331i with option RS-232 have to be order separately

(Ordering code: CIS-G; Software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and XP)

Windows® is a registered trademark of Microsoft Corporation

Manufacturer reserves the right to change sensor specifications without further notice.



ORDER CODE for CCA-P-333i

CCA-P-333i-------

<b>Pressure</b>												
Gauge <sup>1</sup>	1	3	0									
Absolute	1	3	1									
<b>Input [bar]</b>												
0 ... 60				6	0	0	2					
0 ... 100 <sup>2</sup>				1	0	0	3					
0 ... 200 <sup>2</sup>				2	0	0	3					
0 ... 400 <sup>2</sup>				4	0	0	3					
0 ... 600 <sup>2</sup>				6	0	0	3					
Customer	9	9	9									
<b>Output</b>												
4...20 mA / 2-wire											1	
Customer											9	
<b>Accuracy</b>												
0,1 % - standard range											1	
0,1 % - standard range including Calibration Certificate											P	
0,1 % - customer range											I	
0,1 % - customer range including Calibration Certificate											H	
0,2 % (P <sub>N</sub> < 0,1 bar)											B	
Customer											9	
<b>Electrical connection</b>												
Connector DIN 43650 (ISO 4400) (IP 65)										1	0	0
Connector Binder 723 5-pin (IP 67)										2	0	0
Cable gland PG7 / cable length specify (IP 67)										4	0	0
+ PVC cable / 1 m												
Connector Buccaneer (IP 68)										5	0	0
Field housing stainless steel, cable gland M 16 x 1,5 (IP 67)										8	0	0
Field housing stainless steel, cable gland M 20 x 1,5 (IP 67)										8	8	0
Connector Binder 723 and 423 7-pin (IP 67) (for Interface RS 232)										A	0	0
Connector DIN 43650 (ISO 4400) - potting compound inside (IP 67)										E	0	0
Connector M12 x 1, 4-pin (IP 67)										M	0	0
Connector M12 x 1, 4-pin (IP 67) - metal										M	1	0
Cable outlet, cable with ventilation tube (IP 68) <sup>3</sup>										T	R	0
+ PVC cable / 1 m												
Customer	9	9	9									
<b>Mechanical connection</b>												
G 1/2" DIN 3852										1	0	0
G 1/2" EN 837										2	0	0
G 1/4" DIN 3852										3	0	0
G 1/4" EN 837										4	0	0
M 20 x 1,5 DIN 3852										5	0	0
M 12 x 1 DIN 3852										6	0	0
M 10 x 1 DIN 3852										7	0	0
M 20 x 1,5 EN 837										8	0	0
G1/2" DIN 3852 open pressure port										H	0	0
1/2" NPT										N	0	0
1/4" NPT										N	4	0
Customer	9	9	9									
<b>Seals</b>												
Viton (FKM)												1
EPDM (P <sub>N</sub> < 160 bar)												3
NBR (standard)												5
Customer												9
<b>Special version</b>												
Standard												1 1 1
Interface RS 232 (only for connector Binder 723/423 7-pin) <sup>4</sup>												1 2 1
Customer												9 9 9
<b>Software for set up on site</b>												
Communication module ADAPT-6 (RS 232 / USB for CCA-P-331i/333i) + software												
Software for CCA-P-331i/333i												
Update												503498
<b>Accessories</b>												
Adapt 1 with RS232 connecting cable for PC (CIS 510-RS232)												
Adapt 5 with USB connecting cable for PC (CIS 510-USB)												

- 1 - measurement starts with ambient pressure
  - 2 - pressure ranges > 60 bar as CCA-P-333i
  - 3 - code TR0 = PVC cable, cable with ventilation tube available in different types and lengths; cable not included in the price
  - 4 - communication interface RS-232 only possible with el. connection Binder serie 723/423 (7pin)
- Software, Interface and cable for CCA-P-333i with option RS-232 have to be order separately  
 (Ordering code: CIS-G; Software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and XP)  
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# Pressure / level transmitters

## ORDER CODE for CPA-P-331i

CPA-P-331i- [ ] [ ] - [ ] [ ] [ ] [ ] - [ ] - [ ] - [ ] [ ] [ ] - [ ] [ ] [ ] - [ ] [ ] [ ] - [ ] [ ] [ ]

<b>Pressure</b>															
in bar										4	3	0			
in m H <sub>2</sub> O										4	3	1			
<b>Input</b>															
[mH <sub>2</sub> O]	[bar]														
0 ... 4	0 ... 0,4									4	0	0	0		
0 ... 10	0 ... 1									1	0	0	1		
0 ... 20	0 ... 2									2	0	0	1		
0 ... 40	0 ... 4									4	0	0	1		
0 ... 100	0 ... 10									1	0	0	2		
0 ... 200	0 ... 20									2	0	0	2		
0 ... 400	0 ... 40									4	0	0	2		
<b>Customer</b>										9	9	9	9		
<b>Housing material</b>															
Stainless steel 1.4404 (316 L)													1		
<b>Diaphragm material</b>															
Stainless steel 1.4435 (316 L)													1		
<b>Output</b>															
4 ... 20 mA / 2-wire													1		
0 ... 10 V / 3-wire <sup>2</sup>													3		
<b>Customer</b>													9		
<b>Accuracy</b>															
0,1 % - standard range													1		
0,1 % - standard range including Calibration Certificate													P		
0,1 % - customer range													I		
0,1 % - customer range including Calibration Certificate													H		
0,2 % (P <sub>N</sub> < 0,1 bar)													B		
<b>Customer</b>													9		
<b>Electrical connection</b>															
Connector DIN 43650 (ISO 4400) (IP 65)												1	0	0	
Connector ISO 4400 (IP 65) + silicone seals for Ex nA												1	0	5	
Connector Binder Serie 723 5-pin (IP 67)												2	0	0	
Cable gland PG7 / cable length specify (IP 67)												4	0	0	
+ PVC cable / 1 m															
Connector Buccaneer (IP 68)												5	0	0	
Field housing stainless steel, cable gland M 16 x 1,5 (IP 67)												8	0	0	
Field housing stainless steel, cable gland M 20 x 1,5 (IP 67)												8	8	0	
Connector DIN 43650 (ISO 4400) - potting compound inside (IP 67)												E	0	0	
Connector Binder 723 and 423 7-pin (IP 67) (for Interface RS 232)												A	0	0	
Connector M12 x 1, 4-pin (IP 67)												M	0	0	
Connector M12 x 1, 4-pin (IP 67) - metal												M	1	0	
Cable outlet, cable with ventilation tube (IP 68) <sup>1</sup>												T	R	0	
+ PVC cable / 1 m															
<b>Customer</b>												9	9	9	
<b>Mechanical connection</b>															
G 3/4" DIN 3852													K	0	0
<b>Customer</b>													9	9	9
<b>Seals</b>															
Viton (FKM)														1	
EPDM														3	
<b>Customer</b>														9	
<b>Special version</b>															
Standard													1	1	1
Interface RS 232 (only for connector Binder Serie 723/423 7-pin)													1	2	1
<b>Customer</b>													9	9	9

1 - code TR0 = PVC cable, cable with ventilation tube available in different types and lengths; cable not included in the price

2 - maximum length of PVC cable – 25 m, PUR, FEP, TPE – 40 m

Manufacturer reserves the right to change sensor specifications without further notice.

