IEP TECHNOLOGIES
HOERBIGER Safety Solutions

Explosion Multi Sensor MEX-3.x

Customer Documentation

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1 Preface

1.1 Contacts

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1.2 Abbreviations

The following abbreviations are used in this manual

IEP	Industrial Explosion Protection
MEX-3.X	Explosion multi sensor, 3. Generation
FAB-X	Field connection box x Generation
SEV	Switzerland Electronics association / Electrosuisse
FSA	Research Society for Applied System Security and Occupational Medicine

2 Guide to customer documentation

This customer documentation contains the required information on the MEX-3.x multi sensor and provides basic information on safety, system, assembly, installation, commissioning, normal operation, fault diagnosis, maintenance and regular servicing of the individual components.
According to the definition of the user, the information level in this documentation is aimed at the operator and installer of the customer.
The customer documentation cannot take into account all installation variants. In accordance with this, this documentation contains only the information required for standard applications and installation.
In the interest of your safety, the safety of other employees and of the equipment, please observe ALL safety guidelines. For certain operations specialised knowledge is required: The operators must be appropriately qualified for these operations, see chapter 3.3 “Authorised users / operators”.
This customer document contains the description of various types of MEX-3.x multi sensors.

2.1 Additional conditions of use

IEP Technologies GmbH or the responsible expert company are always ready to provide support to customers for special applications.

The content of the customer documentation does not constitute part of an earlier or existing agreement, commitment or legal relationship, nor does it alter any such agreements. All obligations of IEP Technologies GmbH arise from the prevailing purchase contract or the corresponding acknowledgement of order, which contains the only applicable and complete guarantee conditions. The scope of the contractual obligations does not expand as a result of the customer documentation.

The IEP Technologies GmbH personnel are committed to in-house development of technically innovative, user-friendly and safe explosion-safety systems. We provide high-quality systems, expert advice and a comprehensive service and pride ourselves on our ability to respond to the needs of our customers.
Should you have any ideas or suggestions as to how we could improve our service, please write to us. We are always ready to consider your suggestions.

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3 Safety Guidelines

3.1 Introduction

Within this customer documentation the following symbols are used to highlight important safety guidelines to the user. They are used wherever necessary, throughout this document. It is mandatory to observe and to follow safety guidelines, particularly warnings.

WARNING
INDICATES POSSIBLE DANGER TO PERSONS DUE TO MIS-HANDLING OF SYSTEM PARTS.

Caution
INDICATES DANGER TO SYSTEM PARTS OR OF POSSIBLE INTERFERENCE TO OPERATION.

Information
Contains important additional information concerning the system or system parts, and offers additional tips for the user.

3.2 Intended use, conditions for application

3.2.1 Application and intended use

The MEX-3.x multi sensors must be operated in accordance with manufacturer's instructions. According to Directive 94/9/EC (ATEX95) MEX sensors (pressure or temperature sensors) that are connected to so-called type FAB-3.2 and FAB-4 field connection boxes (evaluation units) are intended to be used as detection units of explosion protection systems (pressure resistant and pressure shock resistant construction, explosion venting, explosion suppression and explosion isolation). They are connected with specially developed alarm control units (control and indication equipment). The MEX-3.x und FAB-x are certified as part of explosion protection systems. Further applications which are not covered by the above described intended use need explicit authorisation and clearance of IEP Technologies. Furthermore, these applications are not covered by directive 94/9/EC, that is MEX-3.x and FAB-x are not to be considered as part of an explosion protection system in that case.

Prerequisite
Use of this equipment requires that plant design, assembly, installation, commissioning, servicing and maintenance operations are carried out by expert personnel qualified for this work. This work has to be checked by the responsible supervisor.

Information
See definition ***Authorised Users / Operators***, chapter 3.3.

Professional handling

The accordingly qualified expert personnel has particular responsibility to ensure that

- no system part is used for any other than its original purpose,
- technical data and information concerning intended use correspond to assembly, connection, environmental and operating conditions (as given in project information, type plates and documentation supplied with equipment),
- general assembly and safety regulations are upheld,
- all work is carried out in compliance with on-site, plant-specific conditions and regulations relating to operating dangers.

3.2.2 Notes on conservation of value

Transportation, storage

The units mentioned are high-quality electronic sensors and therefore require careful treatment during all operations, transportation and storage.

