

# Dräger Polytron 7000

(approved as type P3U and P3FB)  
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 zone 22 or 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!
- If the transmitter is equipped, either when delivered or subsequently, with the relay module and/or the pump module, the complete unit is no longer approved for use in explosion-hazard areas. The use of the Dräger Polytron 7000 equipped with a pump module and/or relay module in explosion-hazard areas is forbidden! Explosion hazard!
- Not suitable for use in oxygen-enriched atmospheres, i.e. oxygen content exceeds 21 vol. %. Explosion hazard!

#### Attention:

When used in transmitters with pump module, the O<sub>2</sub> LS sensor (68 09 630) must always be installed at vibration-free locations. If used in this combination, vibrations may cause the measured value to deviate outside of the permissible range.

### Accessories

Use only accessories shown in the Ordering List.

### Liability for proper function or damage

The liability for the proper function of the apparatus is irrevocably transferred to the owner or operator to the extent that the apparatus is serviced or repaired by personnel not employed or authorized by DrägerService or if the apparatus is used in a manner not conforming to its intended use.

Dräger cannot be held responsible for damage caused by non-compliance with the recommendations given above. The warranty and liability provisions of the terms of sale and delivery of Dräger are likewise not modified by the recommendations given above.

Dräger Safety AG & Co. KGaA



## Intended Use


### Dräger Polytron® 7000 Transmitter for electrochemical sensors

- For stationary, continuous monitoring of gas concentrations in ambient air, with built-in DrägerSensor®.
- Automatic configuration of transmitter to suit the built-in DrägerSensor.
- The measuring range may be selected, but it is dependent on the sensor installed.
- With 4 to 20 mA interface, LON communication, Foundation Fieldbus or PROFIBUS PA.
- For installation alternatively in Ex areas zone 0, 1, 2 or 22 corresponding to device category 1G, 2G, 3G, 3D or Class I, Class II, Div. 1 & 2 hazardous area.  
For further details, see the installation notes.

#### Notes on use in zone 22:

Valid for all Dräger Polytron 7000 versions without pump and/or relay module (see II 3D identification marking on the identification tag) and the accessories Duct Adapter for Remote Sensor (Order No. 83 17 150), Remote Sensor (Order No. 83 17 275) and Remote Cable (Order No. 83 17 270, 83 17 998 and 83 17 999).

#### Identification marking and safety data concerning dust explosion protection:

CE 0158  II 3D, IP6x T65 °C (–40 °C Ta +65 °C)

Maximum supply voltage: 30 V DC

As electrical equipment of the device class and category II 3D according to directive 94/9/EC, the transmitter Dräger Polytron 7000 can be installed and operated without safety barriers in the ATEX Zone 22 (dust), if the following notes concerning safe use are taken into account.

1. The category II 3D is only valid for the accordingly marked Dräger Polytron 7000 transmitter.
  2. According to EN 50281-1-2, the transmitter may not be installed in areas which are endangered by conductive, combustible dusts.
  3. The Transmitter and the accessories must be enclosed according to IP 6x rating. Especially the locking screw (2 mm Allen screw) of the sensor bayonet ring tight enough to ensure that the bayonet ring is secured against unintended loosening.
  4. The Dräger Polytron 7000 transmitter and the accessories have a maximum surface temperature of 65 °C and the IP 6x rating. The transmitter must be installed and maintained according to valid regulations (e.g. in European countries according to EN 50281-1-2).
  5. The transmitter and the accessories may only be opened when off-circuit or outside the Ex area. This must always be observed when replacing the sensor!
- Optionally compatible with HART® for connection to a suitable control unit.
  - Optionally available with pump module for the continuous supply of the gas/air mixture to be tested to the transmitter.

**Caution: No explosion protection. Explosion hazard!**

® Polytron is a registered trademark of Dräger.  
DrägerSensor is a registered trademark of Dräger.  
HART is a registered trademark of HCF, Austin, Texas, USA

*Intended Use*

If used together with a control unit (e. g. Regard without a safety barrier) or equipped with a relay module:

**Caution: No explosion protection. Explosion hazard!**

- Warning before any hazardous gas concentrations are reached.
- Automatic implementation of counter measures (for example, connection of an additional ventilation).
- Warning for device errors; display of necessary maintenance work.
- Special calibration mode (blocking of alarm triggering, display of calibration mode, one-man calibration).

**Detection of oxygen in accordance with EN 50104**

**Attention:**

If the Dräger Polytron 7000 transmitter is used for the detection of oxygen, at least one alarm relay must be configured as latching.

**Measuring function for the explosion protection**

BVS 03 ATEX E 406 X

Dräger Polytron 7000 4 to 20 mA with/without display and keypad with/without relay and pump module in connection with DrägerSensor	Measuring range	Testing standard
O <sub>2</sub> LS (6809630) O <sub>2</sub> (6809720)	0 to 25 Vol.-% O <sub>2</sub>	EN 50104 (neutralization measurement)

**Measurement of oxygen**

PFG No. 41300504

Dräger Polytron 7000 4 to 20 mA with/without display and keypad with/without relay and pump module in connection with DrägerSensor	Measuring range	Testing standard
O <sub>2</sub> LS (6809630) O <sub>2</sub> (6809720)	0 to 25 Vol.-% O <sub>2</sub>	EN 50104 (oxygen deficiency and excess of oxygen)

## Design

The Dräger Polytron 7000 was developed specifically as a modular system which permits the user to select one of many different configurations.

**Dräger Polytron 7000 transmitter. with display and keypad and optional for operation with a Palm Pilot 515 and infrared interface or a hand-held HART-compatible operating device or an HART-compatible operating station connected at any point to the 2-wire cable.**

This version is suitable for installations where a display of measured value is required on site and where access is easy for the operator.  
The transmitter is operated directly via a built-in keypad and display.



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**Dräger Polytron 7000 transmitter. without display and keypad, for operation with a Palm Pilot 515 and infrared interface or a hand-held HART-compatible operating device or an HART-compatible operating station connected at any point to the 2-wire cable.**

This version is suitable for installations where access is not easy for the operator or where no display is required.



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### Optional extras:

#### Pump module

This module draws in the gas to be measured from a remote location and pumps it into the Dräger Polytron 7000 transmitter.

**Caution: This option is only possible without explosion protection approval. Explosion hazard!**

#### Relay module

This module permits the local switching of actuators, alarm generators, etc. on the basis of the measured gas concentration.

**Caution: This option is only possible without explosion protection approval. Explosion hazard!**

#### Attention:

If the Dräger Polytron 7000 transmitter is used in connection with the relay module for detecting oxygen according to EN 50104, the transmitter has to be equipped with software version 8.0 or higher.

**Daisy-chain kit**

For the connection of several Dräger Polytron 7000 transmitters to one bus line (multidrop installation). This option does not affect the explosion-protection approval of the transmitter.

**Duct extension**

For mounting the Polytron 7000 transmitters on a duct.  
Used to measure the gas concentration in the duct. This option does not affect the explosion-protection approval of the transmitter.

**Remote sensor**

For installation of the sensor at a distance of up to 30 m away from the Dräger Polytron 7000 transmitter. This option does not affect the explosion-protection approval of the transmitter.

**Duct adapter for remote sensor**

For mounting a remote sensor on a duct for measuring the gas concentration in the duct. This option does not affect the explosion-protection approval of the transmitter.

**Dräger Polytron 7000 software dongles**

For activation of additional functions of the Dräger Polytron 7000. 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 86).
- 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.

**In explosion-hazard areas:**

**Observe the national regulations concerning electrical equipment in explosion-hazard areas.**

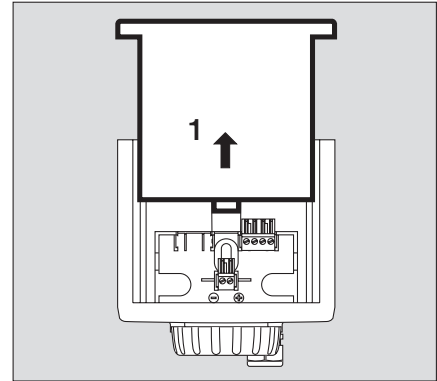
The Dräger Polytron 7000 transmitter consists of several components:

- Dräger docking station  
This can be pre-installed anywhere and contains the electrical installation components.
- The measuring unit Dräger Polytron 7000  
contains the electronics of the transmitter.

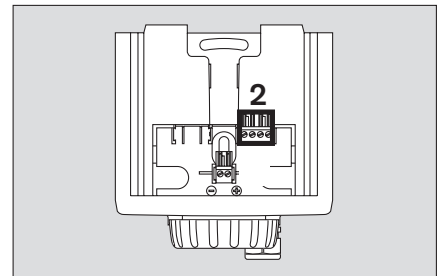
If the measuring unit is not fitted immediately after installing the docking station, the latter should be covered with the raincover provided (dust and water protection) to protect against dust and splashing water.

## 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 16 268), keep it in a safe place and insert it again after completion of the installation work.
- A drilling template is provided on page 137. The mounting holes are  $66 \pm 4$  mm ( $2.6 \pm 0.16$ ") apart.



### Attention:

**Spacers (e.g. mounting bracket 68 09 772) 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:

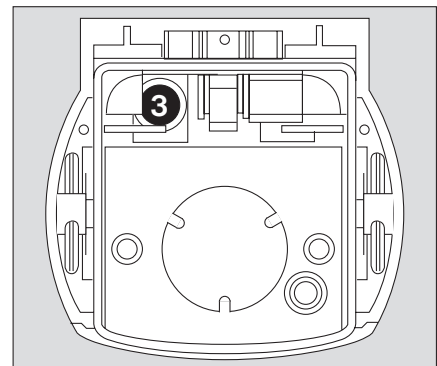
- refit the raincover (protection against dust and splashing water).

**For Multidrop installation only:**  
(see page 17)

## Installing the Daisy Chain kit

Part No. 83 17 282

- 3 Break or drill out the prepared breakthrough for the second cable gland from the inside of the docking station.  
The hole should have a diameter of 20.5 mm.
- Check that the docking station has no loose parts, and clean it if necessary.
- Insert the nut of the cable gland into the docking station.
- Screw in the cable gland from the outside of the docking station and tighten it.



## Electrical connections

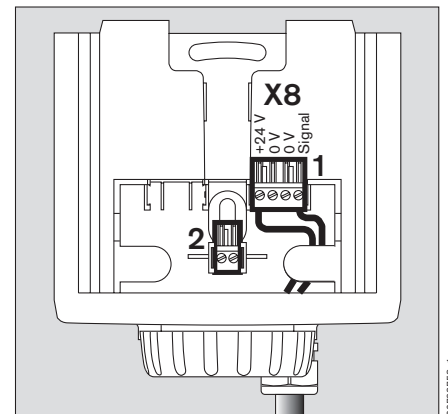
- The electrical wiring may be laid and connected only by a qualified electrician, who must also comply with the appropriate regulations – a screened or un-screened cable (such as LiY, LiYCY) may be used.

### 2-wire connection

- Connection to central device with at least 2-wire cable, 0.5 (AWG 20) to 2.5 mm<sup>2</sup> (AWG 13).

#### Installing the 4 to 20 mA current loop on the transmitter

- For currents of 3 to 22 mA, a DC voltage between 16.5 V DC (3 mA), or 8.0 V DC (22 mA) and 30 V DC must be present at 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 Use a 4-pole terminal block (X8), Part No. 83 16 268, for the Dräger Polytron 7000 – Observe the polarity of the connections. Cut excess wires short or
  - 2 secure them in centre terminals (Part No. 83 16 422).
  - 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 7000 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 7000 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 16.5 V at a current of 3 mA and 8.0 V at a current of 22 mA. 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 the transmitter in areas subject to explosion hazards of zone 0, 1 or****Div. 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:  $U_o (V_{oc}) \leq 30$  V,  $I_o (I_{sc}) \leq 0.3$  A,  $P_o \leq 700$  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:  $C_i = 5$  nF,  $L_i = 50$   $\mu$ 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 P3U entity parameters also taking the cable into account.

Manufacturer	Type	suitable for	R <sub>Cable</sub> (Loop)	Note
MTL	MTL 5041	Zone 0, Div. 1	350	Suitable only for 2-wire
Pepperl & Fuchs	KFD2–CR–Ex1.30 200	Zone 0, Div. 1	400	Suitable only for 2-wire

**SMART transmitter supply units**

(with HART-communication between Ex/Non-Ex area)

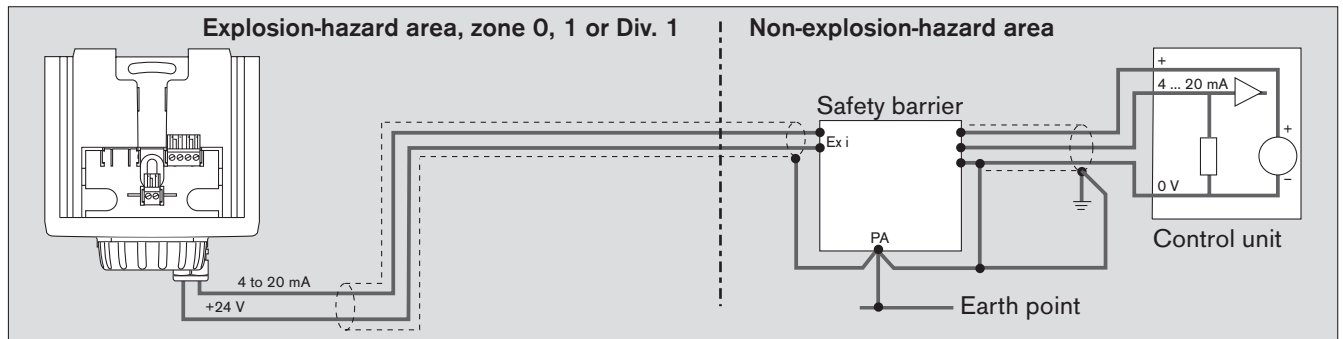
The following safety barriers are provided as examples only. Selected barriers must be acceptable to the authority having jurisdiction and comply with the assigned P3U entity parameters also taking the cable into account.

Manufacturer	Type	suitable for	R <sub>Cable</sub> (Loop)	Note
Endress + Hauser	RN 221 N–B1 (ATEX)	Zone 0	380	Suitable only for 2-wire
	RN 221 N–C1 (FM)	Div. 1	380	Suitable only for 2-wire
	RN 221 N–D1 (CSA)	Div. 1	380	Suitable only for 2-wire
	RN 221 N–E1 (TIIS)		380	Suitable only for 2-wire
MTL	MTL 5042	Zone 0, Div. 1	400	Suitable for 2-wire and 3-wire
Pepperl & Fuchs	KFD2–STC4–Ex1	Zone 0, Div. 1	300	Suitable for 2-wire and 3-wire
Stahl	9160/13–11–11	Zone 0	400	Suitable for 2-wire and 3-wire (3-wire without HART)

- The cable resistances given apply for a load resistance of 250  $\Omega$ . Higher load resistances can drastically reduce the permissible cable resistance!
- When other barriers have been selected, care must be taken that the voltages on the transmitter do not fall below the following values when barrier parameters and cable resistance are taken into account:  
16.5 V for a current of 3 mA and 8.0 V for a current of 22 mA.
- If HART communication is to be used, the HART specifications must also be observed.



- The maximum possible cable lengths can be found in the table on page 18. In each case, use the line marked "Number of transmitters = 1".
- Connect shielding to earth point and/or 0 V (Ex i).



#### Installing the transmitters in explosion-hazard areas of zone 2 or 22 without a safety barrier

- Use only supply units of the device category 3.
  - 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:  
 $C_i = 5 \text{ nF}$ ,  $L_i = 50 \text{ } \mu\text{H}$ .

#### 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!

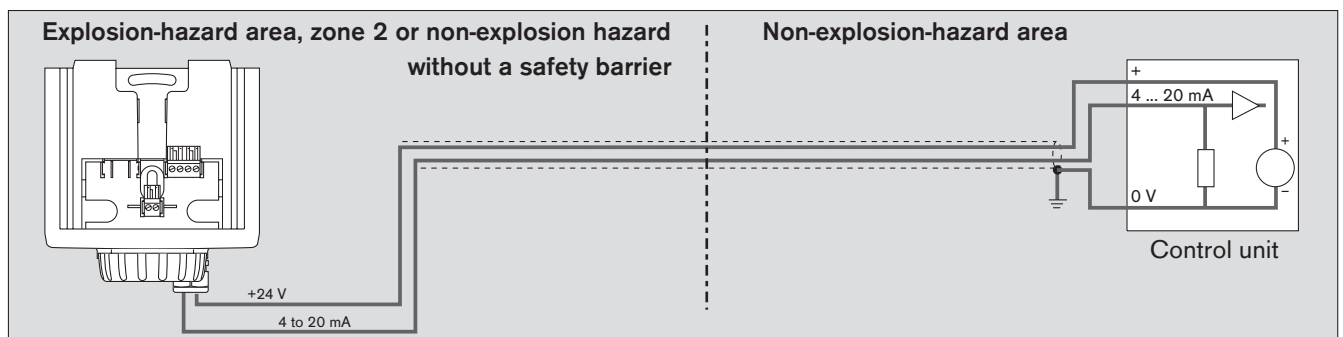
- The maximum possible cable lengths can be found in the table on page 19. In this table, select the line, " Number of transmitters = 1".

#### 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.

- The maximum possible cable lengths can be found in the table on page 19. In this table, select the line, " Number of transmitters = 1".

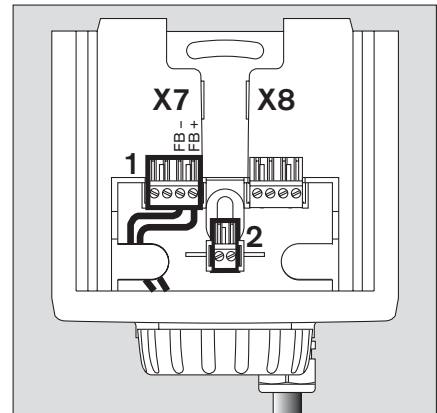


## Electrical connections

**Installing fieldbus communication on the transmitter**

- The transmitter can be connected to a certified intrinsically safe fieldbus system, which supports FISCO (Fieldbus intrinsically safe concept).
  - The PROFIBUS PA transmission technology for intrinsically safe applications is MBP. MBP stands for:
    - Manchester Coding (M)
    - Bus Powered (BP)
  - 5 transmitters can be connected to a segment with a typical segment current of 100 mA.
- Install the 2-wire connection cable in the cable gland, cut it to length and strip off the insulation (approx. 80 mm).
  - Shorten the shield (if installed) to prevent short-circuiting.
  - Connect cable:
    - 1 Use a 4-pole terminal block (X7), Part No. 83 16 268, for the Dräger Polytron 7000 – Observe the polarity of the connections. Cut excess wires short or
    - 2 secure them in center terminals (Part No. 83 16 422).
  - 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).

**Caution: Insert 4-pole (X7) terminal block into left holder.**

**Installing the transmitter in areas subject to explosion hazards of****Zone 0 or Zone 1:**

- Only safety barriers with the following characteristics may be used:
 
$$U_{\max} \leq 24 \text{ V}, I_{\max} \leq 0.38 \text{ A}, P_{\max} \leq 5.32 \text{ W}$$
 or those which correspond to the FISCO model.
- The transmitter may only be connected in 2-wire connection to the left 4-fold terminal block (X7) of the docking station. No electrical connections may be made to the right 4-fold terminal block (X8).

**Installing the transmitter in areas subject to explosion hazards of Zone 2:**

- Make sure that the supply unit corresponds with the FINCO model and that the maximum permissible capacitance and inductance of connections to the supply unit are not exceeded, (also take the cable into account).
- The safety-related input parameters of the transmitter are:
 
$$C_i = 5 \text{ nF}, L_i = 10 \text{ } \mu\text{H}.$$
- The transmitter may only be connected in 2-wire connection to the left 4-fold terminal block (X7) of the docking station. No electrical connections may be made to the right 4-fold terminal block (X8).

**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!**

**Connection to the control unit**

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

**Caution:**

In the case of PROFIBUS devices, the shield must only be connected on one side of the cable to earth.

**3-wire connection**

- Connection to central device with at least 3-wire cable, 0.5 (AWG 20) to 2.5 mm<sup>2</sup> (AWG 13).

**Attention:**

The supplied ferrite sleeves are to be used when installing the transmitter in three-wire technology.

A ferrite sleeve must be pushed onto each core prior to connecting the cable to the four-pole terminal in the docking station.

**Installing the 4 to 20 mA current loop on the transmitter**

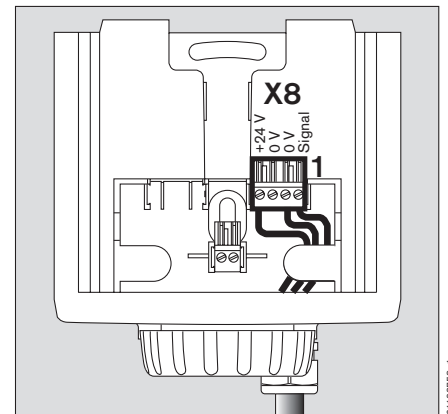
- Install the 3-wire connection cable in the cable gland, cut it to length and strip off the insulation (about 80 mm).
- Shorten the shield (if installed) to prevent short-circuiting:
- Connect cable
  - 1 4-pin terminal for Dräger Polytron 7000 – observe polarity.  
Slide connecting terminal back into 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).

**Connection to the control unit**

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

**Connecting the Dräger Polytron 7000 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.
- When operated from the mains supply, the Polytron control unit provides a supply voltage of at least 20 V. This must be taken into account when determining the maximum cable length (see the table on page 19).
- Unigard is not suitable for the connection of a Polytron 7000 transmitter equipped with a relay or pump module.



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**Connecting the Dräger Polytron 7000 transmitter to control units with a 4 to 20 mA interfaced made by other manufacturers:**

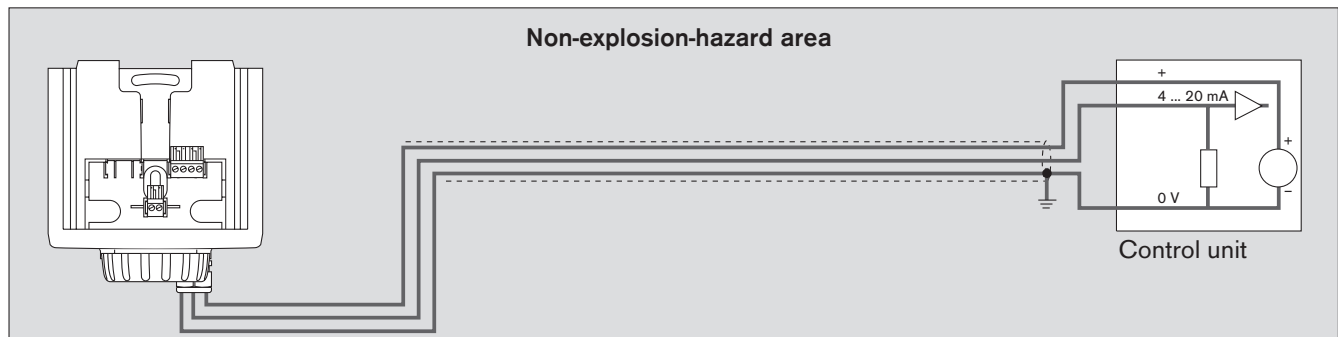
- Further information about the connection can be found in the instructions for the control unit being used.

**Installing the transmitter in non-explosion-hazard areas:**

**Caution:**

**Remove the explosion-protection markings from the transmitter. Once the transmitter has been used after installation in this manner, it may never be installed in explosion-hazard areas. Explosion hazard!**

- When installing a transmitter in a non-explosion-hazard area, connect the cable shield and the negative pole of the supply voltage to earth at the switch cabinet or distribution panel.
- Ensure that the supply voltage provided by the control unit (ignoring the load resistance) is at least as high as specified in the tables of page 19 to page 21.
- If digital communication in accordance with HART is to be used, the load resistance of the supply unit must lie between 230 and 500 .
- The permissible cable lengths are shown in the tables on page 19 to page 21. In each case, use the line marked "Number of transmitters = 1".



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## Connections between several transmitters and a control unit with HART multidrop connections

- Each transmitter must first be put into service separately. Use the menu item "Polling Address" to assign a different polling address in the range "1" to "15" to each transmitter which is to be connected to the multidrop cable (see page 68). It is best to assign sequential polling addresses, starting with "1".

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

- Depending on the supply unit, up to 7 transmitters can be connected to a 2-wire or 3-wire cable.  
The second cable gland is used for the cable to the next transmitter.
- 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:  $U_o (V_{oc}) \leq 30$  V,  $I_o (I_{sc}) \leq 0.3$  A,  $P_o \leq 700$  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:  $C_i = 5$  nF,  $L_i = 50$   $\mu$ H.
  - The safety barrier must be capable of transmitting the communications signals in both directions between the explosion-hazard area and the non-explosion-hazard area. Several manufacturers offer special SMART transmitter supply units for this purpose.

### SMART transmitter supply units

(with HART-communication between Ex/Non-Ex area)

The following safety barriers are provided as examples only and have not been certified for use in combination with the P3U. Selected barriers must be acceptable to the authority having jurisdiction and comply with the assigned P3U entity parameters also taking the cable into account.

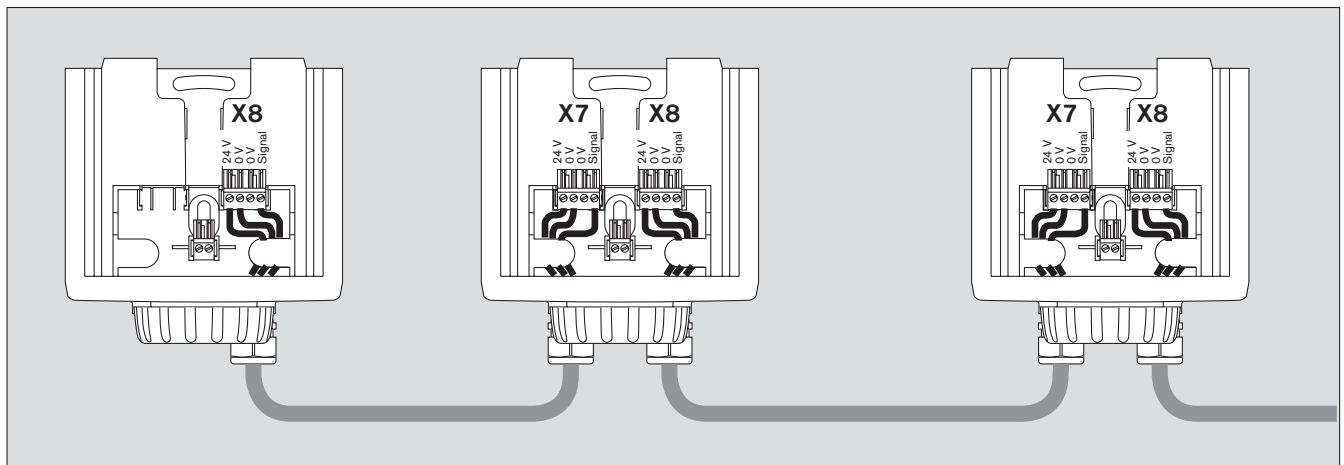
Manufacturer	Type	suitable for	R <sub>Cable</sub> (Total)		
			for up to 5 transmitters	for up to 6 transmitters	for up to 7 transmitters
Endress + Hauser	RN 221 N-B1 (ATEX)	Zone 0	120	50	- - -
	RN 221 N-C1 (FM)	Div. 1			
	RN 221 N-D1 (CSA)				
	RN 221 N-E1 (TIIS)				
MTL	MTL 5042	Zone 0, Div. 1	33	27	20
Pepperl & Fuchs	KFD2-STC4-Ex1	Zone 0, Div. 1	90	10	- - -
Stahl	9160/13-11-11	Zone 0	160	80	20

- If a HART hand-held terminal is used, the permissible values may be lower. Observe the safety-related parameters of the hand-held terminal.
- The cable resistances given apply for the maximum possible number of transmitters as well as a load resistance of 250  $\Omega$ . Higher load resistances can drastically reduce the maximum possible cable resistance!

## Electrical connections

- The following tables show permissible combinations of transmitters, supply voltages and maximum possible cable lengths.
- The capacitance values are typical values for commercially available shielded cables with PVC insulation. The use of cables with different capacity values will result in other cable lengths.

