

Dräger Polytron 3000

(approved as type P3S)

Transmitter for electrochemical Sensors

Instructions for Use



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For Your Safety

Strictly follow the Instructions for Use

Any use of the apparatus requires full understanding and strict observation of these instructions. The apparatus is only to be used for purposes specified here.

Maintenance

The unit must be inspected and serviced regularly by suitably qualified persons. Repair and general overhaul of the apparatus may only be carried out by trained service personnel.

We recommend that a service contract be obtained with DrägerService and that all repairs also be carried out by them. Only authentic Dräger spare parts may be used for maintenance.

Observe chapter "Maintenance Intervals".

Use in areas subject to explosion hazards

Equipment and components which are used in explosion-hazard areas and which have been inspected and approved in accordance with international or European explosion-protection regulations may be used only under the specified conditions. The equipment or components may not be modified in any manner. The use of faulty or incomplete parts is forbidden.

The appropriate regulations must be observed at all times when carrying out repairs on the equipment or components.

If the transmitter has been installed with a suitable safety barrier, its case may be opened or the sensor may be changed while the transmitter is operating.

CAUTION

When the transmitter is installed in Ex areas Class II, Div. 1 & 2, Groups E, F, G, the opening of the housing (inclusive sensor replacement) must not be done when connected to power (power must be turned off or the area has to be temporarily declassified). Explosion hazard!

In applications where category 1G (Zone 0) or EPL Ga devices are required, intense electrostatic charging processes must be avoided.

Accessories

Use only accessories shown in the Ordering List.

Intended Use

Dräger Polytron® 3000 Transmitter for electrochemical sensors

- For stationary, continuous monitoring of gas concentrations in ambient air, with built-in DrägerSensor®.
- For indoor and outdoor use.
- Suitable for use either in mines where firedamp may occur in accordance with device category M1 or in potentially explosive atmospheres of Zone 0, Zone 1 or Zone 2 in accordance with device category 1G, 2G or 3G.
For further details, see the installation notes.
- Calibration by one person even in areas subject to explosion hazards.
- For connection to Dräger central units or to a programmable logic controller (PLC) to warn against physiologically harmful gas concentrations.
- The optional display on the transmitter indicates the actual gas concentration and makes calibration easier.
False alarms during calibration are avoided by a special maintenance mode with output of a maintenance signal.



SF-601-2002-1-eps

® Polytron is a registered trademark of Dräger.
DrägerSensor is a registered trademark of Dräger.

Design

Polytron 3000 is designed for connection to the Dräger Polytron, Regard, Quad-Gard or Unigard central units.

The Polytron 3000 transmitter may also be connected to other central units if the following conditions are met:

- Industrial standard 4 to 20 mA input signal
- Operating voltage at the transmitter 12 to 30 V DC.

On delivery, Polytron 3000 is configured for the measuring range and gas to be measured. This information can be found on a sticker below the service port and on the back of the measuring unit. The Order No. of the sensor to be used is also specified there.

Two different versions of the Polytron 3000 transmitter are available:

Polytron 3000 transmitter with display

This version is intended for installations requiring local indication of the measured value.

The transmitter is calibrated with the aid of two potentiometers and the display.



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Polytron 3000 transmitter without display

This version is intended for installations in which local indication of the measured value is not required.

A digital voltmeter is required for calibration.



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Optional extras:

Duct Extension

For mounting the Polytron 3000 transmitter on a duct.

For measuring the gas concentration in the pipe or duct. This option does not affect the explosion-protection approval of the transmitter.

Installing the transmitter

Preparing for installation

The performance and effectiveness of the entire system depends essentially on the position chosen for installing the transmitter.

The following should be noted during installation:

- Local requirements and regulations governing the installation of gas measuring systems.
- Relevant regulations concerning the connection and routing of electric power supply and signal lines.
- The full scope of environmental factors to which the transmitter may be exposed (ambient conditions: see Technical data, page 19).

- Physical properties of the gas to be measured:
For gases with a density lower than that of air, the transmitter must be located above any possible leak or at the highest point at which large concentrations of gas may occur.
For gases and vapours with a density greater than that of air, the transmitter must be located below a possible leak or at the lowest point at which such gases and vapours may occur.

- The specific uses (e.g. possible leaks, ventilation conditions, etc.).
- Accessibility for the necessary maintenance work (see Installation instructions for the Polytron docking station).
- All other factors and conditions which could have a negative effect on the installation and operation of the system (such as vibrations or varying temperatures).
- We recommend installing a reflective shield if the unit is exposed to strong sunlight.
- The transmitter must be installed vertically (sensor facing downwards).
- The transmitter has been tested with regard to its weather-resistance and may be installed out of doors. Use of a splash guard is recommended to protect the sensor from splashing water, dust and wind.

NOTE
In explosion-hazard areas: Observe the national regulations concerning electrical equipment in explosion-hazard areas.

The Dräger Polytron 3000 transmitter consists of two main components:

- Dräger docking station
This can be pre-installed anywhere and contains the electrical installation components.
- The measuring unit Dräger Polytron 3000
contains the electronics of the transmitter.

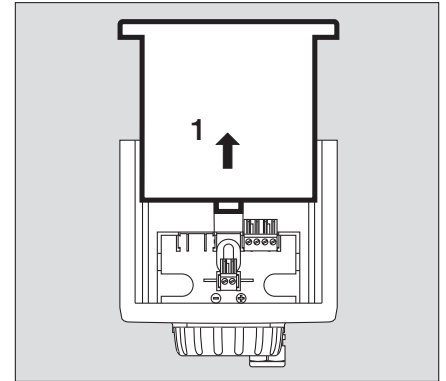
If the measuring unit is not fitted immediately after installing the docking station, the latter should be covered with the raincover provided (dust and water protection) to protect against dust and splashing water.

Installing the docking station

- If the transmitter is to be installed in a Zone 2 explosion-hazard area, select a location with low exposure to mechanical risk.
- Docking station is installed vertically (transmitter with sensor facing down) in an area with low vibrations and stable temperatures – near the possible leak.
- A space of at least 15 cm (6") must be maintained above the transmitter for installation of the measuring unit.
- A space of at least 10 cm (4") – preferably 30 cm (12") – must be maintained below the docking station to permit access for maintenance.

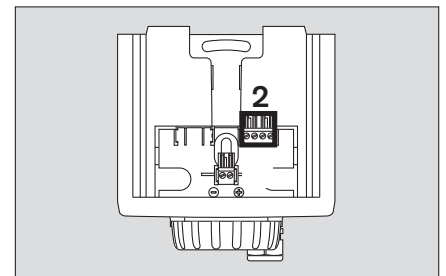
Unpack the docking station.

1 Remove raincover (protection against dust and splashing water).



2 Remove the 4-pole terminal block (Part No. 83 16 422), keep it in a safe place and insert it again after completion of the installation work.

A drilling template is provided on page 64. The mounting holes are 66 ± 4 mm (2.6 ± 0.16 ") apart.



CAUTION

Spacers (e.g. mounting bracket 68 09 951) must be used to prevent any twisting of the housing when installed on uneven surfaces.

If the measuring unit is not to be mounted at this time:
Refit the raincover (protection against dust and splashing water).

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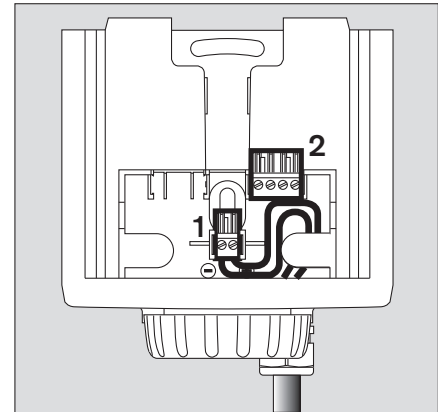
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How to install the electrical connections

- The electrical wiring may be laid and connected only by a qualified electrician, who must also comply with the appropriate regulations – a screened or un-screened cable (such as LiY, LiYCY) may be used.
- Connection to central device with at least 2-wire cable, 0.5 to 2.5 mm².
- For currents of 0 to 22 mA, a DC voltage between 12.0 V DC and 30 V DC must be present at the transmitter.

Installing the 4 to 20 mA current loop on the transmitter

- Fit 2-wire connecting cable in cable gland, cut to length and strip ends (approx. 80 mm / 3.15").
- Shorten the shield (if installed) to prevent short-circuiting:
- Connect cable
 - 1 2-pin terminal for Polytron 3000 – check polarity (marking in the docking station). Cut excess wires short or
 - 2 Fasten in 4-pin terminal.
 - 1 Slide connecting terminal back into holder.
- Secure cable in holder.
- Fold up the installation notes and place them in the Dräger docking station for future use during commissioning.
- Refit raincover (protection against dust and splashing water).



Connecting to the central unit

- Connect shield to earth of central unit (e.g. housing, earth bar, etc.).

Connecting the Dräger Polytron 3000 transmitter to a Dräger control unit (such as Regard, QuadGard, Unigard or Polytron):

- Further information about the connection can be found in the instructions for the Dräger control unit.

Connecting the Dräger Polytron 3000 transmitter to control units with a 4 to 20 mA interfaced made by other manufacturers:

- For operation together with control units made by other manufacturers, care must be taken that the voltage at the transmitter does not drop below 12 V. The supply voltage, the resistance of the cable and the load and the resistance of any installed safety barrier must be taken into account.
- Further information about the connection can be found in the instructions for the control unit being used.

Installing transmitter in mines where firedamp may occur

- Install a safety barrier with the appropriate explosion protection approval (category M1) between the transmitter and the control unit.
 - Only safety barriers or power supply units with the following characteristics may be used:
 $U_0 (V_{OC}) \leq 30 \text{ V}$, $I_0 (I_{SC}) \leq 0.3 \text{ A}$, $P_0 \leq 700 \text{ mW}$.
- Make sure the maximum permissible capacitance and inductance connected to the safety barrier or power supply are not exceeded (taking into account the line as well). The safety-related input parameters of the transmitter are as follows:
 $C_i = 0 \text{ nF}$, $L_i = 50 \text{ } \mu\text{H}$.

Installing the transmitter in areas subject to explosion hazards of zone 0 or zone 1

- Install a safety barrier with the appropriate explosion protection approval (category 1, 2 or Div. 1) between the transmitter and the control unit.
- Only safety barriers with the following characteristics may be used: $U_o (V_{OC}) \leq 30 \text{ V}$, $I_o (I_{SC}) \leq 0.3 \text{ A}$, $P_o \leq 700 \text{ mW}$.
- Take care that the maximum permissible capacitance and inductance of connections to the safety barrier are not exceeded, also taking the cable into account. The safety-related input parameters of the transmitter are: $C_i = 0 \text{ nF}$, $L_i = 50 \text{ } \mu\text{H}$.

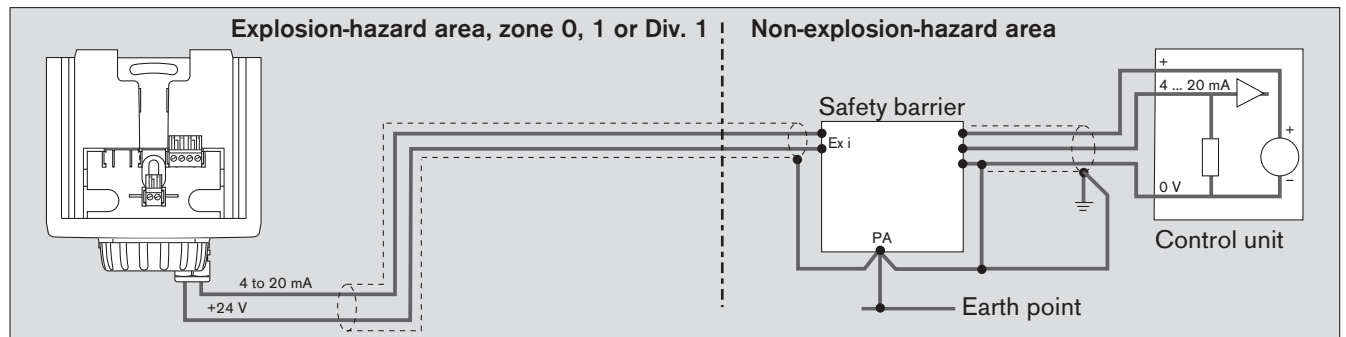
Transmitter supply units

(without HART-communication between Ex/Non-Ex area)

The following safety barriers are provided as examples only. Selected barriers must be acceptable to the authority having jurisdiction and comply with the assigned P3S entity parameters also taking the cable into account.

Manufacturer	Type	suitable for	Line (Loop)
MTL	MTL 5041	Zone 0, Div. 1	$\leq 190 \text{ } \Omega$
Pepperl & Fuchs	KFD2-STC4-Ex1	Zone 0, Div. 1	$\leq 140 \text{ } \Omega$
	KFD2-STC1-Ex1	Zone 0, Div. 1	$\leq 140 \text{ } \Omega$

- Connect shielding to earth point and/or 0 V (Ex i).