Caution

- STORE IN A DRY PLACE.
- TRANSPORT AND STORAGE IN ORIGINAL PACKAGING.
- NEVER LEAVE DEVICE UNPROTECTED IN THE OPEN!
- PROTECT MEASURING CELLS FROM MECHANICAL DAMAGE

3.3 Authorised users / operators

Information
Those responsible for safety on-site must ensure, that

- Plant design, assembly, installation, commissioning, servicing and maintenance operations are carried out expert personnel qualified for these works, and are checked by the responsible supervisor.
  Expert personnel are persons who conform to DIN VDE 0105 or IEC 364 or directly comparable standards. Qualified expert personnel are persons who, on the basis of training, experience or by instruction, and their knowledge of relevant standards, conditions, accident regulations and plant relationships, are entrusted to carry out these activities by those responsible for the safety of individuals and plant. These persons must be considered able to recognise and avoid dangers at an early stage.
  Knowledge of first-aid and on-site emergency procedures is essential.
- These persons have precise knowledge of operating dangers, for example, the danger of hot or poisonous gases, or gases under pressure, gas-liquid mixes and other agents.
- Regulations forbidding unqualified persons from working on high-voltage electrical plant must be upheld (according to DIN VDE 0105 or IEC 364).
- Works and proximity to hazardous systems and components by unqualified personnel is prohibited.

3.4 Safety regulations, Protective measures

3.4.1 Preventive measures to ensure operational safety

WARNING
IF DETECTION SYSTEMS ARE USED WITH MEX-3.X SENSORS CONNECTED IN CONJUNCTION WITH PROCESS MEASUREMENT AND CONTROL, THE OPERATOR MUST ENSURE THAT FAILURE OR EQUIPMENT FAULTS OF THE DETECTION SYSTEM CANNOT RESULT IN INADMISSIBLE OPERATING STATES WHICH WILL COULD CAUSE DAMAGE OR DANGER.

THE LOCAL EX-GUIDELINES HAVE TO BE FOLLOWED.

WARNING
IT MUST BE ENSURED THAT AN AUTOMATIC SHUT-DOWN OF THE PRODUCTION PLANT OCCURS IF A FAULT MESSAGE IS INDICATED (HARDWARE CONNECTION). THE CAUSE OF FAULT MUT BE EVALUATED AND RECTIFIED PRIOR TO THE START-UP OF THE PRODUCTION PLANT.

Information
To prevent faults arising in the equipment, the specified maintenance and inspection tasks must be carried out regularly by qualified and experienced expert personnel.

Fault recognition
Any change to the normal operating state means serious evidence for a functional interference and must be investigated. Among other things, this includes:

- monitoring system is activated (fault message),
- significant drift in test readings,
- increased power consumption of individual components,
- components become overheated,
- unusual odour is detected.

3.4.2 Prevention of equipment faults causing further damage

To avoid personnel or equipment damage caused by operational faults, either directly or indirectly, the operator must ensure, that

- responsible maintenance personnel can be notified rapidly and at any time,
- the maintenance personnel are trained to recognise faults of the MEX sensors in conjunction with FABs, and can react correctly to the resulting operational errors;
- shut-down will not cause further faults or create an additional hazard.

3.5 Guide to environmental impact and waste disposal

- Component units are easily dismantled and disposed of simply.
- All materials used in the MEX sensors are groundwater neutral. Electronic scrap, e.g. printed circuit boards, must be treated as hazardous waste.
- The housings of the MEX sensors are made of anodised aluminium and stainless steel.

Caution

RELEVANT LOCAL WASTE-DISPOSAL REGULATIONS MUST BE OBSERVED.