Transmitter supply unit	Number of transmitters	Maximum possible cable length			
		0.5 mm <sup>2</sup> 265 pF/m	0.75 mm <sup>2</sup> 320 pF/m	1.5 mm <sup>2</sup> 375 pF/m	2.5 mm <sup>2</sup> 400 pF/m
Endress + Hauser: RN 221 N	1	1042 m	921 m	828 m	792 m
	2	1007 m	890 m	801 m	766 m
	3	972 m	860 m	774 m	740 m
	4	936 m	829 m	747 m	714 m
	5	901 m	799 m	720 m	689 m
	6	702 m	768 m	693 m	663 m
MTL: MTL 5042	1	463 m	695 m	828 m	792 m
	2	463 m	695 m	801 m	766 m
	3	463 m	695 m	774 m	740 m
	4	463 m	695 m	747 m	714 m
	5	463 m	695 m	720 m	689 m
	6	379 m	569 m	693 m	663 m
	7	281 m	421 m	666 m	637 m
Pepperl & Fuchs: KFD2-STC4-Ex1	1	1042 m	921 m	828 m	792 m
	2	1007 m	890 m	801 m	766 m
	3	972 m	860 m	774 m	740 m
	4	936 m	829 m	747 m	714 m
	5	901 m	799 m	720 m	689 m
	6	140 m	211 m	421 m	663 m
Stahl: 9160/13-11-11	1	1042 m	921 m	828 m	792 m
	2	1007 m	890 m	801 m	766 m
	3	972 m	860 m	774 m	740 m
	4	936 m	829 m	747 m	714 m
	5	901 m	799 m	720 m	689 m
	6	865 m	768 m	693 m	663 m
	7	281 m	421 m	666 m	637 m



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**Installing the transmitters in explosion-hazard areas of zone 2 or 22 without a safety barrier**

- Use only supply units of the device category 3.
- For safety reasons, we recommend that not more than 8 transmitters be connected to a 2-wire or 3-wire cable.
- 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:  
 $C_i = 5 \text{ nF}$ ,  $L_i = 50 \text{ }\mu\text{H}$ .

**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 transmitter in non-explosion-hazard areas:**

- For safety reasons, we recommend that not more than 8 transmitters be connected to a 2-wire or 3-wire cable.  
If the transmitters are equipped with relay or pump modules, not more than 4 transmitters should be connected to one cable.  
The second cable gland is used for the cable to the next transmitter.

**Caution:** The explosion-protection marking 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. Explosion hazard!

- The following tables show permissible combinations of transmitters, supply voltages and maximum possible cable lengths.
- The capacitance values are typical values for commercially available shielded cables with PVC insulation. The use of cables with different capacity values will result in other cable lengths.

**Transmitter without relay or pump module (2-wire):**

Minimum supply voltage	Number of transmitters	Maximum cable length with a load resistance of 250			
		0.5 mm <sup>2</sup> 265 pF/m	0.75 mm <sup>2</sup> 320 pF/m	1.5 mm <sup>2</sup> 375 pF/m	2.5 mm <sup>2</sup> 400 pF/m
20 V	1	1042 m	921 m	828 m	792 m
	2	1007 m	890 m	801 m	766 m
	3	972 m	860 m	774 m	740 m
	4	585 m	829 m	747 m	714 m
24 V	4	936 m	829 m	747 m	714 m
	5	901 m	799 m	720 m	689 m
	6	865 m	768 m	693 m	663 m
	7	830 m	737 m	666 m	637 m
	8	794 m	707 m	639 m	611 m
	9	390 m	585 m	612 m	586 m

## Electrical connections

Minimum supply voltage	Number of transmitters	Maximum cable length with a load resistance of 250			
		0.5 mm <sup>2</sup> 265 pF/m	0.75 mm <sup>2</sup> 320 pF/m	1.5 mm <sup>2</sup> 375 pF/m	2.5 mm <sup>2</sup> 400 pF/m
28 V	9	758 m	676 m	612 m	586 m
	10	722 m	645 m	584 m	560 m
	11	687 m	614 m	557 m	534 m
	12	651 m	584 m	530 m	508 m
	13	616 m	553 m	503 m	482 m
	14	334 m	502 m	476 m	456 m
	15	78 m	117 m	234 m	390 m

## Transmitter with relay module (3-wire):

Minimum supply voltage	Number of transmitters	Maximum cable length with a load resistance of not more than 500			
		0.5 mm <sup>2</sup> 265 pF/m	0.75 mm <sup>2</sup> 320 pF/m	1.5 mm <sup>2</sup> 375 pF/m	2.5 mm <sup>2</sup> 400 pF/m
20 V	1	287 m	431 m	828 m	792 m
	2	144 m	216 m	431 m	718 m
	3	96 m	144 m	287 m	479 m
	4	72 m	108 m	216 m	359 m
24 V	1	386 m	579 m	828 m	792 m
	2	193 m	289 m	579 m	766 m
	3	129 m	193 m	386 m	643 m
	4	96 m	145 m	289 m	482 m
28 V	1	429 m	644 m	828 m	792 m
	2	215 m	322 m	644 m	766 m
	3	143 m	215 m	429 m	715 m
	4	107 m	161 m	322 m	537 m

## Transmitter with pump module (3-wire):

Minimum supply voltage	Maximum possible flow-rate	Number of transmitters	Maximum cable length with a load resistance of not more than 500			
			0.5 mm <sup>2</sup> 265 pF/m	0.75 mm <sup>2</sup> 320 pF/m	1.5 mm <sup>2</sup> 375 pF/m	2.5 mm <sup>2</sup> 400 pF/m
20 V	0.5 L/min	1	161 m	241 m	482 m	792 m
		2	80 m	120 m	241 m	401 m
		3	54 m	80 m	161 m	268 m
		4	40 m	60 m	120 m	201 m



Minimum supply voltage	Maximum possible flow-rate	Number of transmitters	Maximum cable length with a load resistance of not more than 500			
			0.5 mm <sup>2</sup> 265 pF/m	0.75 mm <sup>2</sup> 320 pF/m	1.5 mm <sup>2</sup> 375 pF/m	2.5 mm <sup>2</sup> 400 pF/m
24 V	1.0 L/min	1	233 m	349 m	699 m	792 m
		2	116 m	175 m	349 m	582 m
		3	78 m	116 m	233 m	388 m
		4	58 m	87 m	175 m	291 m
	1.5 L/min	1	135 m	203 m	406 m	586 m
		2	68 m	102 m	203 m	338 m
		3	45 m	68 m	135 m	226 m
		4	34 m	51 m	102 m	169 m
28 V		1	271 m	406 m	812 m	792 m
		2	135 m	203 m	406 m	677 m
		3	90 m	135 m	271 m	451 m
		4	68 m	102 m	203 m	338 m

**Transmitter with relay and pump modules (3-wire):**

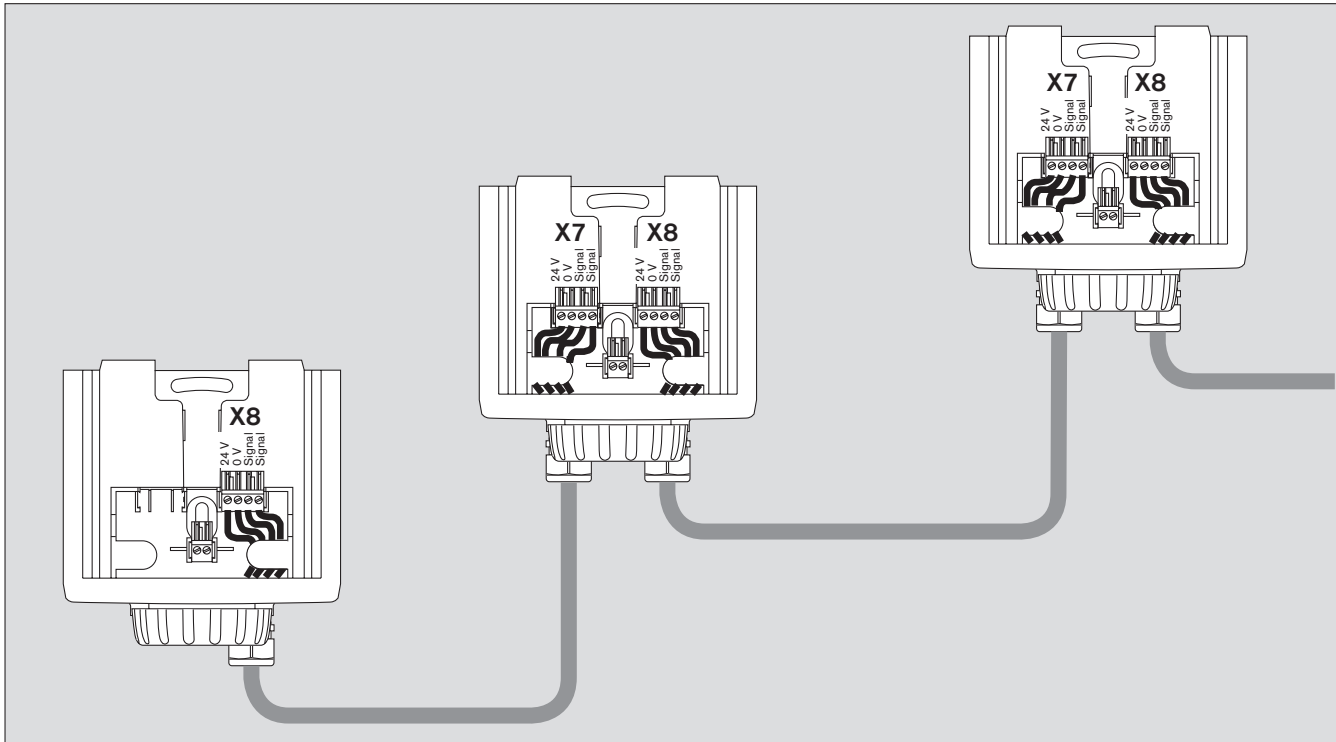
Minimum supply voltage	Maximum possible flow-rate	Number of transmitters	Maximum cable length with a load resistance of not more than 500			
			0.5 mm <sup>2</sup> 265 pF/m	0.75 mm <sup>2</sup> 320 pF/m	1.5 mm <sup>2</sup> 375 pF/m	2.5 mm <sup>2</sup> 400 pF/m
20 V	0.5 L/min	1	110 m	164 m	329 m	548 m
		2	55 m	82 m	164 m	274 m
		3	37 m	55 m	110 m	183 m
		4	27 m	41 m	82 m	137 m
24 V	1.0 L/min	1	161 m	241 m	482 m	792 m
		2	80 m	120 m	241 m	401 m
		3	54 m	80 m	161 m	268 m
		4	40 m	60 m	120 m	201 m
	1.5 L/min	1	90 m	134 m	269 m	448 m
		2	45 m	67 m	134 m	224 m
		3	30 m	45 m	90 m	149 m
		4	22 m	34 m	67 m	112 m
28 V		1	179 m	269 m	537 m	792 m
		2	90 m	134 m	269 m	448 m
		3	60 m	90 m	179 m	298 m
		4	45 m	67 m	134 m	224 m

## 4-wire connection

- Connection to central device with at least 4-wire cable, 0.5 (AWG 20) to 2.5 mm<sup>2</sup> (AWG 13).

### Installing the LON Communication on the transmitter

- For installation using LON communication up to 63 Polytron 7000 can be connected to a four wire cable in any configuration including bus, star, loop and mixed.



- Insert the 4-wire connecting cable in the cable gland, cut it to length and strip the insulation (approx. 80 mm).
- Shorten the shield (if installed) to prevent short-circuiting:
- Connect cable
  - 1 4-pin terminal for Dräger Polytron 7000 – observe polarity.  
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).

### Installing the transmitter in non-explosion-hazard areas:

#### Caution:

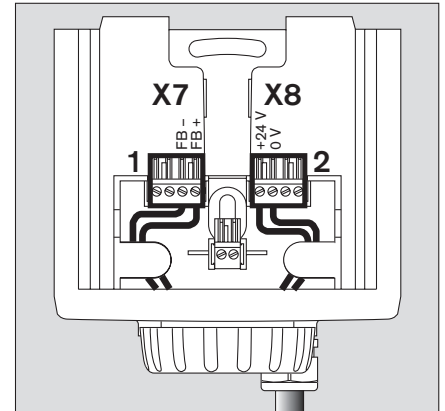
With 4-core connection the transmitter has no Ex protection. Once the transmitter has been used after installation in this manner, it may never be installed in explosion-hazard areas. Explosion hazard!

**Installing fieldbus communication on the transmitter**

- The PROFIBUS PA transmission technology for intrinsically safe applications is MBP. MBP stands for:
    - Manchester Coding (M)
    - Bus Powered (BP)
  - 5 transmitters can be connected to a segment with a typical segment current of 100 mA.
- Install the 4-wire connection cable in the cable gland, cut it to length and strip off the insulation (approx. 80 mm).
  - Shorten the shield (if installed) to prevent short-circuiting.
  - Connect cable:
    - 1 4-pin terminal block for Dräger Polytron 7000, observing the polarity.
    - 2 4-pin terminal block for Dräger Polytron 7000, observing the polarity.
  - 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).

**Installing the transmitter in 4-wire connection:****Caution:**

**With 4-wire connection the transmitter has no Ex protection. Once the transmitter has been used after installation in this manner, it may never be installed in explosion-hazard areas. Explosion hazard!**



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## Installing the measuring unit Dräger Polytron 7000

- 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.

### Attention!

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

- Check the polarity 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 Dräger Polytron 7000 measuring unit.

### Setting the switch for the backup battery



- Check the position of the switch on the bottom of the unit.  
This switch must be set to "on"; otherwise, the time, date and data saved in the Datalogger and the Event Logger will be lost in the case of a power failure.
- 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 it hits the stop, the resistance will increase as the connector engages with the socket on the printed circuit board.

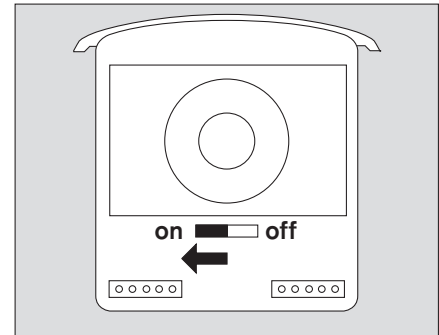
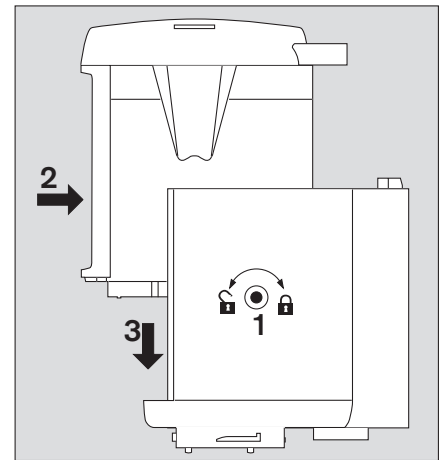
### Note!

Check that the terminals in the docking station are correctly aligned if the connector does not engage correctly!

### Note:

Ensure that the front bottom of the measuring unit is flush with the bottom of the Docking Station. Apply pressure to the measuring unit until it "clicks" into place. If the fronts are not flush, the measuring unit is not completely sealed and could get water inside the transmitter!

- 1 Turn the eccentric catches clockwise with an Allen key to lock the measuring unit  
( ⇒  = approx. 180°).



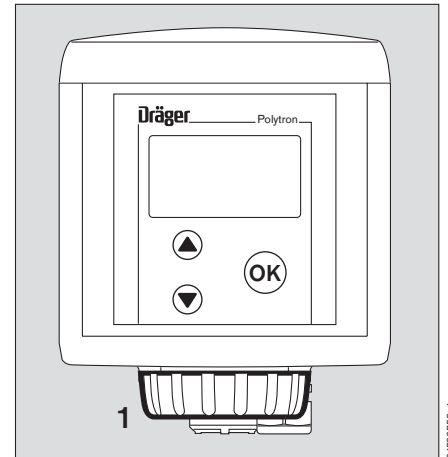
## Fitting the sensor

- 1 Remove bayonet ring from transmitter, remove dummy plate.
- Remove sensor from packaging.
- 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!
- Secure sensor in transmitter with bayonet ring.

**Attention:**

**For use in Zone 22, tighten the locking screw (2 mm Allen screw) of the sensor bayonet ring tight enough to ensure that the bayonet ring is secured against unintended loosening.**

- If necessary, calibrate the sensor as described on page 42.
- If pre-calibrated sensors are used, the alarm chain must be tested with, for example, the bump test.



## Installing accessories

Various accessories are available for the Dräger Polytron 7000 transmitter and may also be installed later.

### Daisy chain kit – Cable Entry Kit

#### Intended use

Daisy chain kit – 83 17 282:

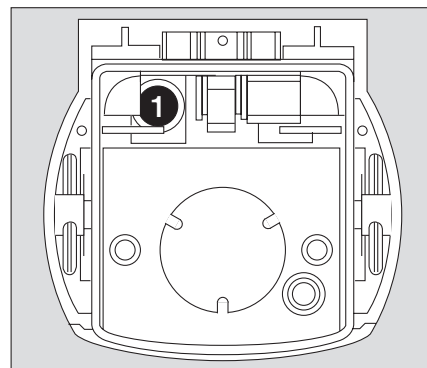
- For the connection of several transmitters to one bus cable (daisy chain or multi-drop connection)

#### Contents of the kit

- Cable gland with nut, 4-pole orange terminal block

#### Preparing the docking station

- Install the docking station as described in the installation notes 90 23 760.
- 1 Break or drill out the prepared breakthrough for the second cable gland from the inside of the docking station.  
The hole should have a diameter of 20.5 mm.
- Check that the docking station has no loose parts, and clean it if necessary.
- Insert the nut of the cable gland into the docking station.
- Screw in the cable gland from the outside of the docking station and tighten it.



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#### Electrical connections

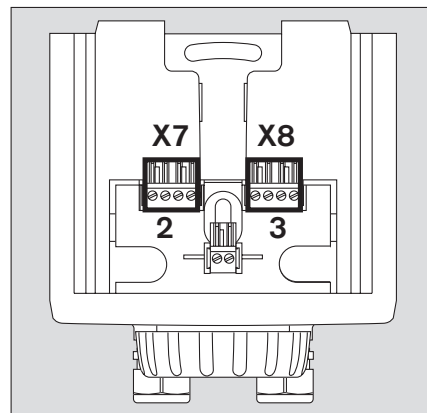
- Connect the wiring as described in the installation notes for the docking station (90 23 760).
- 2 Insert the 4-pole terminal block into the holder on the mounting plate.  
If necessary:
- refit the raincover (protection against dust and splashing water).

#### Note:

The two 4-pole terminal blocks for input (3) and output (2) are electrically connected 1:1 to each other inside the transmitter.

#### Installing the measuring unit

- Install the measuring unit as described in the installation notes 90 23 759.
- Due to the second terminal block, the resistance when installing the measuring unit is slightly higher.  
Make sure that the measuring unit is fully lowered and hits the stop.



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## Remote sensor

### Intended use

Remote Sensor Adapter Polytron 7000 - 83 17 275:

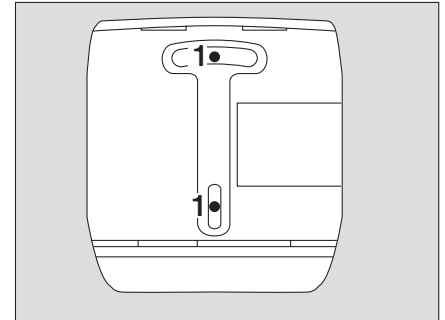
- For installation of the sensor at a distance of up to 30 m from the Polytron 7000 transmitter.

Remote Cable + Sensor plug 5 m Polytron 7000 – 83 17 270 Remote Cable + Sensor adapter, 15 m Polytron 7000 – 83 17 998,

Remote Cable + Sensor plug 30 m Polytron 7000 – 83 17 999:

### Attention:

**The cable of the remote adapter may be shortened at the end with the connector. The cable may not be extended. The use of a different cable is not permitted!**



If a Remote Sensor Adapter with sensor is used on a transmitter installed in accordance with device category 3:

### Caution:

**Remove the Category 1 marking from the transmitter. After being installed in the manner described here, the accessory may never be used in explosion-hazard areas of zone 0 or zone 1 (device category 1 or 2)! Explosion hazard!**

If a Remote Sensor Adapter with sensor is used on a transmitter installed in a non-explosion-hazard area:

### Caution:

**Remove the explosion-protection marking from the transmitter. After being installed in the manner described here, the accessory may never be used in explosion-hazard areas! Explosion hazard!**

### Wall mounting

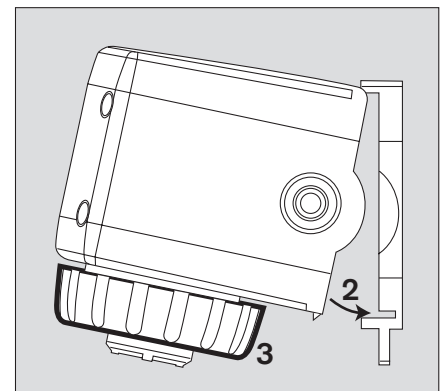
- 1 Drill the holes for the mounting plate. (A drilling template is provided for this on page 137). The mounting holes are  $50 \pm 4$  mm apart.
- Screw the mounting plate of the remote sensor adapter to the wall at the desired position.
- 2 Slide the case of the remote sensor on to the mounting plate until it snaps into position.

### Installing the sensor

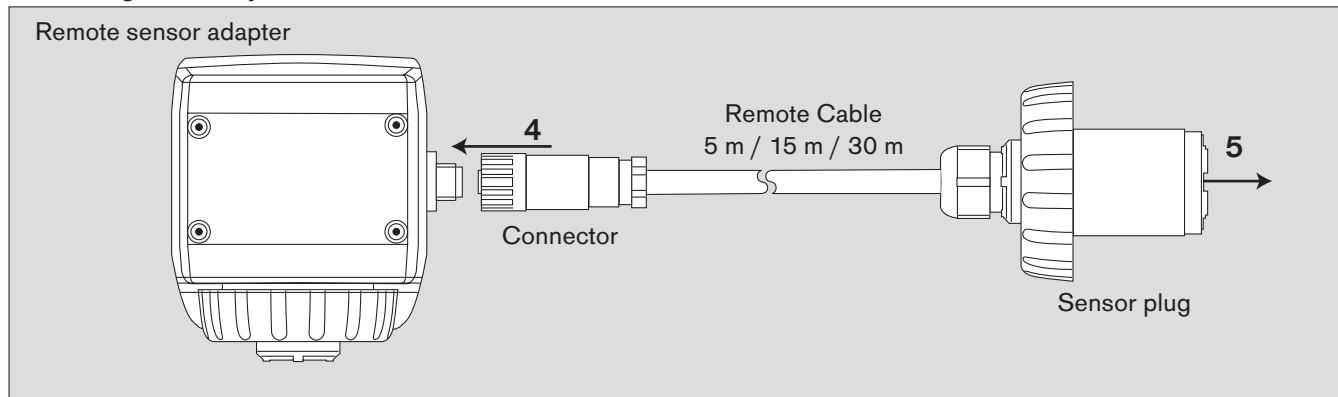
- 3 Unscrew the bayonet ring from the transmitter and remove the blanking disc.
- Remove sensor from packaging.
- Insert the sensor in the opening with the "Dräger" logo pointing to the front.
- Secure the sensor with the bayonet ring.

### Attention:

**For use in Zone 22, tighten the locking screw (2 mm Allen screw) of the sensor bayonet ring tight enough to ensure that the bayonet ring is secured against unintended loosening.**



## Connecting to the Polytron 7000



- 4 Connect the plug of the Remote Cable (cable length 5, 15 or 30 m) to the remote sensor adapter and secure it by turning the ring clockwise.
- 5 Insert the sensor plug in the opening on the Dräger Polytron 7000 transmitter with the "Dräger" logo pointing to the front.
- Secure the sensor plug with the bayonet ring.

### Attention:

For use in Zone 22, tighten the locking screw (2 mm Allen screw) of the sensor bayonet ring tight enough to ensure that the bayonet ring is secured against unintended loosening.

### Note:

The remote sensor is recognised automatically by the transmitter. No further installation steps are required.

## Duct adapter for remote sensor

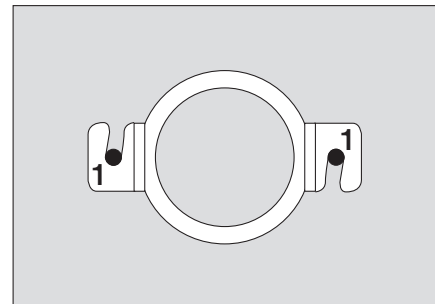
### Purpose

Duct adapter for remote sensor – 83 17 617:

- For mounting a remote sensor on a pipe or duct,
- For measuring the gas concentration in the pipe or duct.

### Mounting

- Drill a hole for the sensor opening (diameter 35+1 mm) at the desired measuring point on the pipe.
- Button the sealing sleeve into the hole.
- Align the retaining clip so that it is centred on the hole.
- 1 Drill the holes for the securing screws. A drilling template is provided on page 137.





- 2 Loosen the bayonet ring of the remote sensor.
  - 3 Place the retaining clip on the pipe of the case and install the bayonet ring again.
- Insert the sensor opening into the sealing sleeve.
  - Turn the retaining clip to the correct position and screw it down.

**Note:**

To avoid faulty measurements, pay close attention to the fitting of the sensor in the sealing sleeve!

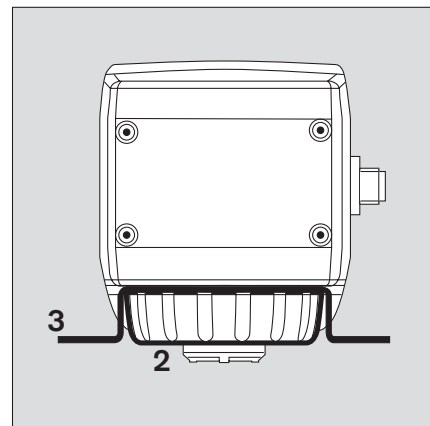
**Removal/changing the sensor**

- Loosen the securing screws.
- Swing the retaining clip to one side.
- Pull the remote sensor out of the sealing sleeve.
- Change the sensor.

**Attention:**

For use in Zone 22, tighten the locking screw (2 mm Allen screw) of the sensor bayonet ring tight enough to ensure that the bayonet ring is secured against unintended loosening.

- Install the remote sensor again.



## Dräger Polytron 7000 software dongles

**Intended use**

Dräger Polytron 7000 software dongle – 83 17 618, 83 17 619 or 83 17 860:

- For activating additional functions in the Dräger Polytron 7000:

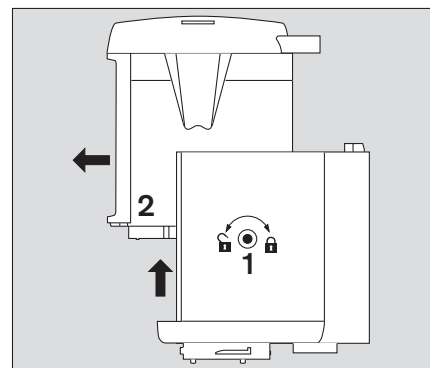
Data Dongle 83 17 618 Colour-code blue	– Activates the Event Logger, the Datalogger and the graphical concentration display.
Sensor Dongle 83 17 619 Colour-code silver	– Activates the sensor self-test.
Sensor Diagnostic Dongle 83 17 860 Colour-code green	– Activates the sensor self-test, the display of the remaining sensor lifetime and the sensor diagnostic function.

**Installing the software dongles**

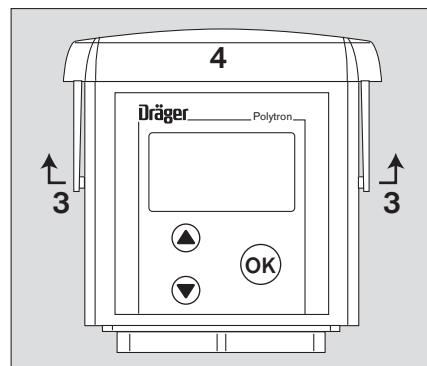
- 1 Release the measuring unit with an Allen key by turning the eccentric catches counter-clockwise (🔒 ⇒ 🔓 = approx. 180°).

**Caution! Use only a 5 mm Allen key without a ball head.**

- 2 Push the measuring unit up to about half height and then pull it forwards out of the docking station.
- The unit must be disconnected from the mains!



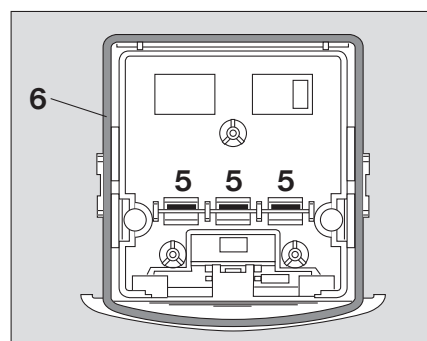
- 3 Bend the snap-hooks on the cover of the measuring unit slightly outwards to release them.
- 4 Remove the cover.



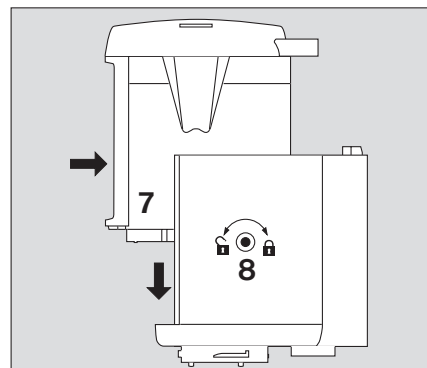
- 5 Hold the dongle with the "Dräger" logo pointing towards the measuring unit. Then insert the dongle into any of the three slots. Up to three dongles may be installed simultaneously.

- Place the cover on the measuring unit and press it down until it snaps into position.

- 6 **Attention:**  
Take care that pressure is applied only to the sleeve (6) of measuring unit. Pressure on the inner structure can damage the unit.



- 7 Slide the measuring unit into the docking station and lower it into position, see page 24.
- 8 Turn the eccentric catches clockwise with an Allen key to lock the measuring unit (🔓 ⇒ 🔒 = approx. 180°).