Installing the transmitters in explosion-hazard areas of zone 2, or in areas not subject to explosion hazards

- Use only supply units or a safety barrier classified as device category 3.
- Only supply units or safety barriers with the following characteristics may be used: $U_o (V_{OC}) \leq 30 \text{ V}$, $I_o (I_{SC}) \leq 0.3 \text{ A}$, $P_o \leq 700 \text{ mW}$.
- Take care that the maximum permissible capacitance and inductance of connections to the supply unit are not exceeded, also taking the cable into account. The safety-related input parameters of the transmitter are:
 $C_i = 0 \text{ nF}$, $L_i = 50 \text{ } \mu\text{H}$.

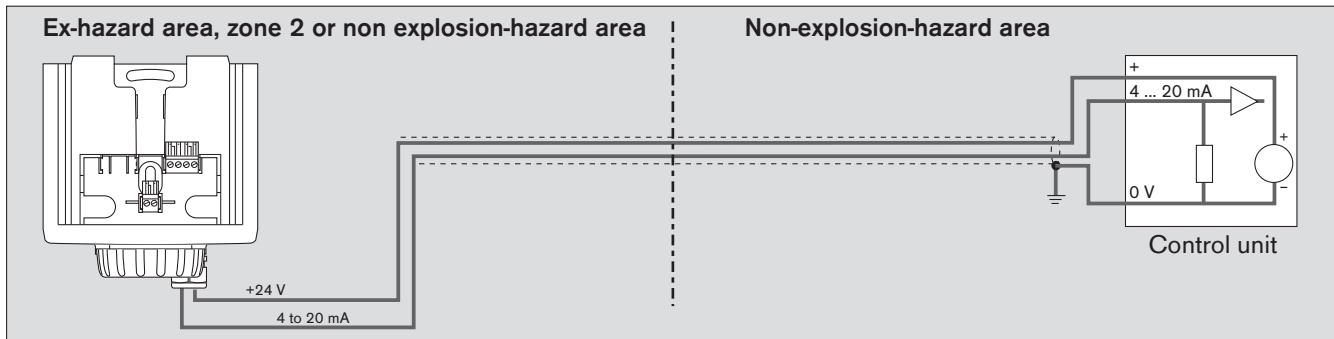
⚠ CAUTION

The category 1 marking has to be cut out from the rating-plate label. Once the unit has been used after installation in the above manner, it may never be installed in explosion-hazard areas of zone 0 or zone 1 (device category 1 or 2).
Explosion hazard!

Installing the transmitters in non-explosion-hazard areas

⚠ CAUTION

The explosion-protection markings has to be removed from the transmitter. Once the transmitter has been used after installation in this manner, it may never be installed in explosion-hazard areas.



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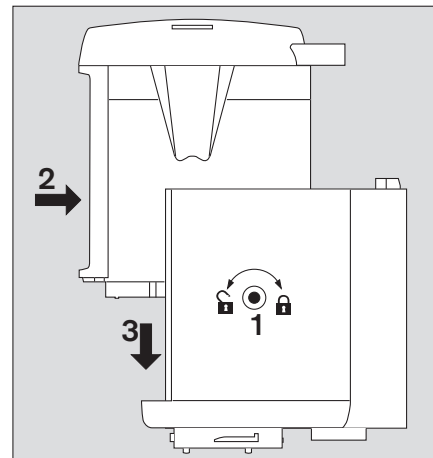
Installing the measuring unit Dräger Polytron 3000

- Remove the rain cover from the previously installed docking station.
 - Examine seal for signs of dirt and clean if necessary.
- 1 Check position of eccentric catches and correct if necessary. The eccentric opening must point upwards, engaged position.

⚠ CAUTION

Use only a 5 mm Allen key without a ball head.

- Check the polarity (marking in the docking station) and cable routing and check that the connector is securely seated; rectify as necessary (see the installation notes for the Polytron docking station).
 - Unpack the measuring unit Dräger Polytron 3000.
- 2 Insert the measuring unit about halfway up the docking station and slide it in as far as it will go.
 - 3 Lower the unit along the front edge of the docking station. About 5 mm before its hits the stop, the resistance will increase as the connector engages with the socket on the printed circuit board.
 - 1 Turn the eccentric catches clockwise with an Allen key to lock the measuring unit (🔓 ⇒ 🔒 = approx. 180°).



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Fitting the sensor

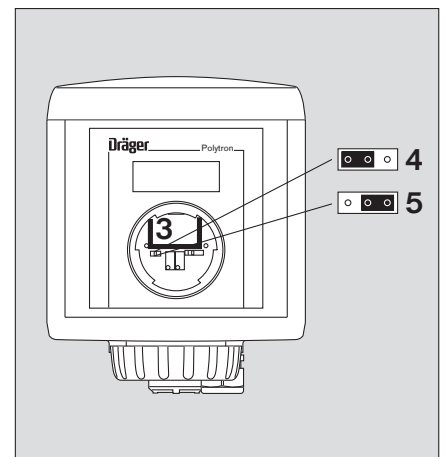
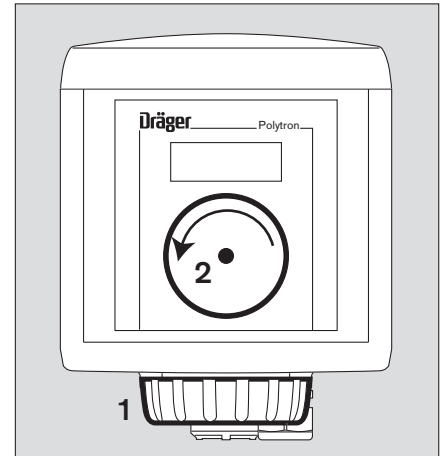
- 1 Remove bayonet ring from transmitter, remove dummy plate.
- 2 Open the front cover of the service port with an Allen key by turning anticlockwise (approx. 60°).

CAUTION

Use only a 5 mm Allen key without a ball head.

- 3 Only use the DrägerSensor specified on the sticker on the Polytron 3000 measuring unit.
 - Remove sensor from packaging.
 - Remove short-circuit jumper from sensor if installed.
 - There is a coded connector on the back of the sensor. Place the sensor in the opening with the connector at the back and the Dräger logo at the front. Before plugging the connector in the socket, ensure that they are identically coded. Incorrect connection can damage the sensor!
 - Secure sensor in transmitter with bayonet ring.

- If the manufacturer's calibration setting for the sensor is to be used:
 - Open the front cover of the service port with an Allen key by turning anticlockwise (approx. 60°). The maintenance switches and potentiometers for calibration are now revealed.
- 4 Jumper J1 must be set over the two left-hand pins or removed completely.
 - If the transmitter is specifically to be calibrated with calibration gas:
 - Open the front cover of the service port with an Allen key by turning anticlockwise (approx. 60°). The maintenance switches and potentiometers for calibration are now revealed.
 - 5 Jumper J1 must be set over the two right-hand pins.



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Start-up

Switch on power supply.

The transmitter begins its warm-up routine. This is indicated by a flashing display. The warm-up phase takes between 5 minutes and 12 hours, depending on the sensor installed. Note the information in the sensor data sheet. The warm-up phase may take longer in extremely high or low temperatures. It is completed when the display stops flashing.

When the sensor has warmed up:

- Transmitters set for specific calibration with calibration gas
 - Calibrate sensor, page 14.
- Transmitters set for use of the manufacturer's calibration setting for the sensor
 - Transmitter is ready for use.
 - Check signal transmission to the central unit and alarm output.

Analogue signal

- A current between 4 and 20 mA flows through the transmitter during normal operation. This current is proportional to the gas concentration.
- Polytron 3000 uses various current values to indicate the operating status of the transmitter:

Current	Meaning
4 mA	Zero point
20 mA	Full-scale value
<3.2 mA	Transmitter fault
3.8 mA ... 4 mA	Sensor drift below zero point
20 mA ... 20.5 mA	Full-scale value exceeded
3.4 mA \pm 0.2 mA constant	Maintenance signal

Display (optional)

- In measuring mode, the display shows the actual gas concentration, e.g.:



- The following symbols may be displayed during measurement:

- If a fault has been detected:



- If the measuring range has been exceeded:



- If the zero point is too low (sensor drift below the zero point):



Maintenance

Maintenance intervals

Before starting operation:

- Check the calibration, see page 14.
- Check the transmission of signals to the control unit and the triggering of alarms.

At regular intervals,

to be defined by the person responsible for the gas warning installation:

- Check the transmission of signals to the control unit and the triggering of alarms.

If a selective filter specific to the sensor is being used:

- Replace the selective filter –
See the related operating instructions for the sensor for details of the capacity of the selective filter being used.

At regular intervals defined in accordance with the sensor being used by the person responsible for the gas warning system:

- Calibrate the sensor, see page 14.
The interval for regular calibration depends on the sensor being used and on the operating conditions.
Specific calibration data for the sensor, see the operating instructions for the sensor.

Every six months:

- Inspection by specialists.
The inspection intervals must be established in each individual case and shortened if necessary, depending on technical safety considerations, engineering conditions and the technical requirements of the equipment.
- We recommend that a service agreement be concluded with DrägerService and that repairs also be carried out by them.

As required:

- Replace sensor, page 17.

Unit calibration

⚠ CAUTION

When the transmitter is installed in Ex areas Class II, Div. 1 & 2, Group E, F, G, the opening of the housing (required for calibration) must not be done when connected to power (power must be turned off or the area has to be temporarily declassified). Explosion hazard!

- Ensure that the sensor is warmed up before it is calibrated. See the sensor data sheet for the warming-up time.
- Only the zero point is checked if an oxygen sensor has been fitted. The zero point of an oxygen sensor does not require calibration.
- The transmitter can be calibrated by the operator on site.
- **For critical applications**, the calibration intervals should be defined in accordance with the recommendations in EN 50073¹⁾, EN45544-4²⁾ and national regulations.

Note the calibration sequence!

- First check the zero point and correct it necessary, Immediately after this, check the sensitivity and adjust it as necessary.
- Never calibrate the sensitivity before calibrating the zero point.
- Zero gas and test gas: see the information in the sensor data sheet.

⚠ CAUTION

Test gas must not be inhaled. Risk to health! Care must be taken about the risks which can arise when using test gas; hazard instructions and safety advice must be observed.
For details, see appropriate DIN Safety Data Sheets.

- Open the front cover of the service port with an Allen key by turning anticlockwise (approx. 60°). The maintenance switch and potentiometers for calibration are now revealed.

⚠ CAUTION

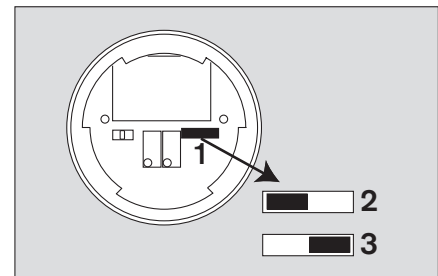
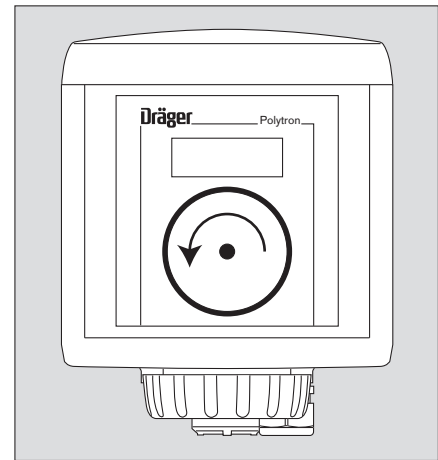
Use only a 5 mm Allen key without a ball head.

NOTE

The Dräger Polytron 3000 does not support the storage of calibration data in the sensor data base.

Measuring / maintenance mode

- 1 Maintenance switch with two positions.
- 2 Measuring mode position (left-hand position) – measured values are relayed to the analogue output.
- 3 Maintenance mode position (right-hand position) – a maintenance signal (3.4 mA \pm 0.2 mA constant) is relayed to the analogue output and prevents alarms being triggered.



1) EN 50073 – Guidelines for selection, installation, use and maintenance of devices for the detection and measurement of flammable gases and oxygen.

2) EN 45544-4 – Electrical devices for the direct detection and direct concentration measurement of toxic gases and vapours – Part 4: Guidelines for selection, installation, use and maintenance.

Output for calibration

- 4 Connect voltmeter (mV setting, $R_i > 10\text{ M}\Omega$) to test points TP1 and TP2 (required for the version without display).

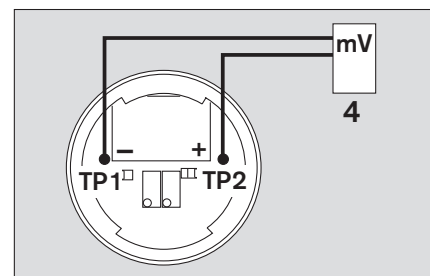
CAUTION

For operation in explosion-hazard areas:

Only use intrinsically safe voltmeters with electrical parameters to the following specifications:

$U_i (V_{max}) \geq 7.6\text{ V}$; $I_i (I_{max}) \geq 1\text{ mA}$; $U_o (V_{oc}) \leq 10.4\text{ V}$; $C_i \leq 2.5\text{ }\mu\text{F}$; $L_i \leq 10\text{ mH}$ (C_o (C_a) and L_o (L_a) are not relevant as C_i and L_i of the test point circuit are zero)
MiniGrabber[®] Test Clips from Pomona Electronics (order no. 4723 or 4826) shall be used for connecting the voltmeter.

