

EasyClean 300X

Instruction manual



English:

page 3

EasyClean 300X

Instruction manual

How to use this instruction manual

This instruction manual is an integral part of the EasyClean300X and contains notes and instructions that are important for safety and operation.

All persons working on or with the EasyClean300X must have first read and understood the sections appropriate to the work in hand.

Please read this instruction manual carefully before using the EasyClean 300X system. Keep this document close to the unit, so operating personnel may be easily refer to it at any time.



First read chapter 2 «Safety»!

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1 Product description

1.1 Introduction

Conformity

EasyClean200 and EasyClean300 correspond to the following guidelines:

- Low voltage guidelines:
 - EU guidelines 73/23/EU
 - Swiss guidelines SR734.26NEV
 - safety guidelines EN61010-1
 - IP-rating EN60529 IP65
- Guidelines EMC:
 - emission EN61326-1, class B
 - harmonics EN61000-3-2
 - voltage deviations EN61000-3-3
 - immunity EN61326-1

Certificates

CE, CSA c us, GS
 ATEX Eex de[ia] IIC T5
 UL Class 1 Zone 1 AEx de IIC
 NEPSI (pending)

Identification

The type plates are located on the left-hand exterior of the housings.



1.2 Fittings and deliverables

Deliverables

EasyClean200 and 300 are shipped without connecting cables. At the installation site, cables are connected to the appropriate terminals in the unit (please refer to **section 4.2 «Connections»**).

Packaging

The unit is packed in plain and padded cardboard.

We recommend that you retain the packing materials for subsequent storage or transportation of the unit. Should you choose to discard the packing materials, observe local regulations and **section 7.3 «Disposal»**.

Good inspection

Check the goods for damage while unpacking. Should you notice signs of damage, inform the shipper and your supplier without delay.

Check the delivery against your order and the delivery note.

1.3 Data and key characteristics EasyClean300X

Housing	Aluminiumlegierung und Stahlblech mit Kunststoffbeschichtung Attention: housing may not be cleaned with solvents containing acetone
Weight	control and valve unit approx. 60 kg (132 lb)
Protection rating	IP65
Ambient conditions	temp. in operation: 0...40 °C (32...104 °F) temp. storage/transportation: -10...70 °C (14...158 °F) degree of pollution: 2 overvoltage category: III
Power supply	120 – 230V AC, 50/60 Hz, 0.18 – 0.3 A (± 15%)
System control	process initiation: via a wash contact in the associated transmitter pH2220X sequence: controlled by the integrated programable PLC
Control input	1 control input for wash contact in transmitter 24V
Control output	1 hold output for external hold relay in transmitter; 24V
Transmitter	METTLER TOLEDO Transmitter for half automatic operation: – pH2220X (Option 487) alternatively via any standard transmitter with wash contact and hold function
Electrical connections	terminal strip 0.08 – 2.5 mm ²
Connection to valve unit	fixed 10-wire control cable 1.5 mm ²
Connection transmitter	4-wire control cable 1.5 mm ² length: 5 m (optional 10 m)
Cable ducts	Ø 3.5 – 10 mm => M 16 Ø 2.5 – 6.5 mm => M 12
Compressed air supply	4 – 8 bar (400 – 800 kPa, 58 – 116 psi) – air quality according to ISO 8573-1 – moisture class 4 (water dew point +3 °C) – particles class 5 (filter 40 µm) – max. oil content class 2 (0.1 mg/m ³) connection: thread G ¹ / ₈ "

Connection to retractable housing	LDPE hose Ø 6/4 mm (1/8"/1/4") optional: PTFE hose Ø 6/4 mm (1/8"/1/4")
Flushing water supply	pressure: 2 – 6 bar (200 – 600 kPa, 29 – 87 psi) connection: thread G ^{1/4} " female
Pump	pump height: max. 8 m (26 ft) suction height: max. 3 m (9.8 ft) volume: 15 ml/cycle at max. pump and suction height material: pump body PP conductive check valves 1.4401, 1.4435 sealing: Viton® connection: thread G ^{1/8} " (PP)
Materials in contact with air, rinsing water, cleaning agents and/or buffers	1.4310, 1.4105, 1.4303 cleaning-/calibration solution PP conductive LDPE, PTFE, Viton®, PPS, 1.4571, 1.4435, 1.4310, 1.4401
Medias in connection with the LDPE hose	water: 0...60 °C (32...140 °F) cleaning solution: 0...50 °C (32...122 °F) buffer: 0...50 °C (32...122 °F)
Medias in connection with the PTFE hose	water: 0...90 °C (32...194 °F) cleaning solution: 0...50 °C (32...122 °F) buffer: 0...50 °C (32...122 °F)