**Note:**

Correct operation of the software dongle can be checked by switching the measuring unit on and selecting the menu items » Information «, » Instrument «, » Module « from the unit menu, see page 53.

## Relay module

### Intended use

Relay module – to order:

- For switching of actuators, alarm generators, etc. on the basis of the measured gas concentration.
- **The unit must be disconnected from the mains!**

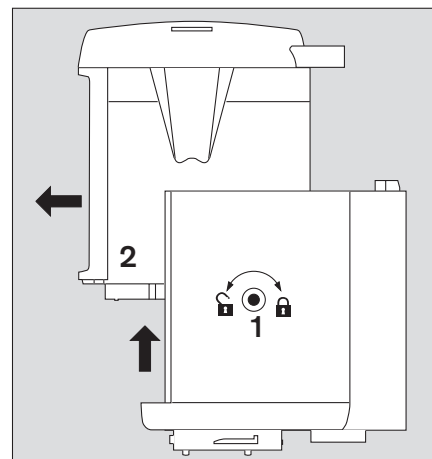
### Caution:

If a Polytron 7000 is subsequently equipped with the relay module and/or the pump module, the complete unit loses its explosion-protection approval. The user must ensure that no related approval markings are left on the Polytron 7000. The explosion-protection markings has to be removed from the transmitter.

The use of the Polytron 7000 with a pump module and/or relay module installed is not permitted in explosion-hazard areas! Explosion hazard!

### Note:

For operation with the relay module, the transmitter must have a 3-wire connection to the control unit.



### Preparing the docking station

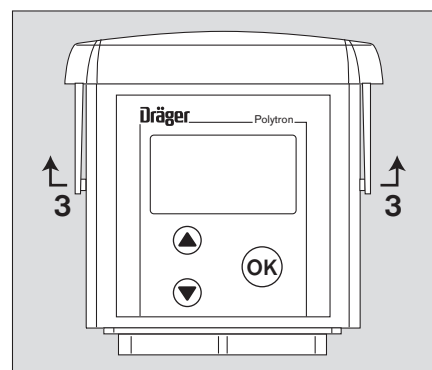
- Remove any existing explosion-protection label from the docking station.
- 1 Release the measuring unit with an Allen key by turning the eccentric catches counter-clockwise (🔒 ⇒ 🔓 = approx. 180°).

**Caution! Use only a 5 mm Allen key without a ball head.**

- 2 Slide the measuring unit halfway upwards and then pull it forward out of the docking station.

### Converting the measuring unit

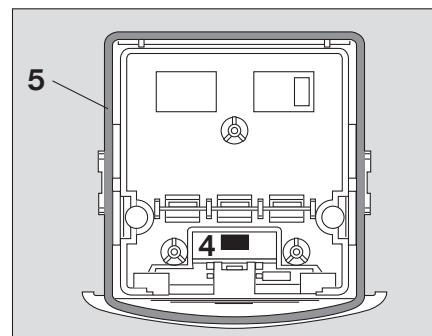
- 3 Bend the snap-hooks on the cover of the measuring unit slightly outwards to release them.
- Remove the cover.



- 4 Plug the connection cable into the male connector behind the display, ensuring that the cable is not twisted.
- Place the relay module on the measuring unit and snap it into position on both sides. In order to make this step easier, the relay cover may be removed.

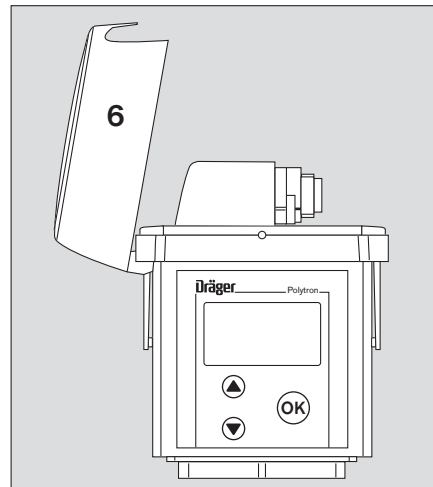
### 5 Attention:

Take care that pressure is applied only to the sleeve of measuring unit. Pressure on the inner structure can damage the unit.



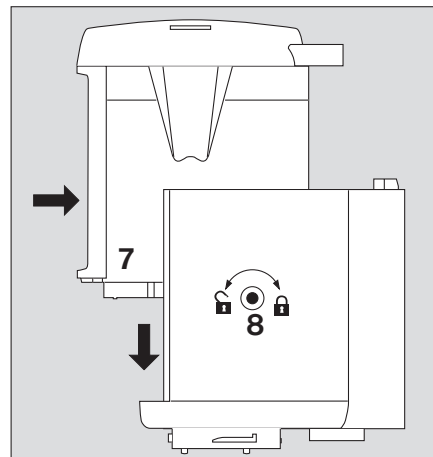
After connecting the relay module to the measuring unit:

- 6 Fit the cover again.



#### Mounting the measuring unit with relay module

- 7 Slide the measuring unit with relay module into the docking station and lower it into position, see page 24.
- 8 Turn the eccentric catches clockwise with an Allen key to lock the measuring unit (🔒 ⇒ 🔒 = approx. 180°).



#### Connecting the devices to be switched

The relay module has three 3 potential-free outputs, each capable of switching 250 V / 5 A:

- A1 relay (switches when the A1 gas alarm is active)
- A2 relay (switches when the A2 gas alarm is active)
- Fault relay (switches in the case of a device fault)

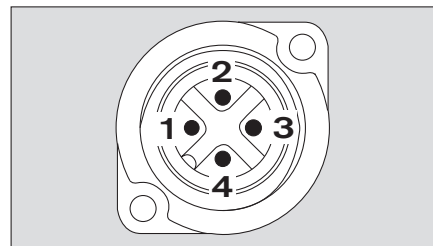
Setting the alarm thresholds: see page 61.

- Connect the devices to be switched to the cable sockets.
- Cable sockets of the following types may be used:
- |                 |             |                        |
|-----------------|-------------|------------------------|
| – Binder        | Type 692    | Part No. 99-0210-00-04 |
| – Amphenol      | Type C16-1  | Part No. T 3109-001    |
| – Hirschmann    | Type CA3 LD | Part No. 934-125-100   |
| – Dräger Safety |             | Part No. 18 90 086     |

#### Pin assignments of the built-in plug on the relay module:

(see also the inside of the relay cover)

- 1 normally closed
  - 2 common
  - 3 normally open
  - 4 not connected
- Note the assignments of the relay outputs on the relay cover.
  - Insert and lock the plug.
  - Close the relay cover.



## Pump module

### Intended use

Pump module – to order:

- For drawing measuring gas from a remote site into the Dräger Polytron 7000 transmitter.

### Caution:

If a Polytron 7000 is subsequently equipped with the relay module and/or the pump module, the complete unit loses its explosion-protection approval. The user must ensure that no related approval markings are left on the Polytron 7000. Remove or cut away any existing approval label.

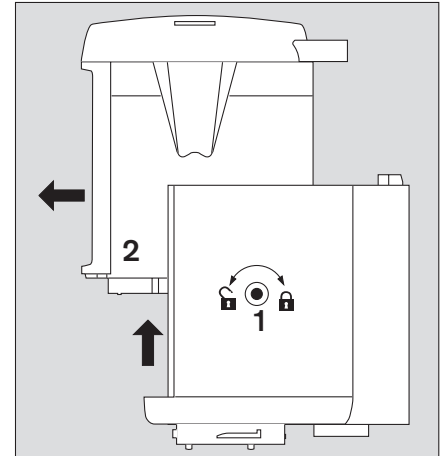
The use of the Polytron 7000 with a pump module and/or relay module installed is not permitted in explosion-hazard areas! Explosion hazard! Suitable explosion protection measures such as flame traps are required when drawing measuring gas from potentially explosive atmospheres!

### Note:

For operation with the pump module the electrical connection must be done in 3-wire connection.

### Caution:

The Polytron 7000 must be disconnected from the supply voltage before the pump module is installed. Explosion hazard!



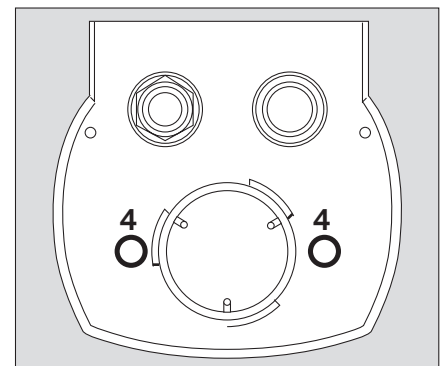
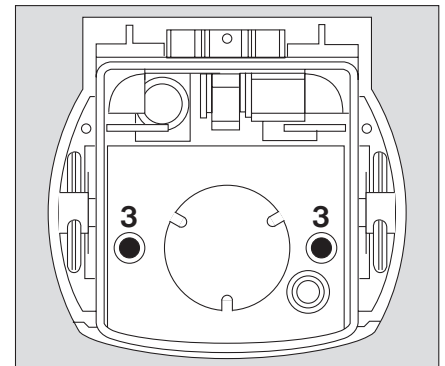
### Preparing the docking station

- Remove any existing approval label/explosion-protection label from the docking station.

- 1 Release the measuring unit with an Allen key by turning the eccentric catches counter-clockwise (🔒 ⇒ 🔓 = approx. 180°).

**Caution! Use only a 5 mm Allen key without a ball head.**

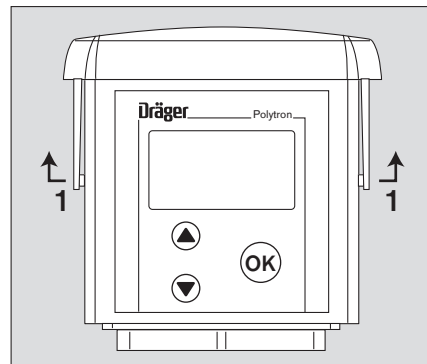
- 2 Slide the measuring unit halfway upwards and then pull it forward out of the docking station.
- 3 Special gush holes are provided on the left and right-hand sides of the sensor recess. The glass tubes of the pump can be inserted in these holes. Punch or drill the holes all the way through the docking station from inside. Each hole should have a 6 mm channel. Then deburr the holes from the outside.
- 4 Check, from the bottom side of the docking station, that the holes go all the way through.
- Check that the docking station has no loose parts, and clean it if necessary.
- 3 Remove the O-rings from the glass tube and insert them into the grooves on the bottom of the docking station.



**Installing the pump in the transmitter**

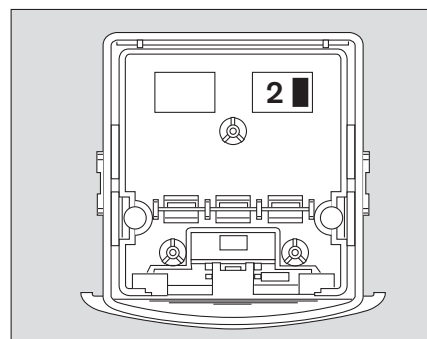
- 1 Bend the snap-hooks on the cover of the measuring unit slightly outwards to release them.

- Remove the cover.



03723756\_1.eps

- 2 Plug the pump connecting cable to the terminal strip.



03823756\_1.eps

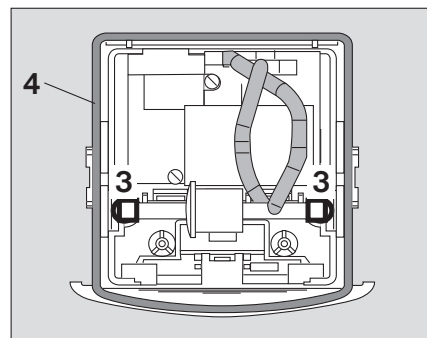
- 3 Slide the glass tube into the holes on the sides of the case and insert the pump module into its holder. Lay the hoses so that they lie inside the case.

- Place the cover on the measuring unit and press it down until it snaps into position.

**4 Attention:**

**Take care that pressure is applied only to the sleeve of measuring unit. Pressure on the inner structure can damage the unit.**

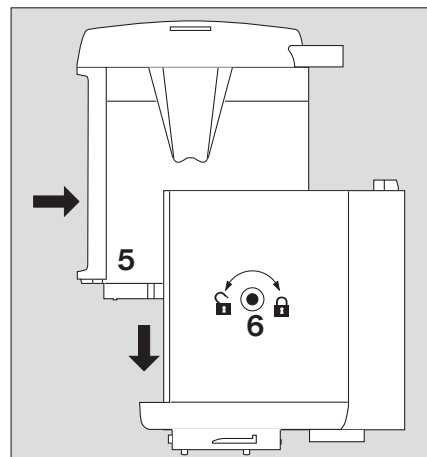
- Insert the measuring unit about halfway up the docking station and slide it in as far as it will go.
- Lower the unit along the front edge of the docking station. About 5 mm before it hits the stop, the resistance will increase as the connector engages with the socket on the printed circuit board.



03823756\_1.eps

- 5 Slide the measuring unit with pump module into the docking station and lower it into position, see page 24.

- 6 Turn the eccentric catches clockwise with an Allen key to lock the measuring unit (🔒 ⇒ 🔒 = approx. 180°).



04023756\_1.eps

**Installing the sensor and pump adapter**

- Unscrew the bayonet ring from the transmitter and remove the blanking disc.
  - Place the sensor in the opening with the Dräger logo facing the front, and push upwards gently until the connector engages.
- 1 Place the fastening ring over the sensor opening.
  - 2 Secure the sensor with the bayonet ring.

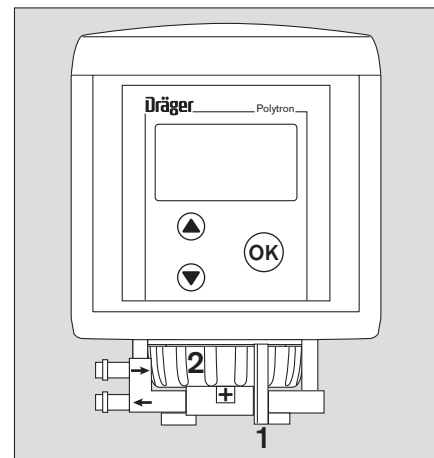
The assembly direction of the pump adapter is determined by the gas flow direction between pump and sensor:

- Connectors for intake and exhaust air point to the left, the ☼ symbol is visible from the front; the pump is positioned in front of the sensor in gas flow direction; the sensor is positioned on the positive pressure side of the pump. This is the preferred operating mode for all sensors.
- Connectors for intake and exhaust air point to the right, the ☾ symbol is visible from the front; the pump is positioned behind the sensor in gas flow direction; the sensor is positioned on the negative pressure side of the pump. This operating mode should only be selected for special reasons.

**Note:**

**This operating mode is not permissible for DrägerSensor O<sub>2</sub> LS (6809630) and DrägerSensor O<sub>2</sub> (6809720)!**

- Insert the pump adapter sleeves into the holes on the underside of the docking station. The seal slides over the sensor.
- 1 Turn the securing ring clockwise until the pump adapter is secure.

**Notes on installation of the inlet line**

The material selected for the inlet hose or inlet pipe and the length of the inlet line will affect the reaction time of the measured signal. In the worst cases, reactions with the selected material, or absorption in this material, will prevent a measurable gas concentration from reaching the sensor.

- Please contact your Dräger sales partner for choice on suitable selection of tubing/hose.
- Maximum permissible pressure difference between flow inlet and the environment of the transmitter: 50 mbar
- The pressure difference between the flow inlet and the environment of the transmitter can cause an additional measurement error.

**Attention:**

**In order to check for leaks, we recommend that you measure the flow at the inlet point and behind the transmitter before using the pump module for the first time and every six months thereafter.**

**Attention:**

**Do not block the lower gas line of the pump adapter. This can damage the gas sensor.**

## Start-up

- Switch on power supply.  
The transmitter begins its warm-up routine:

- The software version, the date and the time are displayed.

**Note:**

**For the correct operation and functionality it is important to set the date and time.**

- The sensor is now warming up. The remaining warming-up time for the sensor is displayed.

**Note on the operation with relay module:**

**During the warm-up period, the relay module indicates a fault. Alarms A1 and A2 are not indicated during the warm-up period.**

- The sensor is ready for use.

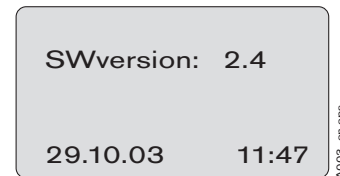
- Depending on the type of sensor installed, the warming-up period time may last between 5 minutes and 12 hours. See the related information in the operating instructions for the sensor. The warm-up phase may take longer in extremely high or low temperatures.

**When the sensor has warmed up:**

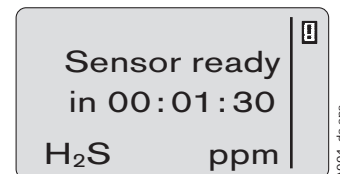
- Calibrate sensor, page 42, when a pre-calibrated sensor is not used.
- Transmitter is ready for use.
- Check the transmission of the signals between to the control unit and the initiation of alarms, see the function group » Analogue interface « on page 69.



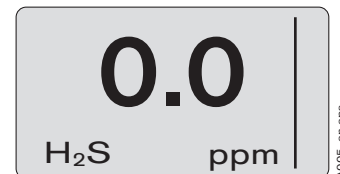
AO01\_en.eps



AO03\_en.eps



AO04\_de.eps



AO05\_en.eps



**Analogue signal**

- A current between 4 and 20 mA flows through the transmitter during normal operation. This current is proportional to the gas concentration.
- The Dräger Polytron 7000 transmitter uses various current values to indicate the operational status of the transmitter:

Current	Meaning
4 mA <sup>1)</sup>	Zero point
20 mA <sup>1)</sup>	Full-scale value
<3.2 mA <sup>1)</sup>	Transmitter fault
3.8 mA ... 4 mA <sup>1)</sup>	Sensor drift below zero point
20 mA ... 20.5 mA <sup>1)</sup>	Full-scale value exceeded
>23 mA	Fault in analogue output
static signal: 3.4 mA <sup>1)</sup> dynamic AC signal: 5 mA <sup>1)</sup> for 0.4 seconds and 3 mA <sup>1)</sup> for 0.7 seconds	Maintenance signal and signal during the warm-up period (configured on delivery: static)
Every 10 seconds <sup>2)</sup> for 1 second <sup>2)</sup> <3.2 mA <sup>1)2)</sup>	Warning signal (factory setting: off)

1) Output current on delivery. The values may deviate by  $\pm 0.5$  mA depending on the set offset current.

2) Factory setting. Can be configured as desired, page 69.

**Caution:**

**Exceeding or falling below the transmitter supply voltage specified in the technical data can lead to an incorrect display of the analogue signal!**

**Display**

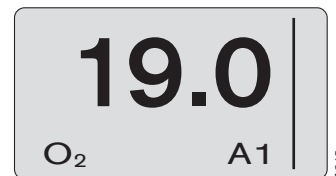
- In measuring mode, the display shows the actual gas concentration, e.g.:



A006\_en.epa

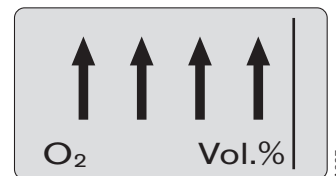
**An alarm is triggered:**

- when rising above - for O<sub>2</sub> also when falling below - the alarm levels for the concentration alarm,



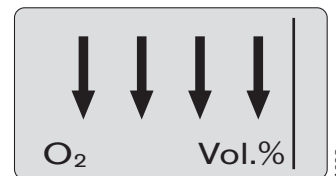
A013\_en.epa

- When the full scale deflection is exceeded:  
The special symbol » ↑↑↑↑ « is displayed instead of the measurement value.



A007\_en.epa














- The measured value drops below the measuring range:  
The special symbol » ↓↓↓↓ « is displayed instead of the measurement value.



A008\_en.epa





*Start-up*

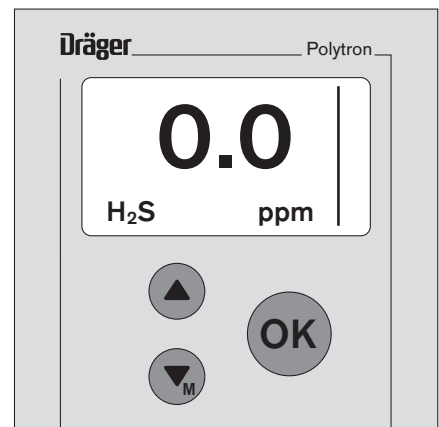
**The following icons may be displayed on the right side of the display in measuring mode in order to indicate the operating status of the unit:**

-  A warning exists – see page 53 for information on how warnings are displayed.  
The information can be retrieved in info mode, see page 39.
-  A fault exists – see page 53 for information on how faults are displayed.
-  Maintenance signal to the control unit, see page 73
-  A pump is installed.
-  There is a pump flow fault, see page 61
-  The measured value exceeds the full-scale value of the analogue interface
-  The measured value is less than the zero-point of the analogue interface
-  The analogue interface is set to a fixed value (e.g. for multidrop) and is not transmitting measured values
-  "Predictive" maintenance: the sensor is ready for use
-  "Predictive" maintenance: the sensor is ready for use but nearing the end of its operating lifetime
-  "Predictive" maintenance: the sensor is still ready for use but should be replaced as soon as possible
-  The Datalogger is active in roll mode. For details on activating and deactivating the Datalogger, see page 78
-  The Datalogger is active in stack mode. For details of activating and deactivating the Datalogger, see page 80

## Activating info mode

The info mode is used to display information on general unit settings and on the unit status.

- Press and hold the »  « key (longer than 3 seconds) – information about the units is displayed on several screens.
- Briefly press the »  « key to move to the next screen.
- Briefly press the »  « to move back to the previous screen.
- The info mode can be terminated at any time by pressing the »  « key.
- If no key is pressed for 30 seconds, the unit automatically returns to its previous state.

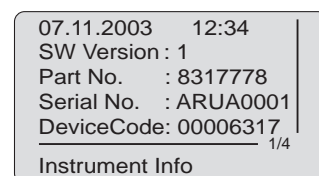


### Example of info mode:

#### Screen 1

Instrument information

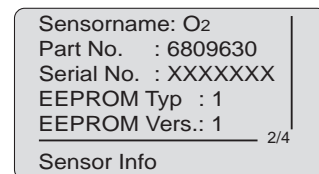
- Line 1 – Date and time
- Line 2 – Software version
- Line 3 – Unit Part No.
- Line 4 – Unit Serial No.
- Line 5 – Unit code



#### Screen 2

Sensor information:

- Line 1 – Sensor name
- Line 2 – Sensor Part No.
- Line 3 – Sensor Serial No.
- Line 4 – EEPROM type
- Line 5 – EEPROM version



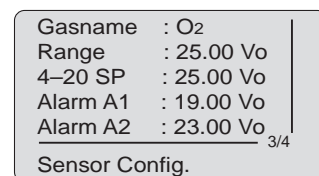
#### Screen 3

Sensor configuration:

- Line 1 – Gas name
- Line 2 – Measuring range (can not be change) and unit of measurement
- Line 3 – Measuring range for the analogue interface.

Displayed only, if the analogue interface card is installed

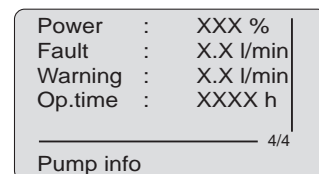
- Line 4 – A1 alarm threshold and unit of measurement<sup>1)</sup>
- Line 5 – A2 alarm threshold and unit of measurement<sup>1)</sup>



#### Screen 4 <sup>2)</sup>

Pump Infos:

- Line 1 – Pump flow
- Line 2 – Threshold error
- Line 3 – Threshold warning
- Line 4 – Pump run time



1) Displayed only if a relay module is fitted!

2) Displayed only if a pump module is fitted!

*Start-up*

If "xx.xx.xx xx:xx" is displayed instead of the date and time, or if an incorrect date and time are displayed:

(only after the cock has been reset due to a power failure)

- Set the date and time, see page 65.

**Note!**

If the date and time are not set correctly, some functions (such as calibration) cannot be executed!

# Maintenance

## Maintenance intervals

### Before starting operation:

- Check the calibration, see page 42.
- Check the transmission of signals to the control unit and the triggering of alarms, page 72.

### 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, page 72.

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 42.  
The interval for regular calibration depends on the sensor being used and on the operating conditions.  
The transmitter calculates, from the selected calibration interval (see page 54), when the next calibration is due.  
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.

When using the pump module:

- In order to check for leaks, measure the flow at the inlet point and behind the transmitter.

### As required:

- Replace sensor, page 44.

## Calibrating the unit

- Ensure that the sensor is warmed up before it is calibrated. See the sensor data sheet for the warming-up time.
- For some sensors (such as oxygen sensors) the function » zero-point calibration « is simply a test of the sensor function. The zero point is not actually calibrated since this is not necessary for these sensors.
- **For critical applications**, the calibration intervals should be defined in accordance with the recommendations in EN 50073<sup>1)</sup>, EN45544-4<sup>2)</sup> and national regulations.

### Note the calibration sequence!

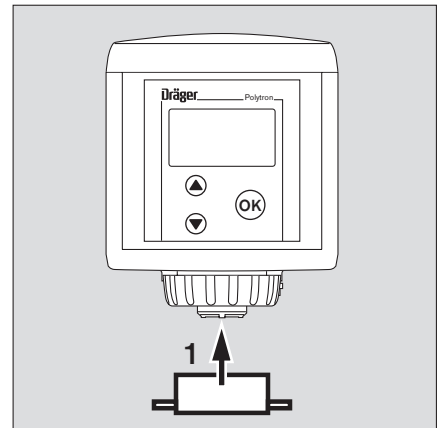
- First check the zero point and calibrate it if necessary, immediately after this, check the sensitivity and adjust it as necessary.
- Never calibrate the sensitivity before calibrating the zero point.
- Calibration cannot be carried out if the date and time are not set.
- Setting the date and the time, page 65.
- Calibration menu, page 56 to page 57
- Zero gas and test gas: see the information in the sensor data sheet and on the pages 105 to 108.

#### 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.

### Calibrating with test gas

- Use a test-gas cylinder with pressure-reduction valve (a stainless-steel pressure reduction valve for aggressive gases). Observe the information in the sensor data sheet.
- 1 Mount a calibration adapter Part No. 68 06 978 (with two hose connectors) on the Polytron 7000.
- Vent the test gas leaving the adapter into a fume cupboard or into the open air (with a hose connected to the second connector on the calibration adapter).



<sup>1)</sup> EN 50073 – Guidelines for selection, installation, use and maintenance of devices for the detection and measurement of flammable gases and oxygen.  
<sup>2)</sup> 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.

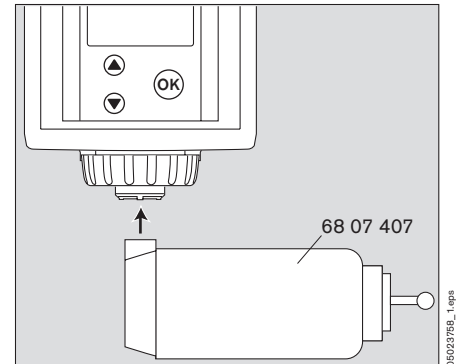
**Calibration with test-gas ampoules**

- Use the calibration flask (Part No. 68 03 407) – Observe the information in the sensor data sheet.
- Follow the instructions printed on the calibration flask and enclosed with the test-gas ampoules.

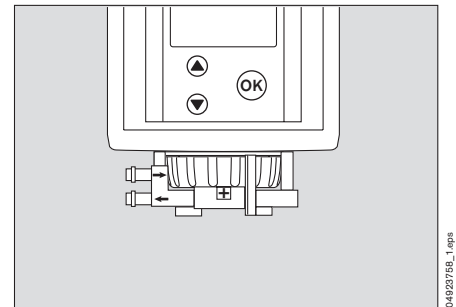
**For units without a pump:**

- 1 Fit the adapter and calibration bottle to the Polytron 7000.

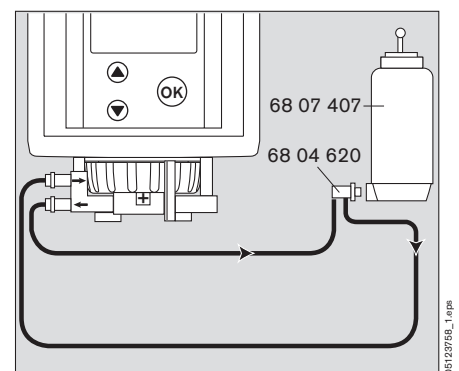
- Break the test-gas ampoule inside the calibration flask.
- Wait until the measured value has settled (see the operating instructions for the sensor for the necessary waiting period). Then carry out calibration.

**For units with a pump:**

- The pump adapter is already installed on the Polytron 7000.



- Insert the adapter (Part No. 68 04 620) in the calibration flask – connect the hoses.
- Break the test-gas ampoule inside the calibration flask and wait until the measured value has settled (see the operating instructions for the sensor for the necessary waiting period). Then carry out calibration.



## Setting up the unit

- Individual settings can be made:
  - via the keypad in menu mode
  - via the HART interface,
  - with the Dräger hand-held terminal (DHHT)

### Note:

After setting up the unit automatically with the copy function of the Dräger Handheld Terminals, the plausibility of the settings must be checked.