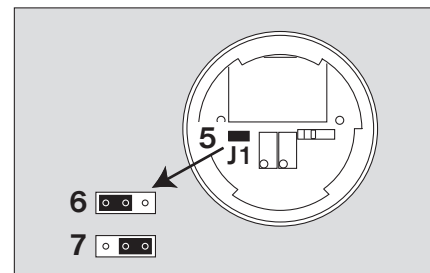
The jumper J1 must be connected to the right-hand pin, when connecting the voltmeter.



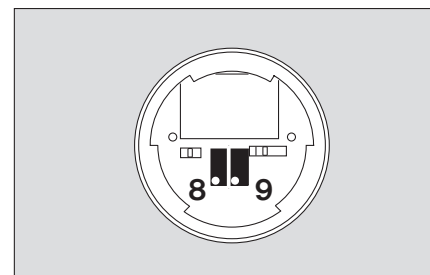
- If a fault is detected, the voltmeter shows -200 mV .
- Voltage output -200 to 1100 mV :
 - -200 mV corresponds to a fault
 - -0 mV corresponds to zero concentration
 - -1000 mV corresponds to the 100 % measuring range end value

Jumper

- 5 Jumper J1 can be set to two positions.
- 6 The left-hand position or complete removal of jumper J1 in order to use the manufacturer's calibration setting for the sensor.
- 7 The right-hand position for calibration with calibration gas and the potentiometers for zero point and sensitivity.
- Only the manufacturer's calibration setting for the sensor can be used when jumper J1 is set over the two left-hand pins.
 - Calibration with calibration gas can be performed when jumper J1 has been set over the two right-hand pins.

**Operating elements**

- 8 Potentiometer (left) for calibration of the zero point.
- 9 Potentiometer (right) for calibration of the sensitivity.



Calibrating the zero point

For all sensors except oxygen sensor:

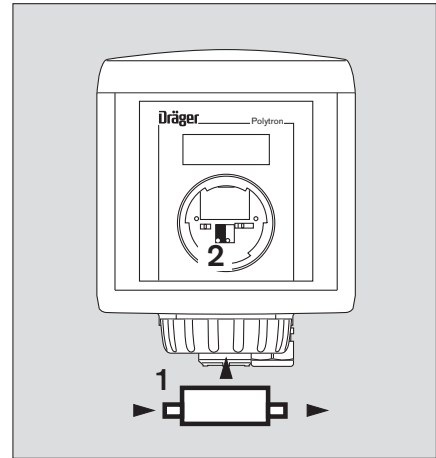
The zero point can be calibrated without the use of nitrogen (zero gas) when the ambient air is free from measuring gas and other interfering gases. Alternatively:

- 1 Use the calibration adapter.
 - Set maintenance switch to maintenance position, see page 14.
 - Let nitrogen flow through the calibration adapter at a rate of approx. 0.5 L/min. Synthetic air may also be used, except when calibrating oxygen sensors.
 - Wait for the measured value to stabilise – approx. 3 minutes. Note the information in the sensor data sheet.
- 2 Set potentiometer for zero point so that the display shows 0 and the digital voltmeter 0 mV ±2 mV.

Oxygen sensors:

The zero point cannot be calibrated for these sensors. The zero point is merely checked.

Switch off calibration gas and remove calibration adapter.
Set maintenance switch to measuring position, see page 14.



Calibrating the sensitivity

▲ CAUTION

Test gas must not be inhaled. Risk to health!
Care must be taken about the risks which can arise when using test gas; hazard instructions and safety advice must be observed.
For details, see appropriate Safety Data Sheets.

— The recommended calibration gas concentration for optimum accuracy is between 40 % and 100 % of the measuring range end value.

- 1 Use the calibration adapter.
 - Set maintenance switch to maintenance position, see page 14.
 - Let calibration gas flow through the calibration adapter at a rate of approx. 0.5 L/min.
- Wait for the measured value to stabilise – approx. 3 minutes. Note the information in the sensor data sheet.

- 3 Set the potentiometer for sensitivity so that the display shows the concentration of the calibration gas or the digital voltmeter shows the calculated voltage mV.

Calculation of the voltage V_{exp} between test points TP1 and TP2:

$$V_{exp} = \text{Concentration of calibration gas} \div \text{Measuring range} \times 1000 \text{ mV}$$

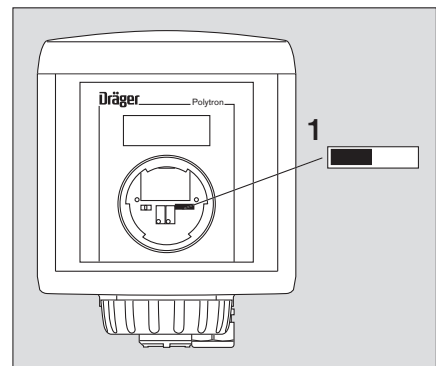
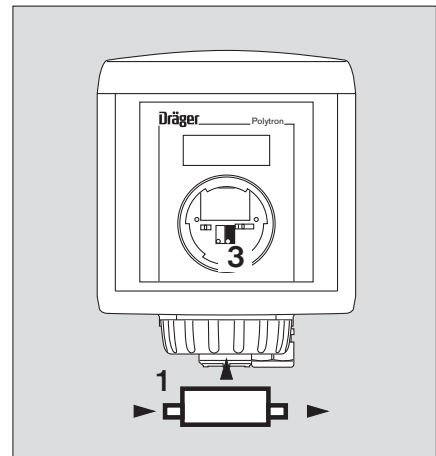
Example: Concentration of calibration gas 250 ppm CO
Measuring range 0 to 300 ppm CO

Calculated voltage:

$$V_{exp} = \frac{250 \text{ ppm}}{300 \text{ ppm}} \times 1000 \text{ mV} = 833 \text{ mV}$$

- Switch off calibration gas and remove calibration adapter.
- Wait until the measured value drops below the alarm threshold set on the central unit. Otherwise an alarm will be triggered when the maintenance switch is returned to the measuring position immediately after calibration.

- 1 Set maintenance switch to measuring position, left-hand position. The 4 to 20 mA output changes to measuring mode.
- Refit the front cover of the service port and lock it in place by turning clockwise with an Allen key (approx. 60°).



Replacing the sensor

The sensor can be replaced, if necessary, without interrupting the power supply in the explosion-hazard area.

Use only DrägerSensors which are approved for use with the Dräger Polytron 3000 transmitter.

⚠ CAUTION

When the transmitter is installed in Ex areas Class II, Div. 1 & 2, Group E, F, G the opening of the housing (inclusive sensor replacement) must not be done when connected to power (power must be turned off or the area has to be declassified)! Explosion hazard!

- Open the front cover of the service port with an Allen key by turning anticlockwise (approx. 60°). The maintenance switch and potentiometers for calibration are now revealed.

⚠ CAUTION

Use only a 5 mm Allen key without a ball head.

- 1 Set maintenance switch to right-hand position. The 4 to 20 mA output changes to maintenance mode. In this position, a maintenance signal is relayed to the analogue output and prevents alarms being triggered.
 - 2 Remove bayonet ring from transmitter; pull out old sensor.
 - 3 Remove sensor from packaging. Ensure that the sensor is of the same type as that specified on the sticker on the measuring unit.
- Remove the short-circuit strap from the sensor (if it is fitted).
 - There is a coded connector on the back of the sensor. Place the sensor in the opening with the connector at the back and the Dräger logo at the front. Before plugging the connector in the socket, ensure that they are identically coded. Incorrect connection can damage the sensor!
- 2 Secure sensor in transmitter with bayonet ring.
- Wait until the measured value drops below the alarm threshold set on the central unit. Otherwise an alarm will be triggered when the maintenance switch is returned to the measuring position immediately after the sensor replacement.
- 1 Set maintenance switch to left-hand position. The 4 to 20 mA output changes to measuring mode.
- Refit the front cover of the service port and lock it in place by turning clockwise with an Allen key (approx. 60°).

When the sensor has warmed up:

- Transmitters set for specific calibration with calibration gas
 - Calibrate sensor, page 14.
- Transmitters set for use of the manufacturer's calibration setting for the sensor.
 - Transmitter is ready for use.

Disposal of electrochemical sensors:

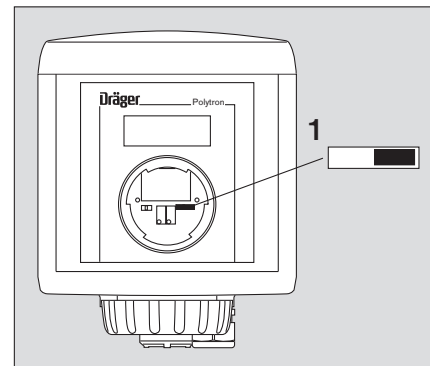
- Sensors must be disposed of as special waste.

⚠ CAUTION

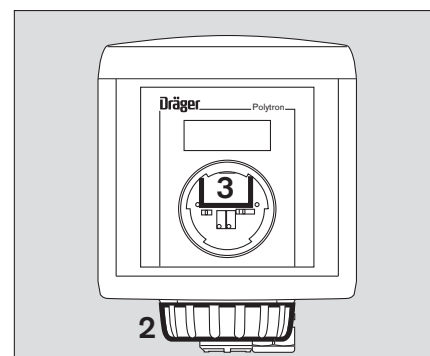
Do not throw sensors into the fire – explosion hazard.
Do not open sensors forcibly – risk of caustic burns.

Note the relevant waste disposal regulations.

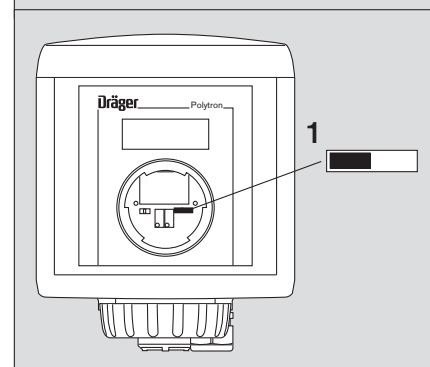
Further information can be obtained from the relevant local authority and from appropriate waste disposal companies.



02123759_1.eps






02123759_1.eps





02123759_1.eps

Fault – Cause – Remedy



Fault	Cause	Remedy
Flashing display	Sensor warms up	Wait for warm-up phase to end.
Display 	Equipment fault, e.g. wrong sensor installed	Only use a sensor with the gas type, Part No. and measuring range indicated on the sticker.
Display 	Measuring range end value exceeded	Wait until the gas concentration is within the measuring range.
Display 	Value too far below zero point	Calibrate zero point if fault occurs frequently.

Technical Data

The measuring range and the measuring properties depend on which type of sensor is installed – see the operating instructions for the sensor being used.

CE markings	<ul style="list-style-type: none"> — Devices and protective systems for use for the intended purpose in explosion-hazard area (Directive 94/9/EC) — Electromagnetic compatibility (Directive 2004/108/EEC) max. influence on sensor: $\leq 2 \times$ repeatability
Ingress protection	IP 66 / IP 67, according to EN 60 529 / IEC 529 (NEMA 4)
Approvals	Polytron 3000 is certified as type P3S.
ATEX	<p>Device markings in accordance with 94/9/EC</p> <p>P3S</p> <p>CE 0158  II 1G / I M1 Ex ia IIC T4 Ga ($-40\text{ °C} \leq T_a \leq +65\text{ °C}$) Ex ia IIC T6 Ga ($-40\text{ °C} \leq T_a \leq +40\text{ °C}$) Ex ia I Ma</p> <p>CE 0158  II 3G Ex ic IIC T4 Gc ($-40\text{ °C} \leq T_a \leq +65\text{ °C}$) Ex ic IIC T6 Gc ($-40\text{ °C} \leq T_a \leq +40\text{ °C}$)</p> <p>BVS 03 ATEX E 406 X Power Supply: $U_i = 30\text{ V}$, $I_i = 0,3\text{ A}$, $P_i = 700\text{ mW}$, $C_i = 0\text{ nF}$, $L_i = 50\text{ }\mu\text{H}$ Meter Circuit, II 1G/3G: $U_o = 7.6\text{ V}$, $I_o = 1\text{ mA}$, $U_i = 10.4\text{ V}$, $C_o = 2.5\text{ }\mu\text{F}$, $L_o = 10\text{ mH}$</p> <p>Year of manufacture (indicated by Serial No.) ¹⁾ Dräger Safety, 23560 Lübeck, Germany</p> <p>Safety parameters for the supply-voltage and signalling circuit (centre terminals of the docking station): $U_i = 30\text{ V}$, $I_i = 0,3\text{ A}$, $P_i = 700\text{ mW}$, $C_i = 0\text{ nF}$, $L_i = 50\text{ mH}$</p>
IECEX	<p>P3S Ex ia IIC T4 Ga ($-40\text{ °C} \leq T_a \leq +65\text{ °C}$) Ex ia IIC T6 Ga ($-40\text{ °C} \leq T_a \leq +40\text{ °C}$) Ex ia I Ma IECEX BVS 04 0003 X Power Supply: $U_i = 30\text{ V}$, $I_i = 0,3\text{ A}$, $P_i = 700\text{ mW}$, $C_i = 0\text{ }\mu\text{F}$, $L_i = 50\text{ }\mu\text{H}$ Year of construction (via serial number) ¹⁾ Dräger Safety, 23560 Lübeck, Germany</p>

¹⁾ Year of construction is coded by the third letter in the serial number shown on the rating plate: A = 2009, B = 2010, C = 2011, D = 2012, E = 2013 etc.
Example: Serial No. ARDH-0054: the third letter is D, which means that the unit was manufactured in 2012.

