

Technical Information

Unifit CPA442

Process assembly

For safe installation of 12 mm sensors (Pg 13.5) in the food, beverage, pharmaceutical and chemical industry



Simple - Safe - Hygienic - Reliable

Application

- Process assembly for 12 mm sensors like pH glass sensors, pH ISFET sensors, oxygen sensors etc.
- Permanent installation in tanks and pipework
- Food
- Pharmaceuticals
- Chemicals
- Water treatment

Your benefits

- Robust assembly
- Complies with 3A standard 74-05
- Complies with the basic criteria of the European Hygienic Equipment Design Group (EHEDG):
 - In-place cleanability
 - In-line steam sterilizability
- Flush mounted, leak-tight electrode seal (molded seal)
- Electropolished surface $R_a=0.38\text{ }\mu\text{m}$ or $0.76\text{ }\mu\text{m}$ (stainless steel 1.4435 (AISI 316 L) and Alloy C22)
- Hygienic process connections, flanges and further established process connections
- Protection cover for KCl and gel sensors

Function and system design

Functionality

The process assembly CPA442 is used to install 12 mm sensors. You can install the assembly vertically or angularly in pipes or reactors.

The assembly seals the sensor against the process. It is suitable for:

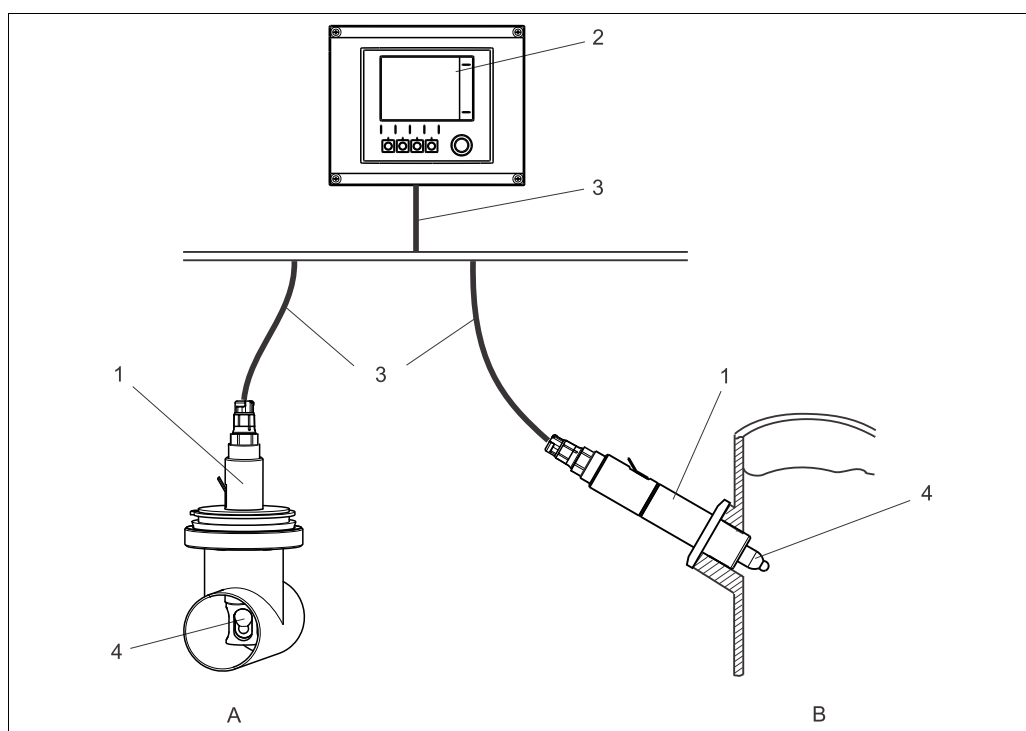
- CIP (cleaning in place)
- SIP (sterilization in place)

The stainless steel version and the Alloy C22 version are autoclavable.

Measuring system

A complete measuring system comprises:

- Unifit CPA442 assembly
- 12 mm sensor, e.g. Orbisint CPS11D or Oxyman COS22D
- Transmitter, e.g. Liquiline CM44x
- Measuring cable



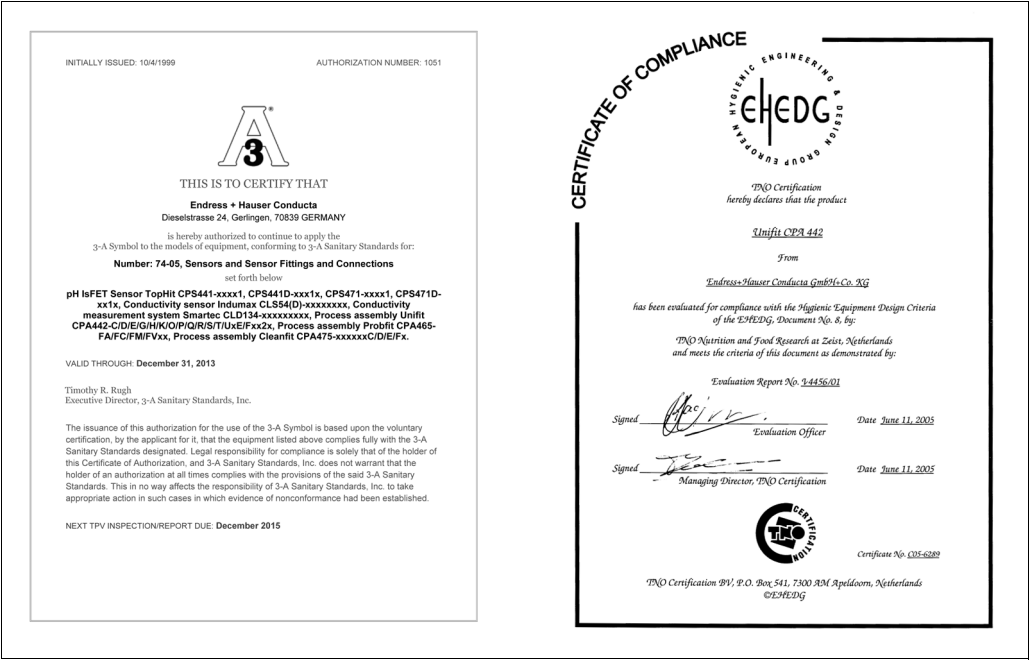
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Example of a measuring system

