

CCA-Xi



- precision pressure transmitter for process industry
- nominal pressure: from 0...400 mbar up to 0...600 bar
- output signals: 2-wire: 4...20 mA
- HART® communication
- stainless steel sensor
- accuracy 0.1 % span
- turn-down 10:1
- two chamber aluminium die cast case or stainless steel field housing
- internal or flush welded diaphragm
- optional: integrated display and operating module, special materials as Hastelloy® and Tantalum, cooling element for media temp. up to 300°C

The process pressure transmitter CCA-Xi has been especially designed for the process industry as well as food and pharmaceutical industry (version stainless steel field housing) and measures vacuum, gauge and absolute pressure ranges of gases, steam, fluids up to 600 bar.

Different process connections such as threads and flanges with an internal or flush welded diaphragm are available and can be combined with a cooling element for media temperatures up to 300°C. The transmitter is as a standard equipped with HART® communication; the customer can choose between a two chamber aluminium die cast case or a stainless steel field housing.

PREFERRED AREAS OF USE ARE



Oil and gas industry / Chemical and petrochemical industry



Food / Pharmaceutical industry

TECHNICAL DATA

Pressure ranges ¹												
Nominal pressure gauge / abs. ^{2,*}	[bar]	0.4	1	2	4	10	20	40	100	200	400	600
Overpressure	[bar]	2	5	10	20	40	80	105	210	600	1000	1000
Burst pressure	[bar]	3	7,5	15	25	50	120	210	420	1000	1250	1250
¹ On customer request we adjust the devices within the turn-down-possibility by software to the required pressure ranges.												
² absolute pressure possible from 1 bar												
Vacuum ranges												
Nominal pressure gauge*	[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		
*for 0 ... 1 bar abs. or -1 ... 0 bar gauge max.temperature 70°C												
Output signal / Supply												
Standard	2-wire: 4 ... 20 mA with HART®-communication								V _S = 12 ... 28 V _{DC}			
Current consumption	max. 25 mA											
Performance												
Accuracy ³	± 0.1 % span											
performance after turn-down (TD)	no change of accuracy											
- TD 5:1	the accuracy is calculated as follows: 0.1 + 0.015 x (turn-down - 5) % span											
- TD > 5:1	e.g. turn-down 9: 0.1 + 0.015 x (9 - 5) % span = 0.16 % span											
Permissible load	R _{max} = [(V _S - V _{S min}) / 0.02 A] W						load during HART® communication: R _{min} = 250 W					
Influence effects	supply: 0.05 % span / 10 V						permissible load: 0.05 % span / kW					
Long term stability	± 0.1 % span / year at reference conditions											
Response time	100 msec – without consideration of electronic damping								measuring rate 10/sec			
Adjustability	electronic damping: 0 ... 100 sec				offset 0 ... 90 % span;				turn-down of span up to 10:1			
³ accuracy according to EN IEC 62828-2 – limit point adjustment (non-linearity, hysteresis, repeatability)												

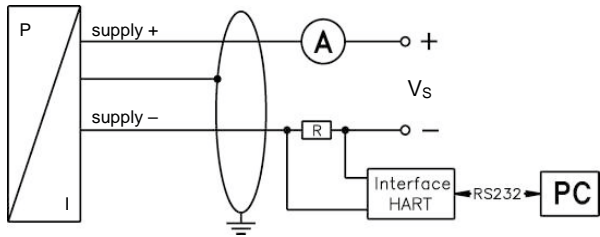
Thermal errors / Permissible temperatures			
Tolerance band ^{4,5}	0.2 % span x turn-down (in compensated range -20 ... 85 °C)		
Permissible temperatures ⁶	medium: -40 ... 125 °C for filling fluid silicon oil -10 ... 125 °C for filling fluid food compatible oil	without display:	environment: -40 ... 80 °C storage: -40 ... 80 °C
		with display:	environment: -20 ... 70 °C storage: -30 ... 80 °C
Permissible temperature medium for cooling element ⁷	filling fluid silicon oil	overpressure: -40 ... 300 °C	low pressure: -40 ... 150 °C
	filling fluid food compatible oil	overpressure: -10 ... 250 °C	low pressure: -10 ... 150 °C
⁴ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions			
⁵ for flange- and DRD-version: tolerance band offset ± 1.6 % span / tolerance band span ± 0.6 % span			
⁶ max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C (without cooling element).			
⁷ max. temperature depends on the used sealing material, type of seal and installation			
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to EN 61326		
Mechanical stability			
Vibration	5 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6	
Shock	100 g / 11 msec	according to DIN EN 60068-2-27	
Filling fluids			
Standard	silicon oil		
Options for process connections	food compatible oil with 21CFR178.3570 approval (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) Halocarbon and others on request		
Materials			
Pressure port	stainless steel 1.4435 (316L)		
Housing	aluminium die cast, powder-coated or stainless steel 1.4404 (316L)		
Cable gland	brass, nickel plated		
Viewing glass	laminated safety glass		
Seals (media wetted)	thread: standard: FKM (recommended for medium temperatures 200 °C) option: FFKM (recommended for medium temperatures < 260 °C; (min. permissible temperature from -15 °C, possible for nominal pressure ranges P _N 100 bar); others on request option: welded version for pressure ports according to EN 837 with P _N between 1 and 40 bar DRD and flange: none, not included in the scope of delivery		
Diaphragm	standard: stainless steel 1.4435 (316 L) options for process connections: Hastelloy® C-276 (2.4819), Tantalum (possible from 1 bar) on request		
Media wetted parts	pressure port, seal, diaphragm		
Miscellaneous			
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent (P41): EPDM-O-ring which is FDA-listed		
Display (optionally)	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ± 9999 ; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% \pm 1 digit		
Ingress protection	IP 67		
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position have to be specified in the order)		
Surface roughness	pressure port R _a < 0.8 µm (media wetted parts); diaphragm R _a < 0.15 µm weld seam R _a < 0.8 µm		
Weight	min. 400 g (depending on housing and mechanical connection)		
Operational life	> 100 x 10 ⁶ pressure cycles		
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁸		
⁸ This directive is only valid for devices with maximum permissible overpressure > 200 bar			