<p>UL (Underwriters Laboratories Inc.)</p>	<p>P3S Only as to Intrinsic Safety for use in Hazardous Locations Class I, Div. 1, Groups A, B, C, D Class II, Div. 1, Groups E, F, G Use in accordance with Dräger Control Drawing SE20105. T4: $-40 \leq T_a \leq +65 \text{ }^\circ\text{C}$, T6: $-40 \leq T_a \leq +40 \text{ }^\circ\text{C}$. Not tested in oxygen enriched atmospheres ($>21 \text{ } \%$ O_2). Power Supply: $V_{\text{max}} = 30 \text{ V}$, $I_{\text{max}} = 0.3 \text{ A}$, $P_i = 700 \text{ mW}$, $C_i = 0 \text{ nF}$, $L_i = 50 \text{ } \mu\text{H}$ Meter circuit: $V_{\text{oc}} = 7.6 \text{ V}$, $I_{\text{sc}} = 1 \text{ mA}$, $V_{\text{max}} = 10.4 \text{ V}$, $C_a = 2.5 \text{ } \mu\text{F}$, $L_a = 10 \text{ mH}$, $C_i = 0$, $L_i = 0$</p>	
<p>CSA (Canadian Standards Association)</p>	<p>P3S Intrinsic safe Class I, Div. 1, Groups A, B, C, D Class II, Div. 1, Groups E, F, G Use in accordance with Dräger Control Drawing SE20106. Power supply: $V_{\text{max}} = 30 \text{ V}$, $I_{\text{max}} = 0.3 \text{ A}$, $P_{\text{max}} = 700 \text{ mW}$, $C_i = 5 \text{ nF}$, $L_i = 50 \text{ } \mu\text{H}$</p>	
<p>Signal transmission to central unit</p>		
<p>Analogue</p>		
<ul style="list-style-type: none"> — Measured-value signal — Drift below zero point — Full-scale value exceeded — Unit fault — Maintenance signal 	<ul style="list-style-type: none"> 4 mA to 20 mA 3.8 mA to 4 mA 20 mA to 20.5 mA <3.2 mA 3.4 mA \pm0.2 mA constant 	
<p>Power supply</p>		
<p>Power supply</p>	<p>12 V DC to 30 V DC Protection against polarity reversal. Terminals for 0.5 to 2.5 mm² (20 to 14 AWG).</p>	
<p>Physical specifications</p>		
<p>Cable inlet</p>	<p>M20x1.5, for cable diameter 6 to 12 mm (0.24" to 0.47")</p>	
<p>Dimensions (H x W x D)</p>	<p>166 mm x 135 mm x 129 mm (6.54" x 5.31" x 5.08)</p>	
<p>Weight</p>	<p>approx. 0.9 kg / 2.0 lbs.</p>	
<p>Ambient conditions</p>		
<p>for operation</p>	<p>Specifications for the sensor: see sensor data sheet -40 to $65 \text{ }^\circ\text{C}$ (-40 to 160°F)¹⁾ 700 to 1300 hPa (20.7 to 38.4 inch Hg) 0 to 100 % relative humidity, non condensing</p>	
<p>during storage</p>	<p>-40 to $70 \text{ }^\circ\text{C}$ (-40 to 150°F) 700 to 1300 hPa (20.7 to 38.4 inch Hg) 0 to 100 % relative humidity, non condensing</p>	

¹⁾ The legibility of the display is restricted at temperatures below $-20 \text{ }^\circ\text{C}$ ($-5 \text{ }^\circ\text{F}$).

Order List

Part name and description	Order No.
Dräger Docking Station	83 17 990
Polytron 3000 measuring units and DrägerSensors	Overview, page 22 and page 24
Accessories:	
Splash guard	68 07 549
Splash guard AC sensor	68 09 379
Transmitter feed unit, U0 = 28 V, I0 = 91 mA Messrs. Stahl, type 9303 / 15 – 22 – 11 Safety barriers are not designed for installation in the explosion-hazard area	18 90 212
Duct Mount Kit	83 17 150
Assembly set	68 09 951
Calibration accessories:	
Calibration with ampoules:	
Calibration flask	68 03 407
Test-gas ampoules and calibration gas, see operating instructions for the DrägerSensor being used	
Calibration with test gas cylinder:	
Calibration adapter	68 06 978
Calibration adapter V	68 10 536
Remote calibration adapter	68 07 955
AC calibration adapter	68 09 380
Pressure reducer	on request
Test gas cylinder	Order from gas supplier
Test gas = Target gas in nitrogen in concentrations between 40 % and 100 % of the measuring range end value	– note delivery period of 6 – 8 weeks and use-by date
Test gas cylinder 99.9 % N ₂ , (zero gas), 4 L, 200 bar	on request
Spare parts:	
Dust filter for DrägerSensor ...	see sensor data sheet
Selective filter for DrägerSensor ...	see sensor data sheet

Polytron 3000 measuring units

Part name and description	Order No. with display	Order No. without display	Order No. DrägerSensor
For measuring ammonia (NH₃):			
Polytron 3000 measuring unit, Measuring range 0 to 100 ppm NH ₃ , for DrägerSensor NH ₃ LC	83 16 637	83 16 737	68 09 680
Polytron 3000 measuring unit,, Measuring range 0 to 300 ppm NH ₃ , for DrägerSensor NH ₃ HC	83 16 638	83 16 738	68 09 645
Polytron 3000 measuring unit, Measuring range 0 to 1000 ppm NH ₃ , for DrägerSensor NH ₃ HC	83 16 639	83 16 739	68 09 645
For measuring carbon monoxide (CO):			
Polytron 3000 measuring unit, Measuring range 0 to 100 ppm CO, for DrägerSensor CO	83 16 632	83 16 732	68 09 605
Polytron 3000 measuring unit, Measuring range 0 to 300 ppm CO, for DrägerSensor CO	83 16 631	83 16 731	68 09 605
Polytron 3000 measuring unit, Measuring range 0 to 1000 ppm CO, for DrägerSensor CO	83 16 630	83 16 730	68 09 605
Polytron 3000 measuring unit, Measuring range 0 to 300 ppm CO, for DrägerSensor CO LS	83 16 633	83 16 733	68 09 620
For measuring chlorine (Cl₂):			
Polytron 3000 measuring unit, Measuring range 0 to 1 ppm Cl ₂ , for DrägerSensor Cl ₂	83 16 647	83 16 747	68 09 665
Polytron 3000 measuring unit, Measuring range 0 to 10 ppm Cl ₂ , for DrägerSensor Cl ₂	83 16 648	83 16 748	68 09 665
Polytron 3000 measuring unit, Measuring range 0 to 25 ppm Cl ₂ , for DrägerSensor Cl ₂	83 16 649	83 16 749	68 09 665
For measuring hydrogen sulphide (H₂S):			
Polytron 3000 measuring unit, Measuring range 0 to 20 ppm H ₂ S, for DrägerSensor H ₂ S	83 16 634	83 16 734	68 10 435
Polytron 3000 measuring unit, Measuring range 0 to 50 ppm H ₂ S, for DrägerSensor H ₂ S	83 16 635	83 16 735	68 10 435
Polytron 3000 measuring unit, Measuring range 0 to 100 ppm H ₂ S, for DrägerSensor H ₂ S	83 16 636	83 16 736	68 10 435
For measuring nitrogen monoxide (NO):			
Polytron 3000 measuring unit, Measuring range 0 to 50 ppm NO, for DrägerSensor NO LC	83 16 640	83 16 740	68 09 625
For measuring nitrogen dioxide (NO₂):			
Polytron 3000 measuring unit, Measuring range 0 to 10 ppm NO ₂ , for DrägerSensor NO ₂	83 16 641	83 16 741	68 09 655

Part name and description	Order No. with display	Order No. without display	Order No. DrägerSensor
For measuring oxygen (O₂):			
Polytron 3000 measuring unit, Measuring range 0 to 5 Vol.-% O ₂ , for DrägerSensor O ₂	83 16 642	83 16 742	68 09 720
Polytron 3000 measuring unit, Measuring range 0 to 25 Vol.-% O ₂ , for DrägerSensor O ₂	83 16 643	83 16 743	68 09 720
Polytron 3000 measuring unit, Measuring range 0 to 100 Vol.-% O ₂ , for DrägerSensor O ₂	83 16 644	83 16 744	68 09 720
Polytron 3000 measuring unit, Measuring range 0 to 25 Vol.-% O ₂ , for DrägerSensor O ₂ LS	83 16 645	83 16 745	68 09 630
For measuring sulphur dioxide (SO₂):			
Polytron 3000 measuring unit, Measuring range 0 to 10 ppm SO ₂ , for DrägerSensor SO ₂	83 16 646	83 16 746	68 09 660
For the measurement of acidic compounds (SiCl₄, BCl₃, ClF₃, HBr, SiF₄):			
Polytron 3000 measuring unit, Measuring range 0 to 3 ppm, for DrägerSensor AC	83 16 652	83 16 752	68 10 595
Polytron 3000 measuring unit, Measuring range 0 to 10 ppm, for DrägerSensor AC	83 16 657	83 16 757	68 10 595
For the measurement of boron trichloride (BCl₃):			
Polytron 3000 measuring unit, Measuring range 0 to 10 ppm BCl ₃ , for DrägerSensor AC	83 16 666	83 16 766	68 10 595
For the measurement of boroethane (B₂H₆):			
Polytron 3000 measuring unit, Measuring range 0 to 0.5 ppm B ₂ H ₆ , for DrägerSensor Hydride SC	83 16 656	83 16 756	68 09 980
For the measurement of ethylene oxide (C₂H₄O):			
Polytron 3000 measuring unit, Measuring range 0 to 50 ppm C ₂ H ₄ O, for DrägerSensor OV	83 16 658	83 16 758	68 09 615
For the measurement of hydride (PH₃, SiH₄):			
Polytron 3000 measuring unit, Measuring range 0 to 0.3 ppm, for DrägerSensor Hydride	83 16 653	83 16 753	68 09 635
Polytron 3000 measuring unit, Measuring range 0 to 1 ppm, for DrägerSensor Hydride	83 16 667	83 16 767	68 09 635
Polytron 3000 measuring unit, Measuring range 0 to 10 ppm, for DrägerSensor Hydride	83 16 668	83 16 768	68 09 635
For the measurement of hydrogen chloride (HCl):			
Polytron 3000 measuring unit, Measuring range 0 to 30 ppm HCl, for DrägerSensor HCl	83 16 670	83 16 770	68 09 640

Part name and description	Order No. with display	Order No. without display	Order No. DrägerSensor
For the measurement of hydrogen (H₂):			
Polytron 3000 measuring unit, Measuring range 0 to 1000 ppm, for DrägerSensor H ₂	83 16 669	83 16 769	68 09 685
Polytron 3000 measuring unit, Measuring range 0 to 3000 ppm, for DrägerSensor H ₂	83 16 655	83 16 755	68 09 685
For the measurement of hydrazine (N₂H₄):			
Polytron 3000 measuring unit, Measuring range 0 to 1 ppm N ₂ H ₄ , for DrägerSensor Hydrazine	83 16 650	83 16 750	68 10 180
For the measurement of ozone (O₃):			
Polytron 3000 measuring unit, Measuring range 0 to 0.5 ppm O ₃ , for DrägerSensor O3	83 16 665	83 16 765	68 10 290
For the measurement of further gases:			
Polytron 3000 measuring unit, Measuring range and DrägerSensor	on request	on request	on request

ATEX approval



Translation

EC-Type Examination Certificate

- (1) **EC-Type Examination Certificate**
- (2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use
in potentially explosive atmospheres
- (3) **BVS 03 ATEX E 406 X**
- (4) **Equipment:** Gas measuring transmitter type P3S and type P3U
- (5) **Manufacturer:** Dräger Safety AG & Co. KGaA
- (6) **Address:** D - 23560 Lübeck
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.
- (8) The certification body of EXAM BBG Prüf- und Zertifizier GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 03.2298 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- | | |
|---------------------|--------------------------------|
| EN 50014:1997+A1-A2 | General requirements |
| EN 50020:2002 | Intrinsic safety 'i' |
| EN 50021:1999 | Type of Protection 'n' |
| EN 50284:1999 | Equipment Group II Category 1G |
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate
- (12) The marking of the equipment shall include the following:

II 1G EEx ia IIC T4/T6

II 3G EEx nL IIC T4/T6

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 15. January 2004

Signed: Jockers

Signed: Eickhoff

Certification body

Special services unit

Page 1 of 3 to BVS 03 ATEX E 406 X
This certificate may only be reproduced in its entirety and without change
Dinnendahlstrasse 9 44809 Bochum Germany Phone +49 201 172-3947 Fax +49 201 172-3948
(until 31.05.2003: Deutsche Montan Technologie GmbH Am Technologiepark 1 45307 Essen)



(13)

Appendix to

(14)

EC-Type Examination Certificate

BVS 03 ATEX E 406 X

(15) 15.1 Subject and type

Gas measuring transmitter type P3S and type P3U

15.2 Description

The Gas measuring transmitter type P3S and P3U are intended for gas detection under atmospheric conditions in fixed installations. The device is housed in a plastic enclosure (surface resistance $< 10^9 \Omega$). Supply of the electronics and signalling is accomplished by a 2-, 3- or 4-wire connection. For all cases, supply and signalling occur from one common intrinsically safe circuit. Both device types may be equipped with a "Duct Extension". This enables direct mounting of the device to a duct, due to the protruding sensor.