Subject to technical changes

Conformity with standards

This explosionproof, flameproof control unit meets the requirements of EN 50 014:1997, EN 50 018:1994 and EN 50 019:1994.

It was developed in accordance with the state-of-the-art engineering practice and manufactured and tested to EN ISO 9001.

This flameproof control unit is suitable for duty in potential explosive atmosphere of zone 1 and 2 as defined by EN 60 079-14:1997 and EN 60 079-10:1996.

2 Safety

2.1 Introduction

This instruction manual lists the main points of how to use the EasyClean300X efficiently, in the intended manner. For safe, trouble-free operation, operators must be aware of these safety instructions and comply with further warning notices in the instruction manual.

This instruction manual, and the safety requirements in particular, must be observed by the operator and all other persons working with the EasyClean300X. Compliance with local regulations and statutory requirements is also essential.

The instruction manual must always be stored close at hand, in a place accessible to all people working with the EasyClean300X.

2.2 Intended use

EasyClean300X is intended solely for automatically controlled flushing and cleaning and semi-automated calibration of sensors in retractable housings, as described in this instruction manual.

Other prerequisites for appropriate use include:

- observing the instructions, notes and requirements set out in this instruction manual
- observing the prescribed inspection and maintenance intervals
- correct care and maintenance of the unit, according to the instruction manual
- observing the prescribed environmental and operational conditions, and permitted installation positions
- compliance with local statutes
- Compliance with official Ex guidelines

2.3 Inappropriate use

Any other use, or use not mentioned here, that is incompatible with the technical specifications is deemed inappropriate. The operator is solely responsible for any damage arising from such use.

The following are deemed particularly inappropriate:

- Installation and operation of the open-design unit in a hazardous area (explosive atmosphere)
- use of hydraulic fluid in place of compressed air
- use of suspensions as cleaning media
- use of salt acid of > 10%.

2.4 Basic principles

The EasyClean300X is a state-of-the-art construction and complies with engineering safety guidelines.

All the same, there can remain certain risks and hazards:

- if the units are operated by inadequately trained personnel.
- if the units are not used in the intended manner.
- if the units are not inspected periodically or the periodical inspection is not carried out properly.

EasyClean300X units must only be used while in perfect working order, for their intended purpose, with due awareness of associated safety and hazard issues and in compliance with the instruction manual.

Defects or damage that impact the unit's safety and functionality must be immediately repaired by the operator or a suitably qualified person, and reported in writing to the manufacturer.

2.5 Warning notices and symbols

This instruction manual identifies safety instructions by means of the following symbols:

**DANGER!**

Warns of a hazard that could lead to extensive material damage, death or grievous bodily injuries.

**CAUTION!**

Warns of a potentially hazardous situation that could lead to minor bodily injury and/or material damage.

**NOTICE!**

Information relating to technical requirements. Non-observance could lead to defects, inefficient operation and possible loss of production.

2.6 Responsibility, organizational measures

Operator's responsibilities

- The operator must only permit personnel to work with the EasyClean300X if they are acquainted with basic regulations concerning workplace safety and accident prevention, and familiar with operating the unit. This instruction manual serves as a basis.
- In addition to the instruction manual, the operator must provide instruction in general statutory and other binding regulations concerning workplace safety and accident prevention, as well as environmental protection.
- Personnel safety and hazard awareness must be monitored regularly.
- Steps must be taken to ensure that the EasyClean300X is operated only while in a safe, properly functional state.