## Replacing the sensor

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

### Caution:

- When installing the transmitter in Ex areas (zone 22 Class II, Div. 1 & 2, Groups E, F, G), do not open the housing (including sensor replacement) when connected to power (or the Ex area has to be declassified). Explosion hazard!

Use only DrägerSensors which are approved for use with the Dräger Polytron 7000 transmitter.

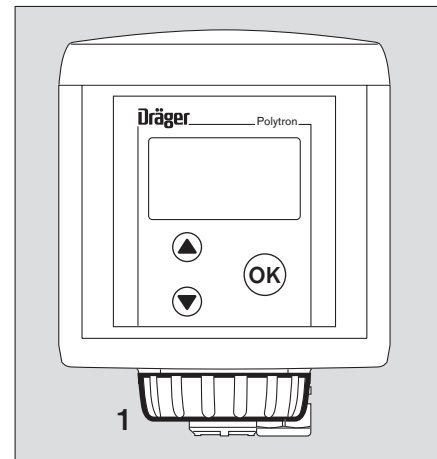
In the menu » Settings «, select the submenu » Sensor « and then the function » Change sensor « – page 75.

- 1 Remove bayonet ring from transmitter; pull out old sensor.
- Remove sensor from packaging. Make sure that it is approved for use with the transmitter.
- 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!
- 1 Secure sensor in transmitter with bayonet ring.

### Attention:

For use in Zone 22, tighten the locking screw (2 mm Allen screw) of the sensor bayonet ring tight enough to ensure that the bayonet ring is secured against unintended loosening.

- It is possible to mark the transmitter with the label enclosed in the packaging. It will then be easy to identify the type of gas for which the transmitter is intended if there is a mains failure.



04223758\_1.rpa



- Check sensor function.
  - If an identical sensor (sensor with the same Part No.) was previously installed, the complete configuration of the transmitter remains unchanged. Otherwise, the transmitter is configured with the default values (see the operating instructions for the sensor).
- See also » Sensorlock «, page 76.

**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.

**Sensor-diagnosis function**

This function is active only if the Polytron 7000 is equipped with a sensor diagnosis dongle (Part No. 83 17 860).

- Extended sensor self-test function, taking such things as the temperature, gas monitoring and remaining sensitivity into account.
- During normal operation, the sensor status is indicated by the sensor-diagnosis icon in the display:

 The sensor is ready

 The sensor is ready, but is approaching the end of its operating lifetime

 The sensor is still ready, but it should be replaced as soon as possible

## Fault – Cause – Remedy

If the display will not function: Have the transmitter checked by DrägerService.

The fault and warning numbers shown in the following tables are displayed in the menu under » Information «, » Instrument «, » Fault « or » Warnings « – see page 53.

Fault number	Cause	Remedy
# 1	Serious data error in unit – various causes.	Initialise the unit with the menu items » Settings «, » Instrument «, » Init. device «, page 66. If this error occurs again: have the transmitter checked by DrägerService.
# 2	Serious unit fault – various causes.	Have the transmitter checked by DrägerService.
# 61	Data error on the interface card – various causes	Have the transmitter checked by DrägerService.
# 63	Hardware fault or software error in the pump module.	Change the pump module, page 33.
# 64	Gas flow of the pump module falls below the configured fault threshold. Reliable measurements are no longer possible.	Check the hoses for blockages, If necessary adjust pump flow.
# 65	Open-circuit in 3-wire cable.	Check the connections.
# 67	Bad contact of the relay module.	Check connector of the relay module or fit it again.
# 100	Unit cannot detect a sensor.	Remove the sensor and install it again, page 44. If the problem persists, check the sensor plug or install a new sensor.
# 101	Sensor data error in the unit.	Remove the sensor and install it again, page 44. If this error occurs again: have the transmitter checked by DrägerService.
# 102	Unit does not support this sensor version.	Use a compatible sensor, see the ordering list on page 92.
# 103	Sensor data error in the unit.	Initialise the sensor with the menu items » Settings «, » Sensor «, » Sensor-EC «, » Init. sensor «, page 77. If this error occurs again: have the transmitter checked by DrägerService.
# 106	Zero-point not correctly.	Zero-point calibration, page 56.
# 107	Sensitivity calibration not executed correctly.	Repeat sensitivity calibration, page 57.
# 108	Sensor data error.	Replace the sensor, page 44.
# 109	Unit fault.	Check the sensor contacts; otherwise have the transmitter checked by DrägerService.
# 121	Fresh-air calibration (first step of autocalibration) not executed correctly.	Repeat autocalibration, page 58. Make sure that the ambient air is free of other gases.
# 125	Sensor not ready.	Replace the sensor, page 44.
# 129	Electrolyte liquid evaporates	Refill electrolyte. See sensor data sheet.


Fault number	Cause	Remedy
# 130	The function » Sensor lock « is active. A sensor with a different Part No. has been inserted.	Deactivate the function » Sensor lock «, page 76 or use a sensor with the same Part No. as the one which was removed.
# 134	Bad contact between the sensor and the sensor card.	Check the sensor contacts. Remove and reinstall the sensor several times. If the problem persists, install a new sensor, page 44.
# 136	Sensor hardware fault.	Remove the sensor and install it again. If the problem persists, install a new sensor, page 44.

Warning number	Cause	Remedy
# 1	Data error in the unit. Certain functions such as the Datalogger or the dongle functions may not be available.	Initialise the unit with the menu items » Settings «, » Instrument «, » Init. device «, page 66. If this error occurs again: have the transmitter checked by DrägerService.
# 51	Datalogger is in stack mode and is 100 % full. No more data can be recorded.	Read out the data. Then clear and restart the Datalogger
# 52	Datalogger is in stack mode and is 90 % full.	Read out the data as soon as possible. Then clear and restart the Datalogger.
# 53	No valid date and/or time is set.	Set the date and time, page 65.
# 58	Software dongle was removed without logging off.	Deactivate the function in the menu » Settings «, » Instrument «, » SW dongle «, » XXX dongle «, page 67.
	Hardware fault in the software dongle.	Change the software dongle, page 29.
# 64	Pump gas flow falls below the warning threshold. Reliable measurements are no longer possible.	Check the hoses for blockages, If necessary adjust pump flow.
# 106	Increased zero-point offset.	Zero-point calibration, page 56.
# 111	Sensor is not working in the specified temperature range.	Operate sensor in the specified temperature range (see Instructions for Use of the sensor).
# 112	Sensor near end of life.	Replace the sensor, page 44.
# 114	Calibration interval expired.	Recalibrate the unit, page 42.
# 115	Sensor was operate for too long with a high concentration.	Reduce overgassing.
# 119	Sensor is not yet fully warmed up. An increased measuring error must be expected.	Wait until the sensor has fully warmed up.
# 120	The sensor has been exposed to an excessively high gas concentration for a long period.	Reduce the exposure to high gas concentrations. If this does not help, replace the sensor, page 44.
# 131	Bad sensor, no longer operating.	Replace the sensor, page 44.
# 132	Electrolyte liquid evaporates. Measurements will soon no longer possible.	Refill electrolyte. See sensor data sheet.
# 135	Information such as the Part No. and the Serial No. is not available.	Disconnect the unit from the mains and restart it. If this error occurs again: have the transmitter checked by DrägerService.

## Menu functions

The menu can be operated, as desired:

- from the keypad (with integrated display) of the transmitter,
- from a HART-compatible Hand Held Terminal (HHT),
- from a HART-compatible control unit or
- from a Polytron 7000 Palm Pilot 515 (non-Ex version) or Palm Pilot 515x Ex version.


If the keypad is used, the menus can be operated with the three keys » ▲ «, » ▼ « and »  « as well as via display.

Key » ▲ «

- Use this key to move upwards through the menus.

Key » ▼ «

- Use this key to move downwards through the menus.
- If the key is held down for more than 3 seconds, the main menu is opened.
- If the key is held down for longer than 1 second and less than 3 seconds, the quick menu is opened (the Info menu is displayed without prompting for a password).

Key »  «

- This key is used to confirm inputs and selected menus and functions

## Menu structure

Overview: page 49.

The unit has two operating modes: measuring mode and menu mode.

Menu mode contains the menus » Information «, » Calibration « and » Settings «.

### Menu » Information «

The menu » Information « can be opened by any user. However, the user is unable to make any changes with this menu option.

### Menu » Calibration «

This menu permits routine operations needed for the regular maintenance of the transmitters.

It should be accessible to persons who are responsible for such maintenance. If the maintenance password is entered, only this menu is accessible.

### Menu » Settings «

This menu permits the setting of individual transmitter and sensor parameters. It should be accessible to authorised persons from the measuring and regulation department or the work safety department. If the password for this menu is entered, the menu » Calibration « is also accessible.

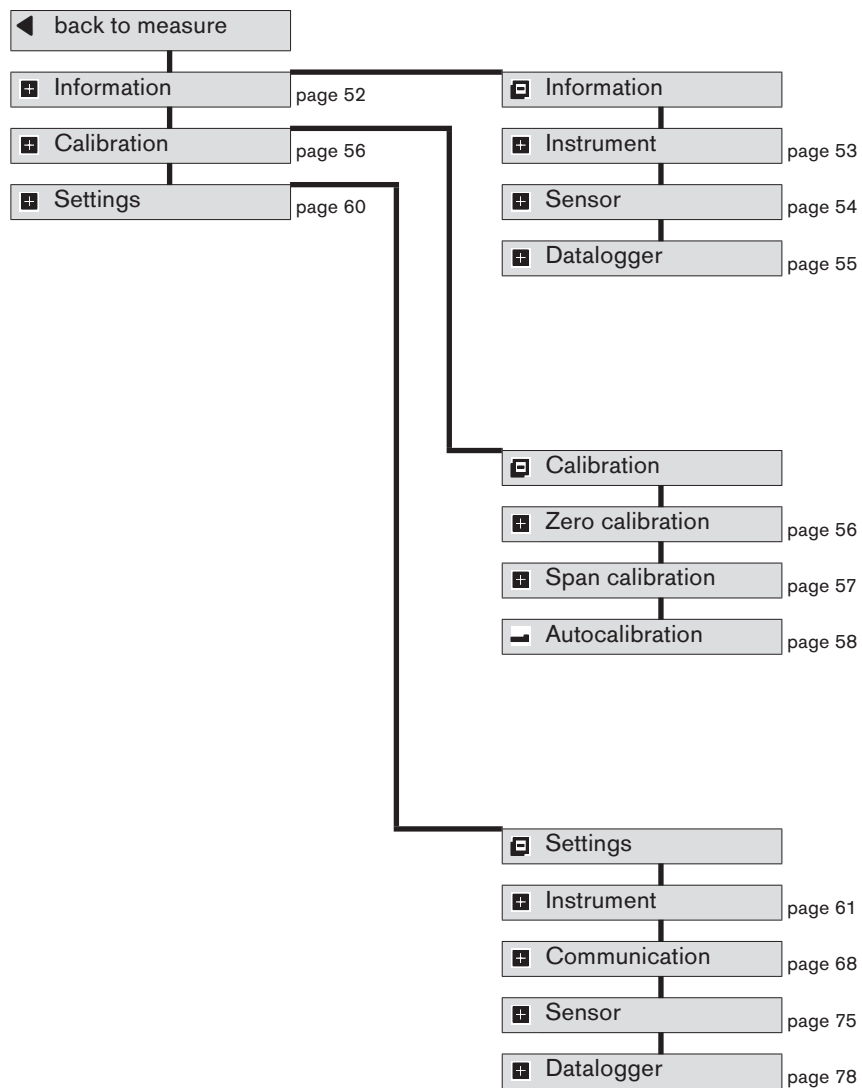
The passwords for the menus » Calibration « and » Settings « can be changed at any time, page 65.

**Default password settings when the unit leaves the factory:**

Password for the menu » Calibration «:     \_ \_ \_ 1

Password for the menu » Settings «:     \_ \_ \_ 2

**Overview of the menu structure**




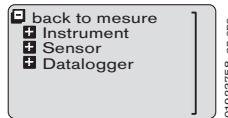
Information about the sub-menus and function:

- See the specified page.


## Basic operating procedures

### Switching to quick-menu mode

- Press the »  « for longer than 1 second but less than 3 seconds to open the quick menu.  
Information on the status and the settings of the transmitter can be queried here, see page 52.









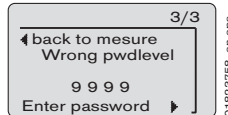
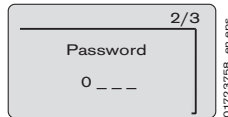
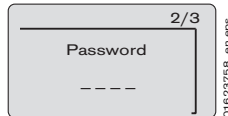
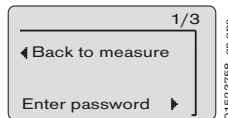
### Switching to menu mode

- Press the »  « for longer than 3 seconds.  
You will then be prompted for the password.

### Entering the password
















In measuring mode:

- Press the »  « for longer than 3 seconds.  
You will then be prompted for the password.
- Use the »  « key to move to the line  
» Enter password «  
and press the »  « key.  
The password entry screen appears.
- Use the »  « and »  « keys to set each of the four positions of the password and press the »  « key to confirm each position.
- After you have confirmed the last position, the menu corresponding to the entered password is opened.  
If the entered password is invalid, a suitable error message is displayed.



## Navigation in the menu

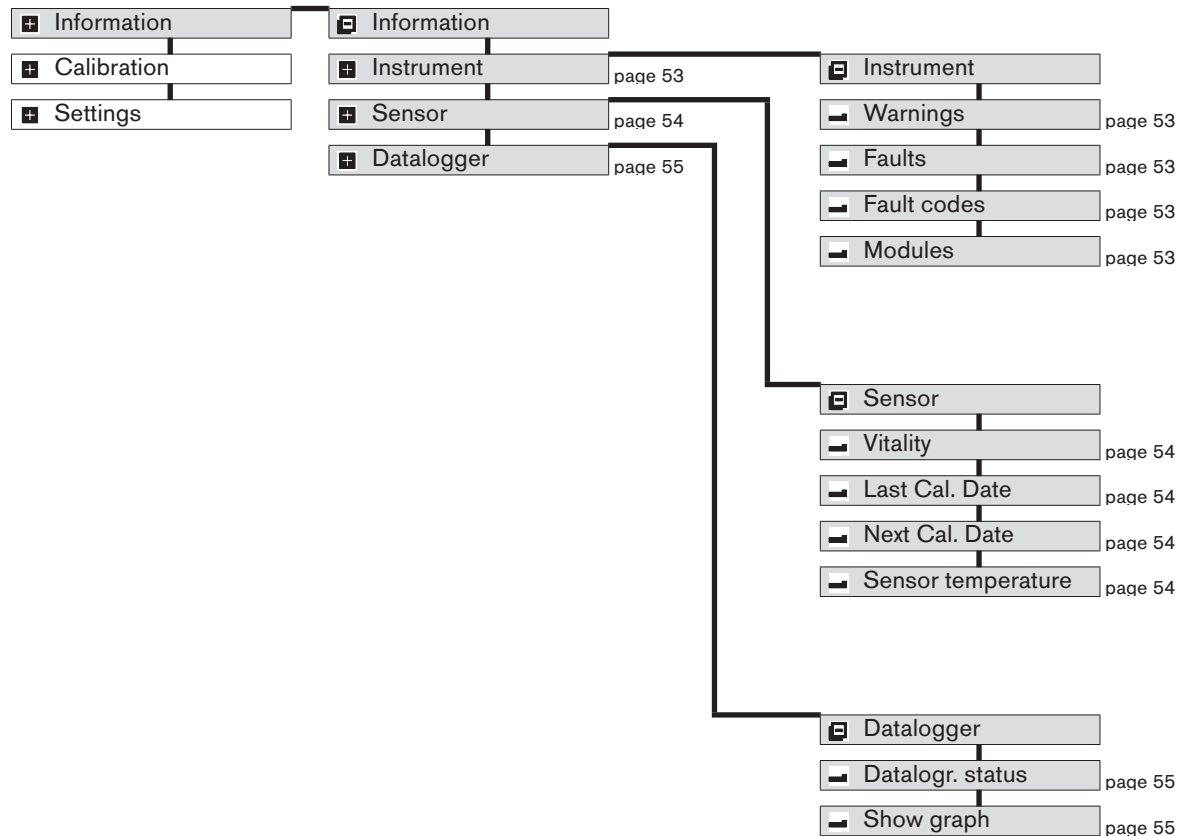
Graphical symbols (icons) simplify the navigation through the various menus:

-  Together with the text » Back «, » Menu «, etc. »
  - Exit from the menu or return to previous menu.
-  Closed folder
  - This item contains further functions or sub-menus.
-  Open folder
  - The functions and sub-menus shown here are contained in this item.
-  Function
  - If activated, functions can be executed in a single step or several steps.
-  Selection activated
  - Press the »  « key for functions which can be selected and activated.
-  List closed / complete to the top
  - There are no further functions, menus or sub-menus above those currently displayed.
-  List can be scrolled up
  - There are further functions, menus or sub-menus above those currently displayed.
-  List closed / complete to the bottom
  - There are no further functions, menus or sub-menus below those currently displayed.
-  List can be scrolled down
  - There are further functions, menus or sub-menus below those currently displayed.
-  Next
  - Execute the related action.
-  Number of current screen / total number of screens within the function.
-  Input
  - Data input with the »  « and »  « keys.

## The menu » Information «

The menu » Information « contains all information about the unit status, the sensors and the Datalogger.

### Overview









## Submenu » Instrument «

The submenu » Instrument Info « contains all functions for interrogating the unit status.



### Warnings

- This function displays any existing warnings in clear text with the warning number, see page 47.  
The icon »  « is displayed if any warnings are active.
- Select the menu items » Information «, » Instrument « and » Warnings « in this order, pressing the »  « key after each selection.
- Any existing warnings are displayed in clear text.  
If more than one warning exists, the number of the currently displayed warning and the total number of warnings are displayed in the top right corner (example: 1/3 = screen 1 of 3).







### Faults

- This function displays any existing faults in clear text with the error number, see page 46.  
If a fault code exists, the icon »  « is displayed.
- Select the menu items » Information «, » Instrument « and » Faults « in this order, pressing the »  « key after each selection.
- Any existing faults are displayed in clear text.  
If more than one fault exists, the number of the currently displayed fault and the total number of faults are displayed in the top right corner (example: 1/2 = screen 1 of 2).

### Fault codes

- This function displays any existing faults / warning codes in the form of a table.  
If a fault code exists, the icon »  « is displayed.
- Select the menu items » Information «, » Instrument « and » Fault codes « in this order, pressing the »  « key after each selection.
- Any existing faults are displayed in the form of numerical codes in a table. If all numerical groups are displayed with the value » 00 «, no faults exist.

### Modules


- All installed hardware modules are displayed.
- Select the menu items » Information «, » Instrument « and » Modules « in this order, pressing the »  « key after each selection.
- A list of all possible modules is displayed. The installed modules are indicated by a »  «. Modules which are not installed are marked with a »  «.
- Use the »  « and »  « keys to select individual modules and press the »  « key to display more detailed information.

## Submenu » Sensor «


The submenu » Sensor « contains the functions for interrogating the sensor status.

### Sensor vitality


This function is active only if the Polytron 7000 transmitter is equipped with the sensor diagnostic dongle, see page 29.

- This function displays the remaining sensitivity of the sensor.
- Select the menu items » Information «, » Sensor « and » Vitality « in this order, pressing the »  « key after each selection.
- The current Sensor Vitality is displayed.
- Dräger Safety recommends that the sensor is exchange when the Sensor Vitality value is less than 25.


### Last calibration date

- This function displays the date of the last calibration.
- Select the menu items » Information «, » Sensor « and » Last cal. date « in this order, pressing the »  « key after each selection.
- The date of the last calibration is displayed.

### Next calibration date

- This function displays the date on which calibration is next due.
- Select the menu items » Information «, » Sensor « and » Next cal. date « in this order, pressing the »  « key after each selection.
- The date on which the sensor is next due for calibration is displayed.

### Sensor temperature


- This function displays the current sensor temperature and the maximum sensor temperature which has been recorded.
- Select the menu items » Information «, » Sensor « and » Show sensortemp. « in this order, pressing the »  « key after each selection.
- The current sensor temperature and the maximum sensor temperature which has been recorded are displayed.

## Submenu » Datalogger «

The submenu » Datalogger « contains the functions for interrogating the Datalogger.


### Datalogger status

This function is active only if the Polytron 7000 transmitter is equipped with the data dongle 83 17 618, see page 29.

- This function displays the status of the Datalogger and the Eventlogger.
- Select the menu items » Information «, » Datalogger « and » Datalogr status « in this order, pressing the »  « key after each selection.
- The current status of the Datalogger and the Eventlogger is displayed:  
Datalogr. : on or off (the Datalogger is on or off)  
Evtlogr. : on or off (the Eventlogger is on or off)
- Activating / deactivating the Datalogger: see page 78.
- Activating / deactivating the Eventlogger: see page 78.

### Show graph

This function is active only if the Polytron 7000 transmitter is equipped with the data dongle 83 17 618, see page 29.

- The measured values of the sensor are displayed graphically on a time axis of 15 minutes.
- Select the menu items » Information «, » Datalogger « and » Show graph « in this order, pressing the »  « key after each selection.

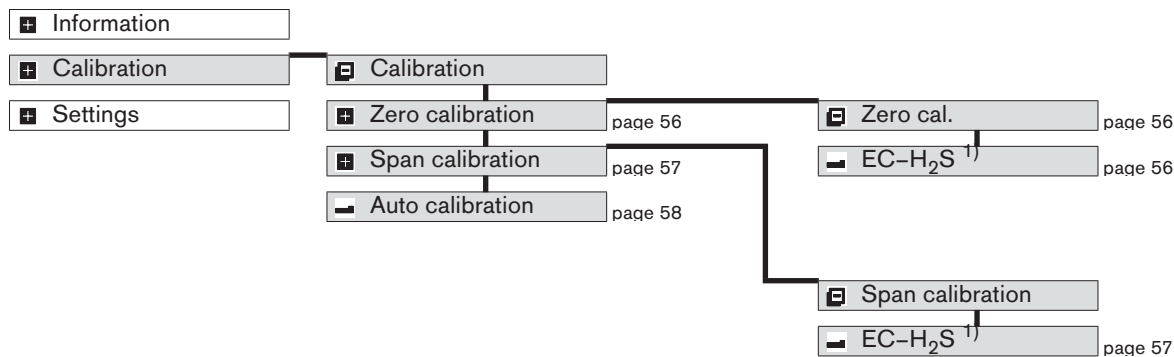
## The menu » Calibration «

The menu » Calibration « contains all functions needed for the calibration and adjustment of the installed sensor.

Notes on handling the calibration gas and calibration accessories can be found in the section "Maintenance" on page 42.

If the calibration functions have not been operated for 60 minutes, the device will switch back to the measuring mode.

### Overview






1) The sensor shown in the overview serves only as an example and may differ from the sensor actually installed in the unit.


### Submenu » Zero calibration «

The submenu » Zero calibration « contains the functions for calibrating / adjusting the zero point of the installed sensor.

#### Zero-point calibration / adjustment

##### Calibration procedure (using an EC-H<sub>2</sub>S sensor as an example):

- Select the menu items » Calibration «, » Zero calibration « and » EC-H<sub>2</sub>S « in this order, pressing the »  « key after each selection.
  - The maintenance signal is transmitted on the analogue interface.
  - The alarm and fault relays are not triggered.
  - The message » Supply zero gas with flow rate 500 mL/min" is displayed
- Connect zero gas to the sensor (for some sensors, N<sub>2</sub> must be used – see information in the section "Maintenance" on page 42).
- Select » Next « and press the »  « key.
  - The current value and the expired time are now displayed.  
When the displayed value has stabilised:
- Select » Accept value « and press the »  « key.
  - The message » Zero calibration running « is displayed
- The required value and the actual value are now displayed.  
If these are correct as displayed:

- Select » Back to menu « and press the »  « key.
- Disconnect the flow of zero gas.

Zero-point calibration can be aborted at any time:


- Use the »  « key to move to » Back « and press the »  « key.






## Submenu » Span cal. «

The submenu » Span cal. « Contains all functions for calibrating the sensitivity of the installed sensor.




### Sensitivity calibration

#### Calibration procedure (using an EC-H<sub>2</sub>S sensor as an example):


- Select the menu items » Calibration «, » Span calibration « and » EC-H<sub>2</sub>S « in this order, pressing the »  « key after each selection.
  - The maintenance signal is transmitted on the analogue interface.
  - The alarm and fault relays are not triggered.
  - The values for the calibration gas are displayed, for example:
 

Cal. gas	:	H <sub>2</sub> S
Unit	:	ppm
Concentr.	:	000025
- The calibration gas, concentration and unit can be changed:
- Select » Cal. gas « and press the »  « key. Select the desired calibration gas from the list and press the »  « key again.
- Select » Concentr. « and press the »  « key. Set the calibration gas concentration (same procedure as for input of a password).
- Select » Unit « and press the »  « key: Select the desired unit from the list and press the »  « key again.


If the settings agree with the available calibration gas:

- Select » Next « and press the »  « key.
  - The message » Supply gas: H<sub>2</sub>S with flow rate 500 ml/min « is displayed.
  - Connect calibration gas (see the information in the section "Maintenance" on page 42) to the sensor.
  - Select » Next « and press the »  « key.
    - The current value and the expired time are now displayed.
  - When the displayed value has stabilised:
    - Select » Accept value « and press the »  « key.
  - In the display the maximum value and the current value as well as the remainder of the sensor vitality are represented as a bar indication.

If these are correct as displayed:

- Select » Next « and press the »  « key.
- Disconnect the flow of calibration gas.

**Attention: An alarm could be triggered in the central unit for as long as the calibration gas concentration is pending!**

- The calibration interval and the date of the next calibration are displayed.
- Select » Back to menu « and press the »  « key.

Sensitivity calibration can be aborted at any time:

- Use the »  « key to move to » Back « and press the »  « key.


## Autocalibration

Autocalibration consists of fresh-air calibration followed by sensitivity calibration.

This function is intended only for users who are familiar with the unit, since the sequence of actions may result in calibration errors.

The function can be activated or deactivated with the menu sequence » Settings «, » Sensor «, » Autocal. «.

### Calibration procedure (using an EC-H<sub>2</sub>S sensor as an example):

- Select the menu items "Calibration" and "Autocal." in this order, pressing the »  « key after each selection.

**Attention: The sensor must be supplied with fresh air, otherwise calibration errors may occur!**

- The maintenance signal is transmitted on the analogue interface.
- The message » Fresh-air calibration running « is displayed.
- Expose the sensor to the ambient air (for some sensors, a zero gas such as N<sub>2</sub> must be used – see the information in the section "Maintenance" on page 42).

Then:

- The values for the calibration gas are then displayed, for example:


Cal. gas	:	H <sub>2</sub> S
Unit	:	ppm
Concentr.	:	000025

- The current value and the calibration gas concentration are now displayed.

The calibration operation depends on whether the selected calibration gas supports so-called autostability.

- **Autostability is supported:**

When the displayed value has stabilised:

- Select » Accept value « and press the »  « key.

- **Autostability is not supported:**


The instrument evaluates the stability of the signal and automatically executes the calibration procedure.

— The required value and the actual value are now displayed.

- Disconnect the flow of calibration gas.

**Attention: An alarm could be triggered in the central unit for as long as the calibration gas concentration is pending!**

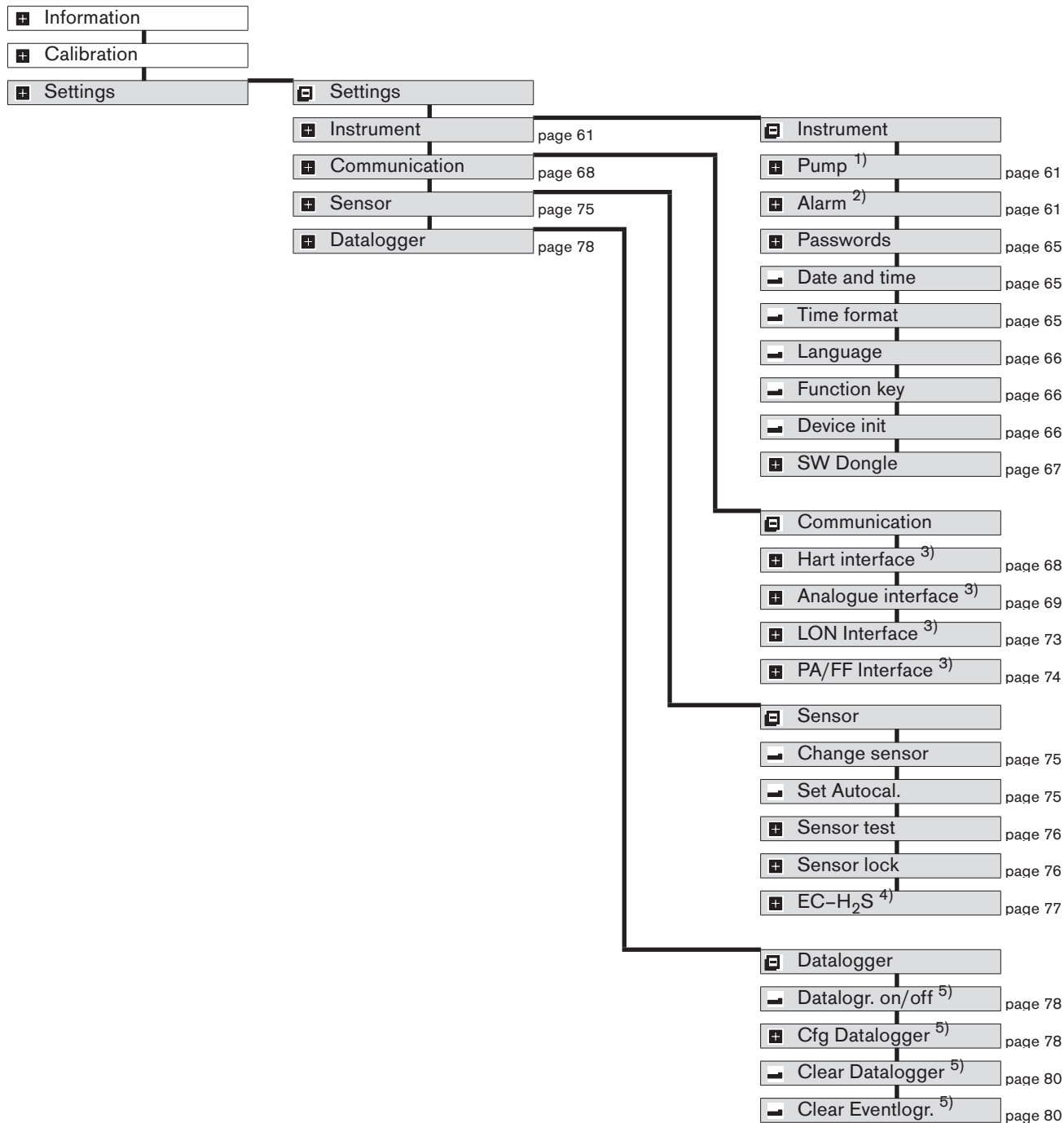
If these are correct as displayed:

- Select » Accept value « and press the »  « key.

