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**1. Information on This Operating Instruction**

- The manual is aimed at specialists and semi-skilled personnel.
- Please read the instructions carefully before carrying out any operation and keep the specified order.
- Thoroughly read and understand the information in chapter 2 "Safety Instructions".

If you have any problems or questions, please contact your supplier or contact us directly at:

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**B62**  
**02/18**

### 1.1 Pictographs Used in This Manual

In this manual, pictographs are used as hazard warnings.

Particular information, instructions and restrictions designed for the prevention of personal or substantial property damage:



**WARNING!** Is used to warn you against an imminent danger that may result in personal injury or death.

**IMPORTANT!** Is used to warn you against a possibly hazardous situation that may result in personal, property or environmental damage.

**CAUTION!** Is used to draw your attention to important recommendations to be observed. Disregarding them may result in property damage.



Passages in the text containing **explanations, information or advice** are highlighted with this pictograph.



The following symbol highlights **actions** you have to conduct or **instructions** that have to be strictly observed.

### 1.2 Exclusion of Liability

We accept no liability for any damage or malfunction resulting from incorrect installation, inappropriate use of the device or failure to follow the instructions in this manual.

### 1.3 General Information

Please inspect the transport packaging and the delivered items immediately upon their receipt to determine their integrity and completeness. You have purchased an instrument that was manufactured according to high quality standards in our company, which is certified according to DIN ISO 9001. Should a reason for complaint however arise, please return your instrument with a precise description of faults to our factory.

The pressure transmitter model DTMH is manufactured according to the valid standards. The following manual was composed with due care. It is not possible, however, to take into account all versions and possible cases of application in this operating instruction. If you have any questions regarding a special application, instruments, storage, mounting, operation or difficulties, please contact us as manufacturer or the distributor.

Please support us in improving this operating instruction. We will gladly accept your advice.

## 2. Safety Instructions

Please read this operating instruction thoroughly before operating the device.

Disregarding the containing warnings, especially the safety instructions, may result in danger for people, the environment, and the device and the system it is connected to.

The pressure transmitter corresponds with the state of engineering at the time of printing. This concerns the accuracy, the operating mode and the safe operation of the device.

In order to guarantee that the device operates safely, the operator must act competently and be conscious of safety issues.

The ARMATURENBAU GmbH and the MANOTHERM Beierfeld GmbH provide support for the use of their products either personally or via relevant literature. The customer verifies that our product is fit for purpose based on our technical information. The customer performs customer and application specific tests to ensure that the product is suitable for the intended use. With this verification, all hazards and risks are transferred to our customers. Our warranty expires in case of inappropriate use.

# Operating Instructions

## Pressure Transmitter Model DTMH

### **Qualified personnel:**

- The personnel that is charged for the installation, operation and maintenance of the pressure transmitter must hold a relevant qualification. This can be based on training or relevant tuition. The personnel must be aware of this manual and have access to it at all times.
- The electrical connection shall be carried out by a fully qualified electrician only.

### **General safety instructions:**

- In all work, the existing national regulations for accident prevention and safety at the workplace must be complied with. Any internal regulations of the operator must also be complied with, even if these are not mentioned in this manual.
- Degree of protection according to DIN EN 60 529: Ensure that the ambient conditions at the installation location do not exceed the requirements of the specified degree of protection (⇒ chapter 4 "Technical Data").
- Use the instrument in its perfect technical condition only. Damaged or defective instruments need to be checked immediately and replaced if necessary.
- Only use appropriate tools for mounting, connecting and dismantling the pressure transmitter.
- Nameplates or other information on the device shall neither be removed nor obliterated, since otherwise any warranty and manufacturer responsibility expires.



