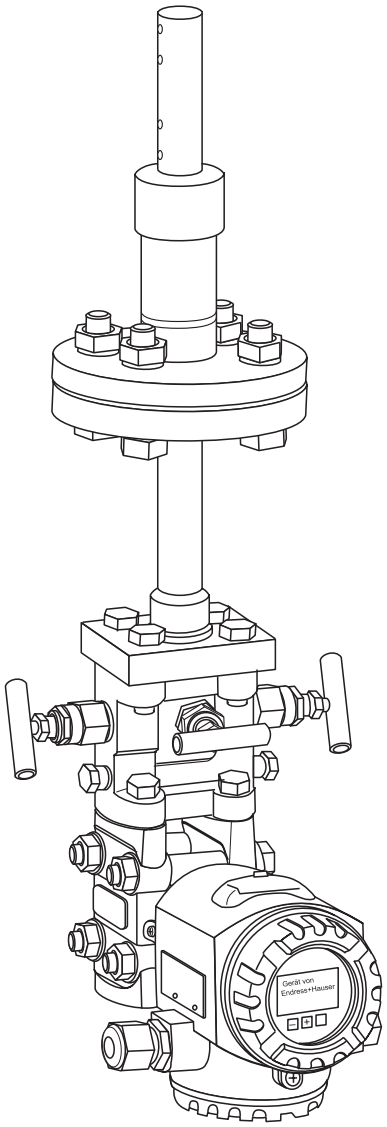
Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Operating Instructions

# Deltatop DP61D, DP62D, DP63D

## Pitot tubes for differential pressure flow measurement

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Endress+Hauser

People for Process Automation

# Table of contents

# 1 Safety instructions

## 1.1 Designated use

The measuring system is used to measure the volume or mass flow of saturated steam, over-heated steam, gases and liquids.
Resulting from incorrect or from use other than that desiganted the operational safety of the measuring devices can be suspended. The manufacturer accepts no liability for damages being produced from this.

## 1.2 Installation, commissioning, operation

The Deltatop measuring system is fail-safe and is constructed to the state-of-the-art. It meets the appropriate standards and EC directives. However, if you use it improperly or other than for its designated use, it may pose application-specific hazards, e.g. product overflow due to incorrect installation or configuration. Installation, electrical connection, start-up, operation and maintenance of the measuring device must therefore be carried out exclusively by trained specialists authorised by the system operator. Technical personnel must have read and understood these operating instructions and must adhere to them. You may only undertake modifications or repair work to the device when it is expressly permitted by the operating instructions.

## 1.3 Hazardous area

Measuring systems for use in hazardous environments are accompanied by separate "Ex documentation", which is an integral part of this Operating Manual. Strict compliance with the installation instructions and ratings as stated in this supplementary documentation is mandatory.

- Ensure that all personnel are suitably qualified.
- Observe the specifications in the certificate as well as national and local standards and regulations.

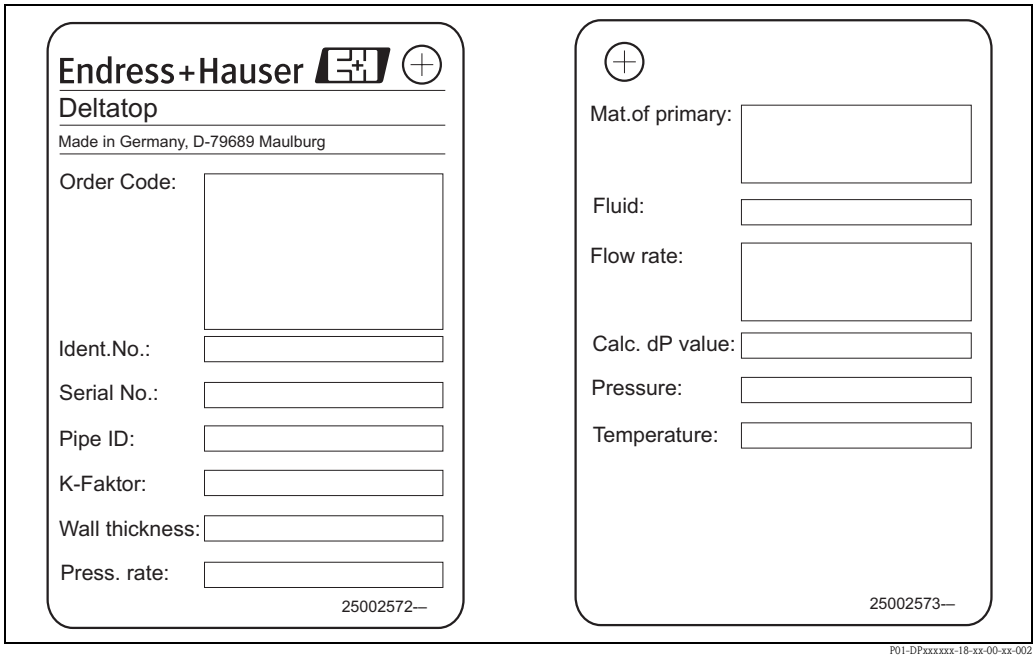
## 1.4 Notes on safety conventions and symbols