## The menu » Settings «

The menu » Settings « contains all functions needed for individual configuration of the unit.

### Overview



1) This menu function can be executed only if the Polytron 7000 transmitter is equipped with a pump module, see page 33.

2) This menu function can be executed only if the Polytron 7000 transmitter is equipped with a relay module, see page 31.

3) This menu function can be executed only if the Polytron 7000 transmitter is equipped with the appropriate interface card.

4) The sensor shown in the overview serves only as an example and may differ from the sensor actually installed in the unit.

5) This menu function can be executed only if the Polytron 7000 transmitter is equipped with the data dongle 83 17 618, see page 29.



## Submenu » Instrument «

The submenu » Instrument « can be used to make various instrument settings.

### Pump

This group contains the setting functions for the pump.

#### – Pump output

- This function is used to set the pump output.
- Select the menu items » Settings «, » Instrument «, » Pump « and » Pump output « in this order, pressing the » OK « key after each selection.
- The maintenance signal is transmitted on the analogue interface, and the display reads: » Flow alarm will be de-energised. Please use a flow meter «.
- Connect a pump adapter and a flowmeter.
- Select » Next « and press the » OK « key.
- Use the » ▲ « and » ▼ « keys to set the pump output. Monitor the change on the flowmeter.

#### Note:

**Choose the response time as low as possible and the pump output as high as possible.**

- Select » Next « and press the » OK « key.
- The flow thresholds are displayed –  
Flow threshold for fault: 0.3 L/min  
Flow threshold for warning: 0.4 L/min

#### – Operating time

- This function is used to display the operating time of the pump.
- Select the menu items » Settings «, » Instrument «, » Pump « and » Operating time « in this order, pressing the » OK « key after each selection.
- The actual operating time of the pump is displayed in hours.

### Alarm / Relay settings

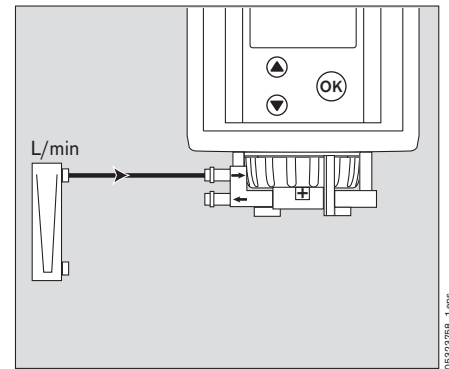
Alarms can be output via a relay and a digital interface if a relay module is installed. This group contains the setting functions for the alarms.

#### Attention:

**In the normal state, the relays of the relay module are energised. Therefore, the state of the relay changes if the power supply is interrupted!**

#### – Alarm on/off

- This function is used to enable and disable alarm monitoring.
- Select the menu items » Settings «, » Instrument «, » Alarm « and » Alarm on/off « in this order, pressing the » OK « key after each selection.
- Select » Enable « or » Disable « and press the » OK « key to activate.













**Attention:**

**If the alarm is disabled, no alarms will be signalled via the relay or the HART interface!**

**A warning »  « appears on the display!**

– **Set alarm A1**

- This function is used to change the alarm configuration for alarm A1.
- Select the menu items » Settings «, » Instrument «, » Alarm « and « alarm A1 « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to set each position of the threshold value for the alarm A1 and press the »  « key to confirm the setting.
- Press the »  « key to confirm the complete alarm threshold value. The setting for the alarm threshold A1 is displayed.
- The function for setting the alarm direction is opened.
- Select » Rising « or » Falling « and press the »  « key to activate your selection.
- Select » Next « and press the »  « key.







- The function for setting the self-hold function of the A1 alarm is opened.
- Select » Latching « or » Non latching « and press the »  « key to activate.
- Select » Next « and press the »  « key.
- Note: » Latching « means that the relay must be manually acknowledged after the alarm condition is no longer fulfilled, » Non latching « means that the relay is automatically acknowledged after the alarm condition is no longer fulfilled.
- The function for setting the A1 acknowledgement is opened.
- Select » Can be acknowledged « or » Cannot be acknowledged « and press the »  « key to activate.
- Note: » Can be acknowledged « means that the relay can be reset when the alarm condition is fulfilled. » Cannot be acknowledged « means that the relay can only be reset after the alarm condition is no longer fulfilled.

**Attention:**


If an alarm has been configured as » Can be acknowledged «, it can also be reset when the alarm condition is fulfilled. In the case of safety-relevant switching operations, the alarm must be configured as » Cannot be acknowledged «.

**Overview of alarm settings**




Alarm configuration		Alarm condition fulfilled		Alarm condition not fulfilled	
		Acknowledgement button actuated	Acknowledgement button not actuated	Acknowledgement button actuated	Acknowledgement button not actuated
Latching	Can be acknowledged	Relay de-energised	Relay energised	Relay de-energised	Relay energised
	Cannot be acknowledged	Relay energised	Relay energised	Relay de-energised	Relay energised
Non latching	Can be acknowledged	Relay de-energised	Relay energised	Relay is automatically de-energised after the alarm condition is no longer fulfilled	
	Cannot be acknowledged	Relay energised	Relay energised	Relay is automatically de-energised after the alarm condition is no longer fulfilled	Relay is automatically de-energised after the alarm condition is no longer fulfilled

- The function for setting the A1 hysteresis is opened.
- This function allows the user to set a bandwidth in which a tripped relay stays in its status until the gas concentration is outside this bandwidth. With this function relays will not "chatter" at the alarm set point. E.g. A1 set point is 40 ppm, hysteresis is set to 3 ppm. Alarm A1 will come on at 40 ppm and will stay active until the concentration falls below 37 ppm.
- Select the line for input of the hysteresis and press the »  « key to switch to edit mode.
- Use the »  « and »  « keys to set each digit of the value and press the »  « key to confirm the setting.
- Select » Next « and press the »  « key.
- The settings of the A1 are indicated.
- To confirm select » Confirm « and press the »  « key.
- The settings for alarm A1 are now complete.

### – Set alarm A2

- This function is used to change the alarm configuration for alarm A2.
- Select the menu items "Settings «, "Instrument «, "Alarm « and "alarm A2 « in this order, pressing the »  « key after each selection
- The settings are made in the same manner as for alarm A1.

### – Set ack.

- This function is used to enable or disable the acknowledgement of the alarms with the »  « key.
- Select the menu items » Settings «, » Instrument «, » Alarm « and » Set ack. « in this order, pressing the »  « key after each selection.
- Select » Enable « or » Disable « and press the »  « key to activate.



#### Attention:

If the functions » Disable acknowledgement « and » Alarm setting latching « are combined, an alarm can only be acknowledged by interrupting the power supply of the Polytron 7000 transmitter!



#### Attention:

If an alarm has been configured as » Can be acknowledged «, it can also be reset when the alarm condition is fulfilled. In the case of safety-relevant switching operations, the alarm must be configured as » Cannot be acknowledged «.



### – Test alarm A1

- This function simulates the A1 alarm state for testing purposes.
- Select the menu items » Settings «, » Instrument «, » Alarm « and » Test alarm A1 « in this order, pressing the »  « key after each selection.
- The function » Test A1 status « is opened.
- Select » Enable « or » Disable « and press the »  « key to activate.
- When the function is enabled, the relay and the interfaces are set to the A1 alarm state.

### – Test alarm A2

- This function simulates the A2 alarm state for testing purposes.
- Select the menu items » Settings «, » Instrument «, » Alarm « and » Test alarm A2 « in this order, pressing the »  « key after each selection.
- The function » Test A2 status « is opened.
- Select » Enable « or » Disable « and press the »  « key to activate.
- When the function is enabled, the relay and the interfaces are set to the A2 alarm state.







### – Test fault

- This function simulates the fault alarm state for testing purposes.
- Select the menu items » Settings «, » Instrument «, » Alarm « and » Test fault alarm « in this order, pressing the »  « key after each selection.
- The function » Test fault status « is opened.
- Select » Enable « or » Disable « and press the »  « key to activate.
- When the function is enabled, the relay and the interfaces are set to the fault alarm state.







## Passwords

This group contains the setting functions for the passwords.






### – Password Calibration

- This function is used to change the password for the menu » Calibration «.
- Select the menu items » Settings «, » Instrument «, » Passwords « and » Password Cal. « in this order, pressing the »  « key after each selection.
- Select the line for password input and press the »  « key to switch to edit mode.
- Use the »  « and »  « keys to set each position of the password and press the »  « key to confirm the setting.
- Press the »  « key to confirm the complete password.

### – Password Settings






- This function is used to change the password for the menu » Settings «.
- Select the menu items » Settings «, » Instrument «, » Passwords « and » Password Cfg. « in this order, pressing the »  « key after each selection.
- Select the line for password input and press the »  « key to switch to edit mode.
- Use the »  « and »  « keys to set each position of the password and press the »  « key to confirm the setting.
- Press the »  « key to confirm the complete password.

## Date and time



- This function is used to set the date and / or time.
- Select the menu items » Settings «, » Instrument « and » Date and time « in this order, pressing the »  « key after each selection.
- Select the desired input line (Date or Time) and press the »  « key to switch to edit mode.
- Use the »  « and »  « keys to set the value and press the »  « key to confirm the setting.

## Time format





- This function is used to set the display format for the date and/or time.

- Select the menu items « Settings », « Instrument » and « Time format » in this order, pressing the »  « key after each selection.
- Select the desired input line (Date format or Time format) and press the »  « key to switch to edit mode.
- Use the »  « and »  « keys to select the desired format (European or US) and press the »  « key to confirm the setting.

### Language

- This function is used to set the language for the menus.
- Select the menu items « Settings », « Instrument » and « Language » in this order, pressing the »  « key after each selection.
- Select the desired language from the list and press the »  « key to activate.

### Function key

- This function is used to set the function which is to be activated when the function key (the »  « key) is pressed briefly.  
Default setting: Fault report.
- Select the menu items » Settings », » Instrument » and » Function key « in this order, pressing the »  « key after each selection.
- Select the desired function and press the »  « key to activate. An icon corresponding to the selected function appear on the right side of the display. Possible selections:
  - Show graph – the measured values are displayed on a time axis, see page 55
  - Fault report – existing faults are displayed in clear text, see page 53
  - Notice report – existing warnings are displayed in clear text, see page 53
  - Fault codes – existing fault codes are displayed in a numerical table, see page 53
- In measuring mode, briefly pressing the »  « key will now activate the selected function.

### Initialise device

This function resets all parameters of the transmitter to the factory default settings.



This affects the following parameters:

- Sensor lock.
- Gas selection (if the sensor is suitable for measuring several different gases).
- Units in the measured value display (normally ppm).
- Measuring range for the 4 to 20 mA interface.

- Sensor lock.
- Gas configuration of the calibration gas (if the sensor is suitable for calibration with a replacement gas).
- Calibration interval The sensor-specific default values can be found in the related sensor data sheet.

It also affects the setting parameters for:

- Pump output
- Alarm parameters
- Passwords
- Language
- Function key
- HART interface
- Datalogger
- Analogue interface



- Select the menu items » Settings «, » Instrument « and » Device init. « in this order, pressing the »  « key after each selection.
- Select » Confirm « and press the »  « key to initialise the device.

### SW dongle



This group permits the deactivation of individual dongles before they are removed or in the case of a fault in a dongle.

A dongle can be reactivated only by restarting the unit.



#### – Data dongle

- Select the menu items » Settings «, » Instrument «, » SW dongle « and » Data dongle « in this order, pressing the »  « key after each selection.
- Select the line » Disable function « and press the »  « key to disable the data dongle.

#### – Sensor test dongle

- Select the menu items » Settings «, » Instrument «, » SW dongle « and » Sensor test dongle « in this order, pressing the »  « key after each selection.
- Select the line » Disable function « and press the »  « key to disable the sensor test dongle.

#### – Diagnosis dongle

- Select the menu items » Settings «, » Instrument «, » SW dongle « and » Diagnosis dongle « in this order, pressing the »  « key after each selection.
- Select the line » Disable function « and press the »  « key to disable the diagnosis dongle.

## Submenu » Communication «

The submenu » Communication « permits various settings to be made for the interfaces.






### HART interface

This group contains the setting functions for the HART interface.

#### – Polling address


The polling address configures the transmitter either for the analogue mode (4 to 20 mA) or the multidrop mode. Setting the polling address to " 0 " enables the analogue mode (4 to 20 mA). To enter multidrop mode, the polling address must be set to a value in the range from " 1 " to " 15 ", which disables the analogue interface and freezes it to a constant current of approx. 3 mA. In order to enable the central controller to request the unique identifier (unambiguous HART address) using HART command #0, all transmitters located on one cable trunk need to be configured with a different polling address. It is best to assign sequential polling addresses, starting with "1".

This setting corresponds to the HART command #6 ("Write Polling Address").

- Select the menu items » Settings «, » Communication «, » Hart interface « and » Polling address « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to set each position of the polling address and press the »  « key to confirm the setting.
- Press the »  « key to confirm the complete polling address.

#### – Unique Identifier






This function can be used to read out the unique identifier (unique HART address), which must be known for the addressing in almost all HART commands. However, knowledge of the unique identifier is necessary only for systems which are not able to read out the unique identifier with the HART command #0 in the short-frame format or the HART command #11. The display corresponds to the address returned by the HART command #0 ("Read Unique Identifier") or #11 ("Read Unique Identifier associated with Tag").

- Select the menu items » Settings «, » Communication «, » Hart interface « and » Identifier « in this order, pressing the »  « key after each selection.
- The unique identifier will be displayed.



### – Tag

The tag may be used to mark a specific transmitter. It can comprise up to 8 alphanumeric characters. It can also serve as an address, in order to read the unique identifier using HART command #11 ("Read Unique Identifier associated with Tag"), from the transmitter, even if the polling address is unknown. This presumes that an unambiguous tag has been configured before.

- Select the menu items » Settings «, » Communication «, » Hart interface « and » Tag « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to set each position of the tag and press the »  « key to confirm the setting.
- Press the »  « key to confirm the complete tag.

## Analogue interface

This group contains the functions needed for the test and setting functions.

### Settings for the analogue interface


#### – Analogue set point / Set measurement range



When the measuring range of the analogue interface must be adjusted.

Here corresponds: 0 ppm = 4 mA; Analogue signal = 20 mA


- According to the standard, the standard measuring range of the sensor automatically ends here.





#### – Warning on/off

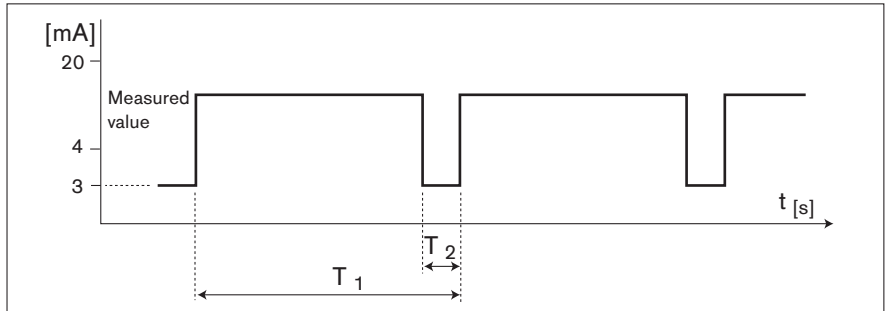
This function is used to switch the warning signal »  « on the analogue interface on and off. If the presence of a warning is to be signalled via the analogue interface, the warning signal must be switched on. In the case of a warning, the current on the analogue interface is switched for one second to the state "Warning". For the rest of the time, the measured signal is transmitted. The interval between the warning signals and the level of the analogue signal can be configured as desired, see "Warning signal" on page 70 and "Warning level" on page 70.

- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Warning on/off « in this order, pressing the »  « key after each selection.
- Select » Enable « or » Disable « and press the »  « key to activate.

### – Warning interval


This function is used to set the interval between the warning signals »  « on the analogue interface.






- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Warning interval « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to set each position of the time interval (in seconds) for  $T_1$  and  $T_2$  and press the »  « key to confirm the setting.




- Press the »  « key to confirm the complete time interval.



### – Warning level

– This function is used to set the current on the analogue interface for the warning signal »  «.

- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Warning level « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to set each position of the current value and press the »  « key to confirm the setting.
- Press the »  « key to confirm the complete current value.

### – Maintenance signal

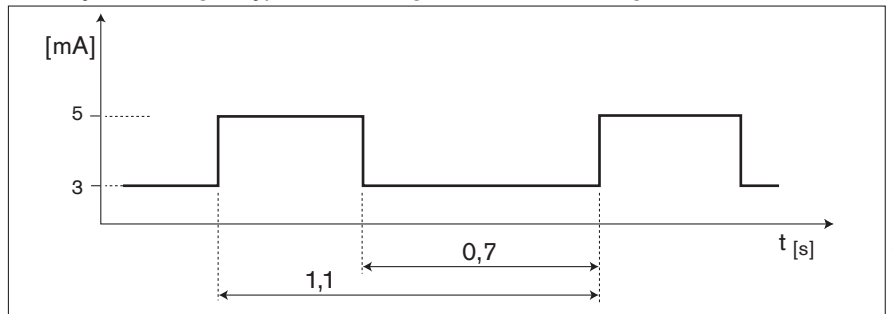
– This function is used to set the signal type on the analogue interface for the maintenance signal »  «.

- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Maintenance signal « in this order, pressing the »  « key after each selection.
- Select the » static « or » dynamic signal type, as required, and activate it by pressing the »  « key.

Note:

The » static « signal type is a DC current signal whose current value can be configured (see » Maintenance level «).

The » dynamic « signal type is an AC signal with the following characteristic:



#### – Maintenance level

- This function is used to set the current on the analogue interface for the maintenance signal » «.
- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Warning level « in this order, pressing the » « key after each selection.
- Use the » « and » « keys to set each position of the current value and press the » « key to confirm the setting.
- Press the » « key to confirm the complete current value.

#### – Offset current













- Provides for the adjustment of the zero point signal (4 mA signal).
- Select » Settings «, » Communication «, » Analogue interface « and » Offset current « in this order, pressing the » « key after each selection.
- Use the » « key for marking the input value for the current value and select it with the » « key.
- Use the » « or » « keys for selecting the desired sign (+/-) for the input.
- By pressing the » « key, select the desired input field and enter the desired current correction value with the » « or » « keys. A maximum input of +/- 0,500 mA of the factory-preset 4 mA current value is possible.
- Press the » « key to confirm the completely adjusted current value.

**Test functions for the analogue interface****– Test analogue**

- This function is used to set various currents in the range 3 to 22 mA on the analogue interface.

**Note:**

**These functions may trigger alarms in the control unit! If necessary, the alarms should be disabled in the control unit before using the functions.**








- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Test analogue « in this order, pressing the »  « key after each selection.
- If the alarms are disabled in the control unit, confirm the message » Switch off all alarms « by pressing the »  « key.
- Use the »  « and »  « keys to set each position of the current value and press the »  « key to confirm the setting.
- Use the »  « and »  « keys to select the state » Set current output « and press the »  « key to activate.
- The selected current is transmitted on the analogue interface.
- Use the »  « and »  « keys to select the line » Next « and press the »  « key to confirm the selection. The function is terminated.
- When the alarms in the control unit have been enabled again, confirm the message » Switch on all alarms « by pressing the »  « key.

**– Test fault**

- This function is used to set the analogue interface to the fault signal »  «.

**Note:**

**These functions may trigger alarms in the control unit! If necessary, the alarms should be disabled in the control unit before using the functions.**


- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Test fault « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to select » Enable « and press the »  « key to activate.
- The current for the fault signal is transmitted on the analogue interface.
- Use the »  « and »  « keys to select » Disable « and press the »  « key to activate.
- The current for the fault signal is switched off.







**– Test warning**

- This function is used to set the analogue interface to the warning signal »  «.


**Note:**

**These functions may trigger alarms in the control unit! If necessary, the alarms should be disabled in the control unit before using the functions.**

- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Test warning « in this order, pressing the »  « key after each selection.








- Use the »  « and »  « keys to select » Enable « and press the »  « key to activate.
- The current for the warning signal is transmitted on the analogue interface.
- Use the »  « and »  « keys to select » Disable « and press the »  « key to activate.
- The current for the warning signal is switched off.

#### – Test maintenance

- This function is used to set the analogue interface to the maintenance signal »  «.

#### Note:

**These functions may trigger alarms in the control unit! If necessary, the alarms should be disabled in the control unit before using the functions.**

- Select the menu items » Settings «, » Communication «, » Analogue interface « and » Test maintenance « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to select » Enable « and press the »  « key to activate.
- The current for the maintenance signal is transmitted on the analogue interface.
- Use the »  « and »  « keys to select » Disable « and press the »  « key to activate.
- The current for the maintenance signal is switched off.


### LON Interface

This function group contains the functions for the LON interface. For details of operation with LON, see also "Polytron 7000 Operation via LON" on page 81.

#### – Neuron ID





Every Polytron 7000 has a Neuron ID. The Neuron ID uniquely defines the Neuron chip on the LON network.

To display the Neuron ID:

- Select the menu items » Settings «, » Communication «, » LON Interface « and » Neuron ID «, pressing the »  « key after each selection.
- The Neuron ID is displayed.








#### – Service PIN

The Polytron 7000 can be commissioned by sending its Neuron ID to the LON network with the aid of the function "Service PIN".

- Select the menu items » Settings «, » Communication «, » LON Interface « and » Service PIN « pressing the »  « key after each selection.
- Use the »  « and »  « to select » Confirm « and press the »  « key to activate this selection.
- The Neuron ID of the Polytron 7000 is transmitted.

**PA/FF interface**


Provides for the address distribution for the Profibus PA interface.

- Select » Settings «, » Communication «, » PA/FF Interface « and » PA address « in this order, pressing the »  « key after each selection.
- Select the line for the address input by using the »  « key and confirm with the »  « key.
- Address entry by pressing the »  « key for selecting the desired position of the input position with subsequent address entry (range 1-126) by pressing the »  « or »  « keys.
- Confirm adjusted address with the »  « key.


## Submenu » Sensor «

The submenu » Sensor « can be used to make various settings for the installed sensor.



### Change sensor

- This function can be used to change a sensor while the unit is running without sending a fault alarm to the control unit. It also ensures that all sensor data currently in the microprocessor can be saved to the EEPROM of the sensor before the sensor plug is disconnected.
- In principle, a sensor can be replaced at any time. However, for technical safety reasons, a fault alarm will be activated until a new sensor is connected, in case a sensor is disconnected accidentally.
- Select the menu items » Settings «, » Sensor « and » Change sensor « in this order, pressing the »  « key after each selection.
- The maintenance signal is transmitted on the analogue interface, and the display reads: » Please remove sensor«.
- Remove the old sensor and plug in the new one (see page 44).  
When the new sensor has been installed:
- The message » Loading database, please wait « is displayed.

When the sensor data have been loaded:

- The message » Database is loaded « is displayed.
- Select » Back to menu « and press the »  « key.
- The maintenance signal on the analogue interface remains until the sensor operates normally.  
The duration of the warming-up period depends on the type of sensor and its history. If, for example, the sensor had already been warmed up on another transmitter and it was disconnected only for a short time, the warming-up period may be shorter than that shown in the operating instructions for the sensor.  
See the operating instructions for the sensor for the maximum warming-up period.  
If the old sensor is replaced with an identical sensor (with the same Part No.), the configuration of the transmitters (gas type, measuring range, calibration gas, calibration interval) remains unchanged.  
Otherwise, the default values for the sensor (see the operating instructions for the sensor) are used by the transmitter if the sensor-lock function (page 76) is disabled.

### Autocalibration setting

- This function is used to enable and disable the autocalibration (page 58).
- Select the menu items » Settings «, » Sensor « and » Set autocal. « in this order, pressing the »  « key after each selection.
- Select » Enable « or » Disable « and press the »  « key to activate.
- Autocalibration from the menu "Calibration" can be used only if this function is enabled.


### Sensor test




This group contains the setting functions for the sensor selftest.

These functions can be used only if the Polytron 7000 transmitter is equipped with the Sensor Dongle 83 17 619 or the Sensor Diagnostic Dongle 83 17 860, see page 29.

#### – Sensor test setting

– This function can be used to activate or reactivate the sensor selftest.



- Select the menu items « Settings », « Sensor » and « Set sensor test » in this order, pressing the »  « key after each selection.

- Use the »  « and »  « keys to select « Enable » or « Disable » and press the »  « key to activate.


– If the sensor selftest is enabled, the transmitter continually tests the sensor in order to ensure reliable operation. If the sensor does not pass the selftest, a suitable warning or fault is generated.

#### – Sensor self-test

– This function is used to start the sensor self-test.



- Select the menu items « Settings », « Sensor », « ECXX » and « Sensor self-test ».
- If a sensor self-test can be executed (depending on sensor or device status): Use »  « to select » Start sensor self-test », then press »  « button to start.
- After a few seconds the result is indicated in the display.

To terminate the function:

- Select » Back to menu « and press the »  « key.

#### – Sensor lock

– This function is used to enable or disable the sensor lock.

- Select the menu items » Settings », » Sensor », » EC-O<sub>2</sub> « and » Sensor lock « in this order, pressing the »  « key after each selection.
- Select » Enable « or » Disable « and press the »  « key to activate.

Enable = The transmitter will accept a new sensor only if it has the same Part No. (=Dräger Order No.) as the old sensor and thus the same sensor type.

Disable = The transmitter will accept other sensor types. In this case, the transmitter uses the default settings for the new sensor, which means that the transmitter configuration will be changed.



**Sensor configuration****(using an EC-O<sub>2</sub> sensor as an example):**

This group contains the setting functions for the sensor.

**– Gas setting**

– This function is used to change the settings for the gas to be measured.

- Select the menu items » Settings «, » Sensor «, » EC-O<sub>2</sub> « and » Set gas « in this order, pressing the » OK « key after each selection.

When several measuring gases of the sensor are displayed:

- Use the » ▲ « and » ▼ « keys to select from the list of measuring gases and the » OK « key to activate.
- The selected gas is indicated.
- Use the » ▲ « and » ▼ « keys to select the unit of measurement (e.g. Vol.%) from the list and press the » OK « key to activate.
- The overview of the settings are displayed.
- If the settings are correct:
- Use the » ▼ « key to select the line » Confirm « and press the » OK « key.

**– Sensor initialisation**

- This function is used to set all parameters of the sensors back to the factory default values.
- Select the menu items » Settings «, » Sensor «, » EC-O<sub>2</sub> « and » Sensor init. « in this order, pressing the » OK « key after each selection.
- Select » Confirm « and press the » OK « key to initialise the sensor.

**– Set calibration interval**

- This function is used to set the calibration interval.
- Select the menu items » Settings «, » Sensor «, » EC-O<sub>2</sub> « and » Set cal. Int. « in this order, pressing the » OK « key after each selection.
- Use the » ▲ « and » ▼ « keys to set each position of the calibration interval (in days) and press the » OK « key to confirm the setting.
- To confirm the entered calibration interval:
- Select » Confirm « and press the » OK « key.

## Submenu » Datalogger «

The submenu » Datalogger « permits various settings to be made for the Datalogger and the Eventlogger.

These functions are available only if the Polytron 7000 transmitter is equipped with the Data Dongle 83 17 618, see page 29.

The contents of the Datalogger or Eventlogger can be evaluated only with the PC software GasVision (Version 5.5 or higher). The contents of the Datalogger for the previous 15 minutes can be viewed with the menu sequence » Information «, » Datalogger « and » Show graph «, page 55.