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ELECTRICAL CONNECTION

Wiring diagram

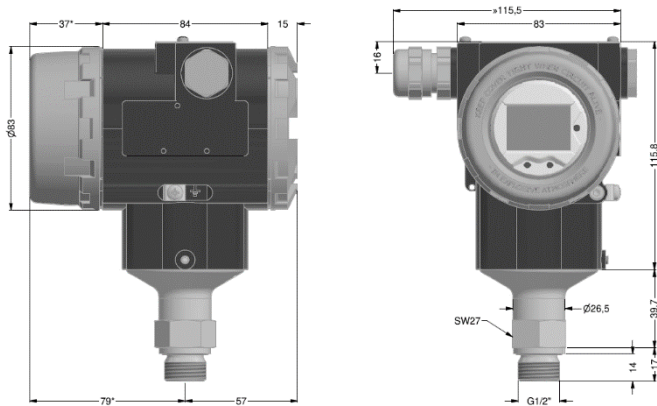


Pin configuration

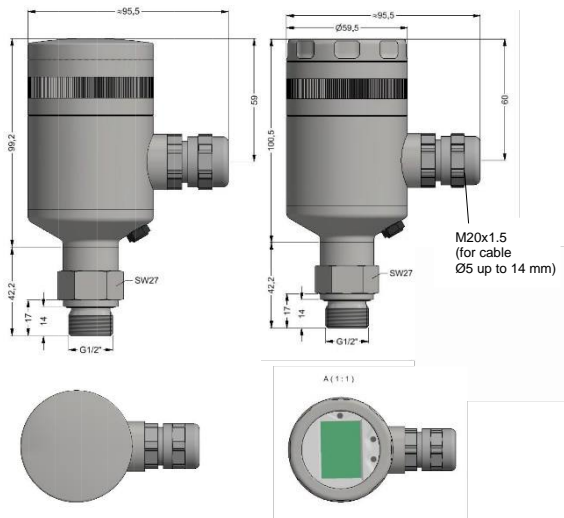
Electrical connections	aluminium die cast case: terminal clamps (clamp section: 2.5 mm ²)	stainless steel field housing: terminal clamps (clamp section: 1.5 mm ²)
Supply +	IN+	IN+
Supply -	IN-	IN-
Test	Test	-
Shield		