**IMPORTANT! Disregarding the respective regulations may result in severe personal injuries and/or property damage.**

### **Special safety instructions:**

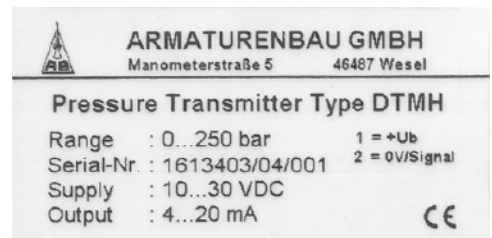
Warnings, which are specifically relevant to individual operating procedures or activities, are to be found at the beginning of the relevant sections of this operating instruction.

## 3. Device Description

The pressure transmitter model DTMH is a temperature-compensated pressure sensor with integrated measuring amplifiers. They measure the pressure in the connected system and convert the measured pressure value into a calibrated output signal that is suitable for transmission and control purposes.

Versions with standard connection (pressure connection with orifice) may only be used for media that do not clog the inlet port of the connection.

The instrument version is indicated on the nameplate:



### 3.1 Intended Use

The pressure transmitter is suitable for measuring the gauge pressure of hydrogen and media containing hydrogen.

Do not use the device beyond its specification or contrary to the operating instructions.

The operational safety of the device supplied is only guaranteed by intended use. The specified limit values (⇒ chapter 4 "Technical Data") must not be exceeded. This particularly applies for the adherence to the permissible full scale value and the permissible temperature range.

When using the pressure transmitter, a high degree of care and precaution is required. It has to be protected from strong vibrations, moisture, shocks, magnetic fields and static electricity.

# Operating Instructions

## Pressure Transmitter Model DTMH




### **IMPORTANT! Risk of injury or material damage due to overpressure!**

Exceeding the maximum overload values may lead to material failure of the device. This may also cause serious damage to health.

→ Ensure that the overload values are never exceeded.

Please check if the pressure transmitter is suitable for your application before ordering and installation.

 **Applications that are not explicitly listed as according to regulations, are improper to intended purpose!**

### 4. Technical Data

Pressure range	0 – 4 bar to 0 – 600 bar –1 / +3 bar to –1 / +15 bar
Output signal	4...20 mA (2-wire)
Power supply	10...30 V DC
Load impedance	(UB-10 V)/0.02 A
Storage temperature	–40 °C to +80 °C (–40 °F to +176 °F)
Rated temperature	–20 °C to +120 °C (–4 °F to +248 °F)
Accuracy	better than ±0.5 % of full scale value
Long-term stability	better than ±0.1 % p. a.
Reference temperature	+20 °C (+68 °F)
Process connection	G ½B made of 1.4404/1.4435 (316L) acc. to DIN EN 837-1
Case	stainless steel
Degree of protection	IP65



**IMPORTANT! Exceeding the limit values may cause a breakdown of the instrument and result in serious personal and property damage!**

### 5. Installation

Please inspect the delivery contents and the condition of the transmitter upon receipt. Return the instrument immediately if any damage is visible.

#### **Mounting:**

Remove the packaging with due care! Dispose of the packaging according to environmental conditions and in accordance with the local waste disposal regulations!



**CAUTION! Before installation, putting into operation and operation, ensure that you have the suitable pressure measuring instrument regarding pressure range, version, degree of protection and materials (Risk of corrosion!) for the specific case of application!**



#### **Please note:**

Avoid any kind of contamination and damage at the process connection and especially at the sealing face!

Do not insert any objects into the process connection!

Connections between chemical seals and pressure transmitters must never be loosened! Possibly existing seals must not be damaged! The sealing screw at the chemical seal must never be loosened.



**IMPORTANT! At process connections with wrench flats, only use the matching torque wrench for installation at the measuring point.**

# Operating Instructions

## Pressure Transmitter Model DTMH

The wrench must be applied at the designated wrench flat only. The right tightening torque depends on material and shape of the used sealing and sealing materials.

- For pressure connections according to DIN EN 837 use profile sealings/flat sealing rings according to DIN 16 258.
- Tighten conical pressure connections. Use sealing material!
- Ensure that sealing surfaces are clean and intact!
- Do not tilt the thread when screwing in.



