

Installation and Operating Instructions

Pressure Transmitters Models PTM..., CTM... and DTM...

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Enclosure: Data Sheet (limit values, techn. data)

1. Important Information in advance

Please read these operating instructions carefully before using the pressure transmitter.

You have purchased an instrument that has been manufactured with a high quality standard in our according to DIN ISO 9001 certified company. Should there, however, arise a reason for a complaint, please return the pressure transmitter with a precise description of the malfunction to our factory.

The pressure transmitters models PTM..., CTM... and DTM are manufactured in accordance with the valid standards.

The following operating instructions have been composed carefully.

However, it is not possible to take all the variants and possible applications of these operating instructions into account.

Please contact us as manufacturer or the distributor when planning to use this equipment in a special application or when there are questions regarding storing, installation, operation or arising difficulties.

For special versions (labelling S on the nameplate) please note the specification according to the delivery note.

Please also support us in improving these operating instructions. We are pleased to receive your remarks.



Applications that are not listed explicitly as intended, are contrary to normal use!

ARMATURENBAU GmbH and MANOTHERM Beierfeld GmbH do not assume liability for damage that arises from misuse of the device resp. from not regarding the information contained in these operating instructions.

Do never manipulate this device. Otherwise you will lose your warranty.

2. Safety Information



Please observe the valid instructions regarding the safety at work and the prevention of accidents, as well as the country-specific installation standards when installing, putting into operation and operating.



The installation, putting into operation and the control of the operation are just to be executed by qualified personnel, meaning persons that are acquainted with installation, mounting, putting into operation and operation of the product as well as the country-specific standards and possess the corresponding knowledge resp. qualifications.



When disregarding the corresponding instructions, injuries and/or damage to property may occur.



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In order to ensure the accuracy of the measuring and the durability of the pressure transmitter and to avoid damages, the indicated limit values on the data sheet are to be observed.



Before the installation and putting into operation, please make sure that you have chosen a pressure transmitter that is regarding to the dept limits, as well as to the compatibility of the material and measuring material adequate for your purposes.



In case of visible damage (e.g. leaking liquids) or malfunctions the pressure transmitter has to be decommissioned immediately resp. an installation and putting into operation must not take place! Please just use intact, faultless pressure transmitters!



All parts, especially the membrane for version FB , have to be protected against incorrect handling when installing the pressure transmitter. Just touch the designated areas with the listed tool, as described below, to avoid damages.

3. Description, Application

Pressure transmitters models PTM..., CTM... and DTM.... are temperature-compensated pressure sensors with integrated measuring amplifiers. They measure the pressure in the connected system and convert the measured pressure into a calibrated output signal, that is qualified for transmission and control purposes.

Version FB with a flush welded membrane may be used for high-viscosity or crystallised media. Versions with standard connection (pressure connection with orifice) may just be used for media, that can not clog the inlet port of the connection.

Models.....Data Sheet(DS)

Piezo-resistive sensors

PTM	Standard version	DS 9810
PTMFB	flush welded membrane	DS 9810
PTMk	Compact version	DS 9810.1
PTMkFB	Compact version, flush welded membrane	DS 9810.1
PTMv	completely welded	DS 9810.2

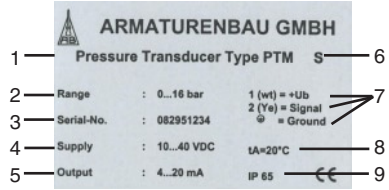
Ceramic sensor

CTMc	Standard version, capacitive	DS 9820
CTMcFG	Field housing, capacitive	DS 9820
CTMd	DMS-stud	DS 9821

Thin-film sensors

DTM	Standard version	DS 9830
DTMk	Compact version	DS 9830.1
DTMFB	Standard version	DS 9830.3

The instrument version is stated on the nameplate:



- | | |
|--------------------------------------|---|
| 1 Basic model | 7 Pin assignment
(power supply,
signal, earthing) |
| 2 Pressure range | 8 Reference temperature |
| 3 Serial number | 9 Case protection type |
| 4 Power supply | |
| 5 Output signal | |
| 6 Labelling S for
special version | |

4. Technical Data

The relevant technical data can be found on the enclosed data sheet, valid for the purchased device type. Further data sheets are available in the download area on our website.



Please observe the limit values that are indicated on the enclosed data sheet. An exceeding of the limit values may cause a breakdown of the device and serious damages to properties and personal injuries!

5. Installation

Storing and Transport

Pressure transmitters are susceptible sensors and have to be treated carefully.

Please check the delivery contents and the condition when receiving the transmitter. Please take care that the membrane of version FB is intact. Return the transmitter immediately, if there are visible damages. Put the transmitter back into the original packaging for further storing. Especially the protection cap has to be installed carefully onto the process connection and must not be removed until the transmitter is going to be installed.

Leave the pressure transmitter in the original packaging for storing up to the installation and store the device protected against damages due to external influences.

In general the temperature limits for storing that are indicated on the enclosed data sheet must not fall below or exceed.

Mounting

Remove the packaging carefully!