DIMENSION DRAWINGS

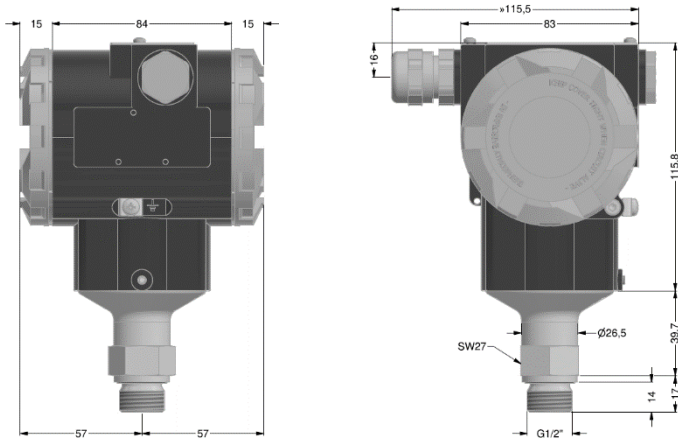
aluminium die cast case⁹ with display



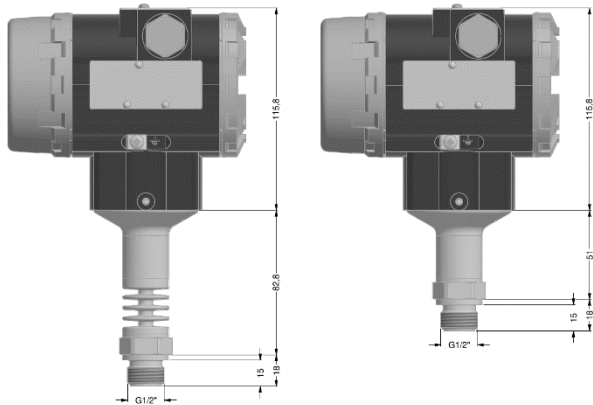
stainless steel field housing



aluminium die cast case⁹ without display



option with cooling element and without

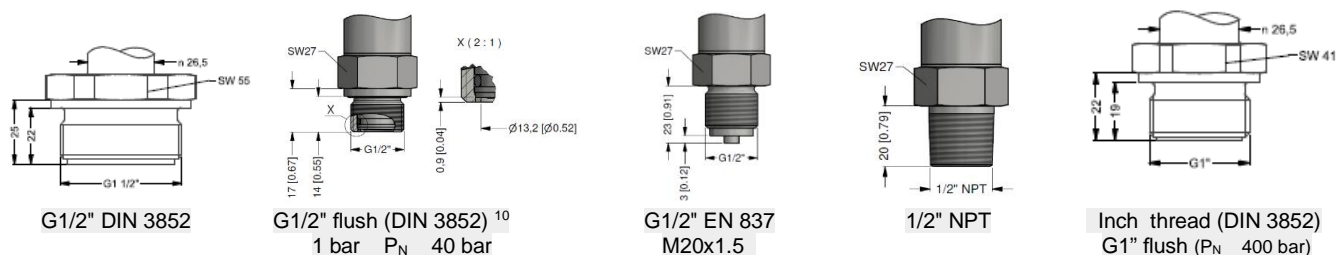


for nominal pressure $P_N > 400$ bar increases the length of devices by 3 mm

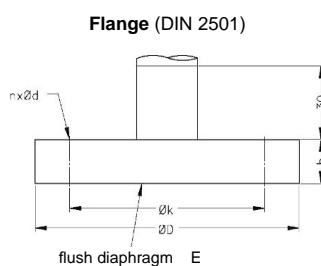
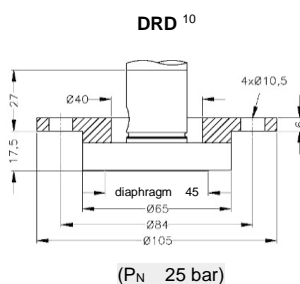
⁹ aluminium case is horizontally rotatable as standard

dimensions in mm

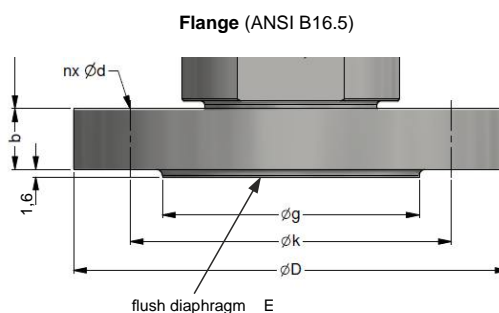
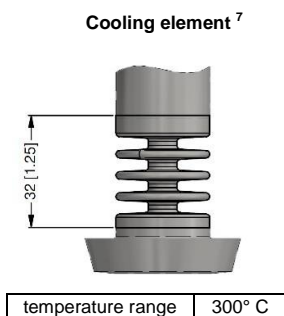
Standard pressure ports



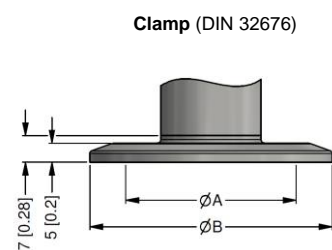
Process connections for low pressure - max. to 40 bar