P3S:

The device may be equipped with an integral LC-Display for displaying the measurement value. The front of the device provides a circular bayonet cover, which may be opened for maintenance work (calibration). Behind the opening, control elements and 2 contacts are located. The contacts allow connection of an I.S. certified voltage meter, which enables reading of the measurement value in case no internal display is provided.

P3U:

The device may be equipped with an integral LC-Display for displaying the measurement value and a membrane keypad. For measurements at remote locations the P3U Remote Adapter may be plugged in, instead of the electrochemical sensor. The cable of the P3U Remote Adapter, which may be up to 100 m in length, connects to the P3U Remote Sensor which now accepts the electrochemical sensor.

15.3 Parameters

15.3.1 Gas measuring transmitter type P3S

15.3.1.1 Supply-/signal circuit
Connection via terminals X1/1 and X1/2

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		300	mA
Maximum input power	P_i		700	mW
Maximum internal capacitance	C_i		negligible	
Maximum internal inductance	L_i		50	μ H

15.3.1.2 Measuring circuit, for calibration only
Connection via 2 contact areas

Maximum output voltage	U_o	DC	7,6	V
Maximum output current	I_o		1	mA
Maximum external capacitance	C_o		2,5	μ F
Maximum external inductance	L_o		10	mH
Maximum input voltage	U_i	DC	10,4	V
Maximum internal capacitance	C_i		negligible	
Maximum internal inductance	L_i		negligible	

Page 2 of 3 to BVS 03 ATEX E 406 X

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(until 31.05.2003: Deutsche Montan Technologie GmbH Am Technologiepark 1 45307 Essen)



15.3.2 Gas measuring transmitter type P3U

Supply-/signal circuit

Connection via terminals X7/1 - X7/4 or X8/1 - X8/4 (looped through)

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		300	mA
Maximum input power	P_i		700	mW
Maximum internal capacitance	C_i		5	nF
Maximum internal inductance	L_i		50	μ H

15.3.3 Ambient temperature range

II 1G EEx ia IIC T6	- 40 °C up to + 40 °C
II 1G EEx ia IIC T4	- 40 °C up to + 65 °C
II 3G EEx nL IIC T6	- 25 °C up to + 40 °C
II 3G EEx nL IIC T4	- 25 °C up to + 65 °C

(16) Test and assessment report

BVS PP 03.2298 EG as of 15.01.2004

(17) Special conditions for safe use

- 17.1 For use in Category 3 areas, the Gas measuring transmitter has been tested according to EN 50021, part 26, Mechanical strength test. The display window has been tested as a light transmitting part and has passed the test at 1 Joule at -25 °C, low risk for mechanical damage.
- 17.2 The measurement function for explosion protection is not the subject of this EC-Type Examination Certificate.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 15.01.2004
BVS-Rip/Mi A 20030560

EXAM BBG Prüf- und Zertifizier GmbH


Certification body


Special services unit



Translation
1st Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X

Equipment: Gas detection transmitter type P3S and P3U
Manufacturer: Dräger Safety AG & Co. KGaA
Address: D-23560 Lübeck

Description

The Essential Health and Safety Requirements with respect to the measuring function for explosion protection are assured by application of:

EN 50104:2002 + A1:2004
EN 50271:2001

This supplement to the EC-type examination certificate covers devices type P3U with software versions 7.2 (main) and V13 (SIOS) for data transmission via the 4-20 mA interface and operation without pump module and without relay module.

This supplement to the EC-type examination certificate covers the measuring function for oxygen (measurement of inertisation) in the measuring range 0 - 25 % (v/v).

Test report

Test report PFG-no. 413000504P dated 22/06/2005

Special conditions for safe use:

- see EC-type examination certificate BVS 03 ATEX E 406 X, 17.1
- For the sensor O2 (part-no. 68 09 720), the test "unpowered storage of the apparatus" was performed in the temperature range -20 ... +40 °C.

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 23/06/2005

Signed: Jockers

Certification body

Signed: Kiesewetter

Special services unit



We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 23. June 2005
PFG-Kie

EXAM BBG Prüf- und Zertifizier GmbH



Certification body



Special services unit

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Diamantstraße 9
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www.exambbg.de

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Die Angaben sind nicht verbindlich für die ATEX-Zertifizierung.



Translation
2nd Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X

Equipment: Gas measuring transmitter type P3FB
Manufacturer: Dräger Safety AG & Co. KGaA
Address: 23560 Lübeck, Germany

Description

The Gas measuring transmitter type P3U can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report and receives then the marking:


type P3FB


The gas measuring transmitter type P3FB is identical to the type P3U, except that the printed circuit board "4-20mA/HART" is replaced by the printed circuit board "PB/FF module", which provided a field bus connection in accordance with the FISCO/FNICO concept classified in IEC 60079-27 (Terminal X7).

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

EN 50014:1997+A1-A2	General requirements
EN 50020:2002	Intrinsic safety 'i'
EN 60079-15:2003	Type of Protection 'n'
EN 50284:1999	Equipment Group II Category 1G
IEC 60079-27:2005	Fieldbus intrinsically safe concept (FISCO) and Fieldbus non-incendive concept (FNICO)

The marking of the equipment shall include the following:

 **II 1G EEx ia IIC T4/T6**

 **II 3G EEx nL IIC T4/T6**



Parameters

1 Gas measuring transmitter type P3FB

Field bus connection in accordance with the FISCO/FNICO concept, connection only via terminal X7

Maximum input voltage	U_i	DC	24	V
Maximum input current	I_i		380	mA
Maximum input power	P_i		5.32	W
Maximum internal capacitance	C_i		5	nF
Maximum internal inductance	L_i		10	μ H

2 Ambient temperature range

II 1G EEx ia IIC T6	-40 °C up to +40 °C
II 1G EEx ia IIC T4	-40 °C up to +65 °C
II 3G EEx nL IIC T6	-25 °C up to +40 °C
II 3G EEx nL IIC T4	-25 °C up to +65 °C

Special conditions for safe use

The measurement function for explosion protection is not the subject of this supplement to the EC-Type Examination Certificate.

Test and assessment report

BVS PP 03.2298 EG as of 07.11.2006

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 07. November 2006

Signed: Dr. Eickhoff

Certification body

Signed: Schumann


Special services unit



We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 07.11.2006
BVS-Rip/Mi A 20060540

EXAM BBG Prüf- und Zertifizier GmbH



Certification body



Special services unit



Translation
3rd Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X

Equipment: Gas detection transmitter type P3U
Manufacturer: Dräger Safety AG & Co. KGaA
Address: D-23560 Lübeck

Description

The Essential Health and Safety Requirements with respect to the measuring function for explosion protection are assured by application of:

EN 50104:2002 + A1:2004
EN 50271:2001

This supplement to the EC-type examination certificate covers operation of the devices with pump module or relay module and modifications of the software (main).

This supplement to the EC-type examination certificate covers devices type P3U with software versions 7.5, 7.6 and 7.8 (main), V13 (SIOS) and V11 and V12 (pump module) for data transmission via the 4-20 mA interface.

This supplement to the EC-type examination certificate covers the measuring function for oxygen (measurement of inertisation) in the measuring range 0 - 25 % (v/v).

Test report

Test report PFG-no. 413000504P NI dated 27/04/2007

Special conditions for safe use

- See 1st supplement to the EC-type examination certificate BVS 03 ATEX E 406 X
- Devices with pump module or relay module shall not be operated in potentially explosive atmospheres. Suitable measures for explosion protection shall be taken when the gas probe is pumped out of potentially explosive atmospheres.
- The relay module shall be operated with devices with software version 7.8 (main).
- Alarms shall only be configured to be "non acknowledgeable".
- If the pump module is used the flow failure detection shall be activated.
- The sensor O2 LS shall only be used in conjunction with the pump module in vibration-free installations.

DEKRA EXAM GmbH
 Bochum, dated 30/04/2007

Signed: Jockers

Signed: Kiesewetter

 Certification body

 Special services unit



We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 30. April 2007
PFG-Kie

DEKRA EXAM GmbH

A handwritten signature in blue ink, appearing to read 'J. Kaus', written over a horizontal line.

Certification body

A handwritten signature in blue ink, appearing to read 'H. W. Sch.', written over a horizontal line.

Special services unit



Translation
4th Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X

Equipment: Gas detection transmitter type P3U
Manufacturer: Dräger Safety AG & Co. KGaA
Address: D-23560 Lübeck

Description

The Essential Health and Safety Requirements with respect to the measuring function for explosion protection are assured by application of:

EN 50104:2002 + A1:2004
EN 50271:2001

This supplement to the EC-type examination certificate covers operation of the devices with pump module or relay module and modifications of the software (main).

This supplement to the EC-type examination certificate covers devices type P3U with software versions 7.5, 7.6, 7.8 and 7.9 (main), V13 (SIOS) and V11, V12 and V13 (pump module) for data transmission via the 4-20 mA interface.

This supplement to the EC-type examination certificate covers the measuring function for oxygen (measurement of inertisation) in the measuring range 0 - 25 % (v/v).

Test report

Test report PFG-no. 413000504P NII dated 15/10/2010

Special conditions for safe use

- See 3rd supplement to the EC-type examination certificate BVS 03 ATEX E 406 X

DEKRA EXAM GmbH

Bochum, dated 15/10/2010

Signed: Simanski

Certification body

Signed: Dr. Kiesewetter


Special services unit



We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 15. October 2010
PFG-Kie

DEKRA EXAM GmbH



Certification body



Special services unit



Translation

(1) 5. Supplement to the EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC Supplement accordant with Annex III number 6
- (3) No. of EC-Type Examination Certificate: **BVS 03 ATEX G 406 X**
- (4) Equipment: **Gas detection transmitter type P3U**
- (5) Manufacturer: **Dräger Safety AG & Co. KGaA**
- (6) Address: **D-23560 Lübeck**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the test report PFG-no. 41300504P NIII.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 50104:2002 + A1:2004**
EN 50271:2001
- This supplement to the EC-type examination certificate covers the measuring function for oxygen (measurement of inertisation) in the measuring range 0 - 25 % (v/v). This supplement to the EC-type examination certificate covers devices type P3U with software versions 7.5, 7.6, 7.8 and 8.0 (main), V13 (SIOS) and V13 (pump module) for data transmission via the 4-20 mA interface.
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (11) This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

Not changed

DEKRA EXAM GmbH
Bochum, dated 27. May 2011

Signed: Simanski

Certification body

Signed: Kiesewetter

Special services unit



- (13) Appendix to
- (14) **5. Supplement to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X**

(15) 15.1 Subject and type

Gas detection transmitter type P3U

15.2 Description

This supplement to the EC-type examination certificate covers a modified pump, a modified display and modifications of the software (main). The equipment can be modified according to the descriptive documents as mentioned in the pertinent test report.

15.3 Parameters

See EC-type examination certificate BVS 03 ATEX E 406 X

(16) Test and assessment report

PFG-no. 41300504P NIII as of 27.05.2011

(17) Special conditions for safe use

- See 3. supplement to the EC-type examination certificate BVS 03 ATEX E 406 X

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 27. May 2011
PFG-Kie/Bre



Certification body



Special services unit

6. Supplement to the EC-Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC Supplement accordant with Annex III number 6

(3) No. of EC-Type Examination Certificate: **BVS 03 ATEX E 406 X**

(4) Equipment: **Gas measuring transmitter type P3S, P3U and P3FB**
(P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor)

(5) Manufacturer: **Dräger Safety AG & Co. KGaA**

(6) Address: **23560 Lübeck**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.

(8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the test and assessment report BVS PP 03.2298 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 60079-0:2009	General requirements
EN 60079-11:2007	Intrinsic safety 'i'
EN 60079-26:2007	Equipment with equipment protection level (EPL) Ga
EN 60079-27:2008	Fieldbus intrinsically safe concept (FISCO)


(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.


(11) This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 1G Ex ia IIC T4 Ga
II 1G Ex ia IIC T6 Ga
II 3G Ex ic IIC T4 Gc
II 3G Ex ic IIC T6 Gc

DEKRA EXAM GmbH
Bochum, dated 01.06.2011


Certification body


Special services unit

Page 1 of 2 to BVS 03 ATEX E 406 X/ N6
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- (13) Appendix to
- (14) **6. Supplement to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X**
- (15) 15.1 Subject and type
Unchanged

15.2 Description

The gas measuring transmitter type P3S, P3U and P3FB can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

The gas measuring transmitter type P3S, P3U, P3FB (P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor) was tested according to the new standard versions of IEC 60079-* (see page 1). The marking was modified according to the new standard versions.