3.6 Applicable standards and directives

3.6.1 Electromagnetic compatibility

IEC 61326-3-1
Immunity requirements for safety-related systems and equipment to fulfil safety-relevant functions (functional safety) for general industrial applications

3.6.2 ATEX 95 "Directive 94/9/EC for equipment and protective systems intended for the use in potentially explosive atmospheres"

Equipment standards

- IEC 60079-0: 2012 explosive atmosphere
  Equipment - general information
- IEC 60079-11: 2012 explosive atmosphere
  Equipment protection by means intrinsic safety "i"
- IEC 60079-26: 2015 explosive atmosphere
  Equipment with equipment protection level (EPL) Ga

IP protection standard by means of housing IP 68 according to IEC 60529

Product Certifications

- Multi sensor MEX-3.x* unit certification **SEV 15 ATEX 0176 X**
  IECEx SEV 15.0023 X

System standards

- EN 1127-1:2008-02 Explosive atmospheres – Explosion prevention and protection, Part 1 Basic concepts and methodology
- EN 14373:2006-01 (Explosion Suppression Systems)
- EN 15089:2009-07 (Explosion Isolation Systems)

System Certifications

- Explosion protection system **FSA 13 ATEX 1641 X**

  Explosion suppression / explosion isolation

4 Device description

4.1 Features

The MEX-3.x pressure sensor was especially developed to detect incipient process explosions. In combination with an FAB-x evaluation unit, the two provided an explosion detection system. The MEX sensors each have two separate pressure measurement cells. In addition, an MEX sensor also contains a temperature sensor.

Figure 1: MEX-3.x

Information

The most important features include:

- Two independent measurement cells integrated into a single housing
- Robust design with ceramic cells for complicated ambient conditions
- Sensor type MEX-3.xHT for use in the case of heightened process temperatures
- Designed for installation in ex zones 1 and 2 for gas, 21 and 22 for dust
  Measurement cells certified for installation in zone 0 and 20
- Aseptic flange technology for pharmaceutical and foodstuff applications

4.2 Device overview

The MEX-3.x sensors are mounted near the FAB-x ***f***ield ***c***onnection ***b***ox that is connected to an alarm centre via a multi-core signal cable. The connection of the FAB-x to the sensor is limited in length. The sensors are available with two different prefabricated cable lengths (5 m and 10 m). The sensors are connected to an intrinsically safe electric circuit within the FAB.

4.2.1 MEX-3 Multi sensor

The multi sensor MEX-3.2 detects pressure changes inside a vessel between 0 and 2000 mbar (abs). It is therefore suitable for most applications. For higher operating pressures a multi sensor MEX-3.* adopted for the respective conditions can be used which consists of measurement cells designed for a higher pressure range. As further standard article the MEX-3.4 with a pressure range between 0 and 4000 mbar is designated. Other pressure ranges can be supplied upon request. The MEX-3.2 as well as the MEX-3.4 is available with the option with a Pt-100 temperature probe. The respective denominations are MEX-3.2T and MEX-3.4T for the temperature option.

The MEX-3(T) can be used up to a maximum process temperature of 125 °C. For higher process temperatures up to 160 °C the version MEX-3.*HT with special piezo-resistive measurement cells and membranes of chemically extra resistant Hastelloy was designed.

Information
The denoted process temperatures refer to the actual temperatures at the mounting location of the sensor. For very high process temperatures (exceeding 160 °C) please consult IEP TECHNOLOGIES GMBH.

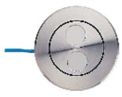
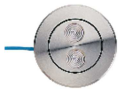
WARNING
WITHOUT RECEIVING CONSENT FROM IEP TECHNOLOGIES GMBH, IT IS NOT PERMITTED TO USE THE MULTI SENSORS AT PROCESS VESSELS WHERE THE MAXIMUM TEMPERATURE OF 125 °C (FOR THE STANDARD VARIANTS) OR 160 °C (FOR THE HT-VARIANT) IS EXCEEDED. FUNCTIONAL IMPAIRMENT OF THE SENSORS AND THE ELECTRONICS CANNOT BE EXCLUDED. THESE FUNCTIONAL IMPAIRMENTS CAN LEAD TO A NON-PROPER FUNCTIONING OF THE EXPLOSION PROTECTION SYSTEM.