Personnel responsibilities

- All persons working with the EasyClean300X must have read the section on safety and responsibilities the warning notices contained in this instruction manual.
- In addition to the instruction manual, generally applicable statutory and other binding regulations concerning workplace safety and accident protection must also be observed.
- Avoid any hazardous working practices that exceed the unit's intended purpose.

Personnel selection and qualification – basic responsibilities

- Only dependable, trained or supervised personnel may work with the EasyClean300X. Operators must read this instruction manual beforehand.
- Responsibilities for operating, maintaining, installing, etc. the unit must be clearly defined.
- Appropriate steps must be taken to ensure that the unit is used by authorized personnel only.
- Personnel under instruction, supervision or general training may only work with the unit under constant supervision by an experienced person.
- Work on electrical parts of the unit may only be performed by a qualified electrician in compliance with electrical engineering regulations.

Constructional modifications on the unit

- The unit may not be modified, extended or rebuilt in a way that impacts its safety without written permission from Mettler-Toledo GmbH, Process Analytics.
- Any parts and components that are not in perfect working order must be replaced without delay.

2.7 Product-specific hazards



Electrical hazards!

Opening the unit for installation or repair work exposes live electrical parts.

Close the unit immediately after work is completed!



Compressed air/water hazards!

Pressurized pipes (compressed air, water) must be isolated and depressurized before commencing repair work!



Ex relevant hazards!

This apparatus is not suitable for duty in Zone 0.
No changes to or modifications of the apparatus are permitted!

Remember: Never leave this Instruction Manual or other foreign objects inside the apparatus!

Operate the control unit in undamaged and clean condition, only for its intended purpose, and only in ambient conditions the enclosure material is capable of withstanding.

An incorrectly assembled control unit may no longer meet the requirements of protection type as defined by EN 60 529:1991

2.8 Residual hazards



Despite all precautionary measures, there remain residual hazards such as:

- a pipe bursting
- hazards arising from a defect in a supervisory controller.

2.9 Emergency measures



Should fluid come into contact with the eyes, rinse thoroughly under running water for at least 15 minutes. A doctor must be consulted for subsequent diagnosis.

Fluid coming into contact with the skin must be immediately washed away with water.

Medical assistance is mandatory for symptoms that clearly arise from skin or eye contact with a medium. Inform the doctor about the type and specific identity of all materials used.

2.10 Safety measures

Always observe local statutes and regulations. They are not incorporated in this instruction manual.

Personal safety equipment like protective goggles and clothing must be worn.

The unit must only be operated while closed.

The operator is responsible for personnel instruction. By way of assistance, the instruction manual can also be ordered in other languages. Being an integral part of the unit, this instruction manual must always be available at the unit's location.

The operator should immediately inform the manufacturer about all safety-related events occurring during use of the unit.

2.11 Modifications

Modifications are permitted only after prior consultation and written approval from the manufacturer.

