



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Pressure measurement

Powerful instruments for process pressure, differential pressure, level and flow

Pressure measurement of Endress+Hauser

1987

First industrial used ceramic sensor

1985



1990

1990

First self-monitoring differential pressure transmitter

1995

Launch of modular concept for pressure and differential pressure

1995



2000

1999

Launch of universal Cerabar M



2004

Cerabar S / Deltabar S
Evolution with unique safety concept

2005

2006

Deltapilot S Evolution



2009

M-Platform –
the compact class



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Endress+Hauser – from a supplier of instrumentation to a provider of complete systems

“What is Endress+Hauser’s complete product offering?”

Many of our customers ask this question. And rightly so. After all, our competence in products, solutions and services is not always appreciated. We have developed from a supplier of instrumentation to a provider of complete systems with the goal of serving our customers throughout the entire life cycle of their plants and to increase their industrial productivity. To this end, we have arranged our activities in accordance with core processes: development, production and delivery of

quality products, solutions and services.

Wherever level, pressure, flow, temperature, analytical and recording data are needed and systems, components and solutions are used, companies appreciate the experience of Endress+Hauser. This is one of the reasons why we are a leading global provider of measurement, control and automation solutions for process industry production and logistics.

Curious? www.endress.com



Endress+Hauser is a family enterprise with a staff of more than 8,000 world-wide and sales of more than 1 billion Euro. Our global presence with 19 production sites in Europe, Asia and the US, as well as sales and service organizations worldwide in almost every country, ensures constant communication with our customers. This enables Endress+Hauser to consistently support the competitiveness of our customers with the highest degree of quality, safety and efficiency.

Continuous optimization of our processes and the use of innovative technology enable us to extend the frontiers of measurement, control and automation engineering and to find safe and efficient solutions for the benefit of our customers. We ensure the compatibility of our processes with the environment to save energy and resources.

All this also makes our customers confident that they will be able to rely on us in the future as ‘[People for Process Automation](#)’.

Competence in pressure measurement

Constant product quality, plant safety and economic efficiency – these are important aspects for any pressure measuring point. Whether pressure, level or flow, today pressure measurement technology is often used for measuring liquids, pastes and gases.

Application examples come from all industry sectors – from the chemical, petrochemical and energy industries to the pharmaceutical, food and environmental industries or in power plants.

The broad range of products available means that finding the ideal solution is easy. No product is suited to all application areas. Therefore measuring systems must be selected that work reliably under the conditions of a particular application and, at the same time, meet the economic situations.

Being one of the leading suppliers in pressure measurement, Endress+Hauser supports you from planning and commissioning through to the maintenance of your measuring point. In addition, we assist you in automation, asset management and the visualization of process data.

Endress+Hauser's pressure instrumentation has a strong presence in all areas of process automation.



The application determines the correct sensor

Be it acid, sludge, gas or steam, the heart of a pressure transmitter is the sensor itself. From the initial development stage right down to the production level, sensors have to meet application requirements, whatever they may be. But more than just a physical knowledge and understanding are required to be able to develop and produce the most important link to the process.

Endress+Hauser itself has been continuously developing and manufacturing a wide range of pressure measurement and sensory technology for 25 years. In doing so, we are always in touch with the client so that we can understand and implement their specific needs.

This results in Endress+Hauser developing capacitive and piezo-resistive pressure sensors with metal and ceramic membranes, each presenting the optimum solution – even in demanding applications. Many of these solutions are unique to the market and demonstrate that we are on the right track with our focus on constant improvement.



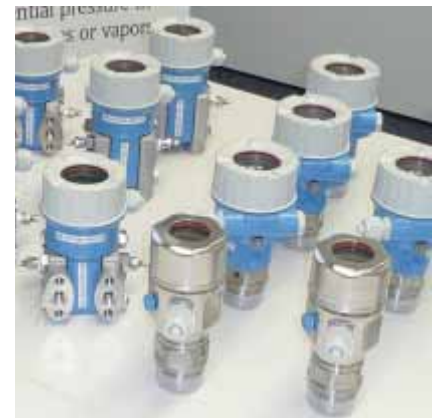
Silicon sensors



Contite measuring cell



Ceraphire ceramic sensors





Sensor technology from Endress+Hauser

Contite

The Contite sensor has been specially developed for hydrostatic level measurement. With its protection for the sensor and cell electronics, the Contite sensor is a convincing solution in the event of severe moisture and condensate formation. The measuring element itself is protected and hermetically sealed between the process membrane and measuring membrane. The process membrane is made of Hastelloy C and thanks to its clever design, is insensitive to every kind of build-up.