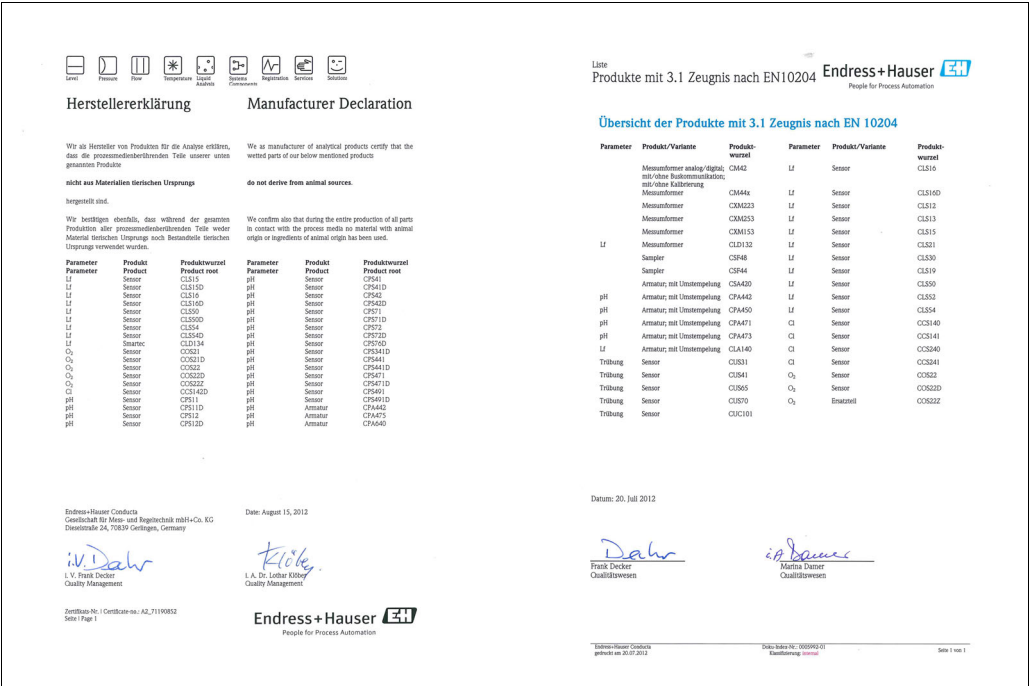
- 1 Unifit CPA442
- 2 Liquiline CM44x
- 3 Measuring cable
- 4 Orbisint CPS11D
- A Installation in pipe
- B Installation in reactor

Reliability

- The assemblies are manufactured according to the certified quality criteria of Endress+Hauser.
- The assemblies are made of high-quality materials like stainless steel 1.4435 (AISI 316 L), Alloy C22 or highly resistant plastics like PVDF or PEEK. Only these materials and the respective sealings are in contact with medium. The assemblies are manufactured from solid material (except the 15° versions S and T).
- The assemblies are inline cleanable and inline sterilizable according to the EHEDG criteria.
- Certified versions and certificates are available.



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The certificates are subjects to changes. The shown examples might not be the latest versions.

Installation

Installation angle	A	Glass sensor:	Installation angle of at least 15° from the horizontal
	B	ISFET pH sensor:	No restrictions, recommended 0 ... 180°
	C	Oxygen sensor:	Installation angle of at least 10° from the horizontal