4.2.2 Tabulation of the MEX-3.x variants

The subsequent tables show the field of use of the different multi-sensor versions:

Item name	Use...	Article No.
	MEX-3.** multi sensor **	
MEX-3.2	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs	00-20301-301
MEX-3.2T	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs, with Pt100	00-20301-302
MEX-3.2 USA	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs 10 m cable	47-110004-001 (00-20301-336)EU
MEX-3.2T USA	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs, with Pt100	00-20301-332
MEX-3.4	at zone 0/20 / in Zone 1 or 21, pressure range 0-4 bar abs	00-20301-306
MEX-3.4T	at zone 0/20 / in Zone 1 or 21, pressure range 0-4 bar abs, with Pt100	00-20301-307
MEX-3.4 USA	at zone 0/20 / in Zone 1 or 21, pressure range 0-4 bar abs	47-110009-001 (00-20301-334)EU
MEX-3.2HT	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs	00-20301-380
MEX-3.2HTT	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs, with Pt100	00-20301-381
MEX-3.2HT USA	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs	47-110004-003 (00-20301-382)EU
MEX-3.2HTT USA	at zone 0/20 / in Zone 1 or 21, pressure range 0-2 bar abs, with Pt100	00-20301-383
MEX-3.2	* Full installation in Zone 0/20, pressure range 0-2 bar	00-20301-311

***For equipment protection level Ga (installation in zone 0), the aluminium cover of the MEX-3.x explosion pressure sensor is protected against impact and friction.**

MEX-3.2 explosion multi sensor (pressure)				area and equipment classification
Pressure Range	0 - 2 (0-4) bar (abs)			II 1/2 D Ex ia IIIC 128°C T_{200} 140°C Da/Db
Process temperature	-20 to +125 °C			II 1/2 G Ex ia IIC T4…T1 Ga/Gb
Ambient temperature	-20 to +125 °C			Cl. I. Div. 1 & Cl. II. Div. 1
Ceramic measuring cells				SEV 15 ATEX 0176 X
				IECEx SEV 15.0023 X
MEX-3.2T explosion multi sensor (pressure and temperature)				
Pressure Range	0 - 2 (0-4) bar (abs)			II 1/2 D Ex ia IIIC 128°C T_{200} 140°C Da/Db
PT100 temperature range	0 to +160 °C			II 1/2 G Ex ia IIC T4…T1 Ga/Gb
Process temperature	-20 to +125 °C			Cl. I. Div. 1 & Cl. II. Div. 1
Ambient temperature	-20 to +125 °C			SEV 15 ATEX 0176 X
Ceramic measuring cells				IECEx SEV 15.0023 X
MEX-3.2HT explosion multi sensor (high temperature application)				
Pressure Range	0 - 2 bar (abs)			II 1/2 D Ex ia IIIC 163°C T_{200} 175°C Da/Db
Process temperature	-20 to +160 °C			II 1/2 G Ex ia IIC T4…T1 Ga/Gb
Ambient temperature	-20 to +160 °C			Cl. I. Div. 1 & Cl. II. Div. 1
Hastelloy measuring cells				SEV 15 ATEX 0176 X
				IECEx SEV 15.0023 X

4.3 Description of device components

4.3.1 Sensor housing

The sensor housing, mounted on a flange which is welded on the protected vessel, consists of two pressure measurement elements which detect the pressure inside the vessel.
A temperature measurement element (Pt-100) for measuring temperature is available as additional option. The piece of the sensor housing in contact with the product is made of 1.3435 / SS 316 stainless steel in the cover is made of red anodised aluminium (AlMg-Si1).
Signals from all measuring elements are amplified and then transmitted via the connection cable attached on the sensor side to the field terminal box FAB-X. The power supply of the sensor is also over this cable.

Information
From 2004 on, only ceramic (Al_2O_3) with the purity of 99.9% will be used for the measurement cells of the MEX-3 instead of a purity of 96% up until now.
This results in reduced surface roughness (0.3 µm instead of 0.5 µm) and a heightened level of mechanical breaking strength. The membranes of the measurement cells for the MEX-3.X HT are made of Hastelloy C276.

4.3.2 Mounting flange for sensor housing

The mounting flange (standard material: 1.4404 / SS 316L) is welded at the vessel wall.

Information
The positioning of the flange is described in chapter 5.2.1 “Installation of MEX -3 welding flange”.

The flange and the sensor housing - viewed from the inside of the vessel - form a quasi - flat surface to comply with the hygiene regulations for foodstuffs and pharmaceutical plants. This special construction in conjunction with the sealing O-rings reduces the build-up of any deposits to a large degree and allows automatic cleaning (CIP - Cleaning In Place).

