



LABOM INSIDE

RELIABLE MEASUREMENT & MONITORING

Pressure Temperature Level Accessories



MADE-TO-MEASURE SOLUTIONS

산업 측정 기술 분야에서 50년 이상의 성공: Hude의 패밀리 비즈니스 LABOM Mess-und Rege'technik GmbH의 성공은 고객 - 중심의 개별 솔루션과 건전한 성장을 기반으로 한다.

Labom은 1968년 Walter Labohm에 의해 설립 되었으며, Labom은 역사를 통해 공예 중심의 회사에서 유명한 산업 측정 기술 분야전문 업체로 발전하였다.

[디지털 압력 및 온도 측정 기술]

Labom의 특수 전문 분야는 솔루션을 측정하기 위해 개별적으로 만들어지며, 이 장치는 식품, 제약, 생명공학 및 화학 분야를 포함한 다양한 산업 분야에서 압력, 수준 및 온도를 측정하고 모니터링하는 데 사용된다.

PASCAL Ci4 INTUITIVE

Pressure transmitter for relative and absolute pressure



With threaded connection
Ci4100



For diaphragm seal operation,
sturdy
Ci4120



For diaphragm seal operation,
hygienic
Ci4110

CI41 PRODUCT HIGHLIGHTS

- High measuring rate up to 100Hz
- Measurement range from 25mbar...400bar
- Accuracy of 0.1%
- Process connections in accordance with the norm or manufacturer-specific
- Hygienic and robust design
- Maximum measurement accuracy even with a diaphragm seal systems thanks to ATC technology (p. 10)
- Turndown of 100:1
- NAMUR-tested to NE95

- Hygienic and sturdy applications을 위한 다양한 process connections.
- 포괄적인 매개변수화, 시뮬레이션 및 진단 기능.
- Hydrogen compatible 수소 호환가능.
- 고해상도 그래픽 디스플레이와 배경 조명.
- Intuitive operation 쉬운 작동법.
- LAB4Level operating software for level applications.

Series CI4100

Pressure transmitter PASCAL Ci4 with threaded connection



Measuring range	-1...600 bar
Media temperature	-40...100 °C
Accuracy	≤ 0.075 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	G1/4B / G1/2B / G1/4A / NPT1/2" / NPT1/4"
Requirement	SIL2 / UKEX / ATEX / IECEx / Hydrogen
Degree of protection	IP65 / IP67 / IP69K(option)

Series CI4110

Pressure transmitter PASCAL Ci4 for diaphragm seal operation, hygienic



Measuring range	1...40 bar
Media temperature	-20...200 °C
Accuracy	≤ 0.075 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	Diaphragm seal HYGIENIC
Requirement	SIL2 / UKEX / ATEX / IECEx
Degree of protection	IP65 / IP67 / IP69K(option)

Series CI4120

Pressure transmitter PASCAL Ci4 for diaphragm seal operation, robust



Measuring range	-1...600 bar
Media temperature	-20...400 °C
Accuracy	≤ 0.075 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	Diaphragm seal
Requirement	SIL2 / UKEX / ATEX / IECEx / Hydrogen
Degree of protection	IP65 / IP67 / IP69K(option)

DIAPHRAGM SEAL TECHNOLOGIES



Differentia designs



Diaphragm seal filling



Inline diaphragm seal

PASCAL Ci4 INTUITVE

For differential pressure, level and flow



Ex HART SIL2 LAB4



Differential pressure transmitter, high overload protection
CI4340



Differential pressure and filling level transmitter
CI4330



Differential pressure and level transmitter, high overload protection
CI4350

CI43 DIFFERENTIAL PRESSURE

- Measurement range from 25mbar...400bar
- Accuracy up to < 0.07%
- Reduced-volume design for diaphragm seal systems with small nominal sizes
- Max. working pressure up to 400bar
- Simultaneous display of differential pressure and static pressure possible
- Operating software LAB4Level (p. 10)
- Long-term stability of 0.1% within 5 years

- 아주 작은 소형 사이즈의 다이어프램 씬 (Diaphragm seals) 시스템을 위한 부피 감소 설계.
- 차압(Differential pressure) 및 정압(Static pressure) 동시 표시 가능.
- 출력 함수: 선형, 반전, 제곱근, 최대 64개의 지지점이 있는 테이블 함수.

- LAB4Level 운영 소프트웨어가 장착된 측정 장치는 충전 수준, 부피 및 무게를 동시에 계산하고 표시할 수 있다.