Contite – uncompromisingly tight

- Highest degree of EMC/RFI resistance due to the metallic enclosure
- Absolutely climateproof because of the glass feedthrough to tightly welded cell electronics
- High accuracy – even at quick and extreme temperature changes



Ceraphire ceramic sensor

Ceramic is one of the hardest materials in the world and ensures the best material properties for the medium. Endress+Hauser capacitive ceramic sensors have membranes up to 30 times thicker than conventional sensors. Even the tiniest of deflections result in measuring signals with the highest accuracy. The property of the ultra-pure ceramic (99.9%) guarantees high resistance to corrosion, low temperature hysteresis and the best in overload resistance.



Ceramic cell for process pressure applications

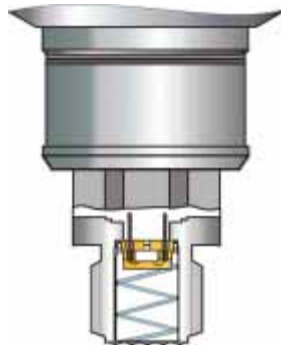
Ceraphire – the unique ceramic sensor

- Corrosion and abrasion resistance to chemicals, acids and alkaline media
- Dry sensor without fill oil / 100% vacuum-proof
- FDA listed material and USP Class VI tested

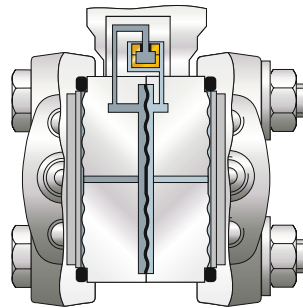
Silicon sensors

Silicon sensors with metal membrane are available for gauge pressure, absolute pressure and differential pressure measurement. As a high-performance solution for high pressure applications up to 700bar (10,000psi), these sensors meet the highest requirements and work reliably across a large temperature range.

For process pressure applications



For differential pressure applications



Silicon sensors – the high pressure solution

- Highest overload resistance up to 1,050bar (15,000psi)
- Highest accuracy up to 0.05%
- Insensitive to temperature effects and static pressure
- Membrane: stainless steel, Hastelloy C, Monel, tantalum or gold-plated



Diaphragm seals

If measurement is to take place under extreme conditions, a variety of diaphragm seals are available for the direct mounting or with capillary extension. They can be used for media temperatures from -70°C up to 400°C (-94°F up to 752°F), are insensitive to aggressive, highly viscous, crystallising or polymerising media and are suitable for measuring points that are difficult to access. Endress+Hauser offers the highest quality in the manufacturing



process and a wide range of special materials (coating and fill fluids) for all diaphragm seals. Our experts optimise the measuring systems to ensure the maximum degree of performance and reliability.





Pressure measurement for your applications

Innovative and economic

Today, the areas of application for pressure measurement are so diverse, ranging from the food and pharmaceutical industry and water and wastewater applications to paper technology, chemical plants and power stations. Pressure sensors guarantee safety and provide crucial information on the process. Even in level and flow measurement, pressure and differential pressure measuring technology is often used. This makes pressure one of the most important measured variables in process automation, inspiring Endress+Hauser to continuously improve and drive forward the development and production of high-quality pressure measurement. With its extensive portfolio of pressure measuring instruments, Endress+Hauser can offer a pressure transmitter that combines state-of-the-art technology with high-grade material for every application and every budget.

Finely-tuned product programme

As one of the world's leading providers of process measuring technology, Endress+Hauser stands for safety and application-oriented solutions in pressure measurement. High-precision pressure sensors with ceramic or metal membranes are available for ever-increasing application demands. Endress+Hauser's wide range of diaphragm seals and accessories offer customised solutions for even the most difficult of measuring tasks. The product programme provides you with a unique portfolio with cost-effective solutions to meet your needs – all from one supplier.

