simex

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 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 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] performance after turn-down (TD) - TD 5:1 - TD > 5:1	± 0.1 % span no change of accuracy the accuracy is calculated as follows: 0.1 + 0.015 x (turn-down - 5) % span 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)
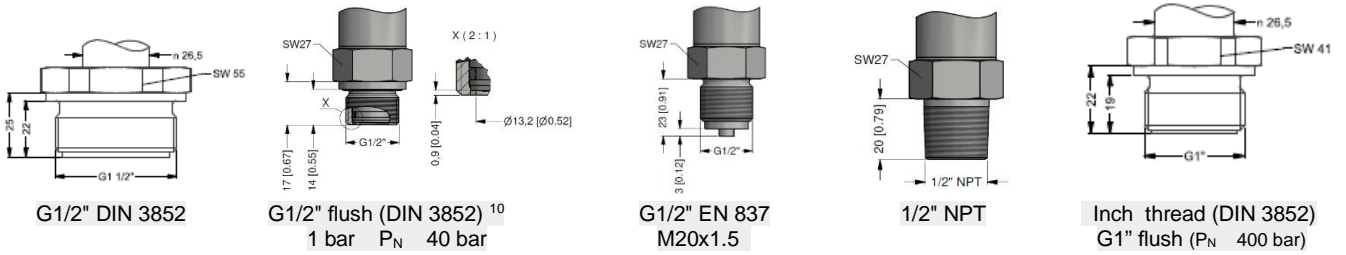
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Thermal errors / Permissible temperatures		
Tolerance band [4, 5]	0.2 % span x turn-down (in compensated range -20 … 85 °C)	
Permissible temperatures [6]	medium: -40 ... 125 °C for filling fluid silicon oil -10 ... 125 °C for filling fluid food compatible 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 Ł ± 1.6 % span / tolerance band span Ł ± 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% ± 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

HART® is a registered trade mark of HART Communication Foundation; Hastelloy® is a brand name of Haynes International Inc.
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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 + Supply – Test	IN+ IN- Test	IN+ IN- -
Shield	⏚	⏚

DIMENSION DRAWINGS

aluminium die cast case [9] with display

stainless steel field housing

M20x1.5
(for cable
Ø5 up to 14 mm)

aluminium die cast case [9] 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

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Standard pressure ports

G1/2" DIN 3852	G1/2" flush (DIN 3852) [10] 1 bar P_N 40 bar	G1/2" EN 837 M20x1.5	1/2" NPT	Inch thread (DIN 3852) G1" flush (P_N 400 bar)

Process connections for low pressure - max. to 40 bar

DRD [10]

(P_N 25 bar)

Flange (DIN 2501)

flush diaphragm E

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

Cooling element [7]

temperature range	300° C

Flange (ANSI B16.5)

flush diaphragm E

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

Clamp (DIN 32676)

dimensions in mm			
size	¾"	DN25	DN32	DN50
A	14	23	32	45
B	25	50.5	50.5	64
P_N [bar]	4 8	0,25 16	16	16

Varivent® (DN 40/50)

P_N 25 bar

[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)

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■ 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)