Please dispose of the packaging according to environmental considerations, resp. in accordance with the local waste disposal regulations!



Before the installation and putting into operation, please make sure that the adequate pressure transmitter regarding pressure range, version, case protection model and materials (risk of corrosion!) has been found for the specific case of application!

Technical data see also enclosed data sheet, as well as further data sheets in the PDF download area on our websites.



Avoid any kind of dirt and damage at the process connection and especially at the sealing surface!



Do not induct any objects into the process connection!



Avoid touching the membrane, especially flush welded membrane or attached chemical seals!



Connections between chemical seals and pressure transmitters must not be detached! Eventual existing seals must not be damaged! The sealing screw at the chemical seal must not be detached at all.

Use just the matching torque wrench at the process connections with wrench flats for the installation at the measurement location.

The wrench has to be adapted exclusively at the designated wrench flat.

The right starting torque depends on the material and the shape of the used sealing resp. sealing materials.

- For pressure connections according to DIN EN 837 use shape- / flat sealing according to DIN 16258
- For pressure connections according to DIN 3852 shape E use pre-installed elastomer-profile packing!
- Tighten conical pressure connections. Use sealing material!
- For chemical seal connection, e.g. diaphragm seal for the food industry using the matching sealing for this chemical seal
- Please regard clean and intact sealing surfaces!
- Do not cant the thread when screwing in.



The matching sealings for each connection have to be used under all circumstances.

Even the minutest leak may, depending on the type of usage conditions, result in unforeseeable damage to property or injury to persons!

The transmitter may be installed in any position, but it has to be installed in a vibration-free position and must not be exposed to strong variations in temperature.

Additional measurement errors caused by deviating from the reference temperature of +20 °C have to be observed!

Avoid a direct pressure blast on the sensor diaphragm!

6. Electrical Connection

Electromagnetic compatibility (EMC) can only be ensured by using shielded cables and a properly connected ground connection.

For this the shield has to be connected to the ground terminal of the cable connection box, resp. the housing if no cable connection box is available.

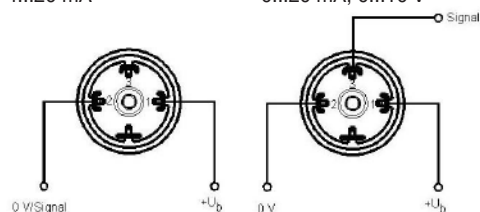
Pin assignment DIN EN plug/ Series G-plug

2-wire

4...20 mA

3-wire

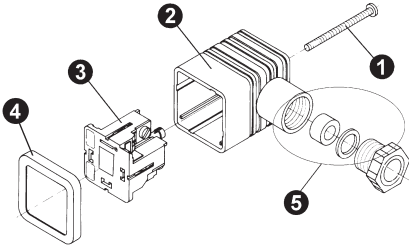
0...20 mA, 0...10 V



The indicated protection types can only be obtained with a firmly mounted cable box and corresponding seal.

Type	Screw fitting	Cable cross-section	Cable-diameter
DIN EN 175308-803-A	PG9	to 1,5 mm ²	6... 8 mm
Serie G	PG7	to 0,5 mm ²	4 ... 7 mm
M 12 x 1	PG9	to 0,75 mm ²	4,5... 7 mm
Skintop	M16x1,5	—	4,5...10 mm
Skintop	PG7	—	4... 7 mm

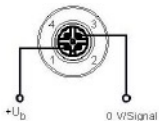
Mounting of the Connection Cable when Universal Plug Connector according to DIN EN175310-803



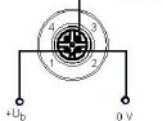
- Unscrew the screw ① and pull the cable box off.
- Remove the profile seal ④.
- Use a suitable screwdriver to prise out inner section ③ from housing section ②. For this apply the screwdriver to the recess marked "Pull".
- Induct the cable through the cable fitting ⑤ into the housing of the cable box ②.
- Use the right cable diameter!
- Regard the minimum bending radius of the used cable (manufacturers' instructions)
- Do not pinch the cable!
- Avoid condensation or humidity in the cable!
- Loosen the screws of the terminals which are to be wired in the inner section ③, insert the cable ends and tighten the screws again.
- Cable wiring in accordance with connection diagram!
- The inner section ③ may optionally be installed in 90° steps
- Insert the inner section ③ so that it engages audibly. If necessary, pull the cable back.
- Tighten the cable gland ⑤, until density and strain relief are given.
- Press on the profile seal ④ again.
- Clip on cable box on transmitter, screw in the central screw ① again and tighten it hand-tight.

Pin assignment M 12-plug

2-wire
4...20 mA



3-wire
0...20 mA, 0...10 V
Signal



7. Maintenance and Repair

Our pressure transmitters are maintenance-free. Should malfunctions occur which cannot be rectified without intervention at the pressure transmitter (compare section 10), please return the pressure transmitter with a precise description of the malfunction.

Repairs are just to be done by the manufacturer.



Do never use sharp and hard objects or ultrasonic baths when cleaning the pressure connection, as these destroy the sensor.