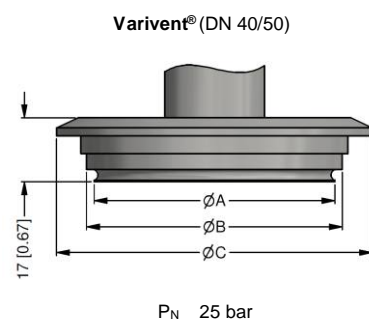
dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
PN [bar]	40	40	16



dimensions in mm		
size	2"/150 lbs	3"/150 lbs
D	152.4	190.5
E	86	89
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	4
d	19.1	19.1
PN [bar]	10	10



dimensions in mm				
size	3/4"	DN25	DN32	DN50
A	14	23	32	45
B	25	50.5	50.5	64
PN [bar]	4	0,25	16	16



⁷ max. temperature depends on the used sealing material, type of seal and installation

¹⁰ mounting flange is included in the delivery (already pre-assembled)

ACCESSORIES

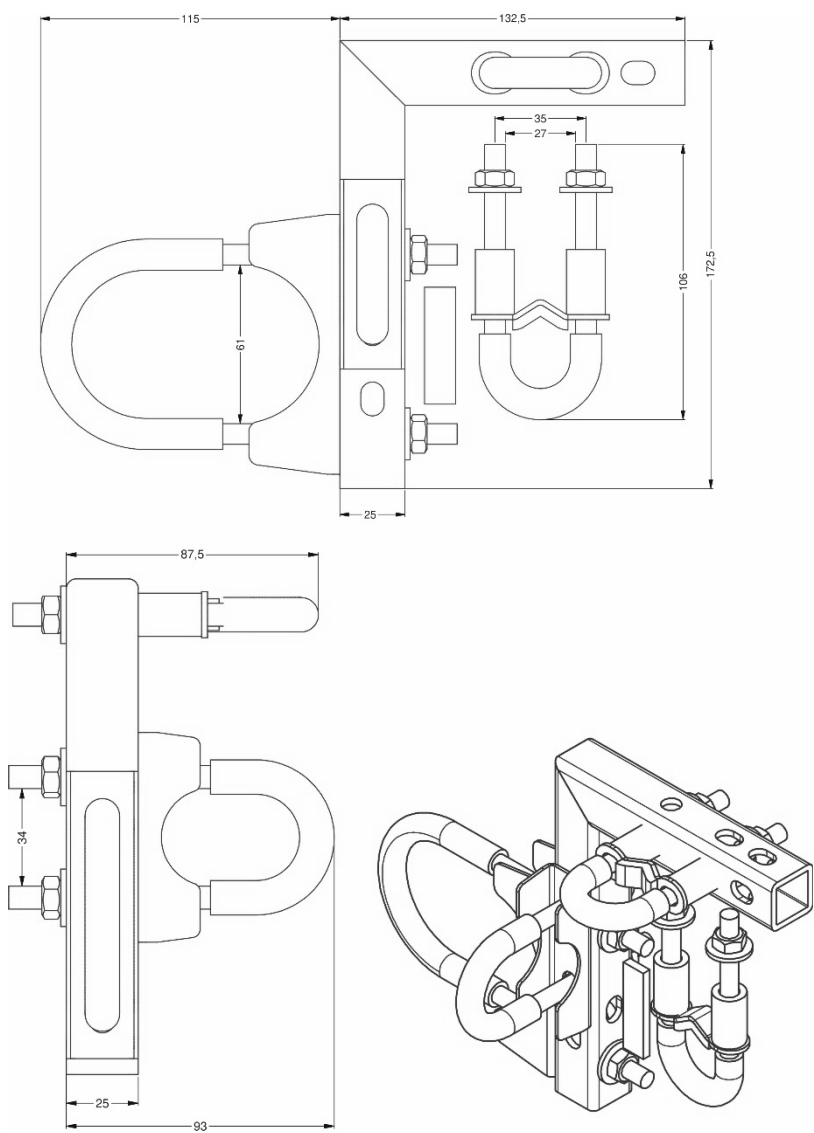
Accessories for aluminium cast (not a part of delivery)

Electrical connection	
Ordering type	Ordering code
plug thread M20x1.5	1001871
cable gland thread M20x1,5	1001460

Universal holder	
Weight	cca 1 kg
Material	0308 (E235)
Surface finish	BIS UltraProtect 1000
Ordering code	5020043



Dimensions (in mm)