	T - Transducer <ul style="list-style-type: none"> ■ Smallest design ■ Order online or by catalog ■ 48 hour delivery 			M - Midrange <ul style="list-style-type: none"> ■ Compact 1-chamber housing ■ Basic applications ■ Modular system
				
	Ceraphant T	Cerabar T	Waterpilot	Cerabar M
Pressure types	Gauge pressure/absolute pressure	Gauge pressure/absolute pressure	Hydrostatic pressure	Gauge / absolute pressure
Areas of application	Process pressure Pressure switch	Process pressure	Level	Process pressure Level
Span in bar in psi	100mbar...400bar 1.5psi...6,000psi	100mbar...400bar 1.5psi...6,000psi	100mbar...20bar 1.5psi...300psi	10mbar...400bar 0.15psi...6,000psi
Pressure sensor	Ceramic up to 40bar (600 psi) Metal up to 400bar (6,000 psi)	Ceramic up to 40bar (600psi) Metal up to 400bar (6,000psi)	Ceramic up to 20bar (300psi)	Ceramics up to 40bar (600psi) Metal up to 400bar (6,000psi)
Output	1 x PNP switch 2 x PNP switch PNP switch with additional 4...20mA analog	4...20mA analog	4...20mA Analog 4...20mA HART® optional with Pt100 temperature measurement	4...20mA Analog 4...20mA HART® PROFIBUS PA FOUNDATION™ fieldbus
Process temperature in °C in °F	-40...135°C -40...275°F	-25...135°C -13...275°F	-10...70°C 14...158°F	-40...150°C -40...302°F -70...400°C with diaphragm seal -94...752°F with diaphragm seal
Accuracy	0.5%	0.5%	0.2% 0.1% optional	0.15% 0.075% optional
Long-term stability	≤ 0.15% / year	≤ 0.15% / year	≤ 0.1% / year ≤ 0.25% / 5 years	≤ 0.1% / year ≤ 0.25% / 5 years
Process connection	Thread versions, flush-mounted hygienic connections	Thread versions, flush-mounted hygienic connections	Suspension clamp, cable mounting screw	Flanges, threads, flush-mounted connections and hygiene variants
Certificates / approvals	CULUS	ATEX, CSA, SIL, GL/ RINA	ATEX, FM, CSA, GL, ABS approval for drinking water, NSF	ATEX, FM, CSA, IEC Ex, 3A, EHEDG

Water and wastewater

The hydrostatic pressure transmitters Deltapilot S and Waterpilot reliably monitor the level in all areas of drinking water processing as well as wastewater systems and purification. The instruments can be quickly and easily installed and are unaffected by build-up and foam formation.






Food and beverages/pharmaceuticals and biotechnology

Hygienic installations require special process connections and protection in an environment that is cleaned intensively every day – even externally. The sensors have to continue to work without drift or measured errors even after SIP and CIP processes.

Here too, Endress+Hauser offers powerful solutions – Cerabar M for process pressure and Deltapilot S for level measurement.

Chemicals/petrochemicals/energy/paper and chemical pulp

Abrasive and corrosive media make great demands on the materials and the performance of the transmitters. Here, ceramic sensors provide the solution to diverse measuring tasks where conventional instruments fail. Cerabar S and Deltabar S were developed to meet these requirements. Thanks to these products, your cost of ownership and process safety can be improved.

S - Superclass <ul style="list-style-type: none"> ■ 2-chamber housing ■ High temperature version ■ Full modularity ■ Diagnosis functionalities ■ SIL3 				
				