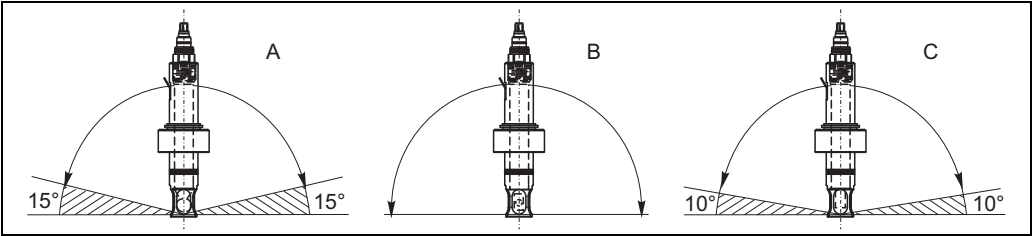


Fig. 1: Permitted installation angles depending on the sensor

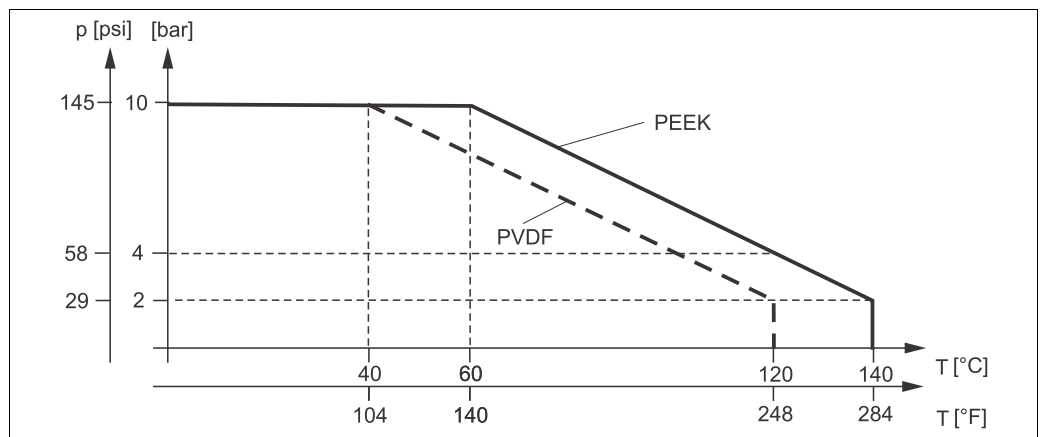
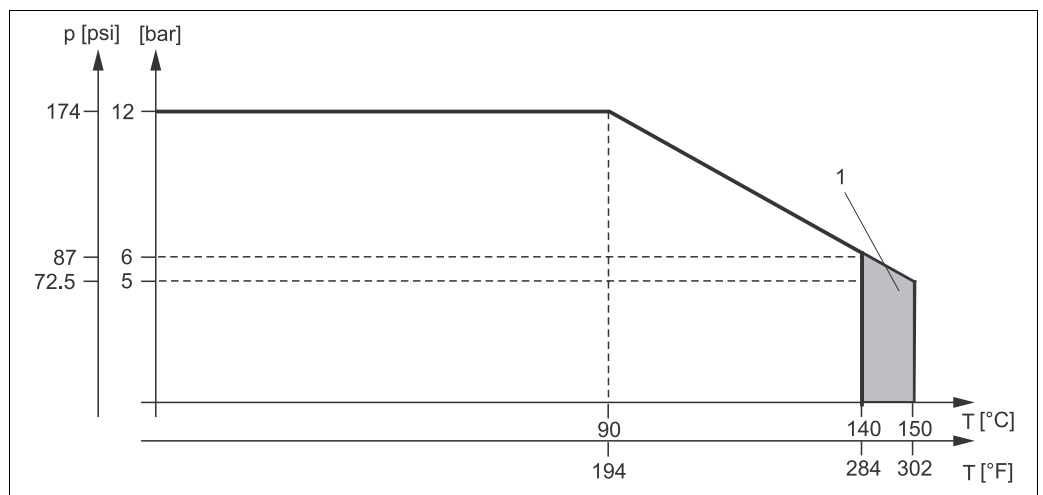
Environment

Ambient temperature	-15 to 80 °C (+5 to 176 °F)
Storage temperature	-15 to 60 °C (+5 to 140 °F)

Process

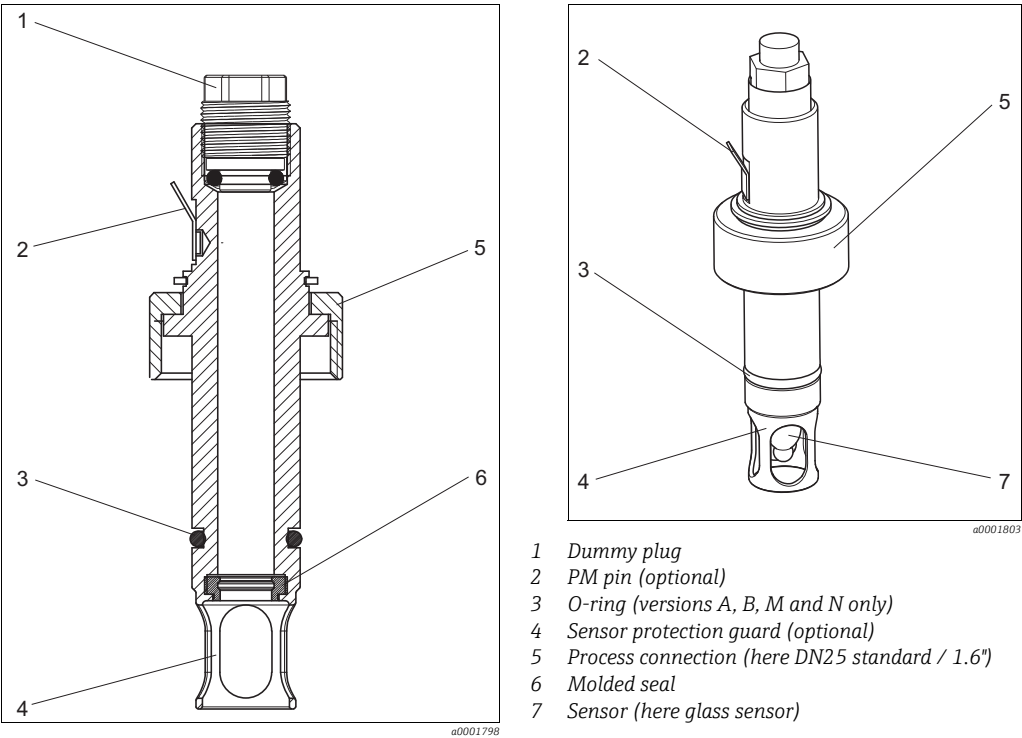
Process temperature range	Stainless steel and Alloy C22	-15 to 140 °C (+5 to 284 °F)
	PEEK	-10 to 140 °C (+14 to 284 °F)
	PVDF	-10 to 120 °C (+14 to 248 °F)
Process pressure	Stainless steel and Alloy C22	12 bar (174 psi) up to 90 °C (194 °F)
		6 bar (87 psi) up to 140 °C (284 °F)
		5 bar (72.5 psi) at 150 °C (302 °F) max. 60 minutes
	PEEK	10 bar (145 psi) up to 60 °C (140 °F)
		2 bar (29 psi) up to 140 °C (284 °F)
	PVDF	10 bar (145 psi) up to 40 °C (104 °F)
		2 bar (29 psi) up to 120 °C (248 °F)