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CCA-Xi.5 ■
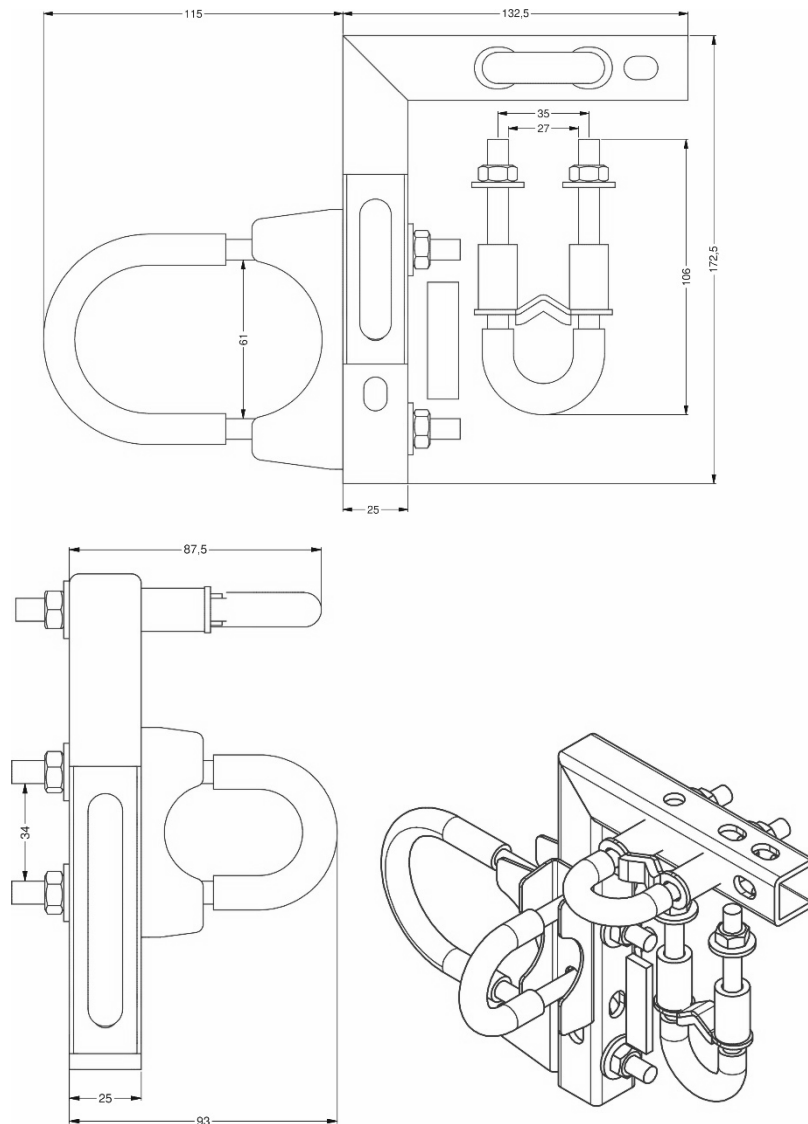
Programming kits for HART® - devices: CIS 150-RS232 and CIS 150-USB

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) **CIS 150-USB**: Adapt 5 connecting cable BNC-Testtip (for measuring device) USB connecting cable – Type A to Type B – (for PC)
System requirement	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

CIS 150-RS232:
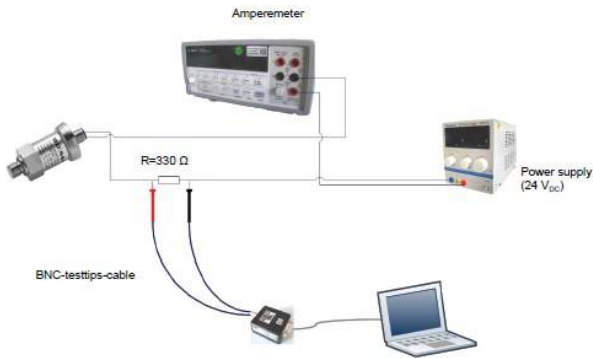
CIS 150-USB interface:
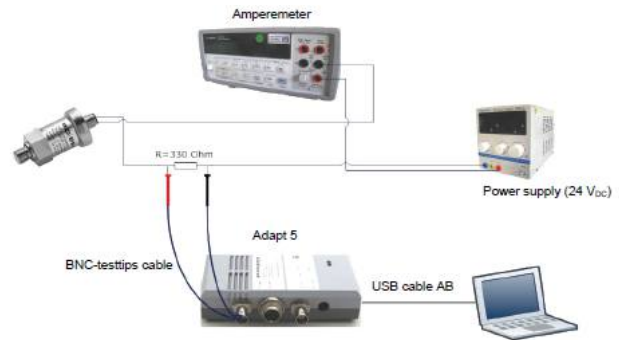
Ordering codes

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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ORDER CODE

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Pressure			
Gauge	5	1	1
Absolute[1]	5	1	2

Input [bar]				
0 … 0,4 bar[1]	4	0	0	0
0 … 1,0 bar	1	0	0	1
0 … 2,0 bar	2	0	0	1
0 … 4,0 bar	4	0	0	1
0 … 10 bar	1	0	0	2
0 … 20 bar	2	0	0	2
0 … 40 bar	4	0	0	2
0 … 100 bar	1	0	0	3
0 … 200 bar	2	0	0	3
0 … 400 bar	4	0	0	3
0 … 600 bar	6	0	0	3
-0,4 … 0,4 bar	S	4	0	0
-1 … 1 bar	S	1	0	2
-1 … 2 bar	V	2	0	2
-1 … 4 bar	V	4	0	2
-1 … 10 bar	V	1	0	3
Customer	9	9	9	9