Deltapilot M	Deltabar M	Cerabar S	Deltapilot S	Deltabar S
Hydrostatic pressure	Differential pressure	Gauge pressure/absolute pressure	Hydrostatic pressure	Differential pressure
Level	Differential pressure Level Flow	Process pressure Level	Level	Differential pressure Level Flow
10mbar...10bar 0.15psi...150psi	1mbar...40bar 0.015psi...600psi	5mbar...700bar 0.075psi...10,000psi	10mbar...10bar 0.15psi...150psi	0.5mbar...40bar 0.07psi...600psi
Contite up to 10bar (150psi)	Metal up to 40bar (600psi) Static pressure up to 160bar	Ceramic up to 40bar (600psi) Metal up to 700bar (10,000psi)	Contite up to 10bar (150psi)	Ceramic up to 3bar (45psi) Silicon up to 40bar (600psi) Static pressure up to 420bar (6,000 psi)
4...20mA HART® PROFIBUS PA FOUNDATION™ fieldbus	4...20mA HART® PROFIBUS PA FOUNDATION™ fieldbus	4...20mA HART® PROFIBUS PA FOUNDATION™ fieldbus	4...20mA HART® PROFIBUS PA FOUNDATION™ fieldbus	4...20mA HART® PROFIBUS PA FOUNDATION™ fieldbus
-10...100°C 14...212°F 135°C (275°F) for 30min.	-40...120°C -40...248°F	-40...280°C -40...536°F -70...400°C with diaphragm seal -94...752°F with diaphragm seal	-10...135°C 14...275°F	-40...120°C -40...248°F -70...400°C with diaphragm seal -94...752°F with diaphragm seal
0.2% 0.1% optional	0.1% 0.075% optional	0.075% 0.05% optional	0.1%	0.075% 0.05% optional
≤ 0.1% / year ≤ 0.25% / 5 years	≤ 0.1% / year ≤ 0.25% / 5 years	≤ 0.05% / year ≤ 0.15% / 5 years ≤ 0.2% / 10 years	≤ 0.05% / year ≤ 0.125% / 5 years	≤ 0.05% / year ≤ 0.15% / 5 years
Threads, flush-mounted hygiene connections and flanges	¼" - 18 NPT	Flanges, thread, flush-mounted and hygienic connections	Flanges, threads, flush-mounted and hygienic connections	Capillary, extended diaphragm seal, completely welded, threads, hygienic connections, flush-mounted ceramic
ATEX, FM, CSA, EC Ex, NEPSI, TIIS, WHG	ATEX, FM, CSA, IEC Ex, NEPSI, TIIS	ATEX, FM, CSA, NEPSI, 3A, EHEDG, TIIS, IEC Ex, SIL3	ATEX, FM, CSA, NEPSI, TIIS, IEC Ex, WHG, 3A, EHEDG, SIL3	ATEX, FM, CSA, NEPSI, TIIS, IEC Ex, 3A, EHEDG, SIL3

Cerabar T



PMP135



PMC131

- Simple to mount, no calibration necessary
- Large measuring range for over-pressure and absolute pressure
- Sensors made of ceramic or stainless steel
- Versions with EEx ib
- Flush-mounted connections and materials with FDA conformity
- 4...20mA



ATEX



Simple, practical, reliable – Cerabar T

Cerabar T is the ideal solution for measurement tasks requiring a compact pressure transducer with a set measuring range. The instrument is quickly integrated in the process using either threaded or flush-mounted process connections. For absolute and overpressure measurement, the T programme offers the robust ceramic sensor with a measuring range of up to 40bar (580psi) or the metal sensor up to 400bar (5,800psi). Both versions guarantee safe functioning in gas, steam and liquid.



PMP131

Metal sensors – reliable and robust

PMP131 with a metal sensor is the perfect choice for high-pressure applications, e.g. in hydraulic systems. The compact design supports installation in the smallest of spaces in the shortest of timeframes.

- Up to 4-fold overload resistance
- For Ex areas



PMC131

Ceramic sensors – safe and sound

The PMC131 with a ceramic sensor offers stability and reliability. The sensor does not use a filling fluid, so is the ideal choice for vacuum applications.

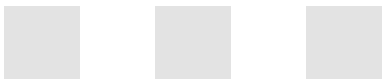
- Corrosion-proof and abrasion-proof
- Up to 40-fold overload resistance
- Excellent linearity down to the smallest measuring range



PMP135

Hygiene matters!

Applications in hygienic processes make major demands on the material and the design. The PMP135 hygienic line combines the typical compact design with flush-mounted process connection and materials in conformity with FDA. This means you can use this device in aseptic processes without hesitation.



Ceraphant T



- Quick and flexible process connection thanks to modular connections
- Function check and on-site information with LEDs and digital display
- Operation and visualisation possible via PC
- Stainless steel housing and lasered nameplate

PTP35

PTP31





Comfortable pressure switch

Our 25 years of knowledge and experience in pressure measurement have naturally left a mark in the development of Ceraphant T, with the right amount of innovation at the right point, as in the hallmark of Endress+Hauser products. Ceraphant T provides safe measurement and monitoring of absolute and overpressure in gas, steam, liquid and dust.

Thanks to its modular adapter system, the pressure switch can be integrated quickly and easily in the process. The stainless steel housing is extremely resistant. Cleaning is simple, as the device information is lasered into the housing.