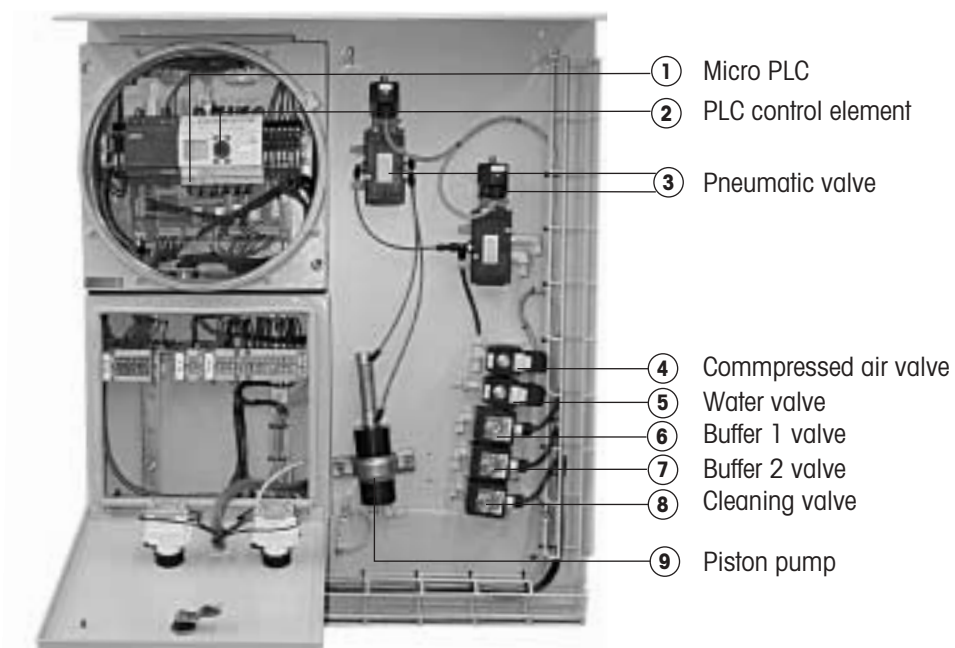
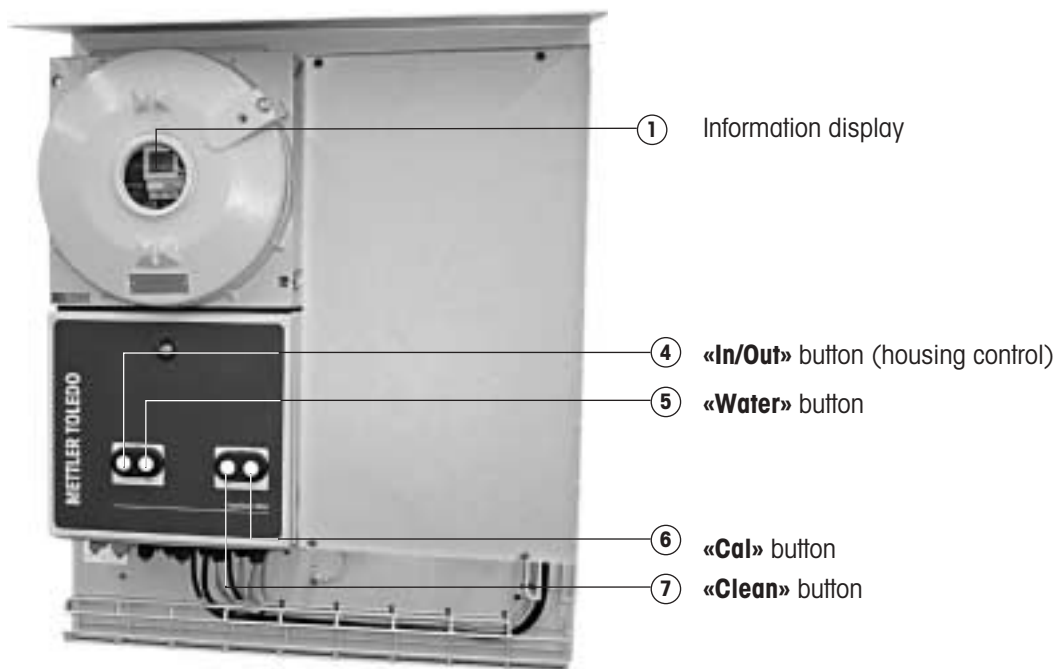
The conversion of the cleaning function to calibration function must only be carried out by qualified personnel.

Only those parts of the unit essential to fulfilling its function may be removed and refitted. Except for authorized service personnel, it is forbidden to remove protective guards and covers using a regular tool. Touching live electrical parts represents a lethal hazard.

3 Your device

3.1 Layout

EasyClean300X



3.2 Functions

General

EasyClean300X is designed to be used with the Mettler-Toledo pH2220X transmitter or any other transmitter with wash contact. This combination provides fully automatic flushing and cleaning as well as semi-automatic calibration of electrodes in retractable housings.

EasyClean300X is supplied with a preset application program. Both the rinsing and cleaning time can be adjusted by the operator to suit the individual local conditions.

The various procedures are triggered by switching the wash contact of the associated transmitter. The built-in PLC logic controls all flushing, cleaning and calibration procedures in EasyClean.

Types of operation

The EasyClean300X has no main switch, and is always in active status.

Basic setting

When the EasyClean300X is switched off, the electrode is removed from the process medium.