Pressure / temperature diagram

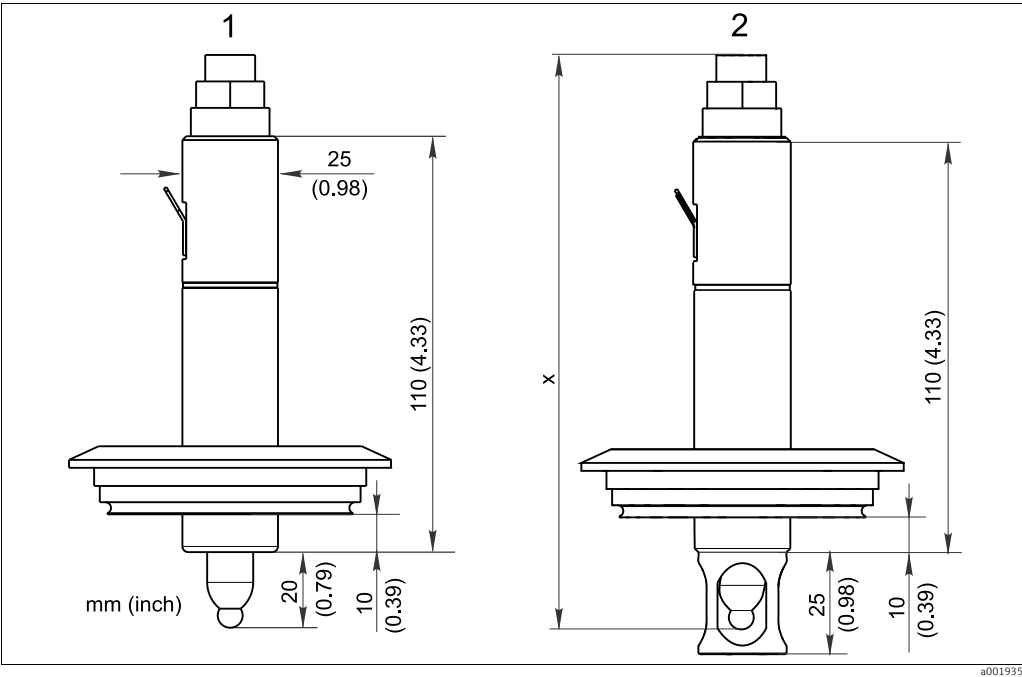


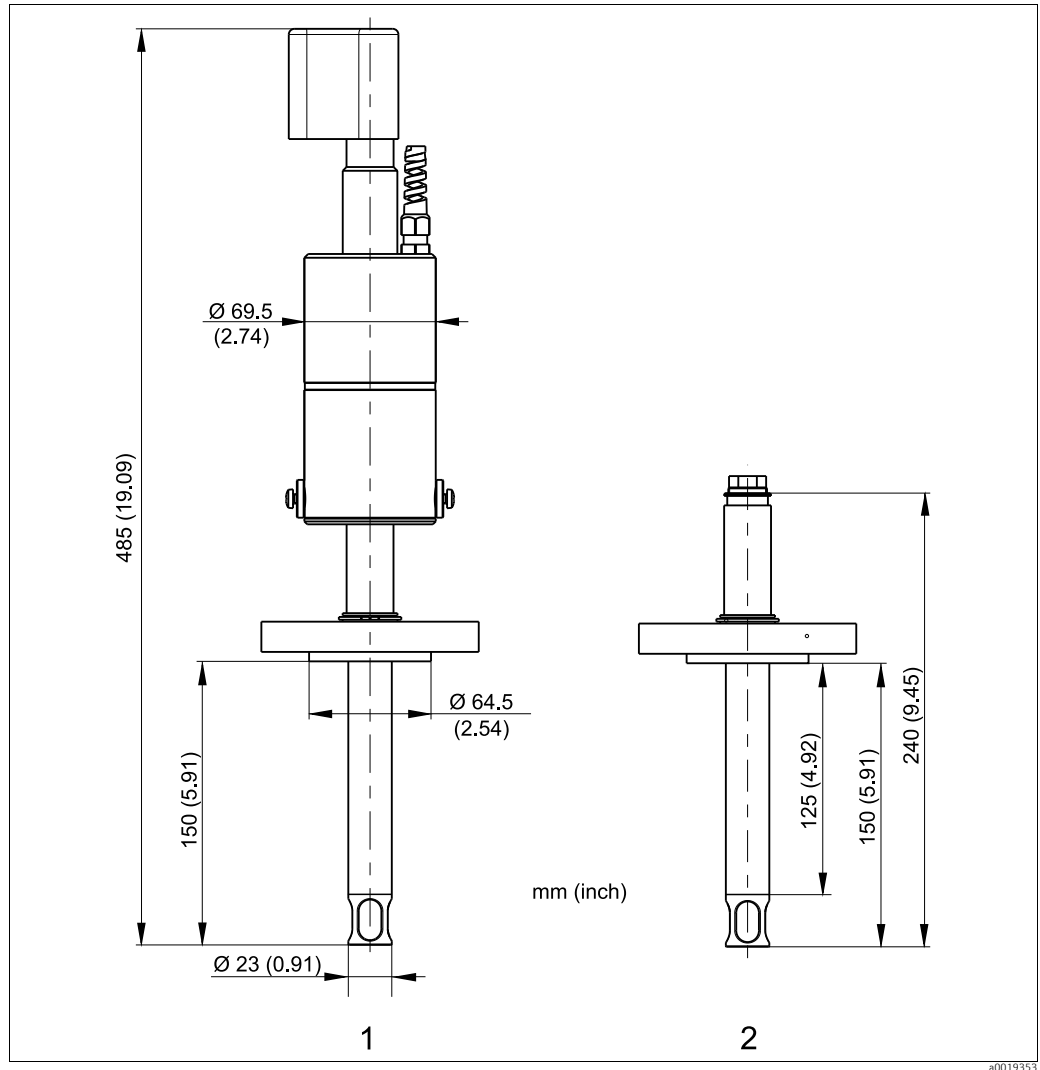
Mechanical construction

Design



Dimensions





Dimensions (version V, flange)

- 1 With sensor protection cover
2 Without sensor protection cover

Weight

Assembly with process connections A to U	0.5 to 1.4 kg (1.1 to 3.1 lbs)
Assembly with process connections V and W	approx. 2.5 kg (5.5 lbs)