As it should be for any modern pressure switch, the Ceraphant T is equipped with an illuminated display as standard. The measured values are visualised with the corresponding unit. The rotatable housing can be positioned in accordance with your requirements, regardless of how the Ceraphant T is installed.



Sure and simple guidance through the setup

You are guided directly to the essential menu items either via operating the keys or via the PC.

The following versions are available for the various requirements:

Electronic versions

- One PNP switch output
- Two PNP switch outputs
- PNP switch output with additional 4...20mA analog output

Process connection versions

- Threaded connections
- Hygienic connections



Waterpilot



- Robust housing with the smallest of probe diameters
- Highest accuracy
- Integrated temperature sensor
- Materials in conformity with drinking water directives
- Extensive measuring point accessories

ATEX



ABS



KTW





Hydrostatic cable probe for the complete measuring solution

Level measurement in deep wells is a typical application for Endress+Hauser's Waterpilot.

Waterpilot – that means level measurement certified for drinking water with a robust ceramic sensor and integrated temperature measurement, all combined on a diameter of just 22mm (0.9"). As a result, the smallest of wells can be used for the application. A robust design for applications in waste waters and sludges or a design free of metal with long-term stability for usage in salt water is also available.

Intelligent application also means using the right accessories. The know-how behind many applications is invested in the extensive range of accessories to provide a solution for your measuring tasks.

Electronic versions

- 4...20mA (FMX167)
- 4...20mA HART® (FMX21)

Optional with Pt100 for temperature measurement.



Accessories

- 1 Additional weight 300g
- 2 Suspension clamp
- 3 Cable gland
- 4 Temperature transmitter
- 5 Terminal box



1



2



3



4



5

Cerabar M



PMP51



PMC51

- Instrument platform with extensive variants
- 1-chamber stainless steel or aluminum housing
- Very simple operation directly on the instrument
- Aseptic connections and FDA-conforming materials
- Modular electronics and displays

ATEX



Compact process pressure measurement

The Cerabar M pressure transmitter of Endress+Hauser constitutes a product suitable for many applications in the most varied industries due to the combination of different properties. Whether you intend to measure gauge or absolute pressure in liquids, steams or gases – Cerabar M will meet all of these challenges. The modular design permits maximum flexibility. The range of features offered is particularly convincing.

The stainless steel housing of Cerabar M distinguishes itself especially by its hygiene design. For aggressive ambient conditions, an even more robust housing variant of aluminum is available. The compact and light instrument provides ingress protection up to IP 69K. Cerabar M can be supplied with all common and especially small, flush-mounted process connections for food and pharmaceutical applications. The function monitoring system and the unique Ceraphire ceramic sensor make Cerabar M a pressure transmitter for any industry.

Various electronics

- Analog electronics (output 4...20mA), the simplest variant and – due to short response times – suited to fast processes. Direct operation on the electronics.
- HART® electronics (output 4...20mA with a superimposed HART® protocol) for additional functionalities and diagnosis functions. May also be calibrated on site without any additional aids.
- PROFIBUS PA electronics for full integration into digital industrial bus systems. The PROFIBUS profile permits control via other actuators, transmitters and probes of a plant.
- All of the digital electronics may be smoothly integrated into your control systems and configured via a PC and the universal FieldCare operating program.



Cerabar M – Overview

Process instrumentation



PMC51



PMP51



PMP55

Hygienic instrumentation



PMC45



PMP45



PMP55

Pressure



Level

Applications

Welcome in any industry

It is not only the wide field of possible applications which makes the Cerabar M pressure transmitter unique. Its modular design permits maximum flexibility. Electronics and display may be easily and quickly exchanged. This reduces purchase and operation costs of a measuring point significantly and this for many years. For if a new plant concept entails a change to another type of communication, you merely exchange the electronic insert.

A revolutionary repertoire

The versatility of the Cerabar M pressure transmitter is unique: Whether you intend to measure gauge or absolute pressure in liquids, steams or gases – Cerabar M will meet all of these challenges. An extensive, application-oriented selection of process connections, electronics and certificates as well as housings permits an operation in hazardous areas through to hygiene applications. Cerabar M is thus the all-round instrument in a compact design.