The internal electronics was slightly modified.

The gas measuring transmitter receives the following marking and ambient temperature range:

	II 1G Ex ia IIC T4 Ga	$(-40^{\circ}\text{C} \leq T_a \leq +65^{\circ}\text{C})$
	II 1G Ex ia IIC T6 Ga	$(-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C})$
	II 3G Ex ic IIC T4 Gc	$(-40^{\circ}\text{C} \leq T_a \leq +65^{\circ}\text{C})$
	II 3G Ex ic IIC T6 Gc	$(-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C})$

15.3 Parameters

15.3.1 Electrical parameters

Unchanged

15.3.2 Thermal parameters

Ambient temperature range depend on temperature class for all types:

$$-40^{\circ}\text{C} \leq T_a \leq +65^{\circ}\text{C} \quad (\text{T4})$$

$$-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C} \quad (\text{T6})$$


- (16) Test and assessment report
BVS PP 03.2298 EG as of 01.06.2011
- (17) Special conditions for safe use

In applications, which require devices of the category 1G (Zone 0) resp. EPL Ga, intensive electrostatic charging processes have to be prevented.

The measurement function for explosion protection is not the subject of this Supplement to the EC-Type Examination Certificate.

(1) 7. Supplement to the EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC Supplement accordant with Annex III number 6
- (3) No. of EC-Type Examination Certificate: **BVS 03 ATEX E 406 X**
- (4) Equipment: **Gas measuring transmitter type P3S, P3U and P3FB**
(P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor)
- (5) Manufacturer: **Dräger Safety AG & Co. KGaA**
- (6) Address: **23560 Lübeck**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the test and assessment report BVS PP 03.2298 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- | | |
|------------------|--|
| EN 60079-0:2009 | General requirements |
| EN 60079-11:2007 | Intrinsic safety 'i' |
| EN 60079-26:2007 | Equipment with equipment protection level (EPL) Ga |
| EN 60079-27:2008 | Fieldbus intrinsically safe concept (FISCO) |
| EN 50303:2000 | Equipment for Group I Category M1 |
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (11) This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:


II 1G Ex ia IIC T4 Ga
II 1G Ex ia IIC T6 Ga
I M1 Ex ia I Ma
II 3G Ex ic IIC T4 Gc
II 3G Ex ic IIC T6 Gc

DEKRA EXAM GmbH
Bochum, dated 01.12.2011



Certification body



Special services unit

Page 1 of 2 to BVS 03 ATEX E 406 / N7

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(13) Appendix to

(14) **7. Supplement to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X**

(15) 15.1 Subject and type

Unchanged

15.2 Description

The gas measuring transmitter type P3S, P3U and P3FB can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

The Gas measuring transmitter type P3S, P3U and P3FB (P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor) was tested for use in Group I.

The marking was modified according to the enhanced range of application.

The gas measuring transmitter receives the following marking and ambient temperature range:

II 1G Ex ia IIC T4 Ga	$(-40\text{ °C} \leq T_a \leq +65\text{ °C})$
II 1G Ex ia IIC T6 Ga	$(-40\text{ °C} \leq T_a \leq +40\text{ °C})$
I M1 Ex ia I Ma	$(-40\text{ °C} \leq T_a \leq +65\text{ °C})$
II 3G Ex ic IIC T4 Gc	$(-40\text{ °C} \leq T_a \leq +65\text{ °C})$
II 3G Ex ic IIC T6 Gc	$(-40\text{ °C} \leq T_a \leq +40\text{ °C})$

15.3 Parameters

15.3.1 Electrical parameters

Unchanged, the parameters are valid for the use in Group I areas, too.

15.3.2 Thermal parameters

Ambient temperature range depends on temperature class and group for all types:

$-40\text{ °C} \leq T_a \leq +65\text{ °C}$ (T4 and Group I)

$-40\text{ °C} \leq T_a \leq +40\text{ °C}$ (T6)

(16) Test and assessment report

BVS PP 03.2298 EG as of 01.12.2011

(17) Special conditions for safe use

Unchanged



- (1) **8. Supplement to the EC-Type Examination Certificate**
- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC Supplement accordant with Annex III number 6
- (3) No. of EC-Type Examination Certificate: **BVS 03 ATEX E 406 X**
- (4) Equipment: **Gas measuring transmitter type P3S, P3U and P3FB (P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor)**
- (5) Manufacturer: **Dräger Safety AG & Co. KGaA**
- (6) Address: **Revalstr. 1, 23560 Lübeck, Germany**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the test and assessment report BVS PP 03.2298 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- | | |
|------------------|--|
| EN 60079-0:2009 | General requirements |
| EN 60079-11:2007 | Intrinsic safety 'i' |
| EN 60079-26:2007 | Equipment with equipment protection level (EPL) Ga |
| EN 60079-27:2008 | Fieldbus intrinsically safe concept (FISCO) |
| EN 50303:2000 | Equipment for Group I Category M1 |
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (11) This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:


II 1G Ex ia IIC T4 Ga
II 1G Ex ia IIC T6 Ga
I M1 Ex ia I Ma
II 3G Ex ic IIC T4 Gc
II 3G Ex ic IIC T6 Gc

DEKRA EXAM GmbH
Bochum, dated 08.08.2012


 Certification body


 Special services unit



(13) Appendix to

(14) **8. Supplement to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X**

(15) 15.1 Subject and type

Unchanged

15.2 Description

The gas measuring transmitter type P3S, P3U and P3FB (P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor) can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

Additional materials can be used optional for the device housing and the bayonet ring for sensor mounting. The additional materials have a surface resistance $< 10^9$ Ohm too.

15.3 Parameters

Unchanged

(16) Test and Assessment Report

BVS PP 03.2298 EG as of 08.08.2012

(17) Special conditions for safe use

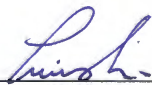
Unchanged

(1) 9th Supplement to the EC-Type Examination Certificate

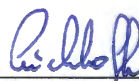
- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
Supplement accordant with Annex III number 6
- (3) No. of EC-Type Examination Certificate: **BVS 03 ATEX E 406 X**
- (4) Equipment: **Gas measuring transmitter type P3S, P3U and P3FB**
(P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor)
- (5) Manufacturer: **Dräger Safety AG & Co. KGaA**
- (6) Address: **Revalstraße 1, 23560 Lübeck, Germany**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the Test and Assessment Report BVS PP 03.2298 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- | | |
|-------------------------|---|
| EN 60079-0:2012 | General requirements |
| EN 60079-11:2012 | Intrinsic safety 'i' |
| EN 60079-26:2007 | Equipment with equipment protection level (EPL) Ga |
| EN 50303:2000 | Equipment for Group I Category M1 |
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (11) This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:


II 1G Ex ia IIC T4 Ga
II 1G Ex ia IIC T6 Ga
I M1 Ex ia I Ma
II 3G Ex ic IIC T4 Gc
II 3G Ex ic IIC T6 Gc

DEKRA EXAM GmbH
Bochum, dated 2014-02-28



Certification body



Special services unit

Page 1 of 2 to BVS 03 ATEX E 406 X / N9

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(13) Appendix to

(14) **9th Supplement to the EC-Type Examination Certificate
BVS 03 ATEX E 406 X**

(15) 15.1 Subject and type
Unchanged

15.2 Description
The gas measuring transmitter type P3S, P3U and P3FB (P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor) was tested in accordance to the new standard versions of EN 60079-0:2012 and EN 60079-11:2012.

15.3 Parameters
Unchanged

(16) Test and Assessment Report
BVS PP 03.2298 EG as of 2014-02-28

(17) Special conditions for safe use
Unchanged

Page 2 of 2 to BVS 03 ATEX E 406 X / N9
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IECEX approval

		<h2 style="margin: 0;">IECEX Certificate of Conformity</h2>	
<p>INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres <small>for rules and details of the IECEX Scheme visit www.iecex.com</small></p>			
Certificate No.:	IECEX BVS 04.0003X	issue No.:	5
Status:	Current	Certificate history: Issue No. 5 (2014-3-7) Issue No. 4 (2012-8-13) Issue No. 3 (2011-12-7) Issue No. 2 (2011-6-10) Issue No. 1 (2006-11-7)	
Date of Issue:	2014-03-07	Page 1 of 4	
Applicant:	Dräger Safety AG & Co. KGaA Revalstrasse 1 23560 Lübeck Germany		
Electrical Apparatus:	Gas measuring transmitter type P3S, P3U, P3FB (P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor) <i>Optional accessory:</i>		
Type of Protection:	Equipment protection by intrinsic safety "i", Equipment with equipment protection level (EPL) Ga		
Marking:	Ex ia IIC T4 Ga (-40 °C ≤ T _a ≤ +65 °C) Ex ia IIC T6 Ga (-40 °C ≤ T _a ≤ +40 °C) Ex ia I Ma (-40 °C ≤ T _a ≤ +65 °C) Ex ic IIC T4 Gc (-40 °C ≤ T _a ≤ +65 °C) Ex ic IIC T6 Gc (-40 °C ≤ T _a ≤ +40 °C)		
Approved for issue on behalf of the IECEX Certification Body:	H.-Ch. Simanski		
Position:	Head of Certification Body		
Signature: (for printed version)			
Date:			
<ol style="list-style-type: none"> 1. This certificate and schedule may only be reproduced in full. 2. This certificate is not transferable and remains the property of the issuing body. 3. The Status and authenticity of this certificate may be verified by visiting the Official IECEX Website. 			
Certificate issued by:	DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany		
	 DEKRA EXAM GmbH		



IECEX Certificate of Conformity

Certificate No.: IECEX BVS 04.0003X

Date of Issue: 2014-03-07

Issue No.: 5

Page 2 of 4

Manufacturer: **Dräger Safety AG & Co. KGaA**
Revalstrasse 1
23560 Lübeck
Germany

Additional Manufacturing location
(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEX Quality system requirements. This certificate is granted subject to the conditions as set out in IECEX Scheme Rules, IECEX 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26 : 2006 Edition: 2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:
[DE/BVS/ExTR06.0003/05](#)

Quality Assessment Report:
[DE/BVS/QAR06.0001/09](#)



IECEX Certificate of Conformity

Certificate No.: IECEX BVS 04.0003X

Date of Issue: 2014-03-07

Issue No.: 5

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Ratings:
Unchanged

Marking:
unchanged

CONDITIONS OF CERTIFICATION: YES as shown below:

In applications, which require devices with EPL Ga (Zone 0), intensive electrostatic charging processes have to be prevented.
The measurement function for explosion protection is not the subject of this supplement to the IECEX Certificate of Conformity.



IECEX Certificate of Conformity

Certificate No.: IECEX BVS 04.0003X

Date of Issue: 2014-03-07

Issue No.: 5

Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

The gas measuring transmitter type P3S, P3U and P3FB (P3U/P3FB alternative with P3U Remote Adapter and P3U Remote Sensor) was tested in accordance to the new standard versions of IEC 60079-0:2011 and IEC 60079-11:2011.

UL approval

**Northbrook Division**

333 Pflingsten Road
 Northbrook, IL 60062-2096 USA
 www.ul.com
 tel: 1 847 272 8800
 fax: 1 847 272 8129
 Customer service: 1 877 854 3577

NOTICE OF AUTHORIZATION TO APPLY THE UL MARK

2004-02-12

Mr. Thomas Treptow
 Draeger Safety AG & Co KGaA
 Revalstrasse 1
 23560 Luebeck Germany

Fax number: 49-451-882-73191

Reference: File E180059 Project 03NK30215
 Models P3S (Polytron 3000) And P3U (Polytron 7000) Gas Detectors,

Product: Intrinsically Safe For Use In Class I, Division 1, Groups A, B, C, D;
 Class II, Division 1, Groups E, F, G When Connected Per Draeger Control Drawing SE20105

Dear Mr. Treptow,

UL's investigation of your product has been completed under the above project number and the subject product was determined to comply with the applicable requirements.

This letter temporarily supplements the UL Follow-Up Services Procedure and serves as authorization to apply the UL Classification Mark only at the factory under UL's Follow-Up Service Program to the subject product, which is constructed as described below:

Identical to Model P3U, which was submitted to UL for this investigation and identical to Model P3S (Polytron C) which is covered in Follow-Up Services Procedure, File E180059, Volume 1, Section 2.

This authorization is effective from the date of this Notice and only for products at the indicated manufacturing locations. Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent to the indicated manufacturing locations in the near future. Please note that Follow-Up Services Procedures are sent to the manufacturers only unless the Applicant specifically requests this document.

Products that bear the UL Mark shall be identical to those that were evaluated by UL and found to comply with UL's requirements. If changes in construction are discovered, appropriate action will be taken for products not in conformance with UL's requirements and continued use of the UL Mark may be withdrawn.