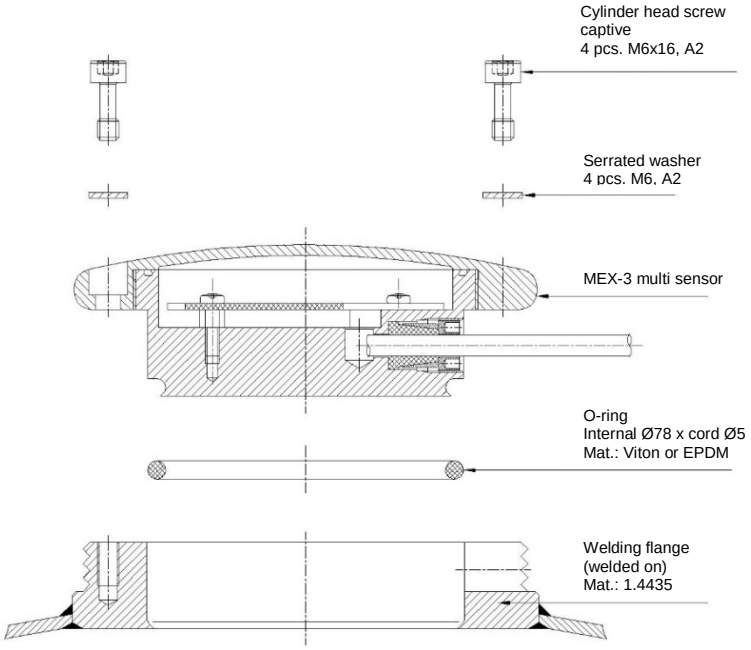
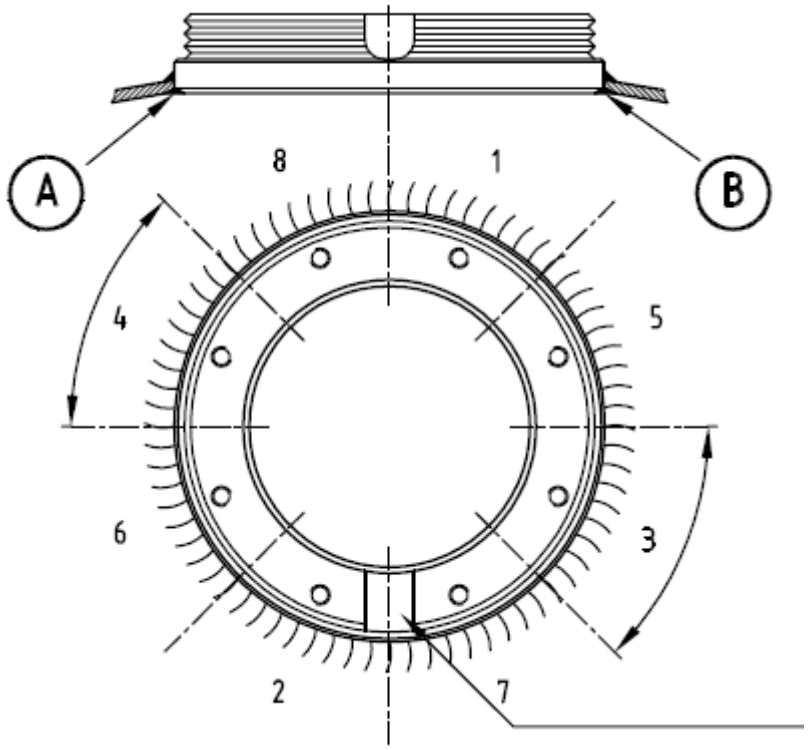


Figure 2: Sensor housing with welding flange and O-ring MEX-3

Welding instructions (distortion-free welding)



The flange at points A and B has to be flush with the inner wall.

After welding a segment, allow the flange to cool.

The flange must not be ground!

Cable gland oriented downwardly

Figure 3: welding procedure specification for welding segments

5 Mechanical and electrical installation

5.1 Installation preparation, planning

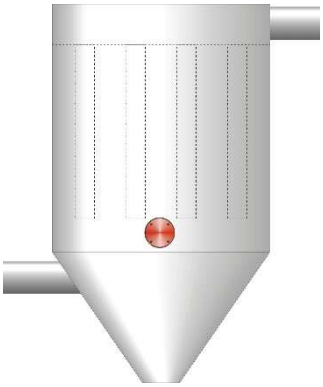
Explosion protection systems serve to protect people and plant. The safety of property and, people's lives depends upon the smooth running of the explosion protection system.