Design		
Aluminium housing - with display (IP 67)	A	0
Aluminium housing - without display (IP 67)	A	N
Stainless steel field housing - with display (IP 67)	F	V
Stainless steel field housing - without display (IP 67)	F	N

Output	
HART® - 4 … 20 mA / 2-wire	H
Customer	9

Accuracy	
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
Customer	9

Electrical connection			
Terminal clamp - Aluminium housing	A	K	0
Terminal clamp - Stainless Steel field housing	8	8	0
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
M 20 x 1,5 DIN 3852	5	0	0
M 20 x 1,5 EN 837	8	0	0
1/2" NPT	N	0	0
G 1/2" DIN 3852 - open port	H	0	0
G 1/2" DIN 3852 flush ($P_N > 2,5$ bar) (only with seals)[3]	Z	0	0
M 20 x 1,5 DIN 3852 flush ($P_N > 2,5$ bar) (only with seals)	D	0	4
G 3/4" DIN 3852 flush ($P_N > 0,6$ bar) (only with seals)	Z	3	0
G 1" DIN 3852 flush ($P_N > 0,25$ bar) (only with seals)	Z	3	1
G 1 1/2" DIN 3852 flush (only with seals)	Z	3	3
G 2" DIN 3852 flush	Z	3	4
G 1" DIN 3852 flush 2x O ring ($P_N > 0,25$ bar)	Z	3	7
G 1/2" DIN 3852 flush 2x O ring ($P_N > 1$ bar)	Z	6	1
G 3/4" DIN 3852 flush 2x O ring ($P_N > 1$ bar)	Z	6	6
G1" flush cone seal ($P_N > 0,25$ bar) (without seals)	K	3	1
1/8" NPT (without seals, monel pressure port, tantal membrane)	Z	9	2
1" NPT flush ($P_N > 0,25$ bar)	N	5	4
Clamp DN 3/4" (4 bar $< P_N < 8$ bar) (without seals)	C	6	8
Clamp DN 1" (DN 25) ($0,4$ bar $< P_N < 16$ bar) (without seals)	C	6	1
Clamp DN 1 1/2" (DN 32) ($0,4$ bar $< P_N < 16$ bar) (without seals)	C	6	2
Clamp DN 2" (DN 50) ($0,4$ bar $< P_N < 16$ bar) (without seals)	C	6	3
DIN 11851 DN 25 ($P_N > 0,6$ bar) (without seals)	M	7	3
DIN 11851 DN 40 ($P_N > 0,4$ bar) (without seals)	M	7	5
DIN 11851 DN 50 ($P_N > 0,25$ bar) (without seals)	M	7	6
"sandwich" DN 25 (without seals)	S	6	1
"sandwich" DN 50 (without seals)	S	7	6
"sandwich" DIN 2501 DN 80 (without seals)	S	8	0
M 22 x 1,5 DIN 3852 flush ($P_N > 2,5$ bar) (only with seals)	D	1	5
Flange DN 25/PN 40 DIN 2501 (without seals)	F	2	0
Flange DN 40/PN 40 DIN 2501 (without seals)	F	2	2
Flange DN 50/PN 40 DIN 2501 (without seals)	F	2	3
Flange DN 80/PN 16 DIN 2501 (without seals)	F	1	4
Flange DN 100/PN 16 DIN 2501 (without seals)	F	2	5
Varivent® DN 40/50 (without seals)	P	4	1
Customer	9	9	9

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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	0
With cooling element from 125 °C up to 150 °C	1	5	0
With cooling element from 150 °C up to 300 °C (P_N 70 bar max. 200 °C permanent) [4]	2	0	0
Customer	9	9	9

Accessories for aluminium cast	
Plug thread M20x1,5	1001871
Cable gland thread M20x1,5	1001460
Universal holder (for pipes 26,5 mm)	5020043

If setting range shall be di erent 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.

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CCA-Xi.8