Series CI4300

Differential pressure transmitter PASCAL Ci4 Delta P for general application



Measuring range	-1...40 bar
Media temperature	-40...100 °C
Accuracy	≤ 0.1 %
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	Process flange with connection dimension
Requirement	SIL2 / UKEX / ATEX / IECEx
Degree of protection	IP65 / IP67 / IP69K(option)

Series CI4330

Differential pressure transmitter PASCAL Ci4 Delta P for diaphragm seal operation



Measuring range	-1...40 bar
Media temperature	-90...400 °C
Accuracy	≤ 0.1 %
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	Diaphragm seal
Requirement	SIL2 / UKEX / ATEX / IECEx
Degree of protection	IP65 / IP67 / IP69K(option)

Series CI4340

Differential pressure transmitter PASCAL Ci4 Delta P for high static working pressure



Measuring range	-16...16 bar
Media temperature	-40...85 °C
Accuracy	≤ 0.075 %
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	Process flange with connection dimension
Requirement	UKEX / ATEX / IECEx
Degree of protection	IP65 / IP67 / IP69K(option)

Series CI4350

Differential pressure and level transmitter PASCAL Ci4 Delta P, highly overload protected



Measuring range	-16...16 bar
Media temperature	-90...400 °C
Accuracy	≤ 0.075 %
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	Diaphragm seal
Requirement	UKEX / ATEX / IECEx
Degree of protection	IP65 / IP67 / IP69K(option)

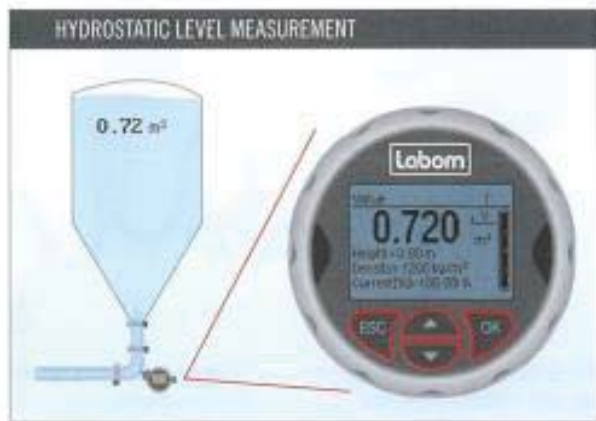
TECHNOLOGIES AND OPTIONS

Hydrostatic level measurement, or by means of differential pressure

CI4 시리즈의 경우 LABOM은 옵션인 운영 소프트웨어 LAB4 레벨을 제공한다.

이 소프트웨어는 채우기 높이, 부피 및 무게를 동시에 계산하고 표시할 수 있다. 수치는 필요에 따라 선택한 단위로 또는 백분율로 표시된다.

다양한 레이아웃을 통해 디스플레이를 사용자의 정보 요구에 맞게 조정할 수 있다. 예를 들어, 공격적인 매체나 위생적인 요구 사항에 따라 공정과 기기 측면을 분리해야 하는 경우 디아프램 씰이 있는 차압 송신기를 사용하여 충전 수준을 측정하는 것이 이상적이다.



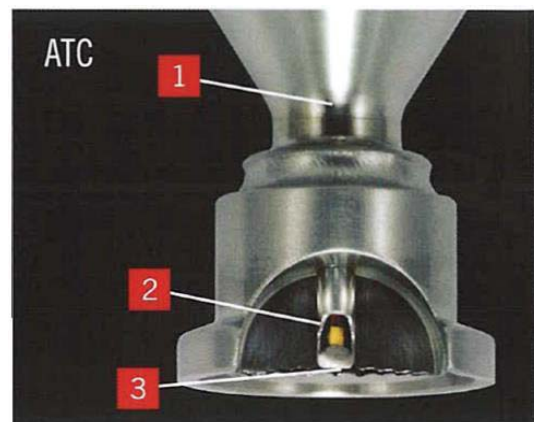
TEMPERATURE ERROR COMPENSATION

Mathematical correction of the measurement error in diaphragm seal systems.

LABOM은 진동판에 대한 공정 온도의 영향으로 인한 단점을 제거하기 위해 추가 보상 공정을 개발했습니다. 시스템을 밀봉합니다. 압력 전달 유체의 온도는 ATC 기술(ATC, Active Temperature Compensation, 활성 온도 보상)이 적용된 추가 온도 센서로 다시 -cord됩니다.