To ensure safe operation of an explosion protection plant, it is not only essential that equipment is kept in good condition, but that it is installed correctly.

WARNING
INSTALLATION MUST BE CARRIED OUT WITH GREATEST CARE. ANY SMALL ERROR CAN CAUSE DAMAGE TO THE PLANT, AND ITS CORRECT FUNCTIONING CAN NO LONGER BE GUARANTEED.

5.2 Installation

5.2.1 Installation of MEX-3 welding flange

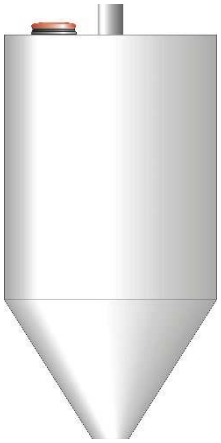


Location on vessels with cones (e.g. filters):

Always mount flange to the cylindrical section of the vessel, below the filter bag if possible (on the raw-gas side).
It must not be located opposite product entrance or air inlet, as this can lead to the product making contact with the membrane. This may trigger an alarm under certain circumstances.

Caution!

When using pneumatic hammers or vibrators, the sensor must be removed to the furthest extent possible and mounted at a 90° angle to the dedusting equipment.



Location on vessels with free volume (e.g. silos):

Vessels with free volume (silos, fluid bed drier) the sensor flange should be located on the top of the vessel.

Location on vessels with a high levels of uncontrolled product dispersion (e.g. mills):

For high levels of uncontrolled product dispersion, it may be necessary to mount the sensor flange on a tee-piece ir stand-off pipe to reduce the risk of product impact.

5.2.2 Installation of sensor housing

The sensor housing is bolted to the flange using four internal hexagonal headed bolts (M6 x 16 captive). Ensure that the lid is firmly bolted down. The lid is rotated by factory so that the holes align with the threaded holes in the flange. If this is not the case, the cover should be turned clockwise, so that the holes line up.

Caution
ENSURE THAT

- THE SERRATED WASHERS ARE PLACED UNDER THE BOLTS; THIS IS AN INTEGRAL PART OF THE GROUNDING CONCEPT FOR USE IN HAZARDOUS ZONES.
- THE CABLE ENTRY FACES DOWNWARD (REDUCE COLLECTION OF DUST AND CLEANING AGENT, BETTER CABLE PROTECTION);
- NO INSULATION IS APPLIED TO SENSOR HOUSING.
- HEAT DISSIPATION IS ENSURED

5.3 Electrical installation

5.3.1 Guidelines for electrical installation

The installation for explosion protection systems must be carried out by an authorised installation company according to the relevant local regulations for extra-low voltage equipment (< 50 V, < 2 A). The instructions described in this customer documentation must be closely observed. Special attention must be paid to the correct cable installation and earthing systems.

Further information on the electronic installation can be found within the individual sets of equipment documentation of the explosion protection system, in the general IEP installation regulations as well is in the project-related cable diagrams.

5.3.2 Electrical installation

Cables

The MEX Sensor's standard scope of supply includes a shielded 6-strand (EEx i) mesh cable with a special silicone sheathing suitable for use at ambient temperatures of up to 180°C. It must be noted that the temperature can be considerably higher within the cable gland area than the maximum permissible ambient temperature. The screen is connected to a sensor housing over an EMC screwed cable gland. The screen must also be connected to the housing in the FAB over a corresponding EMC cable gland. Cable types must be used with specifications that are compliant with the requirements outlined by IEP Technologies. Alternatives may only be used with written permission of IEP Technologies.

Installation in Ex-zones

When installing in Ex-zones, national and on-site regulations must be observed.
The optimum ground connection by using lock washers for the attachment bolts is an integral part of the ex-certification.

Completion

- Use wire end ferrules to connect wire-cored leads to terminals.
- Permanently label both ends of each cable.
- Cable inlets should be completely dust and water-tight.

