Hygienic installation systems for pipes and tanks in pharmaceutical applications

PHARMadapt ESP

Temperature measurement without media contact
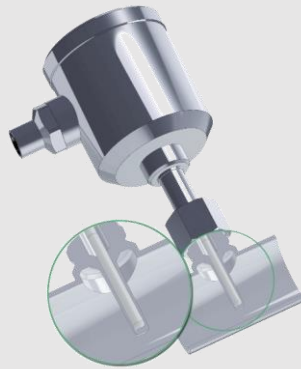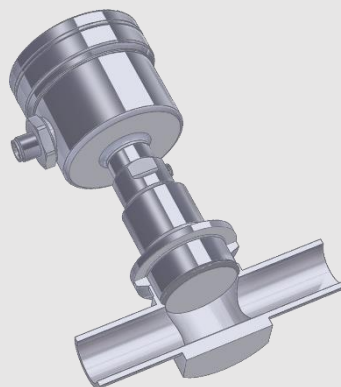
PHARMadapt EPA

Temperature / Point level measurement in narrow measuring points

Fitting system CPM

Pressure measurement with flush installation in smallest pipe diameters

HYGIENIC BY DESIGN
ANDERSON-NEGELE

No process stop due to sensor removal during recalibration or replacement
Temperature measurement without media contact

With the ESP installation system, an thermowell is **permanently installed** in the process. The slim tip of the sensor is inserted into this thermowell and held in contact by a spring. It is therefore **not in direct contact** with the medium.

The sensor can be removed at any time for **recalibration or replacement**, without electrical disconnection and without opening the process, and consequently **without necessity to shut down the plant or to stop the process.**

· **Tailored to requirements**: Special design for pharmaceutical applications
· **Variable**: Installation **in tanks** using welding sockets or adapters. Installation **in pipes** using tees or elbows with integrated thermowells
· **Fast and precise**: t50 response time from 4.4 seconds, measuring accuracy <±0,25 °C
· **One for all:** One sensor type with the same probe length can be used for differing pipe widths, thus **minimizing spare parts inventory** and planning requirements
· **Reliable:** Spring-mounted tip for perfect contact
· **Maximum hygiene:** No product contact = **No risk of contamination** by previous products, foreign bodies and germs via the sensor
· Easy to clean: **design without dead-legs** ensures easy CIP/SIP cleaning
· **Certified quality:** PHARMadapt ESP complies with current norms, specifications and standards such as 3-A, FDA, USP... (see product information)

Temperature sensors TFP

**Fitting system ESP
with integrated thermowell**
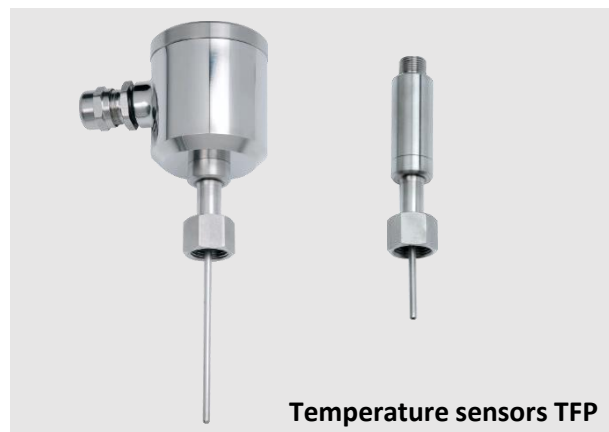
Available temperature sensors

· **TFP 58P | TFP-68P | TFP-168P | TFP-188P**
· **Accuracy class:** A | 1/3B | 1/10B
· **Options:** 2x Pt100 | LCD display | transmitter

Available installation systems for pipes and vessels

· **Weld-in thermowells**
· **Adapters** for diverse process connections (Tri-Clamp, Varivent…)
· **Extension sleeves** for insulated / double-walled vessels
· **Fittings with pipe sections** (designed for orbital welding, to reduce time and quality problems compared to sleeve welding):
  - **Tees** DN8…DN100
  - **Elbows** DN10…25 | DN ½"…1"

The perfect installation situation for every application, in all pipes and vessels

TFP Temperature sensors (Details see respective product information)