공정 열로 인한 결과 측정 오류를 수학적으로 수정할 수 있습니다. 따라서 이 프로세스 덕분에 온도 오차를 80~90% 줄일 수 있습니다.

압력 측정 장치의 높은 정확도와 함께 고정밀 압력 측정을 수행할 수 있습니다.



1. Device connection
2. ATC sensor
3. Diaphragm seal membrane

- Hygienic and sturdy applications을 위한 다양한 process connections
- "smart" 기술이 적용된 모듈식 시스템
- 사이트의 기능 모듈 교체 "플러그 앤 측정"
- PROFIBUS PA, HART® protocol
- Switching module with 2 floating channels

Series CV3100

Pressure transmitter PASCAL CV
with threaded connection



Measuring range	0...400 bar
Media temperature	-20...90 °C
Accuracy	≤ 0.15 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20mA, HART®, with contact, Profibus
Process connection	G1/4"B, G1/2"B, G1/4"A other on request
Requirement	SIL2, UKEX, ATEX, IECEx, Hydrogen
Degree of protection	IP66, IP69K (option)

Series CV3110

Pressure transmitter PASCAL CV,
for diaphragm seal operation, hygienic



Measuring range	0...40 bar
Media temperature	-20...85 °C
Accuracy	≤ 0.15 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20mA, HART®, with contact, Profibus
Process connection	Diaphragm seal Hygienic / Diaphragm seal
Requirement	SIL2, UKEX, ATEX, Hydrogen
Degree of protection	IP66, IP69K (option)

Series CV3120

Pressure transmitter PASCAL CV
for diaphragm seal operation, robust



Measuring range	0...100 bar
Media temperature	up to 350 °C
Accuracy	≤ 0.15 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20mA, HART®, with contact, Profibus
Process connection	Diaphragm seal
Requirement	SIL2, UKEX, ATEX, Hydrogen
Degree of protection	IP66, IP69K (option)

INTUITIVE OPERATION

Optimised menu navigation

The quick set-up summarises all the key setting parameters in a single menu. Various configurable displays enable users to select which and how many subordinate variables are displayed. All parametrisation data can be copied from the device to the configuration memory in the display module. It is stored permanently there. This enables parameters to be transferred simply and quickly to other devices.

Practical display modes

The display structure can be adapted to the requirements of the measuring point. There are five different display modes with configurable content.



REMOVABLE CONTROL UNIT

For concealed or hard-to-reach measuring points

- The display and control unit can optionally be fitted up to 10 metres away from the measuring point.
- Fully-operational control module: with the same functionality as when operating directly on the unit.



- Pressure vessels과 filter monitoring applications에 적합하다.

Series CV3300

Differential pressure transmitter PASCAL CV Delta P for general applications



Measuring range	-1...40 bar
Media temperature	-90...400 °C
Accuracy	≤ 0.15 %
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20mA, HART®, with contact, Profibus
Process connection	Process flange with connection dimension
Requirement	UKEX, ATEX, IECEx
Degree of protection	IP69K

Series CV3330

Differential pressure transmitter PASCAL CV Delta P for general applications



Measuring range	-1...40 bar
Media temperature	-90...400 °C
Accuracy	≤ 0.15 %
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20mA, HART®, with contact, Profibus
Process connection	Process flange with connection dimension
Requirement	UKEX, ATEX, IECEx
Degree of protection	IP69K

INTUITIVE OPERATION

최적화된 메뉴 탐색

빠른 설정은 단일 메뉴의 모든 주요 설정 매개 변수를 요약한다.

다양한 구성 가능한 디스플레이를 통해 사용자는 어떤 하위 변수를 표시할지 및 몇 개의 하위 변수를 선택할 수 있다.

모든 매개 변수 -n 데이터는 장치에서 디스플레이 모듈의 구성 메모리로 복사할 수 있다. 영구적으로 저장가능하며, 이를 통해 매개 변수를 다른 장치로 간단하고 빠르게 전송할 수 있다.

실용적인 디스플레이 모드

디스플레이 구조는 측정 - 측정지점의 요구 사항에 맞게 조정할 수 있다. 콘텐츠를 구성할 수 있는 5가지 디스플레이 모드가 있다.

REMOVABLE CONTROL UNIT

For concealed or hard-to-reach measuring points

- 디스플레이 및 제어 장치는 측정포인트에서 최대 10미터 떨어진 곳까지 선택적으로 장착할 수 있다.
- 완전 작동식 컨트롤 모듈 장치에서 직접 작동하는 경우에는 다음과 같은 기능을 제공한다.