Protection cover	approx. 1.0 kg (2.2 lbs)

Materials**In contact with medium**

Seals:

EPDM, FDA according to 21CFR 177.2600, USP Class VI
FKM (Viton), FDA according to 21CFR 177.2600, USP Class VI
Silicone, FDA according to 21CFR 177.2600, USP Class VI

FFKM (Kalrez) on request

Assembly:

Stainless steel 1.4435 (AISI 316 L)
Alloy C22
PVDF
PEEK

Not in contact with medium

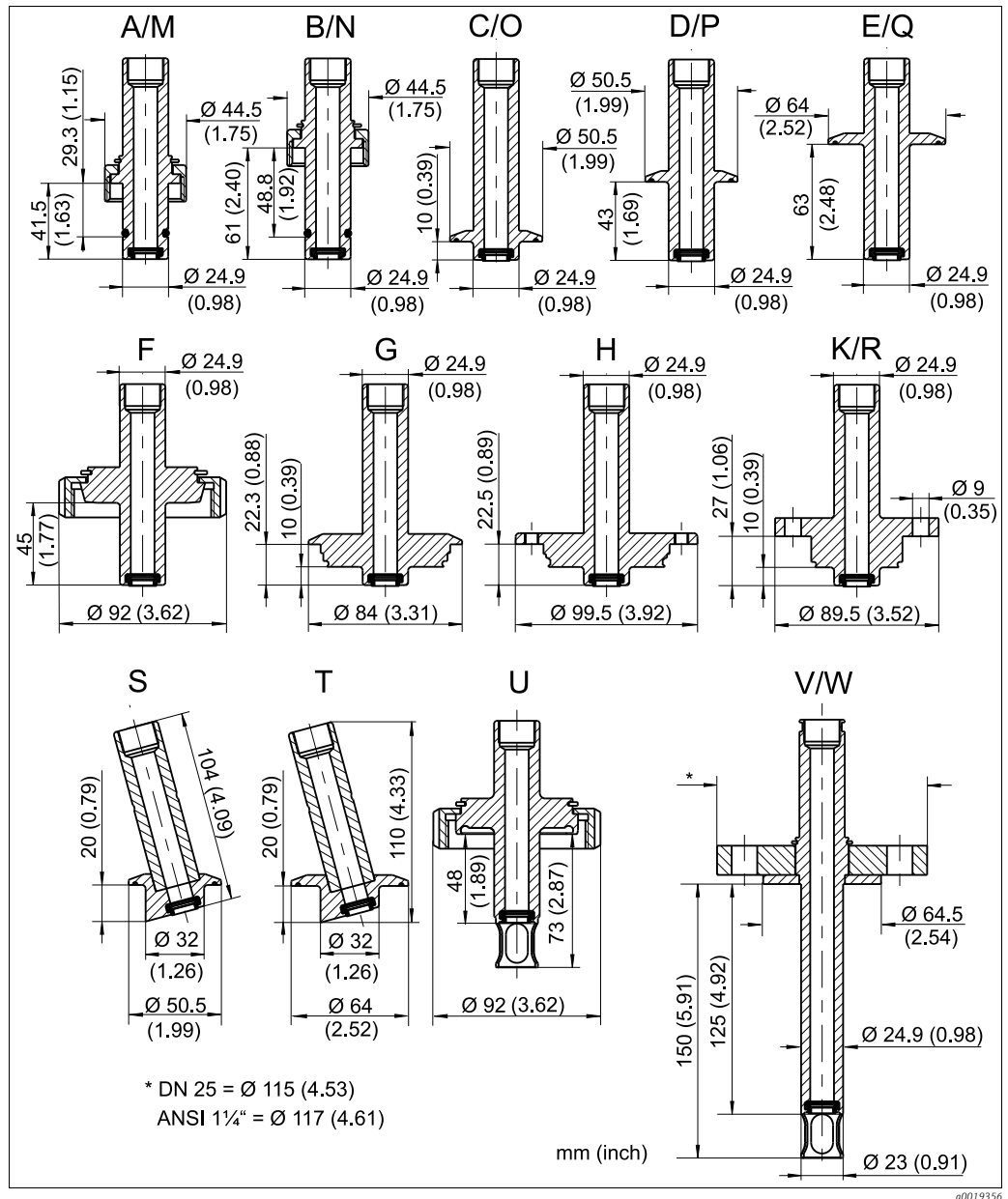
Union nut:

Stainless steel 1.4404 (AISI 316 L)
optional nickel-plated brass

Protection cover:

POM black

Process connections



Process connections

A	DN 25 standard / 41.5 mm (1.6") / with PM	M	DN 25 standard / 41.5 mm (1.6") / without PM
B	DN 25 B.Braun port / 61 mm (2.4") / with PM	N	DN 25 B.Braun port / 61 mm (2.4") / without PM
C	Clamp 1.5" / 10 mm (0.4") / with PM	O	Clamp 1.5" / 10 mm (0.4") / without PM
D	Clamp 1.5" / 43 mm (1.7") / with PM	P	Clamp 1.5" / 43 mm (1.7") / without PM
E	Clamp 2" / 63 mm (2.5") / with PM	Q	Clamp 2" / 63 mm (2.5") / without PM
F	Dairy fitting DN 50 DIN 11851 / 45 mm (1.8") / with PM	R	Neumo BioControl D 50 / 10 mm (0.4") / without PM
G	Varivent DN 40-125 / 10 mm (0.4") / with PM	S	Clamp 1.5" angular 15° / 20 mm (0.8") / without PM
H	APV DN 40-100 / 10 mm (0.4") / with PM	T	Clamp 2" angular 15° / 20 mm (0.8") / without PM
K	Neumo BioControl D 50 / 10 mm (0.4") / with PM	U	DIN 11864-1-A / aseptic DN 50 / without PM
		V	Flange DN 25 / 150 mm (5.9") / without PM
		W	Flange ANSI 150 lbs 1 1/4" / 150 mm (5.9") / without PM

Fitted sensors

Versions A to U: sensors (gel and KCl) with 120 mm in length

Versions V and W: sensors (gel and KCl) with 225 mm in length

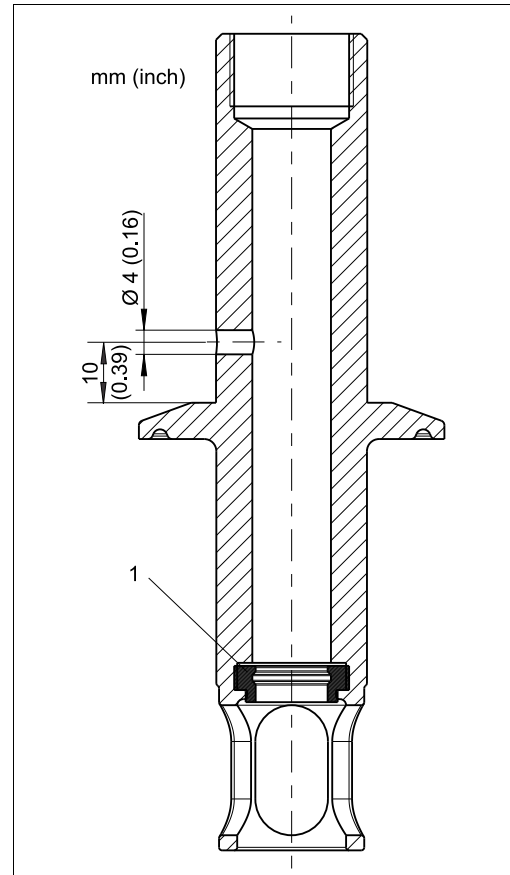


On request this assembly is available for longer sensors up to 425 mm.

Leakage monitoring (optional)

Leakage monitoring (a bore hole 10 mm (0.39") above the process connection) indicates any leaks in the molded seal. In the event of a leak, small amounts of fluid escape through the monitoring hole. The molded seal must then be replaced.

 Leakage monitoring is mandatory for 3-A certification (consider this when ordering).



Leakage monitoring

1 Molded seal (seals to the process)

Ordering information

Scope of delivery

The scope of delivery comprises:

- Ordered assembly version
- Operating Instructions, English.

Order code

Enter the following address in your browser to access the product page:

www.products.endress.com/cpa442

1. You can choose from the following options on the product page located on the right:

Product page function
:: Add to product list
:: Price & order information
:: Compare this product
:: Configure this product

2. Click "Configure this product".
3. The configurator opens in a separate window. You can now configure your device and receive the complete order code that applies for the device.
4. Afterwards, export the order code as a PDF or Excel file. To do so, click the appropriate button at the top of the page.