Deltabar M – Overview



PMD55

- Compact design
- Flexible in adaptation and installation
- Modular electronics and displays
- User-friendly software with application-specific parameter selection



Differential pressure ■ Level ■ Flow

Applications

The compact class of differential pressure measurement

A new design, based on years of experience, was implemented in Deltabar M. It combines flexibility, modularity and compactness. The decisive advantage is this: Deltabar M is easily integrated in any installation conditions. Deltabar M users change from the high-pressure to the low-pressure side by merely moving a small switch on the main electronics. However, the compact design does not mean that accuracy, stability or the intelligence of a measurement have been compromised.

On the contrary: Deltabar M works digitally and is thus robust in relation to external influences and demonstrates high reproducibility. Electronics are modularly exchangeable, i.e. the differential pressure transmitter may be flexibly integrated into any plant or adapted in case of changes. Deltabar M can be set on site without any additional device or PC. This saves costs, be it in procurement, commissioning or operation. The modularity also saves future project costs.



Deltapilot M – Overview



FMB52



FMB51



FMB50

- Contite measuring cell waterproof, climate-resistant and long-term stable
- Lowest temperature influences
- Compact design for installation on the bottom or outlet of a tank
- Rod/rope version for installation from the top
- Very easy setting at the instrument, even without aids

Level

Applications

Compact level measurement with the highest reproducibility

Hydrostatic is not by chance the most frequently used method for level measurement. The measuring principle is simple, robust and versatile. It can be employed in liquids, pastes as well sludges and has thus secured a firm place in many industries and applications.

The compact design of Deltapilot M offers the solution for hydrostatic level measurements in tanks and vessels since it can be installed on the bottom or outlet.

The rod and rope design facilitate the installation from the top. Even under the most difficult process conditions, the different variants of Deltapilot M may be adapted in an optimum fashion. Deltapilot M can also be mounted at a distance to the tank. In this way, the housing including the electronics and display are mounted at a location which is easier accessible. The electronics are installed in the transmitter in a modular system and guarantee very easy commissioning, reliable and flexible operation with many supporting functions and a high degree of safety.

The Contite measuring cell of Deltapilot M is hermetically protected against condensate or aggressive gases. Levels are measured with the highest reproducibility. Deltapilot M may be adapted in many ways including flush-mounted and hygiene process connections. Apart from level measurement, also other information from the measuring point can be displayed, e.g. the content of a tank in liters.



Cerabar S / Deltabar S

PMD75



PMP71



- Fast commissioning via the Quick Setup menu
- Unique safety concept for your process application
- Reliable data management with the HistoROM/M-DAT
- Diagnostic functionality
- High-temperature version up to 280°C (536°F) without diaphragm seal
- Housing can be rotated 380° (!) for an optimum view of the display
- Functional safety up to SIL3

NEPSI



ATEX



TIIS



Safety first

With its comprehensive safety package and the intelligent operating and device concept, the evolution of Cerabar S / Deltabar S from Endress+Hauser offers unique technological innovation in high-end pressure measurement. The multitude of improvements guarantees the user the highest degree of functionality, information and process safety.

For example, the integrated HistoROM/ M-DAT data module makes it possible to record, save and readout important process and device parameters. Analysis, simulation and service parameter querying can be carried out at any time using the diagnostic functions of Cerabar S / Deltabar S, ensuring optimisation to the process.

Operation with concept

The 3-key operation allows for simple and reliable commissioning. All settings and interrogations can be easily carried out externally.

With the Quick Setup menu, the time and effort required to configure the device is reduced to a minimum so that the user commissions the transmitter goal quickly and reliably.

Thanks to the HistoROM/M-DAT memory, the device configuration can be reliably duplicated onto other measuring devices by simply unplugging and plugging the module. Rapid and reliable.

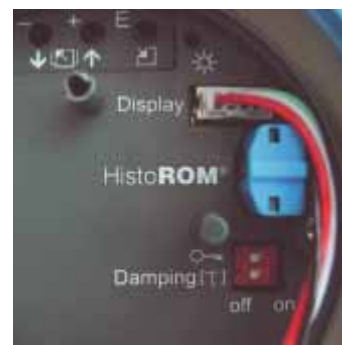
Since the housing can be rotated 380° regardless of the process connection, the pressure transmitter can be adjusted to any viewing position.