Pressure Transmitter, PASCAL CV4 Hygienic

PASCAL CV4 HYGIENIC

Professional pressure transmitters with high-resolution graphic display

- Pressure transmitter, stainless steel case, IP 65/67.
- Accuracy $\leq 0.15\%$.
- 고해상도 그래픽 디스플레이의 사용자 조작과 backlight.
- 포괄적인 매개변수화, 시뮬레이션 및 진단 기능.
- 빠른 설정 기능.
- 일반 측정범위 0.25...400 bar.
(PASCAL CV4110: 0.25...40 bar).
- Turn down to 20:1.
- Output signal: 4...20 mA with HART Protocol.
- Output function:
linear, inverse, table function with upto 32 control points
- Process media temperature: -20...100°C.
(PASCAL CV110: -20...160°C)
- Wetted part stainless steel.
- 다양한 체결나사와 위생용 체결방식 그리고 업체 요구 사양.

PASCAL CV4 HYGIENIC

Professional pressure transmitters with high-resolution graphic display



CV4



With threaded connection

PASCAL CV4100



For diaphragm seal operation

PASCAL CV4110

■ Differential Pressure transmitter PASCAL CV4 Delta P

- Hygienic and sturdy applications을 위한 다양한 체결나사 지원.
- 컴팩트하고 작은 디자인.
- Hydrogen compatible 수소 호환가능.
- Fast response due to high processor performance.
- 포괄적인 매개변수화, 시뮬레이션 및 진단 기능.
- Display removable under voltage.

Series CV4100

Pressure transmitter PASCAL CV4 with threaded connection



Measuring range	-1...600 bar
Media temperature	20...100 °C
Accuracy	≤ 0.1 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA, 4...20 mA HART®
Process connection	G1/4"B, G1/2"B, G1/4"A
Requirement	SIL2, UKEX, ATEX, IECEx, Hydrogen
Degree of protection	IP65, IP67, IP69K(option)

Series CV4110

Pressure transmitter PASCAL CV4 for diaphragm seal operation



Measuring range	1...40 bar
Media temperature	-20...160 °C
Accuracy	≤ 0.1 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA / 4...20 mA HART®
Process connection	Diaphragm seal Hygienic / Diaphragm seal
Requirement	ATEX, IECEx
Degree of protection	IP65, IP67, IP69K(option)

Series CV4300

Differential pressure transmitter PASCAL CV4 Delta P for general applications



Measuring range	-1...40 bar
Media temperature	-20...100 °C
Accuracy	≤ 0.15 %
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20 mA, HART®, with contact
Process connection	Process flange with connection dimension
Requirement	UKEX, ATEX, IECEx
Degree of protection	IP65, IP67, IP69K(option)

PASCAL CV3 MODULAR

Professional pressure transmitter with smart modular technology



With threaded connection

CV3100

CV3 product highlights

- Smart modular technology system
- Functional modules can be exchanged on site
“plug and measure”
- High accuracy $\leq 0.15\%$
- Hygienic design in accordance with EHEDG
- Switching function
- Degree of protection IP 66, IP 69 K
- Profibus, HART®



For diaphragm seal operation,
hygienic
CV3110



For diaphragm seal operation,
sturdy
CV3120



For filter monitoring or level
measurement
CV3300

- 기체, 증기 및 액체의 상대 압력 및 절대 압력 측정에 적합하다.
- 4-digit LED display이며, 180° 측면에서 local read-out이 가능하다.
- 기능적으로 조작부의 회전이 가능하고, 연결부위 없는 원통형 하우징을 사용한다.
- 2개의 선택적인 스위치 기능 지원한다.

- 압력측정범위:
 - 일반측정압: 0...100 mbar to 0...400 bar
 - 절대압: 0...1 to 0...600 bar
 - 정밀도(Accuracy) ≤ 0.2%
- Pressure transmitter와 Pressure switch 사이에는 Galvanic isolation으로 되어있다
- 위생분야에 적용용으로 설계되어있다.
[EHEDG certified]

Series CS2100

Pressure transmitter/Pressure switch PASCAL CS



Measuring range	0...400 bar
Media temperature	20...100 °C
Accuracy	≤ 0.3%
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA / with contact
Process connection	G1/4B / G1/2B / G1/4A / NPT1/2" / NPT1/4"
Requirement	N/A
Degree of protection	IP65 / IP67 (option)