Sincerely,

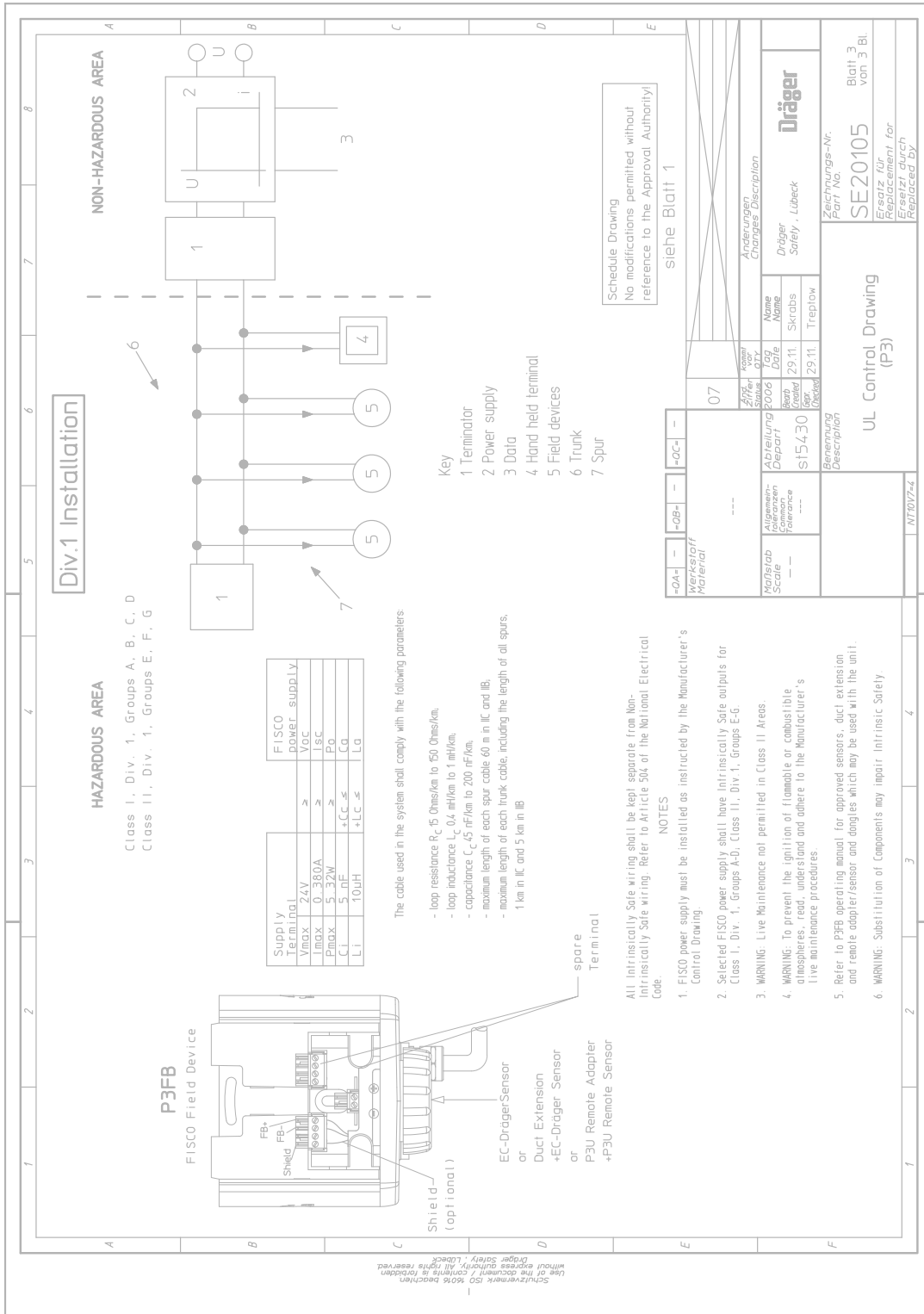
Frederic J. Cleary
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 Hazardous Locations, Gas & Oil
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 E-mail: Frederic.J.Cleary@us.ul.com

Reviewed by:

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An independent organization working for a safer world with integrity, precision and knowledge.





The depicted page is part of the UL-certificate but refers to the Polytron 7000.

CSA approval



Certificate of Compliance

Certificate: 1562835 (097594_0_000)

Master Contract: 160220

Project: 70055569

Date Issued: 2016-10-17

Issued to: Draeger Safety AG & Co. KGaA
Revalstrasse 1
Luebeck, 23560
GERMANY
Attention: Thomas Treptow

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.



Issued by: Zahra Amini
Zahra Amini

PRODUCTS

CLASS - C482801 - SIGNAL APPLIANCES --Combustible Gas Detection Instruments-For Hazardous Locations
CLASS - C482881 - SIGNAL APPLIANCES-Combustible Gas Detection Instruments-For Hazardous Location-
Certified to U.S. Standards

For details related to rating, size, configuration, etc. reference should be made to the CSA Certification Record or the descriptive report.

Class I, Groups A, B, C and D; Class II, Groups E, F and G:

Model P3S, stationary, input rated 30 V dc max., 0.3 A max., intrinsically safe with entity parameters when installed in accordance with Draeger Control Drawing No. SE20106. May be used with duct extension. Temperature Code T4 for ambient temperatures of -40 Deg. C to +65 Deg C. Temperature Code T6 for ambient temperatures of -40 Deg. C to +40 Deg C.

Model P3U, stationary, input rated 30 V dc max., 0.3 A max., intrinsically safe with entity parameters when installed in accordance with Draeger Control Drawing No. SE20106. May be used with duct extension, P3U Remote Adapter, P3U Remote Sensor and Dongles. Temperature Code T4 for ambient temperatures of -40 Deg. C to +65 Deg C. Temperature Code T6 for ambient temperatures of -40 Deg. C to +40 Deg C.



Certificate: 1562835
Project: 70055569

Master Contract: 160220
Date Issued: 2016-10-17

Model P3FB, stationary, input rated 24 V dc max., 0.38 A max., intrinsically safe with entity parameters when installed in accordance with Draeger Control Drawing No. SE20106. May be used with duct extension, P3U Remote Adapter, P3U Remote Sensor and Dongles. Temperature Code T4 for ambient temperatures of -40 Deg. C to +65 Deg C. Temperature Code T6 for ambient temperatures of -40 Deg. C to +40 Deg C.

APPLICABLE REQUIREMENTS

- CAN/CSA-C22.2 No.157-92 - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
- UL Std No. 913, August 9, 2004 - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III, Division 1, Hazardous Locations
- CAN/CSA-C22.2 No. 61010-1-12 - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements
- ANSI/ISA-61010-1 3rd Edition - Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements - Third Edition



Supplement to Certificate of Compliance

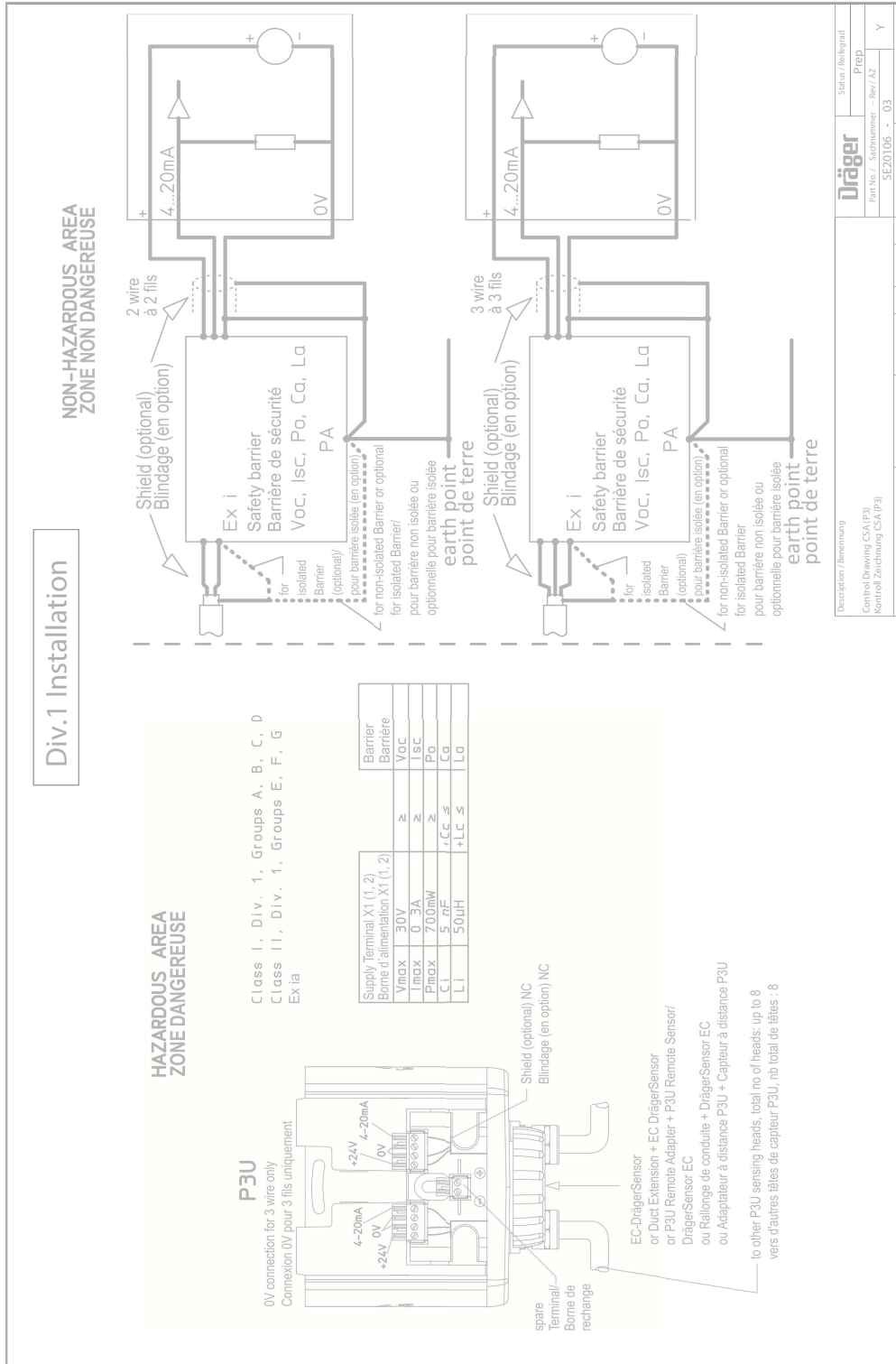
Certificate: 1562835 (097594_0_000)

Master Contract: 160220

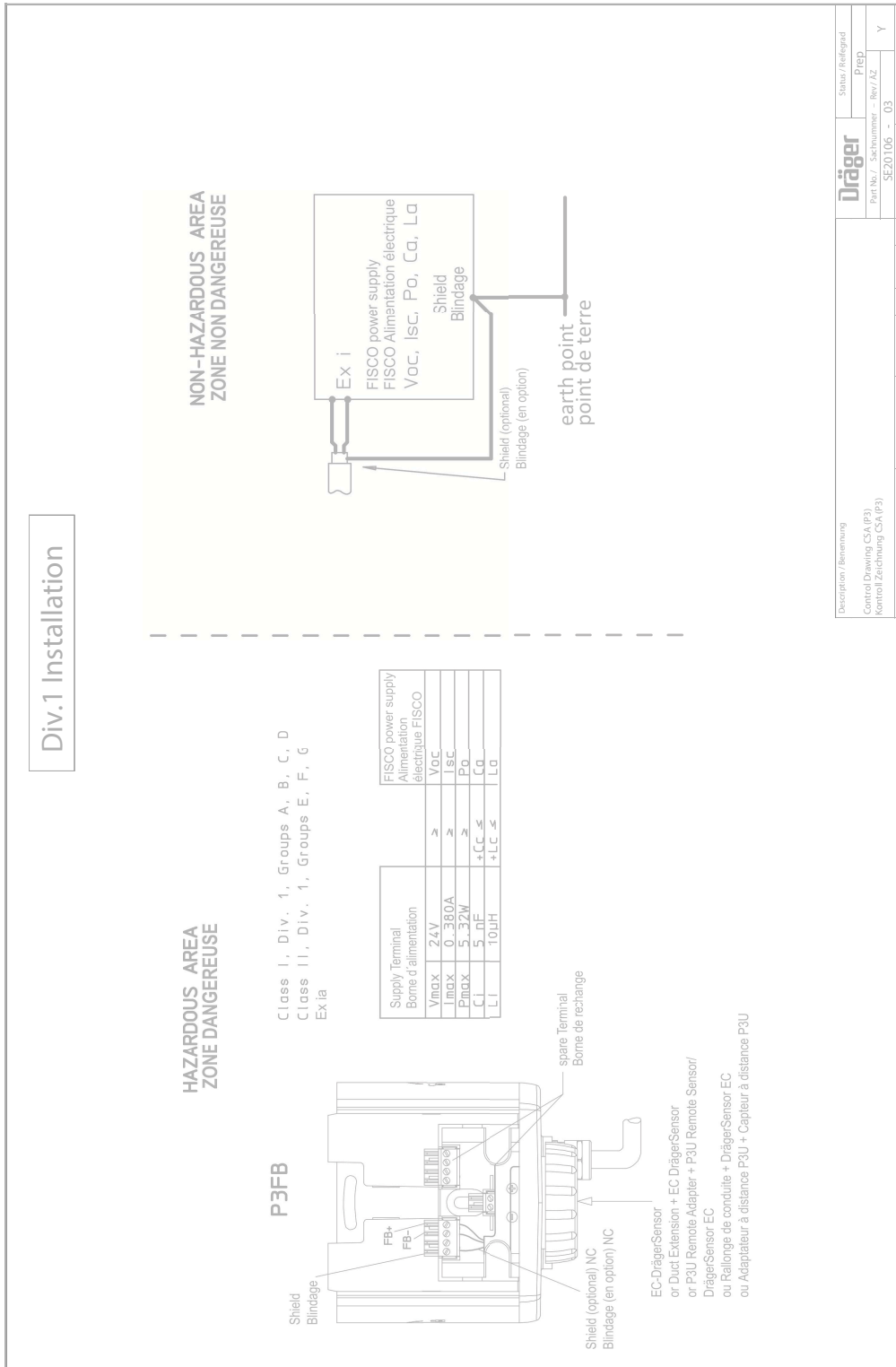
*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
70055569	2016-10-17	Updating the report 1562835 to replace Std. C22.2 No 142-M1987, UL Std No 508, by CAN/CSA-C22.2 NO. 61010-1-12 Ed 3rd, ANSI/ISA-61010-1 3rd Edition, and update some drawings
1856978	2007-01-24	Addition of model P3FB
1562835	2004-11-09	Original Certification of P3S and P3U



The depicted page is part of the CSA-certificate but refers to the Polytron 7000.