High temperatures easily under control

The high-temperature versions of Cerabar S allow quick and direct installation at the process connection without the need for an additional diaphragm seal! As a result, small measuring ranges can be detected with considerably smaller process connections.

This results in shorter installation times, lower costs and additional safety thanks to improved performance.

This is a unique solution worldwide, as to date, only systems with diaphragm seals were available for applications for such temperatures.



Cerabar S/Deltabar S – Overview



Housing diversity



PMC71



PMP71



PMP72



PMP75



FMD77



FMD78



PMP75

Differential pressure



Level



Flow

Applications

Over the last 25 years, our top quality, optimum user safety and innovative power have made us to one of the most popular suppliers of pressure measurement technology worldwide.

This means our staff is at your side in your daily work process, willing partners who are always ready to listen to your needs.

This experience has resulted in the enhanced development and production of Cerabar S und Deltabar S with innovative technology suitable for all industries.

All regulations are strictly observed and the appropriate certificates supplied.



Deltapilot S

FMB70



- Contite sensor: waterproof, climate-proof with long-term stability
- Highest measuring accuracy and reproducibility
- Smallest of temperature effects
- Full modular
- Optional separate mounting of housing and electronic

ATEX



Hydrostatic pressure sensor water-proof and climate-proof

The Deltapilot S is used for measuring the level of water, paste and sludge. The various versions of Deltapilot S can be optimised – even under difficult process conditions. Digital electronic inserts installed directly in the probe housing or in a remote housing away from the measuring point guarantee reliable operation even if the sensor is flooded or being cleaned at the installation point. The Contite sensor is specially developed for hydrostatic level measurement and is hermetically sealed against condensation and gases.

Information on level, volume and product weight is provided with the highest degree of accuracy and reproducibility.

The stainless steel housing and clamp connection facilitate applications in the food industry and in life sciences. Deltapilot S supports qualification processes with required certificates, approvals, calibration protocols and test certificates.



Deltapilot S – Overview



Separated version



Compact version



Version with flanges

FMB70

Level

Applications

Apart from high accuracy you need processes without any contamination for your sensitive media. This requirement – combined with process safety – is a challenging task for process engineering. The instrumentation employed must be easily cleaned from outside and may not permit any product residue in the process. The sensors have to work smoothly without any drift and measuring error even after SIP and CIP procedures and ensure process safety. For decades, Endress+Hauser has been offering you a wide range of hygiene instrumentation for the requirements of the food and pharmaceutical industry. Deltapilot S, for hydrostatic pressure measurement, with the unique Contite measuring cell has been the first choice for sophisticated applications for years.



Process connections

- 1 Triclamp
- 2 Universal connection
- 3 DRD
- 4 Thread
- 5 Flange



Deltatop



- Customised pre-mounting and configuration
- Complete solution for every measuring point
- Orifice plate versions from DN 10 to DN 1000
- Pitot tubes from DN 50 to DN 12000
- Quick commissioning with the Quick Setup menu
- Diagnostics functions



ATEX





The tailored solution for your flow measurement

Deltatop compact instrumentation

In the Deltatop concept, the primary device, manifold block and differential pressure transmitter Deltabar S are already assembled and optimised on the basis of customer data. Deltatop offers minimum static pressure loss and the best accuracy of the differential pressure and sensor.

Deltatop separate instrumentation

The Deltatop concept follows customer needs based on separate instrumentation. If the application conditions do not allow compact instrumentation or if existing impulse piping will continue to be used, this is the optimum solution for modular flow measurement.

Accessories

Thanks to our comprehensive portfolio of accessories and assemblies in various materials and versions, your measuring point can be completely equipped.

- 1 Undivided orifice plate with corner taps
- 2 Manifold blocks
- 3 Shut-off valves
- 4 Pitot tubes
- 5 Condensate trap
- 6 Annular chamber orifice with corner taps

We are pleased to help you in designing your measuring point.



1



2



3



4



5



6

We deliver excellence

Constant high-quality performance can only be achieved where enthusiastic and committed people pool their ideas. For our clients and users, Endress+Hauser instruments should not just be distinguished due to technological innovation but also through the presence of people who stand behind this progress and quality, be it in service, sales, development or in production.



Calibration

Measuring correctly is the 'metrological basis' for any manufacturer of measuring instrumentation. Those wanting to produce to ISO 9000 standards must be able to rely on dependable calibration equipment for all measuring devices. Endress+Hauser's own calibration for 15 years.