Series CS2110

Pressure transmitter/Pressure switch PASCAL CS



Measuring range	0...100 bar
Media temperature	-20...160 °C
Accuracy	≤ 0.3%
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA / with contact
Process connection	Diaphragm seal HYGIENIC
Requirement	EHEDG (valid only in exceptional case)
Degree of protection	IP65 / IP67 (option)

PASCAL CS MULTIFUNCTIONAL

Measuring, switching and indicating



With threaded connection
cs2100



For diaphragm seal operation,
hygienic
cs2110



For diaphragm seal operation,
sturdy
cs2120

Temperature transmitter Series GV4

1. Series GV4610

- 식품 및 제약 산업의 멸균 적용을 위해 온도 측정 및 공정 제어에 사용된다.
- 기존의 모든 파이프 구조에 빠르고 쉽게 장착 가능하다.
- 배관에 필요한 변경 사항이 없으며 용접이 필요하지 않다.

2. Series GV4730

- 별도의 Thermowell에 설치할 수 있도록 설계되었다.
- 4개의 조작 버튼을 사용하여 쉽고 빠른 매개 변수화가 가능하다.
- 고해상도의 그래픽 화면과 사용하기 쉬운 사용자 접속과 밝은 조명을 지원한다.
- Accuracy 0.1%의 측정범위 설정과 빠른 설정 기능을 지원한다.
- 저항측정 Pt100과 3A certification 기준에 부합한다.

Series GV4610

Temperature transmitter GV4 Clamp-on for temperature measurement on pipes



Measuring range	-40...150 bar
Accuracy temp.	Class A / ≤ 0.25 K
Media temperature	-40...150 bar
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20 mA, 4...20 mA HART®
Process connection	Non-Invasiv (back or bottom)
Requirement	N/A
Degree of protection	IP65 / IP67 / IP69K(option)

Series GV4730

Temperature transmitter GV4 MiniTherm for installation in a separate thermowell



Measuring range	-50...200 bar
Accuracy temp.	Class A / ≤ 0.25 K
Media temperature	-50...200 bar
Material wetted parts	Stainless steel 316L (Others on request)
Output signal	4...20 mA, 4...20 mA HART®
Process connection	Invasiv (back or bottom)
Requirement	N/A
Degree of protection	IP65 / IP67 / IP69K(option)

TEMPERATURE TRANSMITTER GV4 HYGIENIC

Professional temperature transmitter with high-resolution graphic display



CV4



For invasive temperature measurement
MiniTherm GV4730



For non-invasive temperature measurement
Ciamp-on GV4610

- 바닷물, 우물, 탱크 농장 및 개방된 물의 수위 측정에 적합하다.
- 측정된 정수압을 환경에 설정되어 요구되는 독립적인 전류 또는 전압 신호로 변환한다.

Series CG2010

**Submersible pressure transmitter
for hydrostatic level measurement**



Ambient temperature	-20...85 °C
Accuracy	≤ 0.15 %
Material wetted parts	Stainless steel (Others on request)
Output signal	4...20 mA
Electrical connection	Stainless steel connector
cable connection	Pluggable, free of halogen, 5 strand
Requirement	ATEX
Degree of protection	IP68. immersible