	Type	Head Ø	Pt100	Transmitter available	Electrical connection	Probe length in mm
	TFP-58P	50 mm	✓	✓	M12 plug PG cable gland	37 | 59 | 83 | 160
	TFP-58P.2	50 mm	✓ (2x)	-	M12 plug PG cable gland	37 | 59 | 83 | 160
	TFP-68P	50 mm	✓ (2x)	✓ (2x)	M12 plug	37 | 59 | 83 | 160
	TFP-168P	18 mm	✓	✓	M12 plug	37 | 59 | 83 | 160
	TFP-188P	18 mm	✓	-	PTFE fixed cable	37 | 59 | 83 | 160

ESP Fitting system (Details see respective product information)

Material: 1.4435 (316L) with 3.1 certificate, surface Ra ≤ 0,8 µm / 0,6 µm / 0,4 µm

	Type	Application	For probe length	Installation length
	ESP-E	Weld-in thermowell for pipes and tanks	83 mm | 160 mm	
	ESP-C	Adapter with integrated thermowell for **Tri-Clamp** 1"...1 ½"	83 mm	66 mm
	ESP-B	Adapter with integrated thermowell for **BioControl** DN25, DN50 and DN65	59 mm	22 mm
	ESP-V	Adapter with integrated thermowell for **Varivent** DN25 and DN40	37 mm 59 mm	20 mm 42 mm
	ESP-F	Adapter F52 / F46 with integrated thermowell for **Fermenter**	83 mm	19 mm
	ESP-G	Tee pipe element with integrated thermowell DIN 2: DN10...DN100 ISO: DN8...DN80 ASME: ½"...4"	37 mm With ESP-VL: 83 mm | 160 mm	Pipe 70...310 mm
	ESP-W	Elbow pipe element with integrated thermowell DIN 2: DN10...DN25 ISO: DN8...DN20 ASME: ½"...1"	37 mm With ESP-VL: 83 mm | 160 mm	Pipe 35...55 mm bzw. 62...88 mm
	ESP-VL	Extension 46 or 123 mm, for ESP-G Tees or ESP-W elbows	Extension from 37 mm to 83 mm | 160 mm	

HYGIENIC BY DESIGN
ANDERSON-NEGELE

Aseptic clamp connection for pipes with nominal diameters from DN10 | ISO8 | ¾"

Hygienic sensors for narrow spaces

Especially in pipes with a **small nominal diameter**, the hygienic installation of a temperature or point level sensor is often difficult to realize.

The PHARMadapt EPA installation system, specially developed for pharmaceutical applications, makes this **integration simple and safe**: the **flow-optimized pipe tees** are simply and reproducibly **welded in** and the sensors are inserted by means of a clamp connection.

· **Installation with zero dead-leg or gap:** The design of the adapter creates a flow-optimised and easily cleanable process connection. Dead spaces as with weld-on sockets are avoided by design.

· **Two connection sizes, many pipe diameters:** connection with di= 8 mm or 18 mm, pipes from DN10 to DN100

· **No weld seam at all:** optionally completely milled from 1.4539 (904L) solid material for optimum hygiene in case of particularly sensitive products and processes.

· **Easy installation:** The EPA adapter can be welded safely and hygienically using the orbital method. The sensor itself is sealed with an O-ring and fixed with a standard clamp

· **Certified quality:** PHARMadapt EPA complies with current norms, specifications and standards such as 3-A, FDA, USP... (see product information)

Available sensors

· **TFP Temperature sensors** Standard (head 50 mm) or Mini (head 18 mm), with 1xPt100 or 2xPt100

· **NCS point level sensors**

Variants of the PHARMadapt EPA fitting system

· **EPA-8**   DN: DIN 10…100 | ISO 8…80 | ASME ¾"…4"
Material: Stainless steel 1.4435 (316L)
Surface: Ra≤0,8 μm (Ra≤0,6 | 0,4 μm optional)

· **EPA-18**   DN: DIN 25… 100 | ISO 20…80 | ASME 1"…4"
Material: Stainless steel 1.4435 (316L)
Surface: Ra≤0,8 μm (Ra≤0,6 | 0,4 μm optional)

· **EPA-18G**   DN: ISO 25…50
Material: Stainless steel 1.4539 (904L) **(Milled)**
Surface: Ra≤0,4 μm electropolished