It is responsible for managing the company's test equipment and looks after some thousand measuring units in use in production, development and service. Devices are calibrated for Endress+Hauser's own use, for clients and for third-party customers.

This guarantees that measurements on products can be safely traced back to 'national calibration standards'.

The Endress+Hauser calibration laboratory is accredited as a DKD (German Calibration Service) lab (DKD-K 13001) for the measured variables vacuum and pressure. Pressure ranges from 1µbar (1.45×10^{-5} psi) absolute pressure to 500bar (7,252psi) and from -1bar (-14.5psi) overpressure to 500bar (7,252psi). The smallest uncertainty of measurement which may be passed on is 0.004%.

Fully automated DKD calibration in the production process

Since November 2004 we have also successfully integrated automated calibration in the running production process.

Our modern production line for the entire S- and M-class pressure instruments is a global innovation in the production of complex measurement technology. For the first time we offer fully automated DKD calibration of pressure instruments in the running production process.

Customers have the possibility of selecting DKD calibration directly via the order code when ordering their pressure device. The requirement is recognized automatically during production.

This means fully automatic control of the entire test procedure – right up to printing of test certificates and labels in the packaging unit.



There are some things you can never get enough of
– for example, safety



Test Center

The Endress+Hauser Test Centre (internationally accredited test centre: DATECH, FM, CSA) has three laboratories for device safety, application technology and electromagnetic compatibility. The various test units make it possible to ensure and improve the reliability and quality of Endress+Hauser devices under realistic test conditions. In addition, the devices for new applications can be tested in advance in parallel with development.

In the various 'durability tests', they are exposed to extreme conditions as can be expected in real applications. These include dust tests (explosion protection), abrasion and friction tests, climate tests (heat and cold), mechanical load tests and spray water leak tests. In addition to a fully automated tank test plant with a capacity of 6,000 liter, used to simulate the most difficult applications, the Endress+Hauser Test Centre also has an accredited EMC laboratory.

Apart from carrying out tests on Endress+Hauser devices in parallel with development, the Test Centre also trains service staff and even customers. Customer-specific application problems are analysed, tests to simulate new applications are run and device approvals are carried out.





Applicator

Selection and Sizing Tool for your Planning Processes

Time is money

The challenges in instrumentation engineering of a plant are numerous: Planners must obtain an overview of the whole project right from the start, they have to combine application and instrumentation to arrive at safe decisions. This is equally true for product selection, calculation and the administration of different projects. Calculations are complex and the variety of products cannot be mastered. Safe calculations and sizing of measuring points become time-consuming cost generators.

Applicator provides planning reliability, fast and flexibly

The Applicator software of Endress+Hauser is a convenient selection and sizing tool for planning processes. Using the entered application parameters, e.g. from measuring point specifications, Applicator determines a selection of suitable products and solutions. Supplemented by sizing functions and a module for project administration Applicator will alleviate your daily engineering work. Applicator has been steadily developed for many years and proves its worth every day a thousand times in the most varied applications of customers.

Take the easy way

Just work with this clear Applicator desktop and straightforward module structure. Selection, calculation or administration, regardless of where you intend to enter a project, Applicator provides an open door for you to start anywhere. And if you want to proceed from one module to another one, this is accomplished by a mere click and there is nothing to prevent a smooth exchange of data.

The Applicator provides you:

- Planning reliability
- Timesaving
- Safe project data
- Flexibility in work processes

The fast way to your Applicator

Applicator of Endress+Hauser may be used free of charge both via the Internet and in form of a CD. You can order the CD version quite conveniently online

<http://www.products.endress.com/applicator>





Worldwide service close to you

Wherever you are situated, your local Endress+Hauser organization or regional customer support office will provide the exact performance you need, be it commissioning, repairs, on-site support, training or maintenance and calibration services.

As one of the largest networks of service experts in process automation, it is our desire to help you discover new opportunities and potentials for maximum benefit and minimum operating risk. We see ourselves as your fair partner in this task, providing the right advice and recommendations to ensure constant reduction of costs and risks.

Endress+Hauser Service:
Global, competent, reliable

At a glance

- Commissioning and installation
- Project management
- Preventive maintenance
- Maintenance contracts
- Spare part service
- Repair service
- Training
- Helpdesk
- Online documentation
- Calibration services





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