**IMPORTANT! The matching sealings for each connection must be used under all circumstances. Depending on the type of application, even the smallest leak may result in unpredictable personal and property damage!**

The installation position is optional, but the instrument must be installed free of vibration and must not be exposed to strong changes in temperature.

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

Avoid a direct pressure blast on the sensor diaphragm!

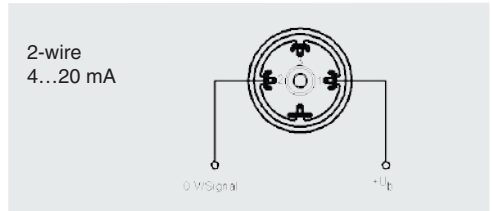
## 6. Electrical Connection

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

### 6.1 Pin Assignment

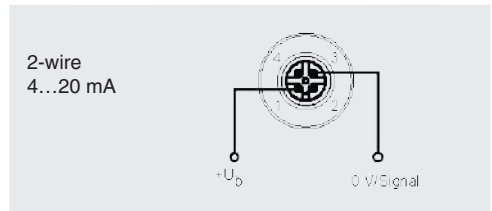
Type	Screw fitting	Cable cross-section	Cable diameter
DIN EN 175308-803-A	PG9	up to 1.5 mm <sup>2</sup>	6–8 mm
M 12x1	PG9	up to 0.75 mm <sup>2</sup>	4.5–7 mm

### Pin assignment DIN EN plug



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

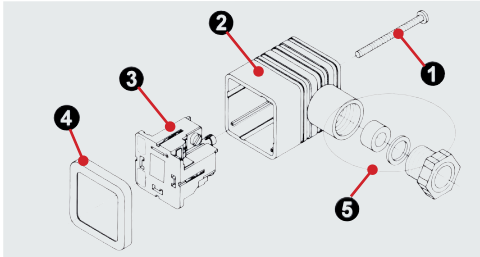
### Pin assignment M 12-plug



# Operating Instructions

## Pressure Transmitter Model DTMH

### 6.1.1 Mounting of the Connection Cable with Universal Plug Connector According to DIN EN 175310-803



- ➊ Central screw
- ➋ Case part
- ➌ Inner part
- ➍ Profile packing
- ➎ Screwed cable gland

→ Unscrew the central screw ➊ and remove the angular cable box from the transmitter.

→ Remove the profile packing ➋.

→ Lever the inner part ➌ out of the case part ➍ with a suitable screwdriver. For this, place the screwdriver in the provided recess at the edge.

→ Insert the cable through the screwed cable gland ➎ into the case part ➍.

👉 Use the right cable diameter!

👉 Regard the minimum bending radius of the cable used (manufacturer's information).

👉 Do not crimp the cable!

👉 Avoid condensation and humidity in the cable!

→ At the inner part ➌, loosen the screws of the terminals, which are to be wired, then insert the cable ends and tighten the screws. (Recommendation: use core cable ends with  $l = 6 \text{ mm}$ .)

👉 Cable wiring according to connection diagram!

→ The inner part ➌ can optionally be installed in 90° steps.

→ Insert the inner part ➌ in the required position, so that it engages audibly. If necessary, pull the cable back slightly.

→ Tighten the screwed cable gland ➎ until leak tightness and strain relief are obtained.

→ Press the profile packing ➋ back on.

→ Attach the angular cable box to the transmitter, screw in the central screw ➊ and tighten it hand-tight.

### 7. Maintenance/Cleaning, Storage and Transport



#### CAUTION! Material damage and loss of warranty!

Any modifications or interventions in the device, made by the customer, might damage important parts or components. Such intervention leads to the loss of any warranty and manufacturer's responsibility!

→ Never modify the device or perform any repairs yourself.