Programming kits for HART® - devices: CIS 150-RS232 and CIS 150-USB

CIS 150-RS232

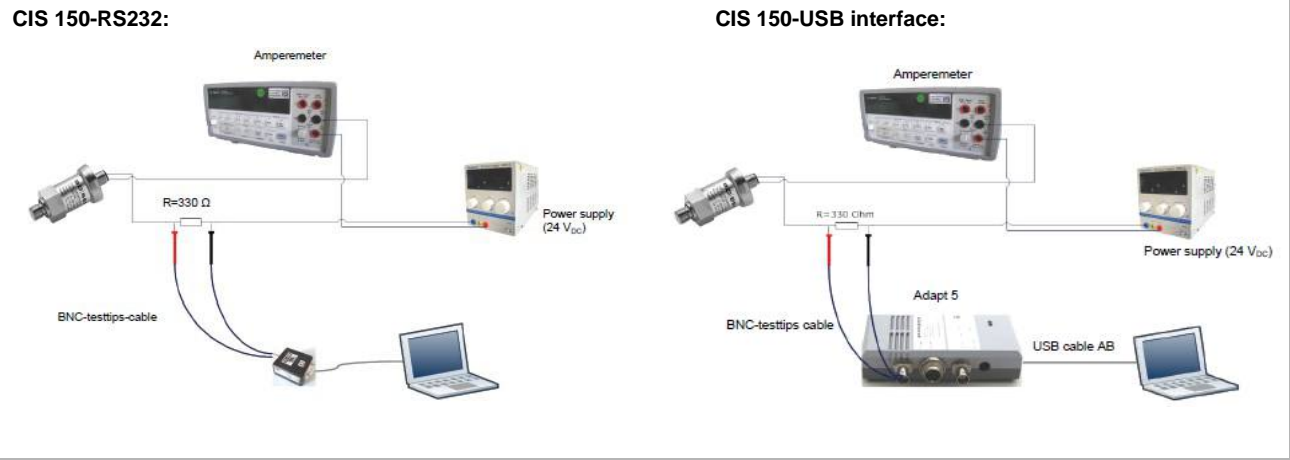


CIS 150-USB



Package contents	Programming software "Config 3.0" on CD operating manual
	CIS 150-RS232: HART® modem (MH-02 Manufacturer: JSP NOVÁ PAKA) connecting cable BNC-Testtip (for measuring device) 9-pin connecting cable RS232 (for PC)
System requirement	CIS 150-USB: Adapt 5 connecting cable BNC-Testtip (for measuring device) USB connecting cable – Type A to Type B – (for PC)
	For the installation of the software, a Windows® PC (95, 98, ME, 2000, NT, XP) with serial interface (RS 232) or USB-interface is required
Please read the operating manual carefully before installing and starting up the programming kit.	

Wiring diagrams



Ordering codes

Version:	Ordering code:
HART(R) modem with RS232 connection cable for PC	CIS 150-RS232
Adapt 5 with USB connection cable for PC	CIS 150-USB

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Diaphragm									
Stainless steel 1.4435 (316 L)								1	
Hastelloy @ C-276 (2.4819) ⁴								H	
Tantalum ^{4,5}								T	
Customer								9	
Seals (included only in thread type connections)									
Without seals (Clamp, dairy pipe DIN, sandwich, flange, varivent)								0	
Viton (FKM)								1	
EPDM								3	
FFKM (for media temperature - 200 °C) ⁶								7	
Without seals - welded (only with EN 837) ^{7,8}								2	
Customer								9	
Filling Fluids									
Silicone oil								1	
Food compatible oil (temperature max. 150 °C) ⁴								2	
Halocarbon ⁴								C	
Customer								9	
Special version									
Standard								0	0
With cooling element from 125 °C up to 150 °C								1	5
With cooling element from 150 °C up to 300 °C (P _N 70 bar max. 200 °C permanent) ⁴								2	0
Customer								9	9
Accessories									
3.1 Material Certificate for Membrane and Mechanical Connection									
Settings in temperature different from basic 20 °C (+/- 10 °C, max. 70 bar and 200 °C)									
Diaphragm Seal									
Capillary tube									
Flange with integral extended diaphragm									
Extension length up to 100 mm									
Extension length between 100 - 200 mm									
Mounting Bracket									
Universal holder (for pipes Ø 26,5 mm)									
Programming									
HART® modem HM02 + USB including SW CONFIG									

5020043

5031837

If setting range shall be different from nominal range please specify in your order

- 1 - absolute pressure possible from 1 bar
- 3 - only possible for P_N 1 bar up to 40 bar
- 4 - only possible with process connections
- 5 - tantal diaphragm possible with nominal pressure ranges from 1 bar
- 6 - min. permissible temperature from -15°C, possible for nominal pressure ranges P_N 100 bar
- 7 - only for P_N 40 bar
- 8 - welded version only with pressure ports according to EN 837

!!! When you make an order it is necessary to fill the questionnaire for transmitters with separators!!!

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