· **Pipe standard:** DIN 11866 | ISO 1127 | ASME BPE

Sensors for temperature TFP | Point level NCS

Fitting systems EPA-8 | EPA-18

Dead leg free installation for every application, with pipe Tees DN10…100

PHARMadapt EPA Temperature / Point level

HYGIENIC BY DESIGN
ANDERSON-NEGELE

TFP temperature sensors (Details see respective product information)

	Type	Head Ø in mm	PT100	Transmitter available	Electrical connection	Probe length in mm	Fitting system
	TFP-641	50	✓	✓	M12 plug PG cable gland	10 | 25 | 50 | 100	EPA-8
	TFP-641.2	50	✓ (2x)	-	M12 plug PG cable gland	10 | 25 | 50	EPA-8
	TFP-642	50	✓ (2x)	✓ (2x)	M12 plug	10 | 25 | 50	EPA-8
	TFP-661	18	✓	✓	M12 plug	10 | 25 | 50 | 100	EPA-8
	TFP-681	18	✓	-	PTFE Fixed cable	10 | 25 | 50 | 100	EPA-8
	TFP-841	50	✓	✓	M12 plug PG cable gland	20 | 50	EPA-18
	TFP-841.2	50	✓ (2x)	-	M12 plug PG cable gland	20 | 50	EPA-18
	TFP-842	50	✓ (2x)	✓ (2x)	M12 plug	20 | 50	EPA-18
	TFP-861	18	✓	✓	M12 plug	20 | 50	EPA-18
	TFP-881	18	✓	-	PTFE Fixed cable	20 | 50	EPA-18

NCS Point level sensors (Details see respective product information)

	Type	Head Ø in mm	Measuring range	Fitting system
	NCS-61P	50	Dk ≥ 20	EPA-8
	NCS-62P	18	Dk ≥ 5	EPA-8
	NCS-81P	50	Dk ≥ 20	EPA-18 EPA-18G
	NCS-82P	18	Dk ≥ 2	EPA-18 EPA-18G

PHARMadapt EPA Fitting systems (Details see product information)

	Typ	Pipe standard	Pipe widths DN
	EPA -8 / A	Series A (DIN 11866)	DIN 10 | 15 | 25 | 32 | 40 | 50 | 65 | 80 | 100
	EPA -8 / B	Series B (ISO 1127)	ISO 8 | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80
	EPA -8 / C	Series C (ASME BPE)	ASME ¾" | 1" | 1½" | 2" | 2½" | 3" | 4"
	EPA -18 / A	Series A (DIN 11866)	DIN 25 | 32 | 40 | 50 | 65 | 80 | 100
	EPA -18 / B	Series B (ISO 1127)	ISO 20 | 25 | 32 | 40 | 50 | 65 | 80
	EPA -18 / C	Series C (ASME BPE)	ASME 1" | 1½" | 2" | 2½" | 3" | 4"
	EPA -18G	ISO 1127	ISO 15 | 20 | 25 | 32 | 40 | 50

Optimized pressure measurement for smallest pipe diameters
Absolutely zero dead-leg, flush front installation

For **high-precision and hygienic pressure measurement**, the pressure diaphragm must be integrated into the process **as flush as possible and without dead space**. This is a particular challenge for pipes with **small nominal diameters**.

Here, the CPM installation system offers a **process connection that is easy and safe to install** and offers unique advantages due to its special design.

· **Zero dead-leg installation with perfect diaphragm position:** Due to the design of the CPM adapter and the extension of the sensor nozzle, the pressure diaphragm sits inline precisely at the height of the media feed-through. This results in an absolutely flow-optimized and hygienic process adaptation. Due to the design of the CPM, dead spaces such as with Tees or weld-on sockets are excluded.

· **Pressure sensors with standard sizes:** Pressure sensors with standard diaphragm diameters of 22 or 38 mm are also used for the smallest nominal pipe diameters from ¼". Measurement tolerances such as those for smaller diaphragm diameters are avoided by design

· **Easy installation:** The CPM adapter is simply fixed in the process with Tri-Clamp or can be welded safely and hygienically with AWF welding collar in orbital process. The pressure sensor itself is sealed with an O-ring and mounted with a standard 1½" clamp