If the EasyClean300X is connected to the mains, the housing and sensor move into the measuring position.

The message «RUN» appears on the display. The EasyClean300X is ready for operation.

Hold function

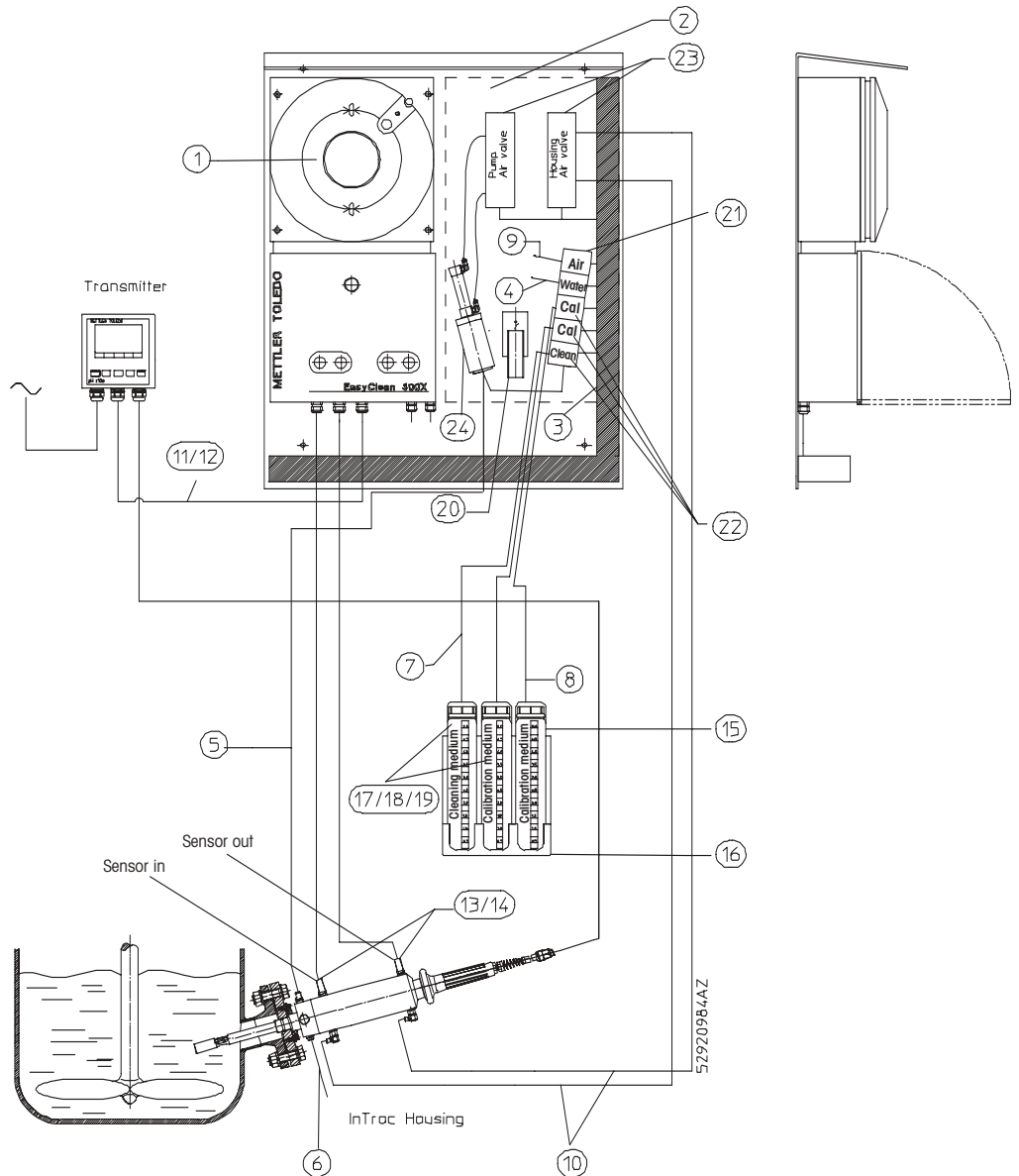
The «HOLD» function is a function of the transmitter. This function suppresses the measured values of the sensor during a work cycle of the EasyClean300X.