Explosion protection systems and high voltage equipment

- Electrical wiring of explosion protection systems may not be laid side by side with high voltage equipment.
- Electrical wiring of explosion protection systems may be fed along the same cable trays as high voltage equipment when there is a metal separator inside the cable tray and the entire cable tray is made out of metal. The explosion protection system cable can be laid in seamless steel pipes, to form a protective separator inside cable channels. The steel pipes must be equipped at either end with equipotential bonding.
- If laid in PVC sheaths, the explosion protection plant cable should be fed through a separate cable tray with a minimum overall distance of 10 cm from the high voltage cables.

Separate cables must always be used for installation of explosion protection systems.

6 Technical data

6.1 Overview of technical data

Standard components	
• MEX-3 sensor	Various designs, see chapter 4.2.2
Sensors	
• Pressure cells	MEX-3.x capacitive, ceramic cells MEX-3.xHT: piezo-resistive, Hastelloy
• Temperature element	Pt100, complies with DIN 43670, class A
Measurements	
• Pressure, 2 cells	0 ... 2000 mbar (abs) or 0 ... 4000 mbar (abs) as standard, other measurement ranges on request; tolerance ± 0.5% of the measurement range
• PT 100 temperature (Option)	0 ... +160°C; tolerance ± 1°C
Installation	
• Flange for sensor housing	Welding flange Ø 130 mm; flush on the inside (aseptic sealing system) Sensor fixtures with 4 M6 bolts and O-ring EPDM (FDA conform)
Dimensions	
• Welding flange for MEX-3	∅ 130 mm x 24 mm high
• MEX-3 sensor housing	∅ 129 mm x 42 mm high
Material	
• MEX-3 housing (all versions)	Stainless steel 1.4435 / SS 316
• MEX-3 lid (all versions)	Aluminium AlMgSi1, anodised red
• Measurement cell membranes	MEX-3.*HT: Hastelloy C276 All others: Ceramics (99.9% Al_2O_3) With a surface roughness surface roughness of 0.3 µm
• Mechanical Resistance sensor	Minimum 1x range + 15 bar (static)
• Temp.-sensor (optional)	Stainless steel 1. 4435 / SS 316
• Cable at MEX-3	Silicon -50 °C - +180 °C

Type plates The type plates are permanently mounted to the MEX-3. • MEX-3	 Vinyl foil, pasted
Power supply MEX-3 • Voltage supply • Current consumption	 8...10 VDC max. 12 mA

6.2 Permitted process and ambient temperatures

6.2.1 Process temperatures

Unit	Dust process temperatures	Gas process temperatures
MEX-3.x / MEX-3.xT	- -20°C…+125°C - Max. 2/3 of the ignition temperature of the dust/air-mixture if dust is dispersed in air - Max. glowing temperature of dust - 75°C for a dust layer of 5 mm	- T4 gases: -20°C...+105°C - T1...T3 or non-classified gas environment -20°C...+125°C
MEX-3.xHT	- -20°C…+160°C - Max. 2/3 of the ignition temperature of the dust/air-mixture if dust is dispersed in air - Max. glowing temperature of dust - 75°C for a dust layer of 5 mm	- T4 gases: -20°C...+105°C - T1...T3 or non-classified gas environment -20°C...+160°C

6.2.2 Ambient temperatures

Unit	Dust ambient temperature	Gas ambient temperatures
MEX-3.x / MEX-3.xT	- -20°C…+125°C - Max. 2/3 of the ignition temperature of the dust/air-mixture if dust is dispersed in air - Max. glowing temperature of dust - 75°C for a dust layer of 5 mm	T1...T4 or non-classified gas environment -20°C...+85°C
MEX-3.xHT	- -20°C…+160°C - Max. 2/3 of the ignition temperature of the dust/air-mixture if dust is dispersed in air - Max. glowing temperature of dust - 75°C for a dust layer of 5 mm	- T4 gases: -20°C...+105°C - T1...T3 or non-classified gas environment -20°C...+125°C