In order to highlight safety-relevant or alternative operating procedures in the manual, the following conventions have been used, each indicated by a corresponding symbol in the margin.

| Safety conventions | |
|---|---|
|  | **Warning!**<br>A warning highlights actions or procedures which, if not performed correctly, will lead to personal injury, a safety hazard or destruction of the instrument |
|  | **Caution!**<br>Caution highlights actions or procedures which, if not performed correctly, may lead to personal injury or incorrect functioning of the instrument |
|  | **Note!**<br>A note highlights actions or procedures which, if not performed correctly, may indirectly affect operation or may lead to an instrument response which is not planned |
| **Explosion protection** | |
|  | **Device certified for use in explosion hazardous area**<br>If the device has this symbol embossed on its name plate it can be installed in an explosion hazardous area |
|  | **Explosion hazardous area**<br>Symbol used in drawings to indicate explosion hazardous areas. Devices located in and wiring entering areas with the designation “explosion hazardous areas” must conform with the stated type of protection. |
|  | **Safe area (non-explosion hazardous area)**<br>Symbol used in drawings to indicate, if necessary, non-explosion hazardous areas. Devices located in safe areas still require a certificate if their outputs run into explosion hazardous areas |
| **Electrical symbols** | |
|  | **Direct voltage**<br>A terminal to which or from which a direct current or voltage may be applied or supplied |
|  | **Alternating voltage**<br>A terminal to which or from which an alternating (sine-wave) current or voltage may be applied or supplied |
|  | **Grounded terminal**<br>A grounded terminal, which as far as the operator is concerned, is already grounded by means of an earth grounding system |
|  | **Protective grounding (earth) terminal**<br>A terminal which must be connected to earth ground prior to making any other connection to the equipment |
|  | **Equipotential connection (earth bonding)**<br>A connection made to the plant grounding system which may be of type e.g. neutral star or equipotential line according to national or company practice |
|  | **Temperature resistance of the connection cables**<br>States, that the connection cables must be resistant to a temperature of at least 85 °C. |

# 2 Identification

## 2.1 Nameplate




***Order Code:*** *Order code of the instrument according to the product structure (see Technical Information TI425P)*
***Ident. No.:*** *Identification number; characterizes the instrument unambiguously*
***Serial No.:*** *Serial number*
***Pipe ID:*** *Inner diameter of the measuring pipe*
***K-Faktor:*** *Flow coefficient of the Pitot tube*
***Wall thickness:*** *wall thickness of the measuring pipe*
***Press. rate:*** *pressure rating*
***Mat. of primary:*** *Material of the Pitot tube*
***Fluid:*** *Fluid for which the instrument has been sized*
***Flow rate:*** *Flow rate for which the instrument has been sized (operating point)*
***Calc dP value:*** *calculated differential pressure at the operating point*
***Pressure:*** *operating pressure*
***Temperature:*** *operating temperature*

## 2.2 Product structure

See Technical Information TI 425P.

# 2.3 Documentation

## 2.3.1 Deltatop

| Document | Device | Designation |
|---|---|---|
| **Technical Information** | | |
| TI422P | DO61W, DO62C, DO63C, DO64P, DO65F | Differential pressure flow measurement with orifices and Deltabar differential pressure transmitter |
| TI425P | DP61D, DP62D, DP63D | Differential pressure flow measurement with Pitot tubes and Deltabar differential pressure transmitter |
| **Operating Instructions** | | |
| BA368P | DO61W, DO62C, DO63C, DO64P, DO65F | Differential pressure flow measurement with orifices and Deltabar differential pressure transmitter |
| BA369P | DP61D, DP62D, DP63D | Differential pressure flow measurement with Pitot tubes and Deltabar differential pressure transmitter |