DIAPHRAGM SEALS DESIGNS

Diaphragm seals, hygienic design



Varivent in-line access unit
DL8080



HYGIENIC tubus
DL8140



Screw-in thread ASEPTIK
flush-mounted o-ring
DE2160



NEUMO BioControl
DL8110

Membrane diaphragm seals, robust design



Flange diaphragm seal
DA1420



Cell design
DC4680



Screw-in thread
DE1180

Membrane diaphragm seal for special applications



Welded design with screw-in
thread
DO8050



Variable connection system
DD1100



Saddle flange version
DD4200

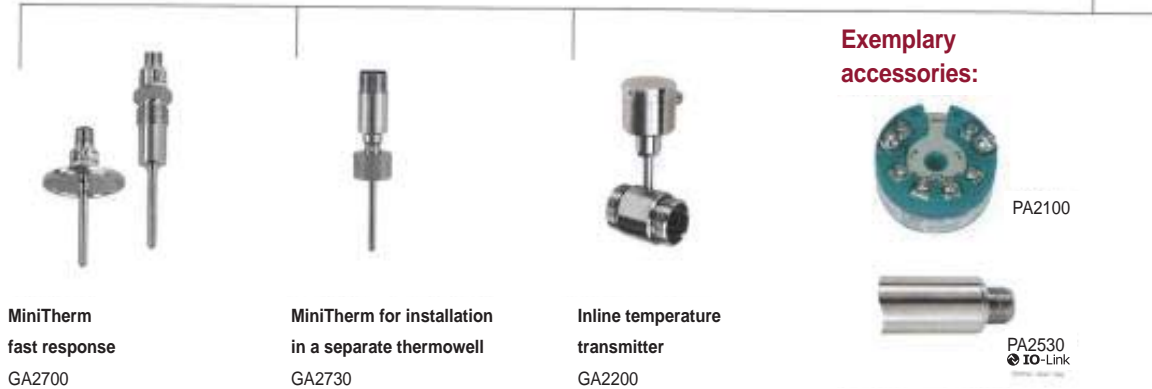
Temperature measurement technology

RESISTANCE THERMOMETER HYGIENIC

For temperature measuring in tanks and pipework



GA2540



Exemplary accessories:



PA2100



PA2530
IO-Link

visit labom.com for further accessories

RESISTANCE THERMOMETER GENERAL APPLICATIONS

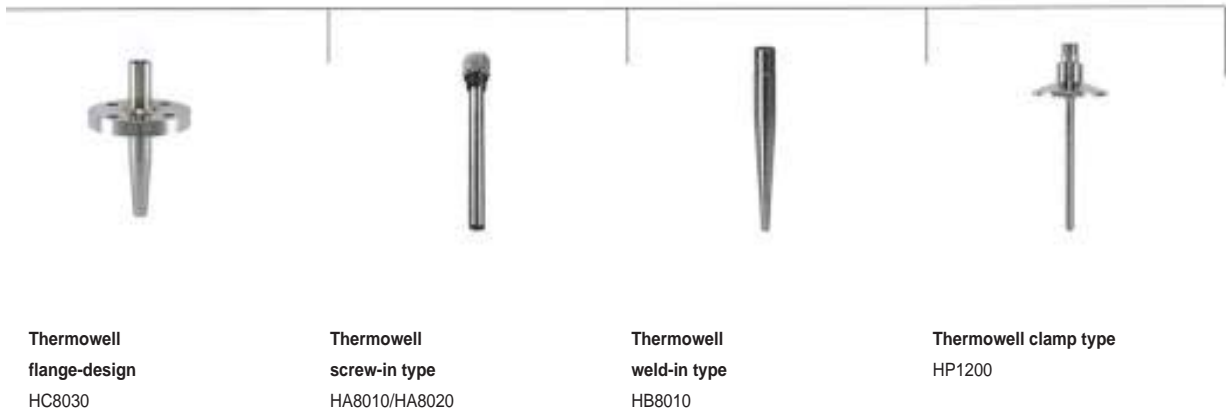


- Measuring resistance 1 x Pt100 in 3 or 4 wire system
- Interchangeable measuring insert
- Measuring inserts for in-process calibration

- Process connections for the food/pharmaceutical/ biotechnology sectors
- Pressure transmitter can be integrated
- Fast response
- Explosion protected devices,
- Classification per SIL2

THERMOWELLS STANDARD OR TAILOR-MADE

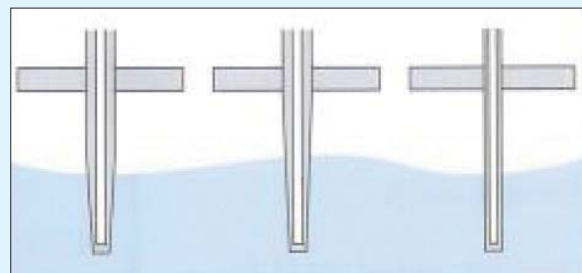
For separating the temperature measuring device from the media



LABOM thermowells are made of thermally conductive materials and are ment to separate the temperature sensor from the product. Thermowells are recommended for use in pressurised processes. Thermowells provide protection against corrosive products and they allow the thermometer to be replaced easily. Their design has been optimised for use with the corresponding dial thermometer or temperature transducer. On request, we will gladly provide a thermowell calculation and analysis for dynamci operating conditions.

THERMOWELL CALCULATION

LABOM thermowells are manufactured in accordance with national standards (DIN 43772) or customer specifications. The corresponding LABOM dial thermometers and temperature sensors have been specially designed for optimal compatibility.



Various designs

Typically thermowells are used in applications where they are to remain in the measured media and only the temperature sensor will be exchanged or retrofitted, or where the temperature sensor must be kept out of direct contact with the product. Thermowells also provide protection against mechanical loads.

As part of our services, we are pleased to offer calculation and analysis of the thermowells to mathematically determine the strength in respect to the static and dynamic load in the individual application.