6.3 Identification

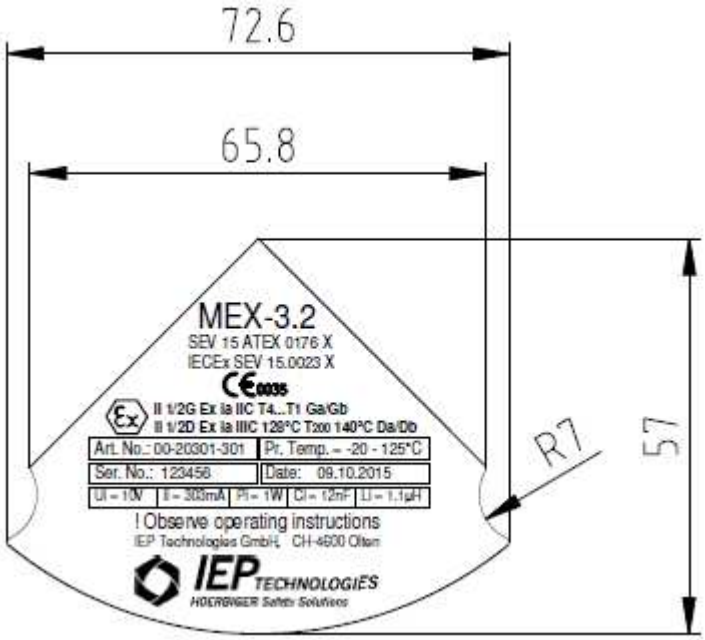


Figure 4: Standard MEX-3.2 rating plate

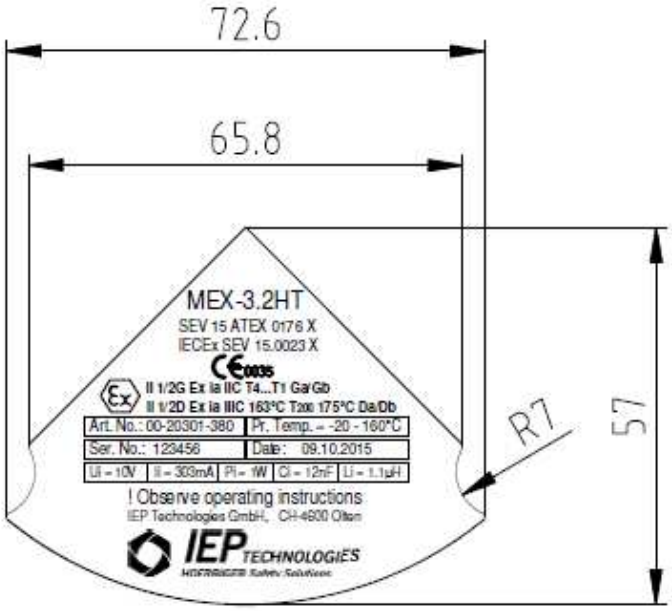


Figure 5: Rating plate for MEX-3.2HT (high temperature)

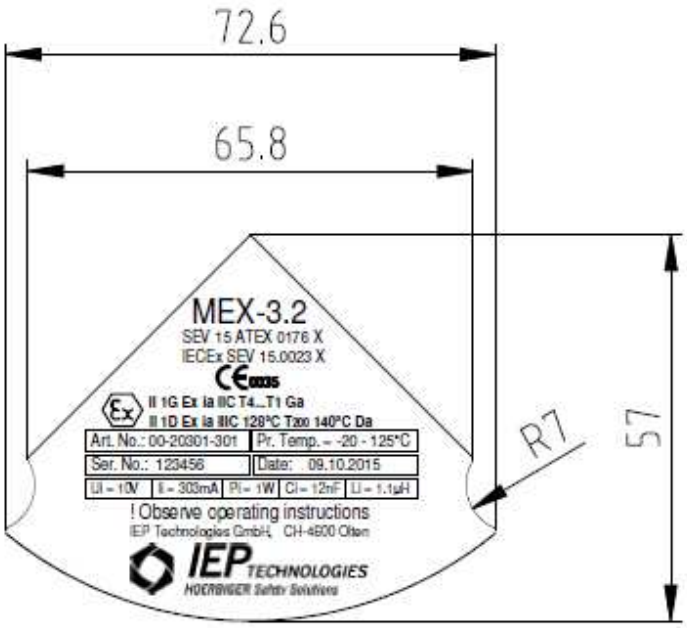


Figure 6: Rating for MEX-3.2 installation zone 0/20

6.4 Ex-ratios for the intrinsic safety of the MEX-3

MEX-3.* (all versions)	
• Self-capacity C_i	12 nF
• Self-inductance L_i	1.1 µH
• Maximum voltage U_i	10 V
• Maximum permitted current I_i	303 mA
• Maximum permitted power P_i	1 W