### Datalogger:

The Datalogger saves the measured values in accordance with the configuration set under » Set Datalogger «. The Datalogger can save at least 3000 measured values. If the data is saved at intervals of one minute, this is sufficient for a monitoring period of 50 hours. The monitoring period can be extended considerably by using the setting » Trigger « (page 79).

### Eventlogger:




The Eventlogger saves unit and sensor events (such as: A1 threshold value exceeded; flow fault in pump). The Eventlogger can save a maximum of 100 events

## Logger on/off



- This function is used to enable or disable the Data- or Eventlogger.
- Select the menu items » Settings «, » Datalogger « and » Datalgr. On/off « in this order, pressing the »  « key after each selection.
- Select » Enable « or » Disable « and press the »  « key to activate.

## Datalogger setting

This group contains the setting functions for the Datalogger.



- **Sample time**
- This function can be used to set the sample time for the Datalogger.
- Select the menu items » Settings «, » Datalogger «, » Set Datalogger « and » Sample time « in this order, pressing the »  « key after each selection.
- Select the desired sample time from the list and press the »  « key to activate it (»  «).

### – Peak / average

- This function can be used to select whether the Datalogger is to save peak or average values.
- Select the menu items » Settings «, » Datalogger «, » Set Datalogger « and » Peak/average « in this order, pressing the »  « key after each selection.
- Select » Peak « or » Average « and press the »  « key to activate.






Peak	The maximum concentration value measured during the selected sample time is saved.
Average	The average of all concentration values measured during the selected sample time is saved.

### – Trigger on/off

- This function can be used to enable or disable the threshold criterion for saving of concentration values.
- If this function is enabled and a suitable trigger value is selected, it is possible to monitor the measured values for a longer period.
- Select the menu items » Settings «, » Datalogger «, » Set Datalogger « and » Peak/average « in this order, pressing the »  « key after each selection.
- Select » Enable « or » Disable « and press the »  « key to activate.




Enable	Concentration values are saved only if they exceed the threshold set under » Trigger value « (referred to the previously saved value).
Disable	All measured values which occur during the sample time are saved.

### – Trigger value

- This function can be used to set the trigger value.  
This value refers proportionally to the whole measuring range.  
Example: with a measuring range of 500 ppm a trigger value of 2 % is entered.  
Then the datalogger will only store measured values (refer to the last stored measured value) that deviate by more than 10 ppm.
- Select the menu items » Settings «, » Datalogger «, » Set Datalogger « and » Trigger value « in this order, pressing the »  « key after each selection.
- Use the »  « and »  « keys to set each position of the trigger value and press the »  « key to confirm the setting.
- Press the »  « key to confirm the complete trigger value.




### – Stack/roll

- This function can be used to set the operating mode of the Datalogger and the Eventlogger.




- Select the menu items » Settings «, » Datalogger «, » Set Datalogger « and » Stack/roll « in this order, pressing the »  « key after each selection.
- Select » Stack « or » Roll « and press the »  « key to activate (»  «).

Roll	when the Datalogger storage space is use up, the oldest data will be overwritten first
Stack	when the Datalogger storage is full, no further data can be saved. An appropriate warning is generated.

### Clear Datalogger






- This function is used to delete all data from the Datalogger.
- Select the menu items » Settings «, » Datalogger « and » Clear Datalogger « in this order, pressing the »  « key after each selection.
- The message » Clear Datalogger data « is displayed.
- Use the »  « key to select the line » Confirm « and press the »  « key.
- The data are deleted from the Datalogger.

### Clear Eventlogger

- This function is used to delete all data from the Eventlogger.
- Select the menu items » Settings «, » Datalogger « and » Clear Eventlogger « in this order, pressing the »  « key after each selection.
- The message » Clear Eventlogger data « is displayed.
- Use the »  « key to select the line » Confirm « and press the »  « key.
- The data are deleted from the Eventlogger.

## 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.

<b>CE markings</b> <sup>1)</sup>	<ul style="list-style-type: none"> <li>– Devices and protective systems for use for the intended purpose in explosion-hazard area (Directive 94/9/EC)</li> <li>– Electromagnetic compatibility (Directive 89/336/EEC) max. influence on sensor: 2 x repeatability</li> </ul>
<b>Ingress protection</b>	IP 66 / IP 67, according to EN 60 529 / IEC 529 (NEMA 4)
<b>Approvals</b>	<b>Polytron 7000 is approved as type P3U and type P3FB.</b>
<b>ATEX</b>	Device markings in accordance with 94/9/EC
<ul style="list-style-type: none"> <li>– <b>Type P3U</b></li> </ul>	<p> <b>CE</b> <sup>0158</sup>  <b>II 1G</b>            EEx ia IIC T4 (–40 °C Ta +65 °C)            EEx ia IIC T6 (–40 °C Ta +40 °C)         </p> <p> <b>CE</b> <sup>0158</sup>  <b>II 3G</b>            EEx nL IIC T4 (–25 °C Ta +65 °C)            EEx nL IIC T6 (–25 °C Ta +40 °C)         </p> <p> <b>BVS 03 ATEX E 406 X</b>            Power Supply: <math>U_i = 30 \text{ V}</math>, <math>I_i = 0,3 \text{ A}</math>, <math>P_i = 700 \text{ mW}</math>, <math>C_i = 5 \text{ nF}</math>, <math>L_i = 50 \text{ }\mu\text{H}</math> </p> <p> <b>CE</b> <sup>0158</sup>  <b>II 3D</b>            IP6x T65 °C (–40 °C Ta +65 °C)            maximum supply voltage 30 V DC         </p> <p>           Year of manufacture (indicated by Serial No.) <sup>2)</sup>            Dräger Safety, 23560 Lübeck, Germany         </p> <p>           Safety parameters for the supply-voltage and signalling circuit            (centre terminals of the docking station):  <math>U_i = 30 \text{ V}</math>, <math>I_i = 0.3 \text{ A}</math>, <math>P_i = 700 \text{ mW}</math>  <math>C_i = 5 \text{ nF}</math>, <math>L_i = 50 \text{ }\mu\text{H}</math> </p>
<ul style="list-style-type: none"> <li>– <b>Type P3FB:</b></li> </ul>	<p> <b>CE</b> <sup>0158</sup>  <b>II 1G</b>            EEx ia IIC T4 (–40 °C ≤ Ta ≤ +65 °C)            EEx ia IIC T6 (–40 °C ≤ Ta ≤ +40 °C)         </p> <p> <b>CE</b> <sup>0158</sup>  <b>II 3G</b>            EEx nL IIC T4 (–25 °C ≤ Ta ≤ +65 °C)            EEx nL IIC T6 (–25 °C ≤ Ta ≤ +40 °C)         </p> <p> <b>BVS 03 ATEX E 406 X</b>            FISCO Field Device, FNICO Field Device            Power Supply: <math>U_i = 24 \text{ V}</math>, <math>I_i = 0.38 \text{ A}</math>, <math>P_i = 5.32 \text{ W}</math>, <math>C_i = 5 \text{ nF}</math>, <math>L_i = 10 \text{ }\mu\text{H}</math> </p> <p>           Year of manufacture (indicated by Serial No.) <sup>2)</sup>            Dräger Safety, 23560 Lübeck, Germany         </p>

1) EN 50270 – For the display valid for table 2.1 and for table 3.1 is assessment criterion B.

EN 50270: For HART-Communication with connected Remote-Sensor valid for table 3.1 is assessment criterion B.

2) The year of manufacture is indicated by the third letter in the serial number shown on the rating plate: T = 2003, U = 2004, W = 2005, X = 2006, Y = 2007, Z = 2008, A = 2009, B = 2010, C = 2011, etc.

Example: Serial No. ARUH-0054: the third letter is U, which means that the unit was manufactured in 2004.

**IECEX****– Type P3U:**

EEx ia IIC T4 (–40 °C Ta +65 °C)

EEx ia IIC T6 (–40 °C Ta +40 °C)

IECEX BVS 04 0003 X

Power Supply:  $U_i = 30 \text{ V}$ ,  $I_i = 0,3 \text{ A}$ ,  $P_i = 700 \text{ mW}$ ,  $C_i = 5 \text{ nF}$ ,  $L_i = 50 \text{ }\mu\text{H}$ Year of construction (via serial number) <sup>1)</sup>

Dräger Safety, 23560 Lübeck, Germany

**UL (Underwriters Laboratories Inc.)****– Type P3U:**

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 Ta +65 °C, T6: –40 Ta +40 °C.

Not tested in oxygen enriched atmospheres (>21 % O<sub>2</sub>).Power Supply:  $V_{\max} = 30 \text{ V}$ ,  $I_{\max} = 0.3 \text{ A}$ ,  $P_i = 700 \text{ mW}$ ,  
 $C_i = 5 \text{ nF}$ ,  $L_i = 50 \text{ }\mu\text{H}$ **CSA (Canadian Standards Association)****– Type P3U:**

Intrinsic safe

Class I, Div. 1, Groups A, B, C, D

Class II, Div. 1, Groups E, F, G

Ex ia T4 (–40 °C Ta +65 °C),

Ex ia T6 (–40 °C Ta +40 °C)



Use in accordance with Dräger Control Drawing SE20106.

Power supply:  $V_{\max} = 30 \text{ V}$ ,  $I_{\max} = 0.3 \text{ A}$ ,  $P_{\max} = 700 \text{ mW}$ ,  
 $C_i = 5 \text{ nF}$ ,  $L_i = 50 \text{ }\mu\text{H}$

**Signal transmission to central unit****Analogue**

– Measured-value signal	4 mA to 20 mA
– Drift below zero point	3.8 mA to 4 mA
– Full-scale value exceeded	20 mA to 20.5 mA
– Unit fault	<3.2 mA
– Maintenance signal	3.4 mA

Options which can be switched on or off:

– Warning	Fault signal for 1 second every 10 seconds <sup>1)</sup>
-----------	--

**Digital**HART compatible,  
transmission on two- or three-wire, shielded cable**Analogue (4 to 20 mA) signal transmission (2-wire)**

– Supply voltage (w/o pump or relay module)	16.5 V DC to 30 V DC
– for a current of 3 mA	min. 8.0 V DC at the transmitter
– For a current of 22 mA	
– AC component	<0.5 V <sub>SS</sub>

**Analogue (4 to 20 mA) signal transmission (3-wire)**

– Supply voltage	– 12 V DC to 30 V DC (w/o pump or relay module)
– AC component	<0.5 V <sub>SS</sub>
– Load resistance	0 ohm to 40 [ohm/volt] x (U <sub>S</sub> <sup>2)</sup> – 4 V)

**Digital signal transmission (2-wire)**

	16.5 V DC to 30 V DC
– AC component	<0.2 V <sub>SS</sub> ; <2.2 mV <sub>eff</sub> (500 to 10 000 Hz)
– Load resistance	0 ohm to 40 [ohm/volt] x (U <sub>S</sub> <sup>2)</sup> – 4 V)

**Digital signal transmission (3-wire)**

– supply voltage	12 V DC to 30 V DC (w/o pump or relay module)
– AC component	<0.2 V <sub>SS</sub>
– load resistance	230 ohm to 40 [ohm/volt] x (U <sub>S</sub> <sup>2)</sup> – 4 V), max. 600 ohm

**Digital signal transmission (4-wire)**

– supply voltage	12 V DC to 30 V DC (w/o pump or relay module)
– AC component	<0.2 V <sub>SS</sub>
– load resistance	230 ohm to 40 [ohm/volt] x (U <sub>S</sub> <sup>2)</sup> – 4 V), max. 600 ohm

**PROFIBUS PA**

– Communication rate	31.25 kBaud
– Data volume	244 Byte
– Bus length	max. 1900m
– Segment size	max. 32 slaves
– Physical layer	IEC 61158-2; digital, bit-synchronous, Manchester Encoding
– Segment current	18.1 mA

**Foundation Fieldbus:**

– Communication rate	31.25 kBaud
– Data volume	128 Byte
– Bus length	max. 1900m
– Segment size	max. 240 nodes
– Physical layer	IEC 61158-2; digital, bit-synchronous, Manchester Encoding

<sup>1)</sup> Can be configured as desired. Factory setting: disabled.<sup>2)</sup> Actual supply voltage at the transmitter.

<b>Power consumption</b> (without analogue signal transmission)	typical 50 mW
<b>Cable inlet</b>	M20 x 1.5; cable diameter 6 mm (0.24") to 12 mm (0.47")
<b>Wire cross-section</b>	0.5 mm <sup>2</sup> (AWG 20) to 2.5 mm <sup>2</sup> (AWG 13)
<b>Weight</b>	approx. 0.9 kg / 2.0 lb, without pump and relay module.
<b>Ambient conditions</b> for operation	Specifications for the sensor: see sensor data sheet –40 to 65 °C (–40 to 160°F) <sup>1)</sup> 700 to 1300 hPa (20.7 to 38.4 inch Hg) 0 to 100 % relative humidity, non condensing
during storage	–40 to 70 °C (–40 to 150°F) 700 to 1300 hPa (20.7 to 38.4 inch Hg) 0 to 100 % relative humidity, non condensing

- 1) The legibility of the display is restricted at temperatures below –20 °C (–5 °F). Operation of the transmitters becomes more difficult at subzero temperatures due to the increasing slowness of the display.
- 2) Actual supply voltage at the transmitter.

## Relay module

### Caution:

**The relay module is not covered by the explosion protection approvals.  
Use is not permitted in explosion-hazard areas! Explosion hazard!**

<b>Supply voltage (DC)</b>	12 V to 30 V at the transmitter
<b>Relay outputs</b>	
– logical channels	A1, A2, fault
– principle	normally energised (for fail-safe operation)
– contacts	1-pole changeover (SPDT)
– contact rating	5 A at 30 V DC; 5 A at 250 V AC
<b>Ambient conditions</b> for operation	–40 to 65 °C (–40 to 160°F) 700 to 1300 hPa (20.7 to 38.4 inch Hg) 0 to 100 % relative humidity, non condensing
during storage	–40 to 70 °C (–40 to 150°F) 700 to 1300 hPa (20.7 to 38.4 inch Hg) 0 to 100 % relative humidity, non condensing
<b>CE markings</b>	– Electromagnetic compatibility (Directive 89/336/EEC) – Low-voltage equipment (Directive 72/23/EEC), when used with transmitter)



## Pump module

### Caution:

The pump module is not covered by the explosion protection approvals.  
Use is not permitted in explosion-hazard areas! Explosion hazard!

### Supply voltage (DC)

- |                              |                                 |
|------------------------------|---------------------------------|
| — for an output of 0.5 L/min | 12 V to 30 V at the transmitter |
| — for an output of 1.0 L/min | 16 V to 30 V at the transmitter |
| — for an output of 1.5 L/min | 20 V to 30 V at the transmitter |

### Power consumption

- |                              |      |
|------------------------------|------|
| — for an output of 0.5 L/min | <2 W |
| — for an output of 1.0 L/min | <4 W |
| — for an output of 1.5 L/min | <6 W |

### Output

- |                   |  |
|-------------------|--|
| — Setting range   | approx. 0.5 l/min to 1.5 l/min (approx. 30 % to 100 %) |
| — Factory setting | 0.5 L/min  |

### Flow warning

- |                   |           |
|-------------------|-----------|
| — Factory setting | 0.4 L/min |
|-------------------|-----------|

### Flow alarm

- |                   |           |
|-------------------|-----------|
| — Factory setting | 0.3 L/min |
|-------------------|-----------|

### Hose connectors

- |                          |      |
|--------------------------|------|
| — Internal hose diameter | 5 mm |
|--------------------------|------|

### Materials used in the gas path

- |                |                  |
|----------------|------------------|
| — Pump adapter | PP, Viton        |
| — Gas guides   | PP, glass        |
| — Dust filter  | PE               |
| — Pump         | EPDM, PTFE, Niro |

### Ambient conditions

- |                |   |
|----------------|---|
| for operation  | 0 to 55 °C (32 to 130°F)<br>700 to 1300 hPa (20.7 to 38.4 inch Hg)<br>0 to 100 % relative humidity, non condensing    |
| during storage | –40 to 70 °C (–40 to 150°F)<br>700 to 1300 hPa (20.7 to 38.4 inch Hg)<br>0 to 100 % relative humidity, non condensing |

### CE markings

- |  |        |
|--|--------|
| — Electromagnetic compatibility (Directive 89/336/EEC) when used with trans- | mitter |
|--|--------|

## Order List

Part name and description	Order No.
Dräger Polytron 7000 4 to 20 mA D, with display and keypad	83 17 610
Dräger Polytron 7000 4 to 20 mA D with relay module, with display and keypad	83 17 636
Dräger Polytron 7000 4 to 20 mA D with pump module, with display and keypad	83 17 637
Dräger Polytron 7000 4 to 20 mA D with relay and pump mod- ules, with display and keypad	83 17 638
Dräger Polytron 7000 4 to 20 mA HART D, with display and keypad	83 17 710
Dräger Polytron 7000 4 to 20 mA HART D with relay module, with display and keypad	83 17 776
Dräger Polytron 7000 4 to 20 mA HART D with pump mod- ule, with display and keypad	83 17 777
Dräger Polytron 7000 4 to 20 mA HART D with relay and ump modules, with display and keypad	83 17 778
Dräger Polytron 7000 LON D, with display and keypad	83 17 810
Dräger Polytron 7000 LON D with relay module, with display and keypad	83 17 816
Dräger Polytron 7000 LON D with pump module, with display and keypad	83 17 817
Dräger Polytron 7000 LON D with relay and pump modules, with display and keypad	83 17 818
Dräger Polytron 7000 PB, with PROFIBUS module with display and keypad	83 19 430
Dräger Polytron 7000 PB, with PROFIBUS module, relay module, display and keypad	83 19 427
Dräger Polytron 7000 PB, with PROFIBUS module, pump module, display and keypad	83 19 436
Dräger Polytron 7000 PB, with PROFIBUS module, relay module and pump module, display and keypad	83 19 438
Dräger Polytron 7000 FF, with Foundation Fieldbus module, with display and keypad	83 19 440
Dräger Polytron 7000 FF, with Foundation Fieldbus module, relay module, with display and keypad	83 19 428
Dräger Polytron 7000 FF, with Foundation Fieldbus module, pump module, display and keypad	83 19 437

## Order List

Part name and description	Order No.
Dräger Polytron 7000 FF, with Foundation Fieldbus module, relay module and pump module, display and keypad	83 19 439
Dräger Docking Station	83 17 990
<b>Sensors</b>	
DrägerSensor AC	68 10 595
DrägerSensor Cl <sub>2</sub>	68 09 665
DrägerSensor CO	68 09 605
DrägerSensor CO LS	68 09 620
DrägerSensor COCl <sub>2</sub>	68 09 930
DrägerSensor H <sub>2</sub>	68 09 685
DrägerSensor H <sub>2</sub> S	68 10 435
DrägerSensor H <sub>2</sub> S	68 09 610
DrägerSensor H <sub>2</sub> S HC	68 09 710
DrägerSensor H <sub>2</sub> O <sub>2</sub>	68 09 705
DrägerSensor H <sub>2</sub> O <sub>2</sub> HC	68 09 675
DrägerSensor HCl	68 09 640
DrägerSensor HCN	68 09 650
DrägerSensor Hydrazine	68 10 180
DrägerSensor Hydride	68 09 635
DrägerSensor Hydride SC	68 09 980
DrägerSensor NH <sub>3</sub>	68 09 680
DrägerSensor NH <sub>3</sub> HC	68 09 645
DrägerSensor NO	68 09 625
DrägerSensor NO HC	68 09 715
DrägerSensor NO <sub>2</sub>	68 09 655
DrägerSensor O <sub>2</sub>	68 09 720
DrägerSensor O <sub>2</sub> LS	68 09 630
DrägerSensor O <sub>3</sub>	68 10 290
DrägerSensor OV1 (Organic Vapours)	68 10 740
DrägerSensor OV2 (Organic Vapours)	68 10 745
DrägerSensor SO <sub>2</sub>	68 09 660
<b>Accessories</b>	
Pump module	on request
Relay module	on request
Cable Entry Set – Daisy Chain	83 17 282
Remote sensor	83 17 275
Remote adapter, 5 m	83 17 270
Remote adapter, 15 m	83 17 998
Remote adapter, 30 m	83 17 999

Part name and description	Order No.
Duct adapter for remote sensor	83 17 617
Dräger Polytron 7000 Data Dongle	83 17 618
Dräger Polytron 7000 Sensor Dongle	83 17 619
Dräger Polytron 7000 Sensor Diagnostic Dongle	83 17 860
Pump adapter for AC sensor used with 68 09 380	83 17 976
Gas Vision	83 14 034
CC Vision	64 08 515
IR data cable, USB DIRA	83 17 409
Palm m515Ex	83 17 995
IR Adapter Palm m515	83 18 080
<b>Calibration accessories</b>	
Calibration adapter	68 06 978
Calibration adapter V	68 10 536
Calibration adapter for AC sensor	68 09 380
Calibration flask	68 03 407
Adapter for calibration flask	68 04 620
Manual pump	68 01 933
Test-gas ampoules and calibration gas, see operating instructions for the DrägerSensor being used	

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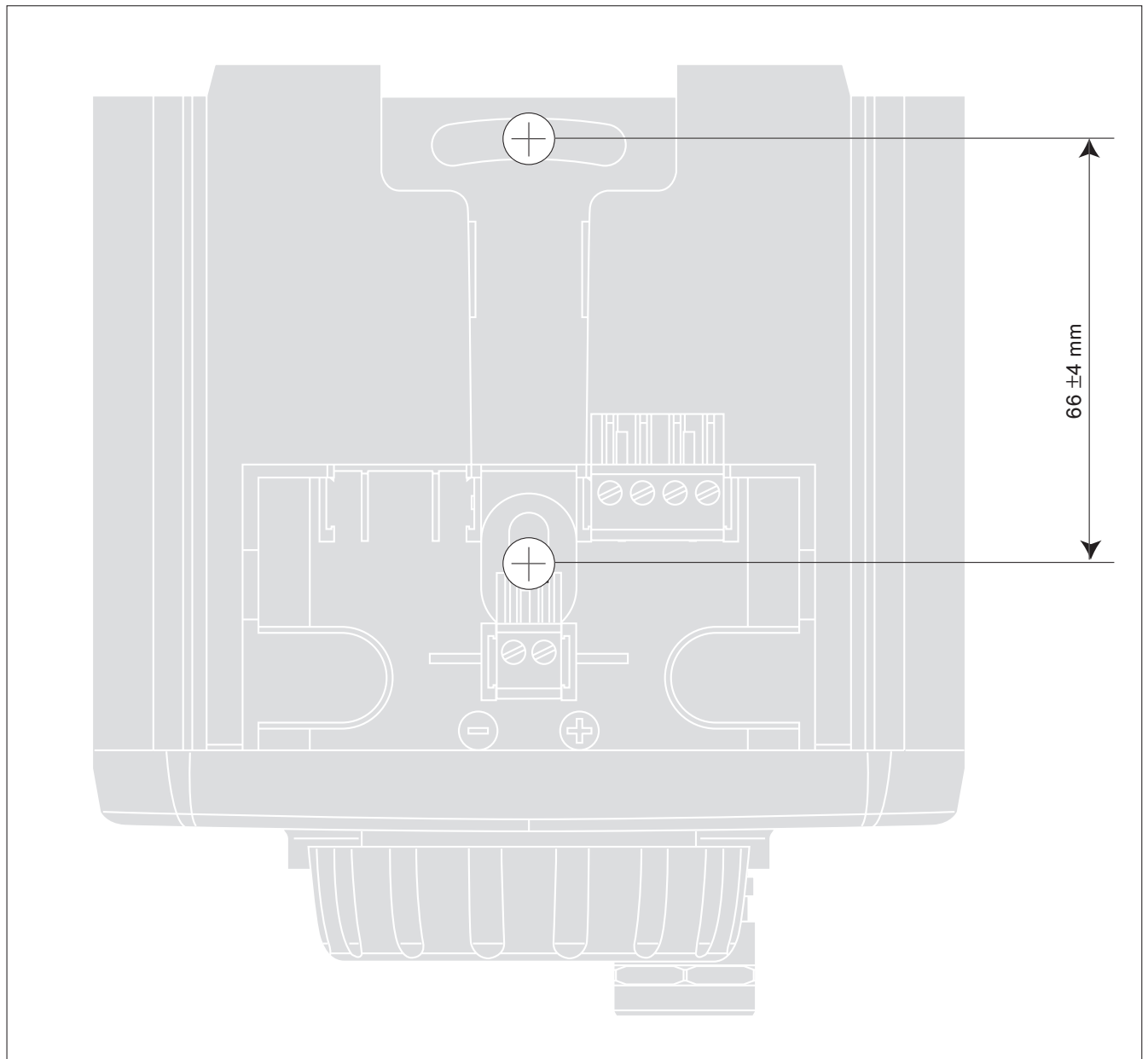
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## Drilling templates

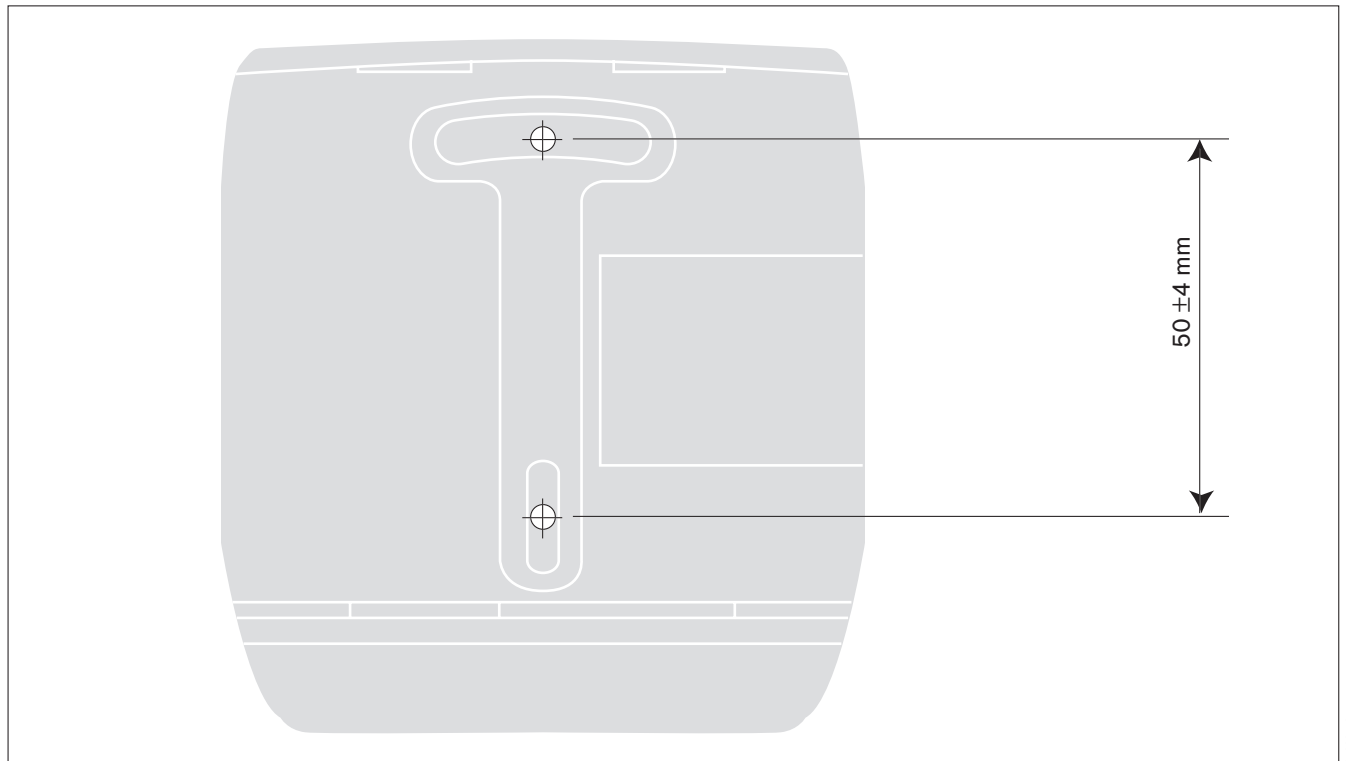
### Dräger docking station



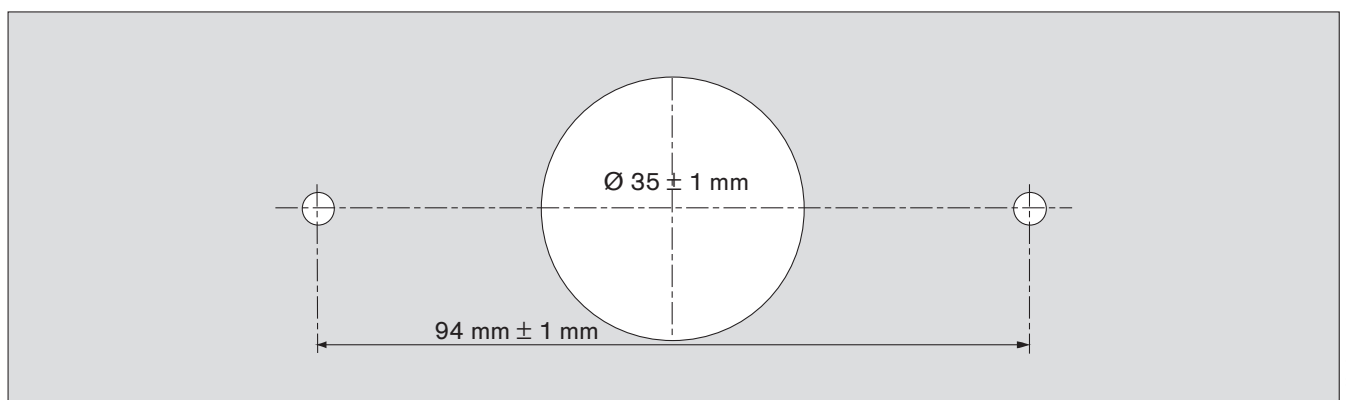
04523758\_1.qps



## Remote sensor



## Duct adapter













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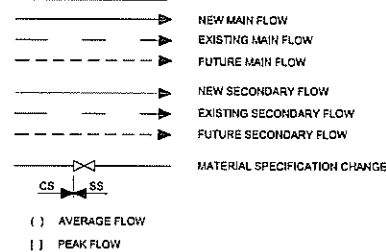
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Edition 06 - May 2011 (Edition 01 - September 2003)