Schutzmerkmal ISO 16016 beachten
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 Dräger Safety

Description / Benennung		Status / Reifegrad	
Control Drawing CSA (P3) Kontroll Zeichnung CSA (P3)		PREP	
Document Type / Dokumententyp	Page / Seite	Part No. / Zeichnungs-Nr. / AZ	Y
EXCT DRAWING(A3)	3 of 4	SE20106 - 03	
		Repl. for / Ersatz für	SE20106-02

The depicted page is part of the CSA-certificate but refers to the Polytron 7000.

HAZARDOUS AREA/ ZONE DANGEREUSE

Use the following parameters if cable parameters are unknown: Cable Capacitance: $Cc = L \times Ccable = 1000ft \times 60pF = 0.06\mu F$
 Cable Inductance: $Lcable = 0.2\mu H/ft$ ($Lc = L \times Lcable = 1000ft \times 0.2\mu H/ft = 0.2mH$)
 Utiliser les paramètres suivants si les paramètres des câbles ne sont pas connus: Capacité des câbles : $Ccable = 60 pF/ft$ ($Cc = L \times Ccable = 1000 ft \times 60 pF = 0.06 \mu F$)
 Inductance des câbles : $Lcable = 0.2 \mu H/ft$ ($Lc = L \times Lcable = 1000 ft \times 0.2 \mu H/ft = 0.2 mH$)

All Intrinsicly Safe wiring shall be kept separate from Non-intrinsicly Safe wiring. Refer to Article 504 of the National Electrical Code.
 Tous les câblages à sécurité intrinsèque doivent être tenus à l'écart des câblages qui ne sont pas à sécurité intrinsèque. Se référer à l'article 504 du code électrique national américain.

NOTES/ REMARQUES

- P3S/ P3U:**
 1. Barrier Output current must be limited by a resistor, such that the output voltage vs current plot is a straight line between Voc and Isc.
 Le courant de sortie de la barrière doit être limité par une résistance de manière à ce que la tension de sortie vs le tracé du courant soit une ligne droite entre Voc et Isc.
- P3S/ P3U/ P3FB:**
 2. Barrier / FISCO power supply must be installed as instructed by the Manufacturer's Control Drawing.
 La barrière / Alimentation électrique FISCO doit être installée conformément au dessin de contrôle du fabricant.
- P3S/ P3U/ P3FB:**
 3. Selected Barrier / FISCO power supply shall have Intrinsicly Safe outputs for Class I, Div. 1, Groups A-D, Class II, Div. 1, Groups E-G.
 La barrière / Alimentation électrique FISCO sélectionnée doit disposer de sorties à sécurité intrinsèque pour Classe I, Div. 1, Groupes A-D, Classe II, Div. 1, Groupes E-G.
- P3S/ P3U:**
 4. If the maximum output power is not specified, it can be evaluated using the formula $Pa = \frac{1}{4} \times Voc \times Isc$.
 Si la puissance débitée maximum n'est pas spécifiée, elle peut être évaluée en utilisant la formule $Pa = \frac{1}{4} \times Voc \times Isc$.
- P3S/ P3U/ P3FB:**
 5. WARNING: Read and understand manual before operating.
 AVERTISSEMENT: Lire attentivement le manuel avant de mettre en marche.
- P3S/ P3U/ P3FB:**
 6. WARNING: Live Maintenance not permitted in Class II Areas.
 AVERTISSEMENT: La maintenance en direct n'est pas autorisée dans les zones de Classe II.
- P3S/ P3U/ P3FB:**
 7. WARNING: To prevent the ignition of flammable or combustible atmospheres, read, understand and adhere to the Manufacturer's live maintenance procedures.
 AVERTISSEMENT: Pour éviter l'inflammation d'atmosphères inflammables ou combustibles, comprendre et respecter les procédures de maintenance en direct du fabricant.
- P3S/ P3U/ P3FB:**
 8. Refer to P3FB operating manual for approved sensors and duct extension which may be used with the unit.
 Se reporter à la notice d'utilisation P3FB pour savoir quels sont les capteurs homologués et la rallonge de conduite qui peut être utilisée avec l'unité.
- P3S:**
 9. WARNING: Special Tools - MiniGrabber® from Pomona shall be used for connecting meter for calibrations. This MiniGrabber® can only enter the instrument by 4.5 mm and secure that only the test point holes in the circuit board can be accessed from the outside, by using these special tools. Jumper must always be in place, when connecting.
 AVERTISSEMENT: Outils spéciaux - il est recommandé d'utiliser MiniGrabber® de Pomona pour raccorder le compteur à des fins d'étalonnage. Ce MiniGrabber® peut pénétrer de seulement 4,5 mm à l'intérieur de l'instrument et garantir donc, avec ces outils spéciaux, l'accès aux trous de test du circuit électrique depuis l'extérieur. Le cavalier doit toujours être en place lorsque l'on connecte le compteur.
- P3S/ P3U/ P3FB:**
 10. WARNING: Substitution of Components may impair Intrinsic Safety.
 AVERTISSEMENT: La substitution de composants peut compromettre la sécurité intrinsèque.

Schutzmerkmal ISO 16016 beachten
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Description / Bemerkung Control Drawing CSA (P3) Kontrol Zeichnung CSA (P3)	Status / Reifegrad Prep
	Part No. / Seriennummer - Rev / AZ SE20106 - 03
Document Type / Dokumententyp TEXT DRAWING (A3)	Page / Seite 4
	of / von 4
	Repl. for / Ersatz für SE20106Z2

Declaration of Conformity



EU-Konformitätserklärung
EU-Declaration of Conformity



Dokument Nr. / Document No. SE20148-05

Wir / we Dräger Safety AG & Co. KGaA, Revalstraße 1, 23560 Lübeck, Germany

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

Gasmessgerät Typ P3S (Polytron 3000) / P3U, P3FB (Polytron 7000)
Gas Detection Instrument type P3S (Polytron 3000) / P3U, P3FB (Polytron 7000)

mit der EG-Baumusterprüfbescheinigung / Expertise
is in conformity with the EC-Type Examination Certificate / **BVS 03 ATEX E 406 X**
Expertise

ausgestellt von der benannten Stelle mit der Kenn-Nr.
issued by the Notified Body with Identification No. **DEKRA EXAM GmbH**
Dinnendahlstraße 9
D-44809 Bochum
0158

und mit den folgenden Richtlinien unter Anwendung der aufgeführten Normen übereinstimmt
and is in compliance with the following directives by application of the listed standards

Bestimmungen der Richtlinie <i>provisions of directive</i>		Nummer sowie Ausgabedatum der Norm <i>Number and date of issue of standard</i>
94/9/EG(CE) ¹⁾ 2014/34/EU ²⁾	ATEX-Richtlinie ³⁾ ATEX Directive ³⁾	EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007, EN 50303:2000
2004/108/EG(CE) ¹⁾ 2014/30/EU ²⁾	EMV-Richtlinie EMC Directive	EN 50270:2006 (type 2), EN 61000-6-3:2007+A1:2011+AC:2012
2006/95/EG(CE) ¹⁾ 2014/35/EU ²⁾	Niederspannungs-Richtlinie ⁴⁾ Low Voltage Directive ⁴⁾	EN 61010-1:2010

1) gültig bis / valid to 2016-04-19, 2) gültig ab / valid from 2016-04-20
 3) nur für explosionsgeschützte Varianten zutreffend / *only applicable for explosion-protected variants*
 4) nur für Varianten mit Relais-Modul zutreffend / *only applicable for variants with relay module*

Überwachung der Qualitätssicherung Produktion durch
Surveillance of Quality Assurance Production by **DEKRA EXAM GmbH**
Dinnendahlstraße 9
D-44809 Bochum
0158

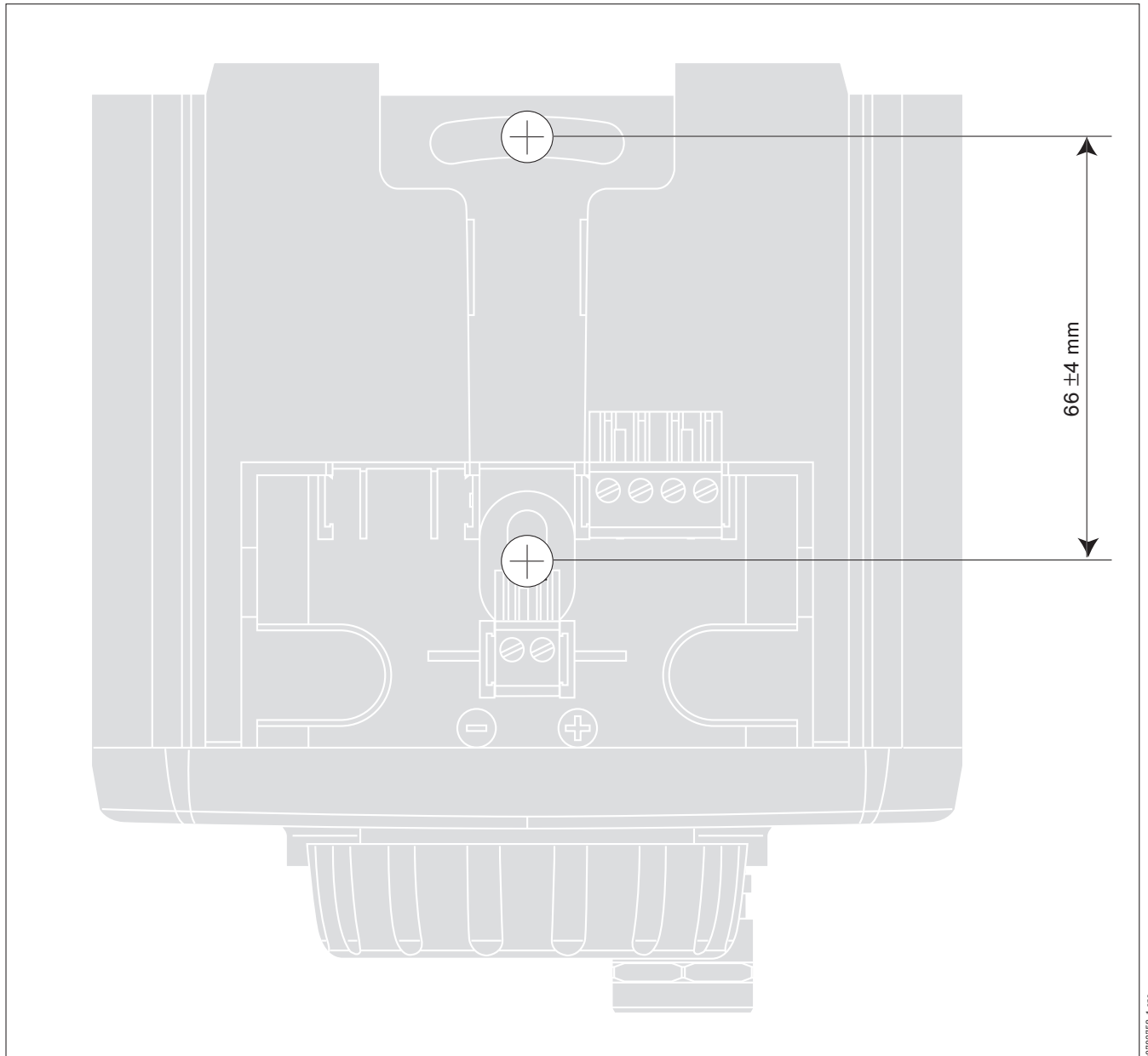
Lübeck, 2016-01-08

Ort und Datum (jjjj-mm-tt)
Place and date (yyyy-mm-dd)

Ingo Pögn
 Manager
 Head of CoC Safety Products
 Connect & Develop

Drilling templates

Dräger docking station



02723756_1.dwg

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Edition 06 - December 2016 (Edition 01 - February 2004)

Subject to alteration