## 2.3.2 Deltabar S

| Document | Device | Designation |
|---|---|---|
| **Technical Information** | | |
| TI382 | Deltabar S | Differential pressure transmitter |
| **Operating Instructions** | | |
| BA270P | Deltabar S | Differential pressure transmitter - HART |
| BA294P | Deltabar S | Differential pressure transmitter - PROFIBUS PA |
| BA301P | Deltabar S | Differential pressure transmitter - FOUNDATION FIELDBUS |
| **Description of Instrument Functions** | | |
| BA274P | Cerabar S/Deltabar S/Deltapilot S | Pressure and differential pressure transmitter HART |
| BA296P | Cerabar S/Deltabar S/Deltapilot S | Pressure and differential pressure transmitter PROFIBUS PA |
| BA303P | Cerabar S/Deltabar S/Deltapilot S | Pressure and differential pressure transmitter FOUNDATION FIELDBUS |
| **Safety Instructions (ATEX)** | | |
| XA235P | Deltabar S | ATEX II 1/2 G EEx ia |
| XA237P | Deltabar S | ATEX II 1/2 D |
| XA239P | Deltabar S | ATEX II 1/3 D |
| XA240P | Deltabar S | ATEX II 2G EEx d |
| XA241P | Deltabar S | ATEX II 3 G EEx nA |
| XA242P | Deltabar S | ATEX II 1/2 G EEx id; ATEX II 2 G EEx d |
| XA243P | Deltabar S | ATEX II 1/2 GD EEx ia |
| XA275P | Deltabar S | ATEX II 1 GD EEx ia |

### 2.3.3 Omnigrad T (RTD resistance thermometer) iTEMP (temperature head transmitter)

| Document | Device | Designation |
|---|---|---|
| **Technical Information** | | |
| TI269T | Omnigrad T TR24 | RTD resistance thermometer |
| TI070R | iTEMP TMT181 | temperature head transmitter 4...20 mA |
| TI078R | iTEMP TMT182 | temperature head transmitter HART |
| TI079R | iTEMP TMT184 | temperature head transmitter PROFIBUS PA |
| **Operating Instructions** | | |
| KA141R | iTEMP TMT181 | temperature head transmitter 4...20 mA |
| KA142R | iTEMP TMT182 | temperature head transmitter HART |
| BA115R | iTEMP TMT184 | temperature head transmitter PROFIBUS PA |
| **Safety Instructions (ATEX)** | | |
| XA003T | Omnigrad T TR24 | ATEX II 1 GD EEx ia IIC |
| XA004R | iTMEP TMT181 (4...20 mA) | ATEX II 1 G EEx ia IIC |
| XA006R | iTEMP TMT182 (HART) | ATEX II 1 G EEx ia IIC |
| XA008R | iTEMP TMT184 (PROFIBUS PA) | ATEX II 1 G EEx ia IIC |

### 2.3.4 Flow and Energy Manager RMS621/RMC621

| Document | Device |
|---|---|
| **Technical Information** | |
| TI092R | Energy Manager RMS621 |
| TI098R | Flow and Energy Manager RMC621 |
| **Operating Instructions** | |
| BA127R | Energy Manager RMS621 |
| BA144R | Flow and Energy Manager RMC621 |

## 2.4 Certificates and approvals

### 2.4.1 CE mark, declaration of conformity

The device is designed to meet state-of-the-art safety requirements, has been tested and left the factory in a condition in which it is safe to operate. The device complies with the applicable standards and regulations as listed in the EC declaration of conformity and thus complies with the statutory requirements of the EC directives. Endress+Hauser confirms the successful testing of the device by affixing to it the CE mark.

### 2.4.2 European Pressure Equipment Directive 97/23/EC (PED)

Deltatop Pitot tubes comply with article 3.3 of the Pressure Equipment Directive 97/23/EC and thus have no CE mark affixed to them.

## 2.5 Registered trademarks

HART®
Registered trademark of HART Communication Foundation, Austin, USA

PROFIBUS®
Registered trademark of the PROFIBUS Trade Organisation, Karlsruhe, Germany

FOUNDATION Fieldbus®
Registered trademark of the Fieldbus Foundation Austin, Texas, USA

VITON®
Registered trademark of the company, E.I. Du Pont de Nemours & Co., Wilmington, USA

Ermeto®
Registered trademark of the Parker Hannifin GmbH, Bielefeld, Germany

# 3 Installation

## 3.1 Incoming acceptance, transport, storage

### 3.1.1 Incoming acceptance

Check the packing and contents for any sign of damage.
Check the shipment, make sure nothing is missing and that the scope of supply matches your order.

### 3.1.2 Transport

Caution!
Follow the safety instructions and transport conditions for instruments of more than 18 kg.
Do not lift the measuring instrument by the housing of the transmitter in order to transport it.

### 3.1.3 Storage

For storing and transport, shock proof packaging of the measuring instrument is required. The original packaging material provides optimum protection.
The permissible storage temperature for the Deltabar transmitter is -40 °C ... +80 °C.

## 3.2 Dimensions

See Technical Information TI425P.