Possible combinations

The following table shows you all possible combinations of the assembly:

	Process connection																			
	A	B	C	D	E	F	G	H	K	M	N	O	P	Q	R	S	T	U	V	W
Material 316 L R _a = 0.76	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Material 316 L R _a = 0.38	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Material Alloy R _a = 0.76										x			x							
Material Alloy R _a = 0.38										x			x							
Material PVDF										x	x		x							
Material PEEK										x	x		x							
EHEDG	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
EHEDG, EN 10204	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
EHEDG, EN 10204, Pharma	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
3-A, EHEDG			x	x	x		x	x	x				x	x	x	x	x	x		
3-A, EHEDG, EN 10204			x	x	x		x	x	x				x	x	x	x	x	x		
Seal, EPDM	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Seal, FKM	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Seal, silicone	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
with protection guard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x
without protection guard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
without leakage detection	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
with leakage detection	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Protection cover										x	x			x					x	x
Brass union nut	x	x								x	x									

Other combinations on request

Product structure

 The following product structure represents the status of printing. You can create a complete and valid order code on the Internet using the configurator tool.

Process connection, immersion depth, potential matching (PM)									
	A	DN 25 standard / 41.5 mm (1.6") installation depth without protection guard, with PM							
	B	DN 25 B. Braun port / 61 mm (2.4") installation depth without protection guard, with PM							
	C	Clamp; 1.5" / 10 mm (0.4") installation depth without protection guard, with PM							
	D	Clamp; 1.5" / 43 mm (1.7") installation depth without protection guard, with PM							
	E	Clamp; 2" / 63 mm (2.5") installation depth without protection guard, with PM							
	F	DN 50 dairy fitting / 45 mm (1.8") installation depth without protection guard, with PM							
	G	Varivent N = 68 mm DN 40-125 / 10 mm (0.4") installation depth without protection guard, with PM							
	H	APV DN 40-100 / 10 mm (0.4") installation depth without protection guard, with PM							
	K	Neumo BioControl D 50/ 10 mm (0.4") installation depth without protection guard, with PM							
	M	DN 25 standard / 42 mm (1.6") installation depth without protection guard, without PM							
	N	DN 25 B. Braun port / 61 mm (2.4") installation depth without protection guard, without PM							
	O	Clamp; 1.5" / 10 mm (0.4") installation depth without protection guard, without PM							
	P	Clamp; 1.5" / 43 mm (1.7") installation depth without protection guard, without PM							
	Q	Clamp; 2" / 63 mm (2.5") installation depth without protection guard, without PM							
	R	Neumo BioControl D 50/ 10 mm (0.4") installation depth without protection guard, without PM							
	S	Clamp; 1.5" oblique / 20 mm (0.8") installation depth without protection guard, without PM							
	T	Clamp; 2" oblique / 20 mm (0.8") installation depth without protection guard, without PM							
	U	DIN 11864-1-A aseptic DN 50 / without PM							
	V	Flange DN 25 / 150 mm (5.9") installation depth with protection guard, without PM							
	W	Flange ANSI 150 lbs, 1¼" / 150 mm (5.9") installation depth with protection guard, without PM							
		Material, surface roughness							
		1	Stainless steel 1.4435 (AISI 316L), surface finish $R_a = 0.76 \mu\text{m}$						
		2	Stainless steel 1.4435 (AISI 316L), surface finish $R_a = 0.38 \mu\text{m}$ /with inspection certificate EN 10204-3.1						
		3	Alloy C22, surface finish $R_a = 0.76 \mu\text{m}$ /with inspection certificate EN 10204-3.1						
		4	Alloy C22, surface finish $R_a = 0.38 \mu\text{m}$ /with inspection certificate EN 10204-3.1						
		7	PVDF (polyvinylidene fluoride)						
		8	PEEK (polyetheretherketone)						
			Approval, certificates						
		A	EHEDG cleanable and sterilizable						
		B	EHEDG cleanable and sterilizable + EN 10204-3.1						
		C	EHEDG cleanable and sterilizable + EN 10204-3.1 + Pharma CoC						
		E	3-A, EHEDG cleanable and sterilizable						
		F	3-A, EHEDG cleanable and sterilizable + EN 10204-3.1						
			Seal, wetted parts						
			1	EPDM molded seal (complying with FDA requirements, USP Class VI)					
			2	FKM (Viton®) molded seal (complying with FDA requirements, USP Class VI)					
			3	Silicone molded seal (complying with FDA requirements, USP Class VI)					
				Sensor protection guard					
			A	With integrated sensor protection guard (+ 25 mm installation depth)					
			B	Without sensor protection guard (+ 20 mm free installation depth required)					
				Version					
				1	Basic version				
				2	With leakage detection, 3-A				
					Additional option				
					1	Basic version			
					2	Protection cover 316 / POM, KCl sensor, chemical capable			
					3	Union nut G1¼, nickel plated brass			
CPA442-									complete order code

Process connection Clamp 1.5" with OD of 50.5 mm (1.99")

- complies with ASME-BPE 2009
- complies with DN 40 DIN 32676 2001
- complies with NW 38 ISO 2852

Process connection Clamp 2" with OD of 64 mm (2.52")

- complies with ASME-BPE 2009
- complies with DN 50 DIN 32676 2001
- complies with NWsd 51-40 ISO 2852

Certificates and approvals

Hygienic certificates

FDA

All materials in contact with medium are listed at FDA.

3-A

Certified according to 3-A Standard 74-05 ("3-A Sanitary Standards for Sensor and Sensor Fittings and Connections Number 74-05").

(for versions with leakage monitoring **and** process connections C, D, E, G, H, K, O, P, Q, R, S, T, U)

TSE/BSE

No material of animal origin is used. Origin, production and processing are free of TSE/BSE.
(deliverable via CoC certificate)

USP Class VI

Certificate (Certificate of Compliance) according to USP (United States Pharmacopeia) part <87> and part <88> class VI

The seals made of EPDM, FKM and silicone are approved.