Subject to alteration

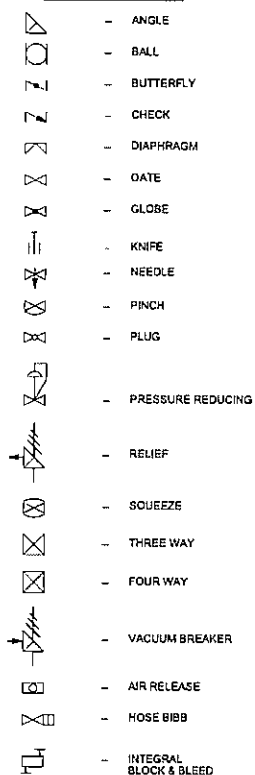
# FLAWS AND LINES



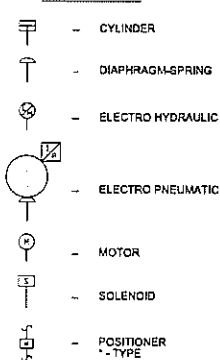
## ABBREVIATIONS

A TO C	AIR TO CLOSE
A TO O	AIR TO OPEN
AVG	AVERAGE
B/E L	BOTTOM ELEVATION
CL	CENTER LINE
CFM	CUBIC FEET PER MINUTE
CW	CITY WATER (POTABLE)
DIA	DIAMETER
DWG	DRAWING
EL	ELEVATION
F.C.	FAIL CLOSED
F.O.	FAIL OPEN
FRL	FILTER/REGULATOR/LUBRICATOR
GAL	GALLONS
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPW	GALLONS PER MINUTE
HB	HOSE BIB
HG	INCHES OF MERCURY
HI	HIGH
HDA	HAND/OFF/AUTO
HP	HORSEPOWER
IA	INSTRUMENT AIR
ID	INSIDE DIAMETER
INV	INVERT
LO	LOW
MH	MANHOLE
MW	MANWAY
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
OAL	OVERALL LENGTH
O.D.	OUTSIDE DIAMETER
PA	PLANT AIR
PSIG	POUNDS PER SQUARE INCH - GAUGE
PW	PLANT WATER
RED	REDUCER
RPM	REVOLUTIONS PER MINUTE
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SG	SPECIFIC GRAVITY
SP	SETPOINT
SSH	STRAIGHT SIDE HEIGHT
STD	STANDARD
SW	SEAL WATER
SWD	SIDE WATER DEPTH
TDH	TOTAL DYNAMIC HEAD (FT OF FLUID)
T/EL	TOP ELEVATION
TYP	TYPICAL
VAC	VACUUM
VSD	VARIABLE SPEED DRIVE
WC	WATER COLUMN
WD	WATER DEPTH
WL	WATER LEVEL
WW	WORKING VOLUME (DOES NOT INCLUDE FREEBOARD OR HEAD)

## VALVE SYMBOLS



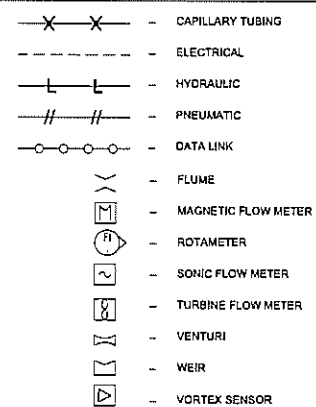
## ACTUATORS



## PIPING AND TUBING MATERIALS

ABS	ACRYLONITRILE BUTADIENE STYRENE TRUSS PIPE
ALM	ALUMINUM PIPE OR TUBING
ARP	ALUMINUM REINFORCED PLASTIC PIPE
BL	BLACK IRON PIPE
BPT	BRAIDED PLASTIC TUBING-PVC
CI	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CMCP	CORRUGATED METAL CULVERT PIPE
CMH	CHEMICAL HOSE
CMP	CORRUGATED METAL PIPE
COP	COPPER PIPE
CPVC	CHLORINATED POLYVINYL CHLORIDE PIPE
CS	CARBON STEEL PIPE
DI	DUCTILE CAST-IRON PIPE
ERP	EPOXY RESIN PIPE
FRP	FIBERGLASS REINFORCED PLASTIC PIPE
GS	GALVANIZED STEEL PIPE
HOSE	FLEXIBLE HOSE
HSI	HIGH SILICON IRON PIPE
KLS	PVDF LINED STEEL PIPE (KYNAR LINED TYPICAL)
KYN	PVDF (KYNAR TYPICAL)
MI	CARBON STEEL PIPE W/MALLEABLE IRON FITTINGS
NEO	NEOPRENE HOSE
NI	NICKEL ALLOY PIPE
NLS	NEOPRENE LINED STEEL PIPE
PEP	POLYETHYLENE PIPE
PETB	POLYETHYLENE TUBING
PLS	POLYPROPYLENE LINED STEEL PIPE
POP	POLYPROPYLENE PIPE
PRP	PHENOLIC RESIN PIPE
PVC	POLYVINYL CHLORIDE PIPE
PVC HOSE	POLYVINYL CHLORIDE HOSE
PVDF	POLYVINYLCHLORIDE FLUORIDE PIPE
RBR	RUBBER HOSE
RCCP	REINFORCED CONCRETE CULVERT PIPE
RCP	REINFORCED CONCRETE PIPE
SAR	SARAN TUBING
SLH	SLUDGE HOSE
SLS	SARAN LINED STEEL PIPE
SS	STAINLESS STEEL PIPE OR TUBING
TEF	TEFLON TUBING
TI	TITANIUM ALLOY PIPE
TLS	TEFLON LINED STEEL PIPE
TYB	TYGON TUBING-BRAIDED
TYG	TYGON TUBING-UNBRAIDED

## INSTRUMENTATION AND RELATED ITEMS



## INSTRUMENT SYMBOLS

	PRIMARY LOCATION ***NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY LOCATION ***NORMALLY ACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS	1	2	3
SHARED DISPLAY, SHARED CONTROL	4	5	6
COMPUTER FUNCTION	7	8	9
PROGRAMMABLE LOGIC CONTROL	10	11	12

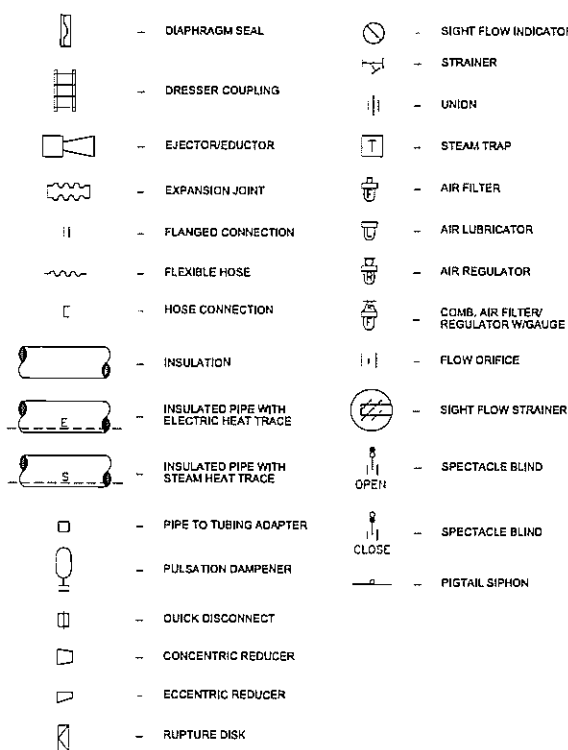
\* SYMBOL SIZE MAY VARY ACCORDING TO THE USER'S NEEDS AND THE TYPE OF DOCUMENT. A SUGGESTED SQUARE AND CIRCLE SIZE FOR LARGE DIAGRAMS IS SHOWN ABOVE, CONSISTENCY IS RECOMMENDED.

\*\* ABBREVIATIONS OF THE USER'S CHOICE SUCH AS IP1 (INSTRUMENT PANEL #1), IC2 (INSTRUMENT CONSOLE #2), CC3 (COMPUTER CONSOLE #3), ETC., MAY BE USED WHEN IT IS NECESSARY TO SPECIFY INSTRUMENT OR FUNCTION LOCATION.

\*\*\* NORMALLY INACCESSIBLE OR BEHIND-THE-PANEL DEVICES OR FUNCTIONS MAY BE DEPICTED BY USING THE SAME SYMBOL BUT WITH DASHED HORIZONTAL BARS, I.E.



## PIPING ACCESSORIES



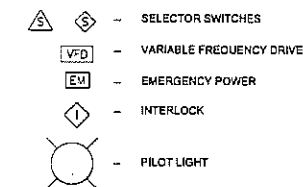
ISA INSTRUMENT IDENTIFICATION TABLE			
PROCESS VARIABLE	MODIFIER (IF NEEDED)	SUCCEEDING LETTERS	
		READOUT OR COMPUTER FUNCTION	MODIFIER (IF NEEDED)
A ANALYSIS		ALARM	
B BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE
C USER'S CHOICE		CONTROL	
D USER'S CHOICE	DIFFERENTIAL		
E VOLTAGE		SENSOR (PRIMARY ELEMENT)	
F FLOW RATE	RATIO (FRACTION)		
G USER'S CHOICE		GLASS, VIEWING DEVICE	
H HAND			HIGH
I CURRENT (ELECTRICAL)		INDICATE	
J POWER	SCAN		
K TIME, TIME SCHEDULE	TIME RATE OF CHANGE	CONTROL STATION	
L LEVEL		LIGHT	LOW
M USER'S CHOICE	MOMENTARY		MIDDLE, INTERMEDIATE
N USER'S CHOICE		USER'S CHOICE	USER'S CHOICE
O OPERATING		ORIFICE (RESTRICTION)	
P PRESSURE, VACUUM		POINT (TEST CONNECTION)	
Q QUANTITY	INTEGRATE, TOTALIZE		
R RADIATION		RECORD	
S SPEED, FREQUENCY	SAFETY	SWITCH	
T TEMPERATURE		TRANSMIT	
U MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION
V VIBRATION, MECH. ANALYSIS		VALVE, DAMPER, LOUVER	
W WEIGHT, FORCE		WELL	
X UNCLASSIFIED	X-AXIS	UNCLASSIFIED	UNCLASSIFIED
Y EVENT, STATE OR PRESENCE	Y-AXIS	RELAY, COMPUTE, CONVERT	
Z POSITION, DIMENSION	Z-AXIS	DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

LEGEND BASED ON ISA STANDARD S 5.1

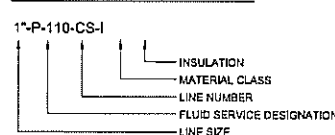
## INSTRUMENT TAG NUMBERS

TIC 103 - INSTRUMENTATION IDENTIFICATION OR TAG NUMBER  
103 - LOOP NUMBER  
TIC - FUNCTIONAL IDENTIFICATION  
NOTE: HYPHENS ARE OPTIONAL AS SEPARATORS

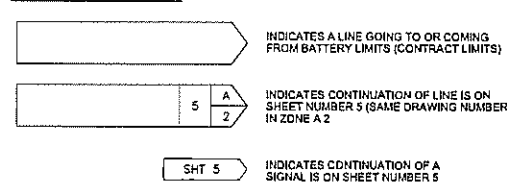
## ELECTRICAL AND RELATED ITEMS



## LINE NUMBER IDENTIFICATION



## LINE CONTINUATIONS



## EQUIPMENT TAG NUMBERS

XXXXX AGITATORS, AERATORS  
BX XXXX AIR HANDLING-BLOWERS, COMPRESSORS, DRIVERS  
RX XXXX CLARIFIERS, THICKENERS, SEPARATORS  
FX XXXX FILTERS-VACUUM, PRESSURE, CENTRIFUGES  
PX XXXX PUMPS  
TX XXXX TANKS  
EX XXXX HEAT EXCHANGER  
HX XXXX SOFTENERS, DEMINERALIZERS  
RO XXXX REVERSE OSMOSIS UNITS  
SG XXXX STEAM GENERATORS

## VALVE & ACCESSORY TAG

VX XXXX VALVE  
EX XXXX EXPANSION JOINT  
HX XXXX HOSE  
FX XXXX FILTER  
SX XXXX STRAINER  
SB XXXX SPECTACLE BLIND  
ST XXXX STEAM TRAP  
IX XXXX INJECTOR

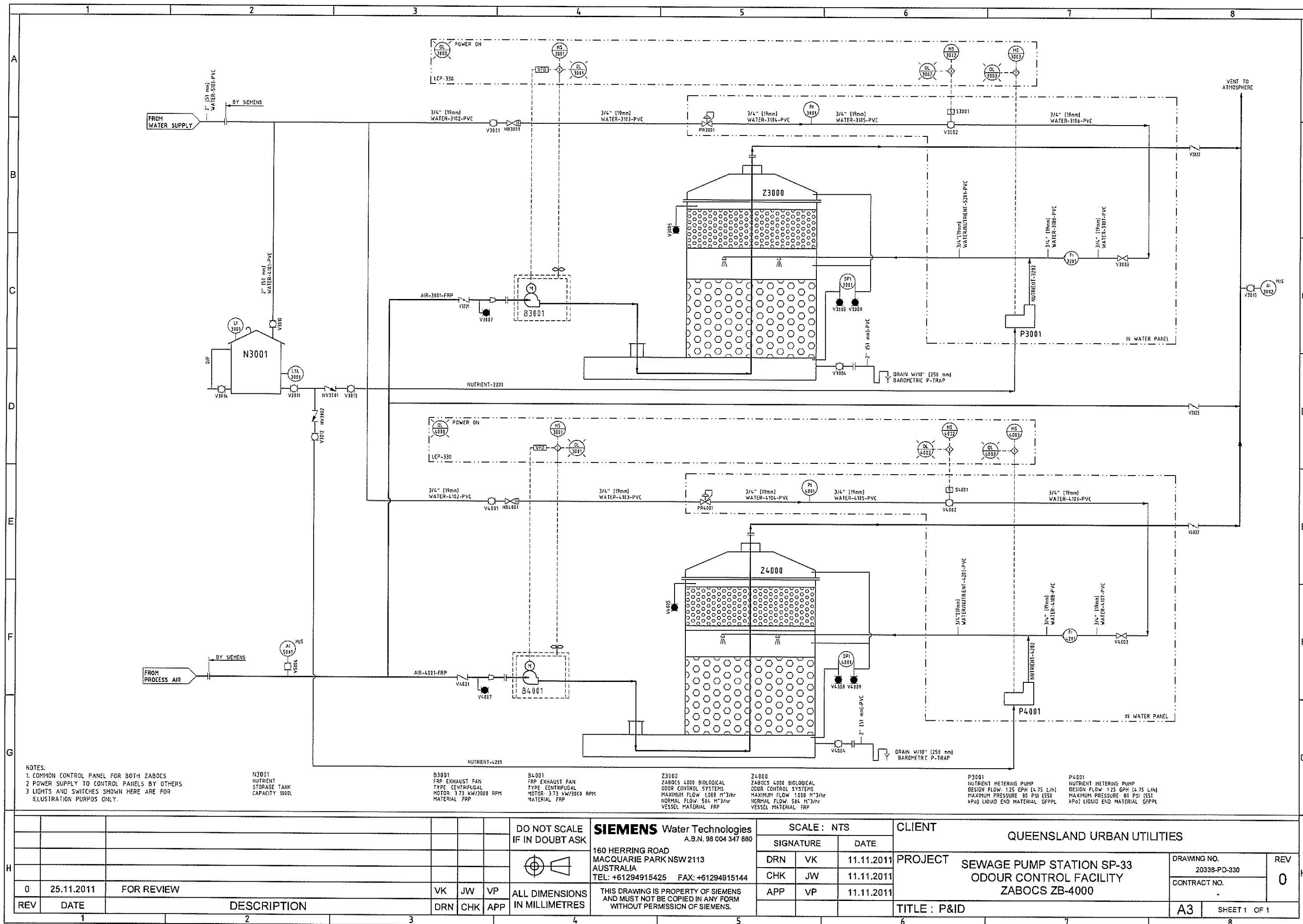
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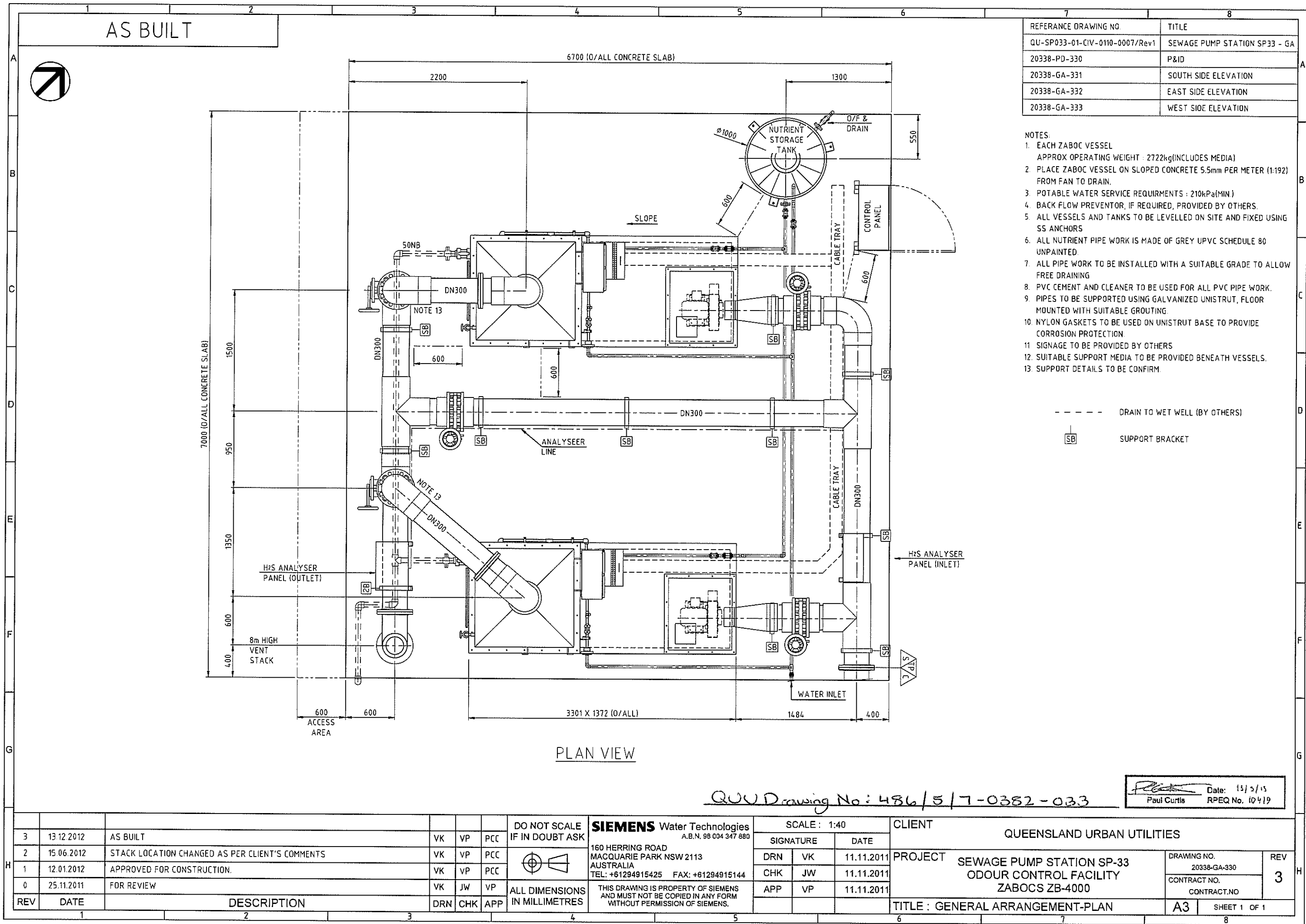
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CHECKER	DATE			
DP	09/08/11			
ENGINEER	DATE			
NN	09/08/11			
MANAGER	DATE			
DP	09/08/11			
FILE: 000202-11				
SCALE: NTS				
PROJECT	CODE	DRAWING	SHEET	REV
000202	-	11	1 OF 2	-

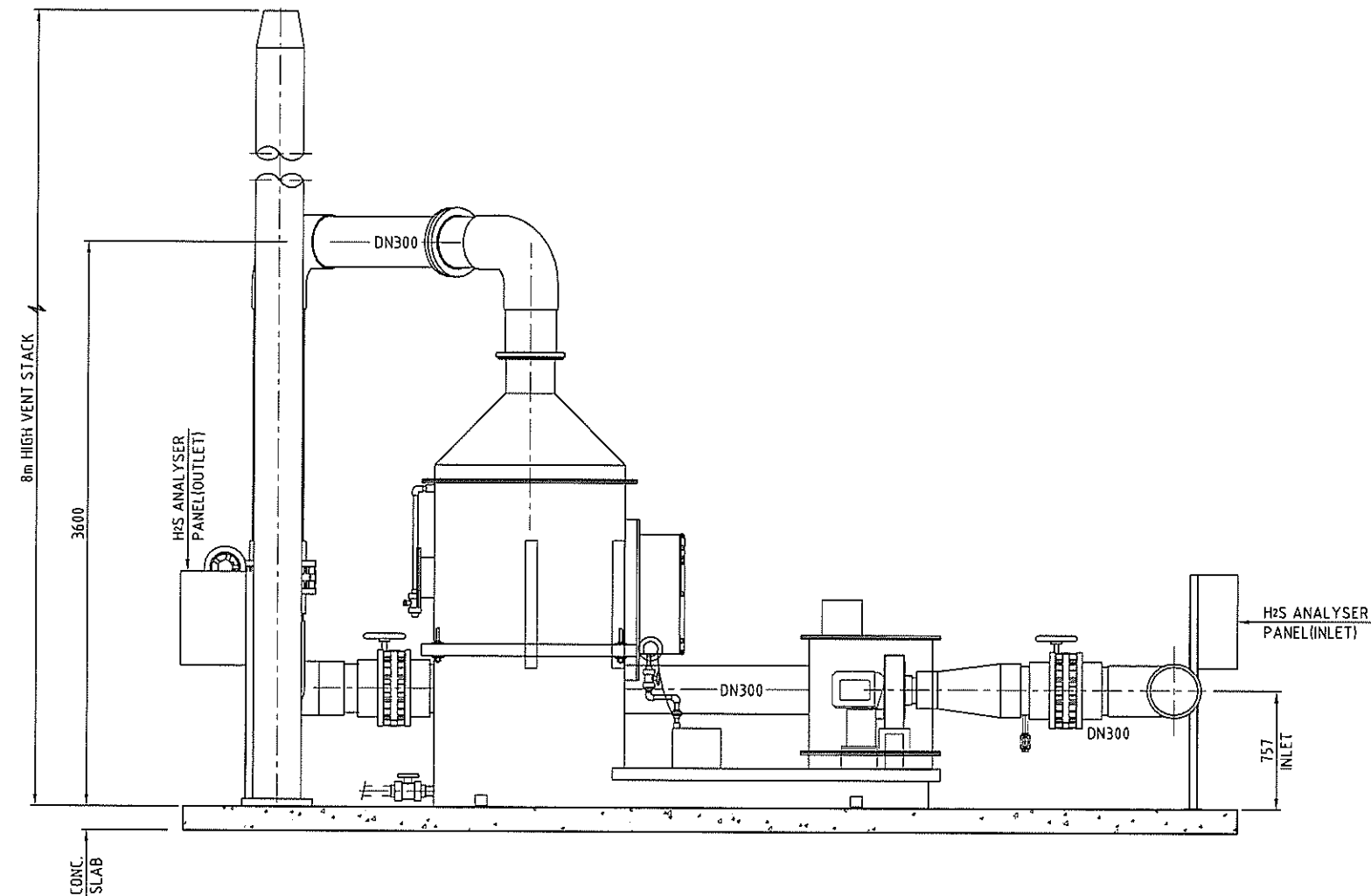
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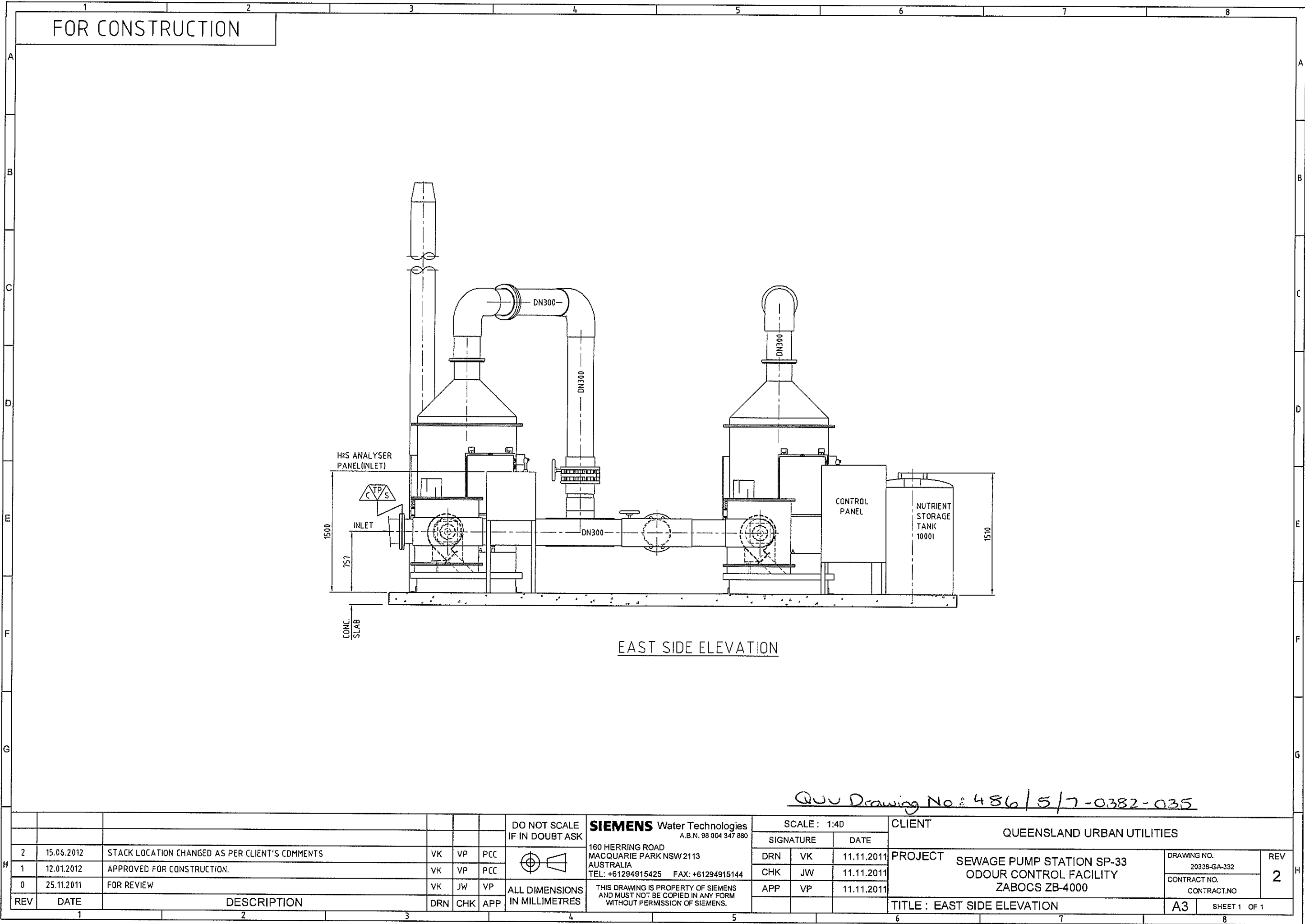




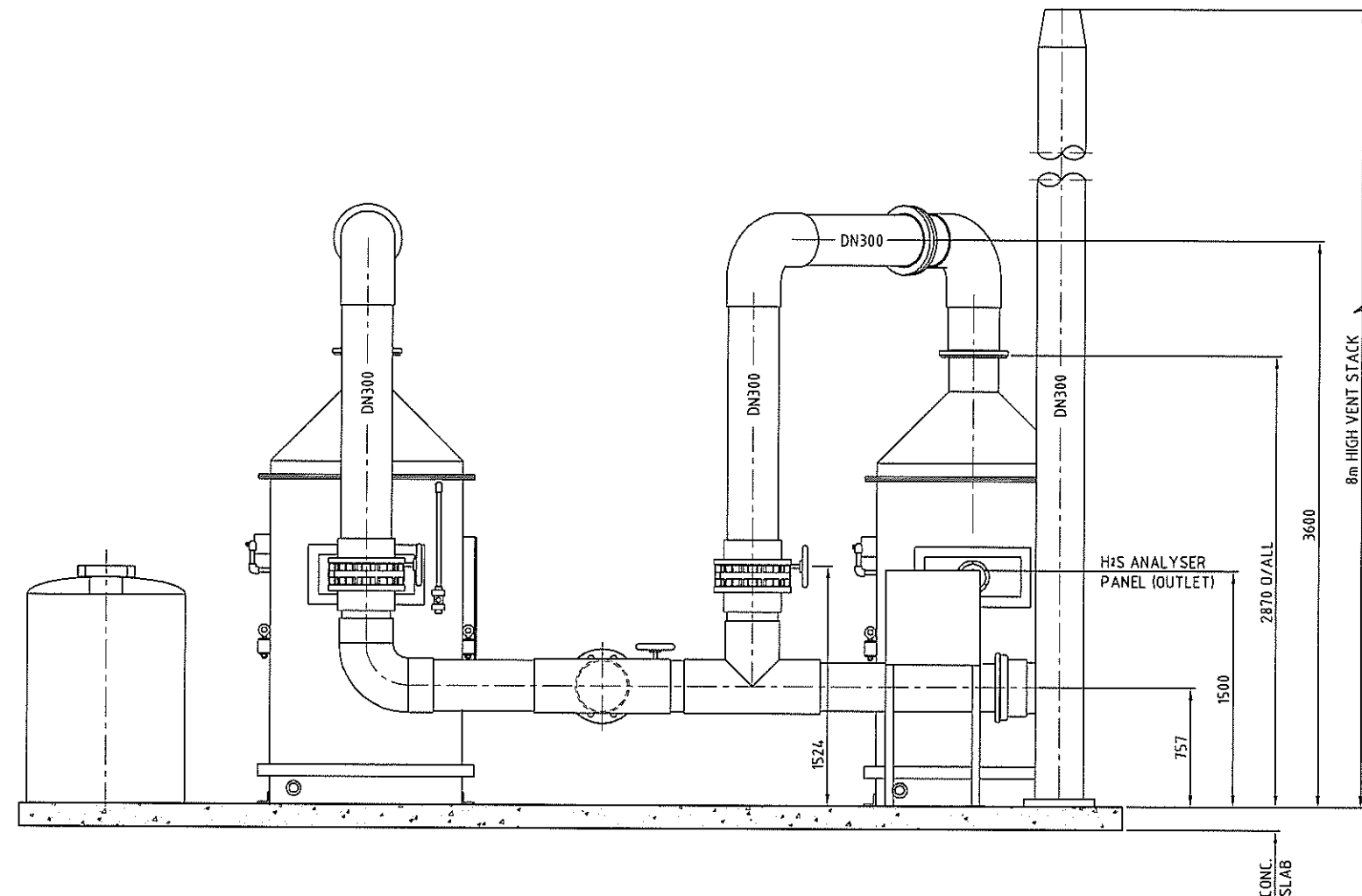
SOUTH SIDE ELEVATION

SYSTEM DRAIN TYP.