To assure the accuracy of the measurement we recommend a regular examination of the pressure transmitter. For this the transmitter has to be disconnected of the process and has to be compared with a corresponding test device.

Precision Zero Adjustment

In case of a process-related required zero adjustment

• for models PTM und CTMc

the cable box has to be taken down.

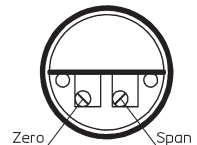
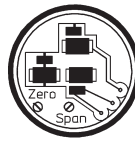
Afterwards the thumb screw, resp. 4 screws have to be loosened. Remove the upper plug section carefully and fold it to the side.

The potentiometer "Zero" can be adjusted with a screwdriver by turning to the right (+) or left (-) within a range of approximately 5-10%.

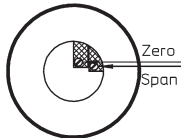
PTM....

2-wire (4-20 mA)

3-wire (0-20 mA, 0-10 V)



CTMc

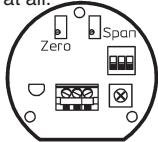


• **for model CTMcFG**

remove the screw cap.

The potentiometer "Zero" can be adjusted with a screwdriver by turning to the right (+) or left (-).

The potentiometer labelled "Span" located beside the zero adjustment (Zero) must never be adjusted at all.



• **for model CTMd**

Zero point not adjustable

• **for models DTM, DTMk, DTMFB**

Zero point programmed, therefore just comparable ex works



The zero adjustment is just to be done by suitably trained personnel! An incorrectly calibrated measurement range can result in unforeseeable damage to properties or injuries to persons!

8. Accessory

Seals : Item number:


CU-Flat Seal

G ¼ B(¼" BSP), M12 x 1,5 100 011 80 01
 G ½ B(½" BSP), M20 x 1,5 100 011 80 02



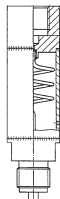
CU-Profile Seal

G ¼ B(¼" BSP), M12 x 1,5 100 011 80 05
 G ½ B(½" BSP), M20 x 1,5 100 011 80 06

Cooling Elements

Models KEI, KEIv and KEIvR

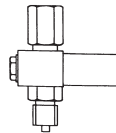
for medium temperatures
 up to +150 °C / +250 °C
 (+ 302 °F / + 482 °F)



see data sheet 7002

(just for types that are not already delivered with integrated temperature decoupler, typecode TE)

Overpressure Protection-Piston Valve,
 1.4571
 (316 stainless steel),
 Data sheet 11500

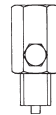


Adjustment Range: Item number:

0,4 - 2,5 bar	100 004 30 01
2 - 6 bar	100 004 30 02
5 - 25 bar	100 004 30 03
20 - 60 bar	100 004 30 04
50 - 250 bar	100 004 30 05
240 - 400 bar	100 004 30 06

Snubber

with lateral fixable spindle, 1.4571
 (316 stainless steel),



G ½ female x G ½ B
 (½" BSP female x ½" BSP)

Item number:
 100 003 30 01

9. CE-Declaration of Conformity

CE The CE labelling on the equipment indicates conformity with the applicable EU directives for placing products on the market within the European Community. The corresponding declaration of conformity is enclosed resp. is available upon request.

10. Malfunctions

Description	Possible cause	Remedy
No output signal	missing operating voltage.....	apply operating voltage
	cable broken.....	check the cable and repair it
	wiring fault.....	check the wiring and correct it
	missing input pressure.....	check pressure connection, apply pressure
Output signal constant	usage conditions not permissible.....	return to works with a description of the malfunction and the usage conditions
	orifice is clogged.....	check measuring point, clean it carefully and if necessary return with a description of the malfunction
Output signal too high	pressure transmitter is defective.....	return with a description of the malfunction
	incorrect measurement range.....	replace pressure transmitter
Output signal too low	pressure transmitter is defective.....	return with description of the malfunction
	incorrect measurement range.....	replace pressure transmitter
	for current signal: load is too high.....	reduce load or boost operating voltage
	for voltage signal: load is too low.....	change load
	operating voltage is too low.....	boost operating voltage
Incorrect zero signal	pressure transmitter is defective.....	return with description of the malfunction
	zero point has changed due to not permissible operating conditions.....	return with description of the malfunction
	not permissible operating voltage.....	apply allowed operating voltage
Non-linear output signal	pressure transmitter is defective.....	return with description of the malfunction
	Measurement span has changed due to the operating conditions or improper calibration at the potentiometers.....	return with description of the malfunction
	pressure transmitter is defective.....	return with description of the malfunction

Our data sheets as latest version can always be found in the PDF download area of our websites

<http://armaturenbau.com> and <http://manotherm.com>.

Data sheets of the pressure transmitters are among other things available in category 9.

The latest issue status of our operating instructions is also available in the PDF download area in category II. operating instructions.

For queries please contact our sales teams:

Monday - Thursday from 7:00 a.m. to 4:30 p.m.

Friday from 7:00 a.m. to 3:15 p.m.

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