EHEDG

Certified for cleanability and sterilizability according to EHEDG

Pharma CoC

Manufacturer's certificate according to published Endress+Hauser specification.

Material inspection certificate

3.1

Material inspection certificate according to EN 10204 - 3.1

Surface finish

Inspection certificate according to EN 10204 - 3.1

Pressure equipment directive

DGRL 97/23/EG

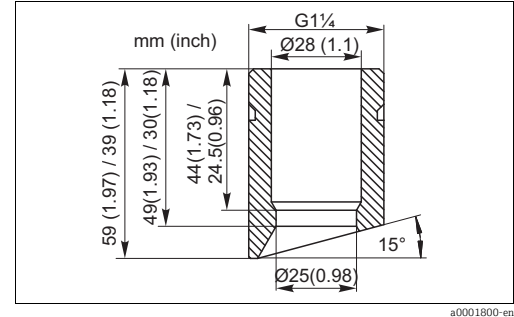
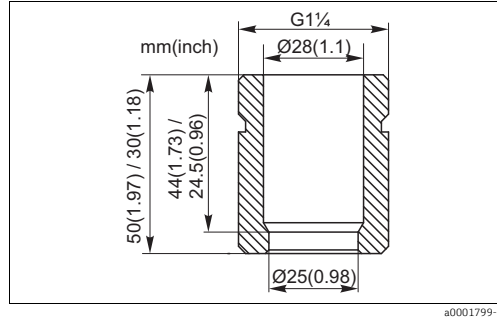
Certificate of compliance according to pressure equipment directive 97/23/EG

Accessories

Seals

- EPDM seal set for CPA442; order no. 51507170
- FKM (Viton®) seal set for CPA442; order no. 51507169
- Silicone seal set for CPA442; order no. 51507171

Welding sockets



- DN25 safety welding socket, straight, stainless steel 1.4435, L=50; order no. 51508049
only for CPA442-B*****
only for CPA442-N*****
 - DN25 safety welding socket, angled, stainless steel 1.4435, L=50/60; order no. 51508050
only for CPA442-B*****
only for CPA442-N*****
 - DN25 safety welding socket, straight, stainless steel 1.4435, L=30; order no. 51508051
only for CPA442-A*****
only for CPA442-M*****
 - DN25 safety welding socket, angled, stainless steel 1.4435, L=30/40; order no. 51508052
only for CPA442-A*****
only for CPA442-M*****
-  Already existing standard welding sockets (of CPA440 / CPA441 / CPA460) order no. 50005192 and 50028446 are also suitable for CPA442.

Dummy plug

- Dummy plug for G1¼ process connection,
- Stainless steel 1.4435 (AISI 316L), FKM (Viton®) seal, G1¼ internal thread; order no. 51502800

Sensors

Orbisint CPS11/CPS11D

- pH sensor for process applications
- Optional SIL version for connection to SIL approved transmitters
- With dirt-repellent PTFE diaphragm
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps11 or www.products.endress.com/cps11d)
- Technical Information TI028C/07/EN

Orbisint CPS12/CPS12D

- ORP electrode for process applications
- With dirt-repellent PTFE diaphragm
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps12 or www.products.endress.com/cps12d)
- Technical Information TI367C/07/EN

Ceraliquid CPS41/CPS41D

- pH sensor
- With ceramics diaphragm and liquid KCl electrolyte
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps41 or www.products.endress.com/cps41d)
- Technical Information TI079C/07/EN

Ceraliquid CPS42/CPS42D

- ORP electrode
- With ceramics diaphragm and liquid KCl electrolyte
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps42 or www.products.endress.com/cps42d)
- Technical Information TI373C/07/EN

Ceragel CPS71/CPS71D

- pH sensor
- With double chamber reference system and integrated bridge electrolyte
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps71 or www.products.endress.com/cps71d)
- Technical Information TI245C/07/EN

Ceragel CPS72/CPS72D

- ORP electrode
- With double chamber reference system and integrated bridge electrolyte
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps72 or www.products.endress.com/cps72d)
- Technical Information TI374C/07/EN

Orbipore CPS91/CPS91D

- pH sensor
- With open aperture for media with high dirt load
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps91 or www.products.endress.com/cps91d)
- Technical Information TI375C/07/EN

Orbipore CPS92/CPS92D

- ORP sensor
- With open aperture for media with high dirt load
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps92 or www.products.endress.com/cps92d)
- Technical Information TI435C/07/EN

Tophit CPS471/CPS471D

- Sterilizable and autoclavable ISFET sensor for food and pharmaceuticals, process technology, water treatment and biotechnology;
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps471 or www.products.endress.com/cps471d)
- Technical Information TI283C/07/EN

Tophit CPS441/CPS441D

- Sterilizable ISFET sensor for media with low conductivity, with liquid KCl electrolyte;
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps441 or www.products.endress.com/cps441d)
- Technical Information TI352C/07/EN

Tophit CPS491/CPS491D

- ISFET sensor with open aperture for media with high dirt load;
- Ordering per product structure (--> Online configurator, www.products.endress.com/cps491 or www.products.endress.com/cps491d)
- Technical Information TI377C/07/EN

Oxymax COS22D

- Sterilizable sensor for dissolved oxygen
- Order as per product structure (--> Online configurator, www.products.endress.com/cos22d)
- Technical Information TI446C/07/EN



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Mail: Sales@ainstru.com