Pressure transmitters / Pressure gauges

CPM fitting system

Available pressure transmitters and gauges

· **D3 Differential pressure and level sensor**
· **L3 Pressure and level sensor**
· **MPP Modular pressure and level sensor**
· **PF Modular pressure sensor**
· **HA Pressure sensor (autoclavable)**
· **EK Pressure gauge 63 mm (autoclavable with CPM)**
· **EM Pressure gauge 90 mm (autoclavable)**
· **EP Pressure gauge with digital display**

Variants of the CPM fitting system

· **CPM (Ø 38,1 mm),** for nominal widths ½" - 4"
· **CPM Mini (Ø 22,2 mm),** for nominal widths ¼" - ½"

· **Tri-Clamp connection,** for nominal widths ½" bis 4"
· **AWF (butt weld),** for nominal widths ¼" bis 4"

· **Material: Stainless steel 316L** (Option: Hastelloy)
· **Surface: Ra = 0,4 | 0,5 | 0,6 µm** (see table)

Zero dead-leg, flush front inline process connection for pipes from ¼" to 4"

CPM Fitting systems (Details see product information)

Materials:

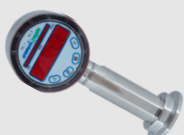Stainless steel 316L with 3.1 Certificate with batch number | (Hastelloy (Option)
O-Ring EPDM USP Class VI (Standard) | Silicon or Viton (Option)

	Type	Pipe size	Connection	Surface Ra Ep=electropolished	Length in mm
	CPM Mini	¼"	AWF (butt weld)	Ra≤0,5 (ep)	101,6
	CPM Mini	½"	AWF (butt weld)	Ra≤0,4 (ep)	101,6
	CPM Mini	½"	Tri-Clamp	Ra≤0,4 (ep)	152,4
	CPM	½"	AWF (butt weld)	Ra≤0,4 (ep)	133,4
	CPM	½"	Tri-Clamp	Ra≤0,4 (ep)	114,3
	CPM	¾"	AWF (butt weld)	Ra≤0,4 (ep)	133,4
	CPM	¾"	Tri-Clamp	Ra≤0,4 (ep)	120,7
	CPM	1"	AWF (butt weld)	Ra≤0,4 (ep)	120,7
	CPM	1"	Tri-Clamp	Ra≤0,4 (ep)	133,4
	CPM	1-½"	AWF (butt weld)	Ra≤0,4 (ep)	139,7
	CPM	1-½"	Tri-Clamp	Ra≤0,4 (ep)	146,1
	CPM	2"	AWF (butt weld)	Ra≤0,4 (ep)	177,8
	CPM	2"	Tri-Clamp	Ra≤0,4 (ep)	171,5
	CPM	2-½"	AWF (butt weld)	Ra≤0,6	184,2
	CPM	2-½"	Tri-Clamp	Ra≤0,6	184,2
	CPM	3"	AWF (butt weld)	Ra≤0,6	196,9
	CPM	3"	Tri-Clamp	Ra≤0,6	196,9
	CPM	4"	AWF (butt weld)	Ra≤0,6	241,3
	CPM	4"	Tri-Clamp	Ra≤0,6	241,3

Available pressure transmitters and gauges (Details see respective product information)

	Typ	Anwendung	Anschluss		Typ	Anwendung	Anschluss
	D3	Differential pressure and level sensor	CPM		HA	Pressure sensor (autoclavable only with CPM)	CPM CPM Mini
	L3	Pressure and level sensor	CPM		EK	Pressure gauge 63 mm (autoclavable only with CPM)	CPM CPM Mini
	MPP	Modular pressure and level sensor	CPM CPM Mini		EM	Pressure gauge 90 mm (autoclavable)	CPM
	PF	Modular pressure sensor	CPM		EP	Pressure gauge with digital display	CPM CPM Mini

Illustrations partly not with CPM connection

NEGELE MESSTECHNIK GMBH

Raiffeisenweg 7   Phone   +49 (0) 83 33 . 92 04 – 0
87743 Egg an der Günz   Fax   +49 (0) 83 33 . 92 04 – 49

GERMANY   Sales@anderson-negele.com

INTERNATIONAL MAIN OFFICES

North America   **Asia**

Anderson Instrument Company Inc.   Anderson-Negele China
Fultonville, NY 12072   Shanghai, 200335
USA   P.R. CHINA

                                                 Anderson-Negele India
                                                 Kurla, Mumbai – 400 070
                                                 INDIA