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WEST SIDE ELEVATION

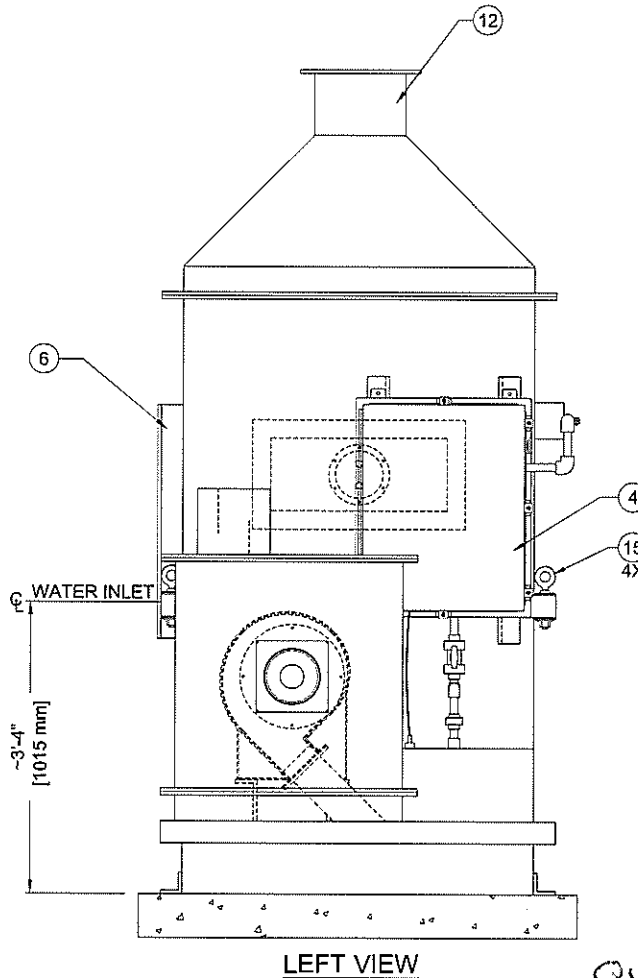
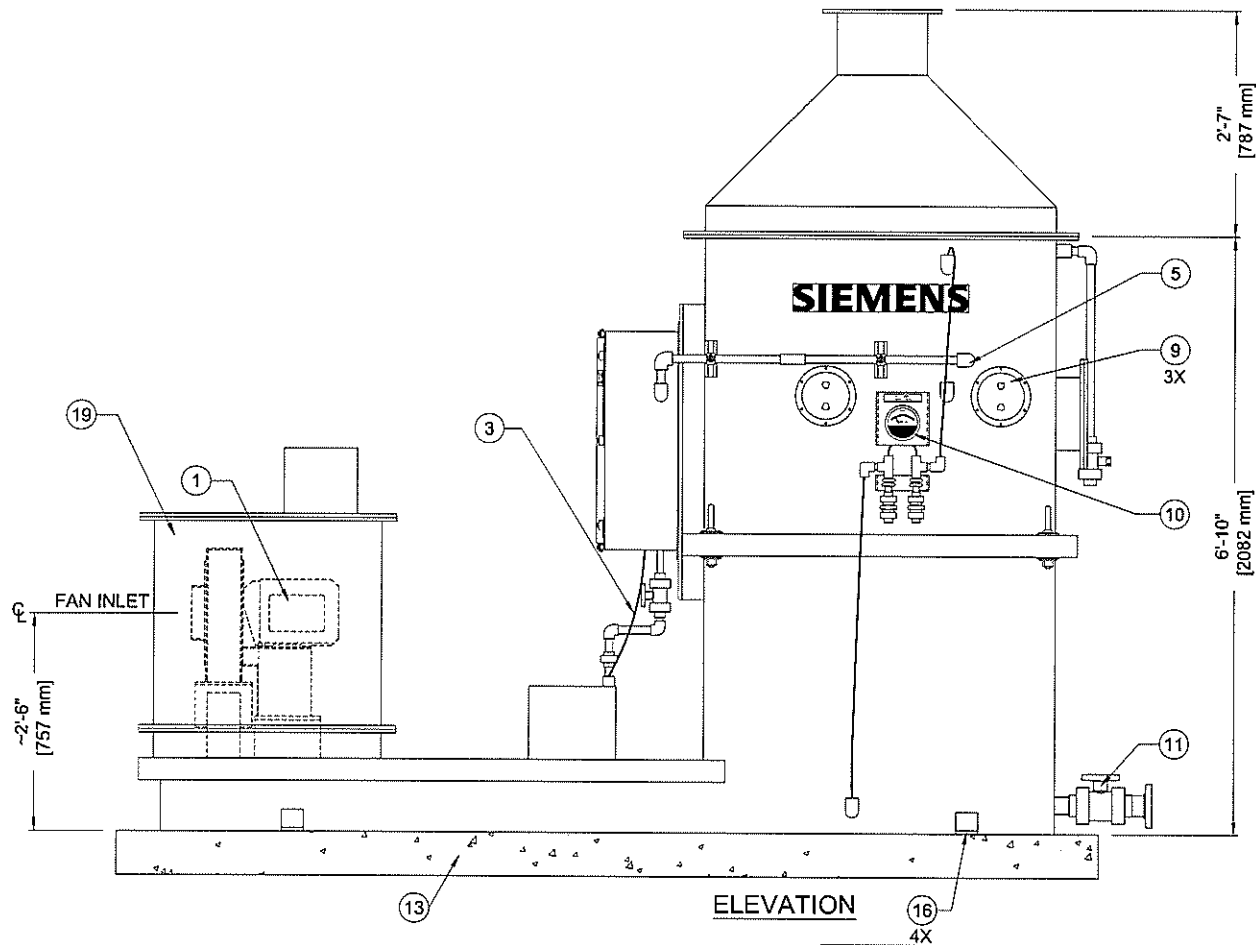
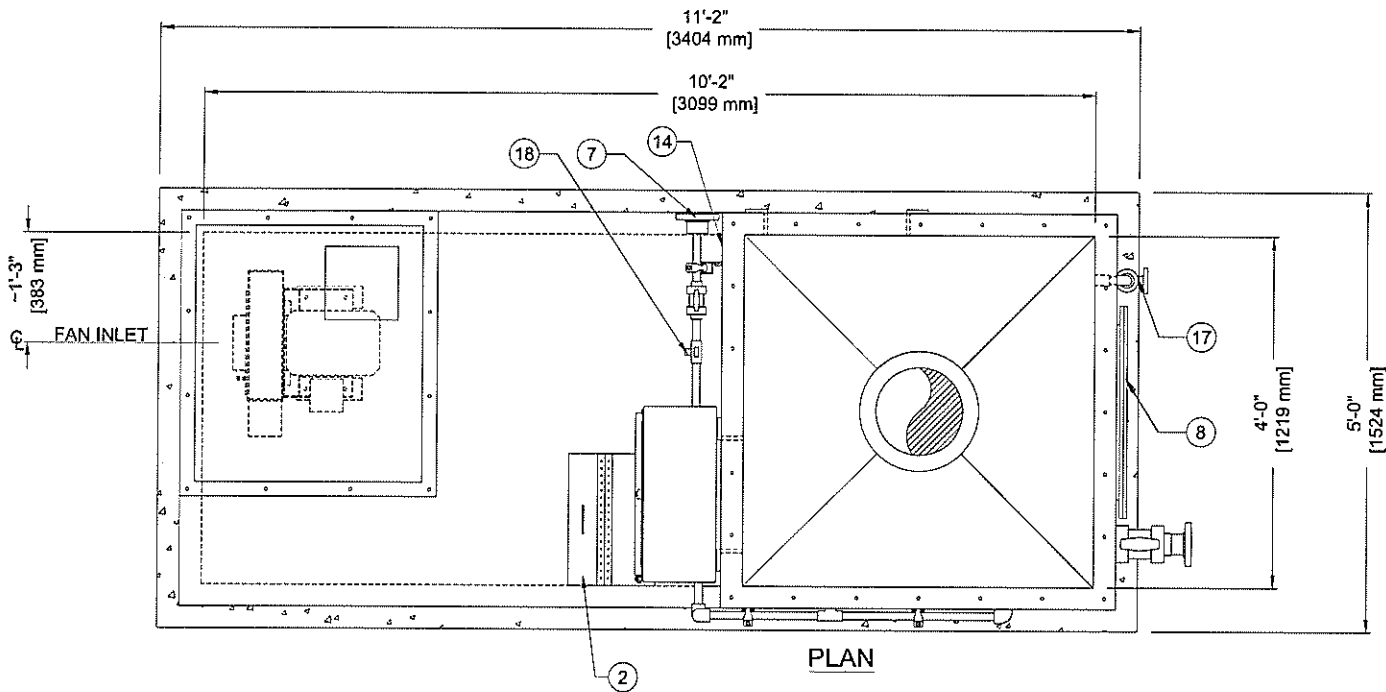
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						DO NOT SCALE IF IN DOUBT ASK	<b>SIEMENS</b> Water Technologies A.B.N. 98 004 347 880	SCALE: 1:40		CLIENT					
								SIGNATURE		DATE		QUEENSLAND URBAN UTILITIES			
2	15.06.2012	STACK LOCATION CHANGED AS PER CLIENT'S COMMENTS	VK	VP	PCC		160 HERRING ROAD MACQUARIE PARK NSW 2113 AUSTRALIA TEL: +61294915425 FAX: +61294915144	DRN	VK	11.11.2011	PROJECT SEWAGE PUMP STATION SP-33 ODOUR CONTROL FACILITY ZABOCS ZB-4000		DRAWING NO. 20338-GA-333	REV 2	
1	12.01.2012	APPROVED FOR CONSTRUCTION.	VK	VP	PCC		CHK	JW	11.11.2011	CONTRACT NO.					
0	25.11.2011	FOR REVIEW	VK	JW	VP		APP	VP	11.11.2011	CONTRACT NO.					
REV	DATE	DESCRIPTION	DRN	CHK	APP	ALL DIMENSIONS IN MILLIMETRES	THIS DRAWING IS PROPERTY OF SIEMENS AND MUST NOT BE COPIED IN ANY FORM WITHOUT PERMISSION OF SIEMENS.				TITLE: WEST SIDE ELEVATION		A3	SHEET 1 OF 1	
1		2		3		4		5		6		7		8	

BAR = 1" AT PLOT SCALE

INTL REF: 000202-G21

STD: BORDER-0307-11X17B

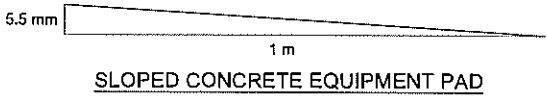


NOMENCLATURE

- 1. FAN (7.75" [197 mm] O.D. SLIP-END INLET)
- 2. NUTRIENT TANK
- 3. NUTRIENT FEED LINE
- 4. SST WATER CABINET
- 5. WATER FEED LINE
- 6. ELECTRICAL CONTROL PANEL MOUNTING BRACKET
- 7. WATER INLET CONNECTION - 2" [50 mm] UNIVERSAL FLANGE
- 8. MAIN ACCESS FLANGE
- 9. ACCESS PORTS (TYP. OF 3)
- 10. DIFFERENTIAL PRESSURE GAUGE
- 11. SYSTEM DRAIN - 2" [50 mm] UNIVERSAL FLANGE
- 12. STACK OUTLET FLANGE - 12" [305 mm] I.D.
- 13. SLOPED CONCRETE EQUIPMENT PAD
- 14. ID TAG
- 15. POSITIONING EYES (TYP. OF 4)
- 16. ANCHOR LUGS (TYP. OF 4)
- 17. OUTLET AIR SAMPLE PORT
- 18. HOSE BIBB
- 19. FRP FAN SOUND ENCLOSURE

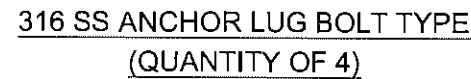
- NOTES:
- 1. APPROX. OPERATING WEIGHT: 6,000 LBS [2722 kg] (INCLUDES MEDIA)
  - 2. PLACE ON SLOPED CONCRETE, 5.5mm PER METER [1:192] FROM FAN TO DRAIN.
  - 3. SERVICE REQUIREMENTS:
    - ELECTRICAL: 400 VAC, 3PH, 25 AMPS, 50 HZ
    - POTABLE WATER: 3/4" [19 mm] LINE (30 PSI MIN.)
  - 4. BACKFLOW PREVENTER, IF REQUIRED, PROVIDED BY OTHERS.
  - 5. 10" [254 mm] BAROMETRIC P-TRAP ON DRAIN, PROVIDED BY OTHERS.
  - 6. ELECTRICAL CONTROL PANEL IS TO BE PROVIDED BY OTHERS.
  - 7. INLET AIR SAMPLE PORT IS TO BE PROVIDED LOOSE AND INSTALLED ON THE INLET DUCTWORK BY OTHERS.

TYPICAL OF  
2X SYSTEMS

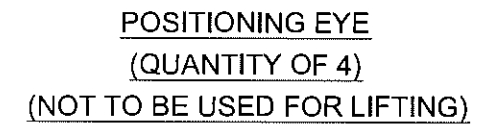


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							NN	10/04/11	QUEENSLAND URBAN UTILITIES, SPS 33							
							CHECKER	DATE	ZB-4000 BIOLOGICAL ODOR CONTROL SYSTEM							
							DP	10/04/11	GENERAL ARRANGEMENT DRAWING							
							ENGINEER	DATE	CLIENT	SIEMENS LTD						
						NN	10/04/11		AUSTRALIA							
						MANAGER	DATE	<div>SIEMENS</div> <div>Industry San Diego, CA 858-487-2200</div>								
						DP	10/04/11									
						FILE:		000202-G2								
						SCALE:		NTS		PROJECT		CODE	DRAWING		SHEET	REV
										000202		-	G2		1 OF 3	-
REV	DESCRIPTION					DATE	DWN	CHKD	APVD	ECN						



ANCHOR BOLTS TO BE 316 SS HVU ADHESIVE ANCHOR SYSTEM



NOTES:

1. ALL DIMENSIONS IN INCHES.
2. DRILLING PER ANSI STANDARD B16.9.



ID	OD	BC	# HOLES	DIA	L	T	T
102 mm	213 mm	178 mm	4	11 mm	152 mm	10 mm	3 mm
152 mm	264 mm	229 mm	8	11 mm	152 mm	10 mm	3 mm
203 mm	314 mm	279 mm	8	11 mm	152 mm	10 mm	3 mm
254 mm	365 mm	330 mm	12	11 mm	152 mm	10 mm	3 mm
305 mm	416 mm	381 mm	12	11 mm	152 mm	10 mm	3 mm
356 mm	467 mm	432 mm	12	11 mm	152 mm	10 mm	3 mm
406 mm	518 mm	483 mm	16	11 mm	152 mm	13 mm	5 mm
457 mm	568 mm	533 mm	16	11 mm	152 mm	13 mm	5 mm
508 mm	619 mm	584 mm	20	11 mm	152 mm	13 mm	5 mm
610 mm	720 mm	686 mm	20	11 mm	152 mm	13 mm	5 mm
762 mm	873 mm	838 mm	28	11 mm	152 mm	13 mm	5 mm
914 mm	1026 mm	991 mm	32	11 mm	152 mm	13 mm	5 mm
1067 mm	1178 mm	1143 mm	36	11 mm	152 mm	16 mm	6 mm
1219 mm	1381 mm	1321 mm	44	14 mm	152 mm	16 mm	6 mm
1372 mm	1534 mm	1473 mm	48	14 mm	152 mm	16 mm	6 mm
1524 mm	1686 mm	1626 mm	52	14 mm	152 mm	16 mm	6 mm

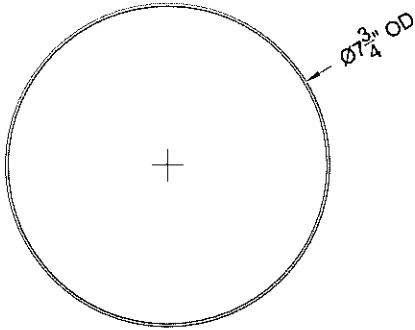
## DRILLED PIPE FLANGES

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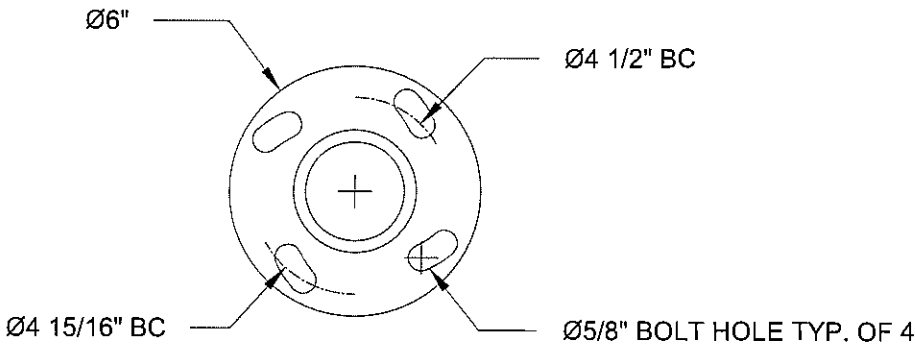
BAR = 1" AT PLOT SCALE

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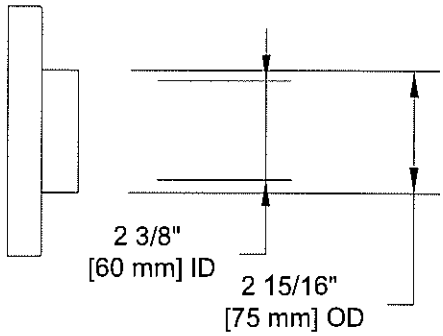
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FAN INLET CONNECTION  
( TYPICAL OF 1 )  
PER SYSTEM

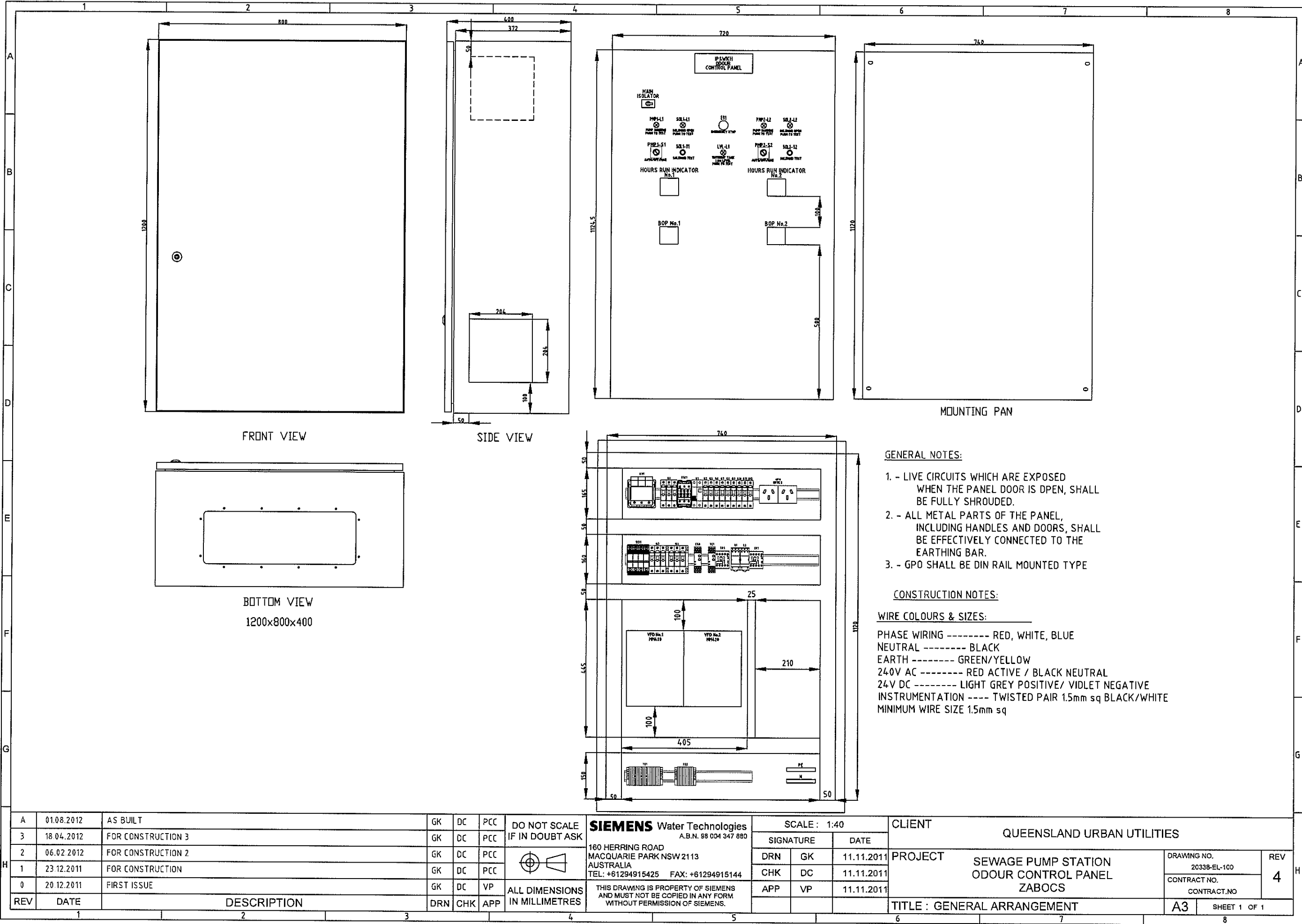


WATER INLET AND DRAIN CONNECTION,  
2" SCH 80 PVC DIAMETER UNIVERSAL FLANGE

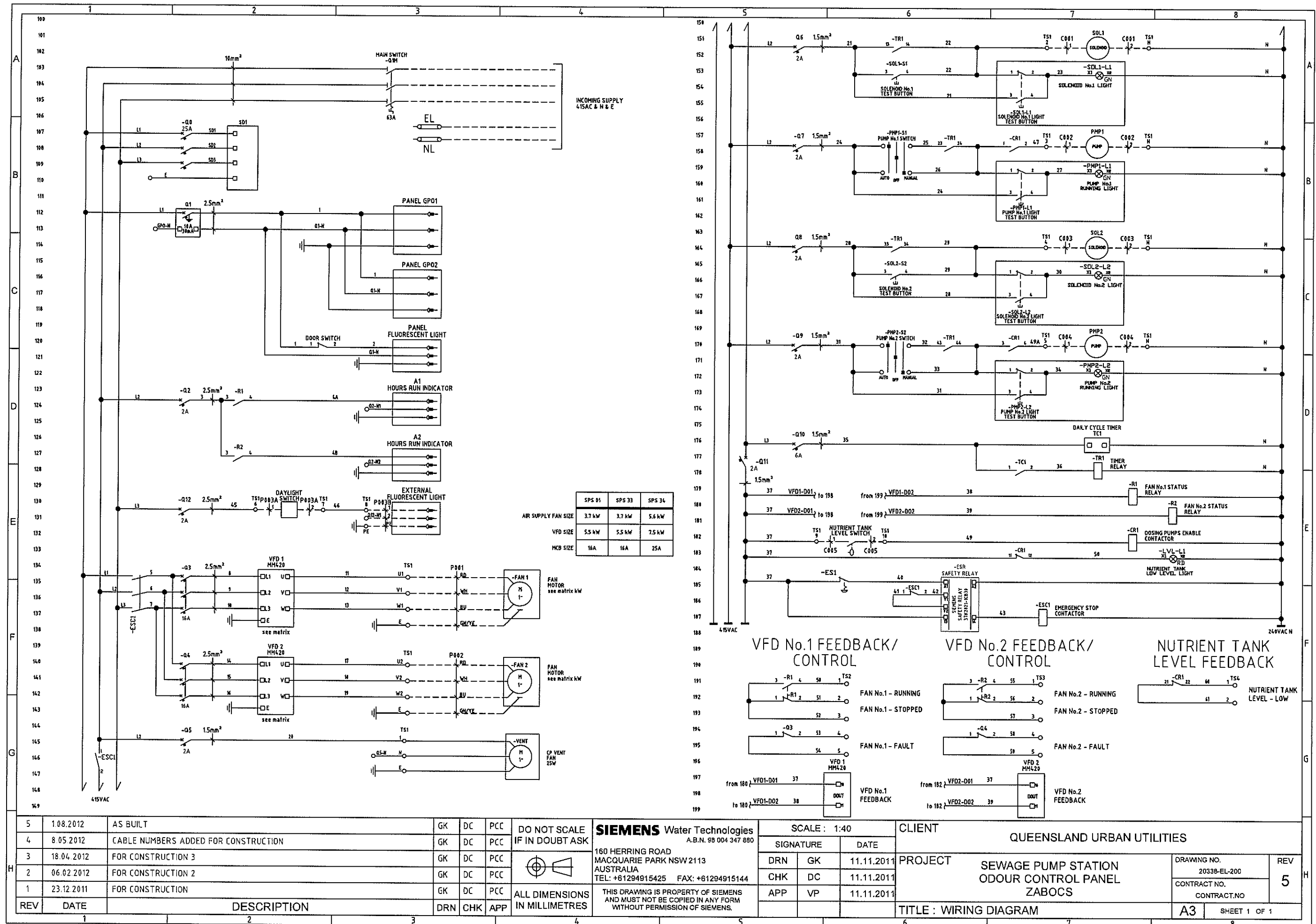


QUU Drawing No : 486/5/7-0382-039

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							NN	10/04/11	QUEENSLAND URBAN UTILITIES, SPS 33							
							CHECKER	DATE	ZB-4000 BIOLOGICAL ODOR CONTROL SYSTEM							
							DP	10/04/11	CONNECTION DETAILS							
							ENGINEER	DATE	CLIENT	SIEMENS LTD						
							NN	10/04/11		AUSTRALIA						
							MANAGER	DATE	<b>SIEMENS</b>	Industry San Diego, CA 858-487-2200						
							DP	10/04/11								
						FILE:	000202-G2									
						SCALE:	NTS	PROJECT	CODE	DRAWING	SHEET	REV				
REV						DESCRIPTION	DATE	DWN	CHKD	APVD	ECN	000202	-	G2	3 OF 3	-



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