#### Maintenance:

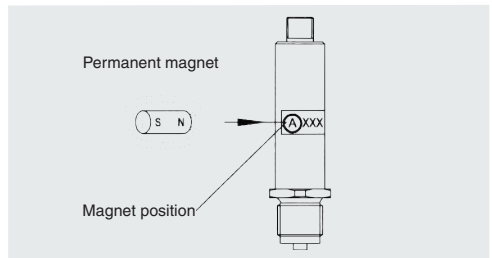
Our pressure transmitters are maintenance-free.

In case of faults, which cannot be eliminated without interference in the pressure transmitter (⇒ chapter 10 "Electrical Malfunctions"), please return the instrument, together with a precise description of the faults, to the manufacturer for repair. Any arising repairs may only be executed by the manufacturer.

To assure the accuracy of measurement, we recommend a regular examination of the pressure transmitter. For this, the instrument needs to be separated from the process and checked by using a corresponding test device.

#### Zero adjustment:

The zero point can be set easily with a magnet within  $\pm 10 \%$  of the nominal range.



# Operating Instructions

## Pressure Transmitter Model DTMH

To correct the zero point, hold a permanent magnet (e.g. pin board magnet) at the position marked on the pressure transmitter (the encircled letter) approximately 30–150 seconds after the voltage supply has been switched on.

To correct the zero point, ambient pressure has to be applied. Offsets for previously set values for initial and final pressures will be corrected automatically by the device. A magnetic field applied outside of this time period has no effect on the setting. The supply voltage has to be switched off and on before the zero point can be set again.

### Cleaning:

- Clean the dead weight tester with a dry or slightly dampened soft cloth.
- Do not use any sharp objects or aggressive agents for cleaning.



**CAUTION! Never use sharp or hard objects or ultrasonic baths when cleaning the pressure connection, as these destroy the sensor!**

### Storage and transport:



**Pressure transmitters are sensitive sensors and have to be handled with due care.**

- Use the original packaging or comparable packaging for storage/for transport. Especially the protection cap has to be attached carefully to the process connection and must not be removed until the installation of the transmitter.
- Avoid impacts or strong vibrations.
- Protect the device against damage caused by external influences.
- During storage, the specified temperature limits must not be exceeded.

## 8. Dismounting



### WARNING! Risk of injury!

Never remove the device from a system in operation.

Make sure that the system is switched off professionally.

### Before dismounting:

Check before dismounting, whether the system

- is switched off,
- is in a safe and currentless state,
- is unpressurised and cooled down.

### Dismounting:

→ Pay attention to potentially leaking media. Take appropriate precautions to collect them.

## 9. Declaration of Conformity



The CE marking of the instruments certifies the conformity with prevailing EU directives for placing products on the market within the European Community. The following directives apply:

2014/30/EU (EMC) and 2014/68/EU (PED)  
The corresponding declaration of conformity is enclosed or available upon request.

# Operating Instructions

## Pressure Transmitter Model DTMH

### 10. Electrical Malfunctions

Fault Description	Potential Cause	Correction
No output signal	missing operating voltage	apply operating voltage
	broken cable	check the cable and repair it
	wiring fault	check the wiring and correct it
	missing input pressure	check the pressure connection, apply pressure
	operating conditions not permissible	return to works with description of faults and operating conditions
Output signal constant	clogged orifice	check the measuring point, clean it carefully, if necessary return to works with description of faults
	defective pressure transmitter	return to works with description of faults
Output signal too high	pressure range incorrect	replace pressure transmitter
	defective pressure transmitter	return to works with description of faults
Output signal too low	pressure range incorrect	replace pressure transmitter
	for current signal: load impedance too high	reduce load impedance or increase operating voltage
	operating voltage too low	increase operating voltage
	defective pressure transmitter	return to works with description of faults
Incorrect zero signal	zero point altered due to non-permissible operating conditions	return to works with description of faults
	operating voltage not permissible	apply permissible operating voltage
	defective pressure transmitter	return to works with description of faults
Output signal non-linear	measuring span altered due to non-permissible operating conditions or improper adjustment at the potentiometer	return to works with description of faults
	defective pressure transmitter	return to works with description of faults