Messages

The integrated control is equipped with a display. This displays the current function status of the control.

3.3 Integration into a measurement system

The following diagram shows a typical example of the integration of the EasyClean300X into a measurement system.



- | | | | |
|-------|---|-------|---|
| 1 | Control unit | 13/14 | Inductive feedback device (modification kits for existing housings are available) |
| 2 | Valve unit | 15 | Canister for cleaning medium (optional) |
| 3 | Connection cable control unit > valve unit | 16 | Canister rack for 3 canister (optional) |
| 4 | Water connection | 17-19 | Buffer solutions (optional) |
| 5 | Connecting hose valve unit > retractable housing | 20 | Flow sensor |
| 6 | Drainwater hose | 21 | Air/water valve |
| 7 | Connecting hose valve unit > cleaning medium | 22 | Buffer-cleaning valves |
| 8 | Connecting hoses valve unit > buffer reservoir(s) | 23 | Pneumatic valve |
| 9 | Compressed air hose | 24 | Pisten pump |
| 10 | Control air hoses for housing, 5 m | | |
| 11/12 | Control cable transmitter > control unit | | |

4 Commissioning



DANGER

Please refer to chapter 2 «Safety».

All work on the system's electrical components may only be performed by authorized, specialist staff.



NOTICE

During commissioning, please proceed according to section 4.3 «Checklist for installation and commissioning». Note the references to more detailed information.

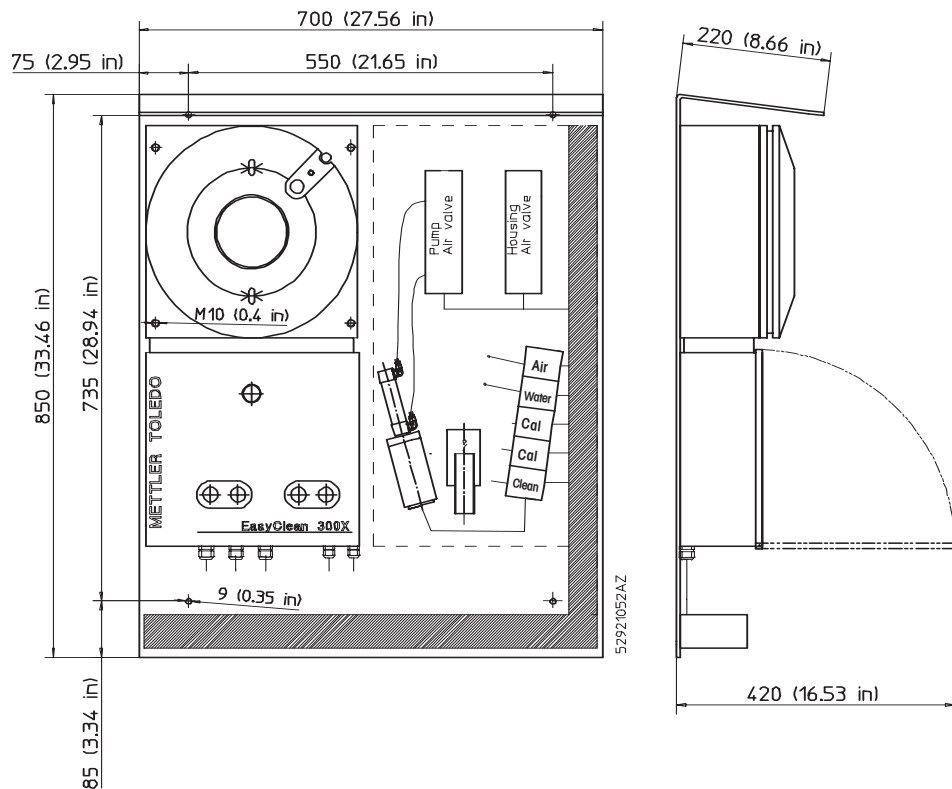
4.1 Fitting

The EasyClean300X is designed to be fitted directly, on to walls (C-rail) or posts/pipes.

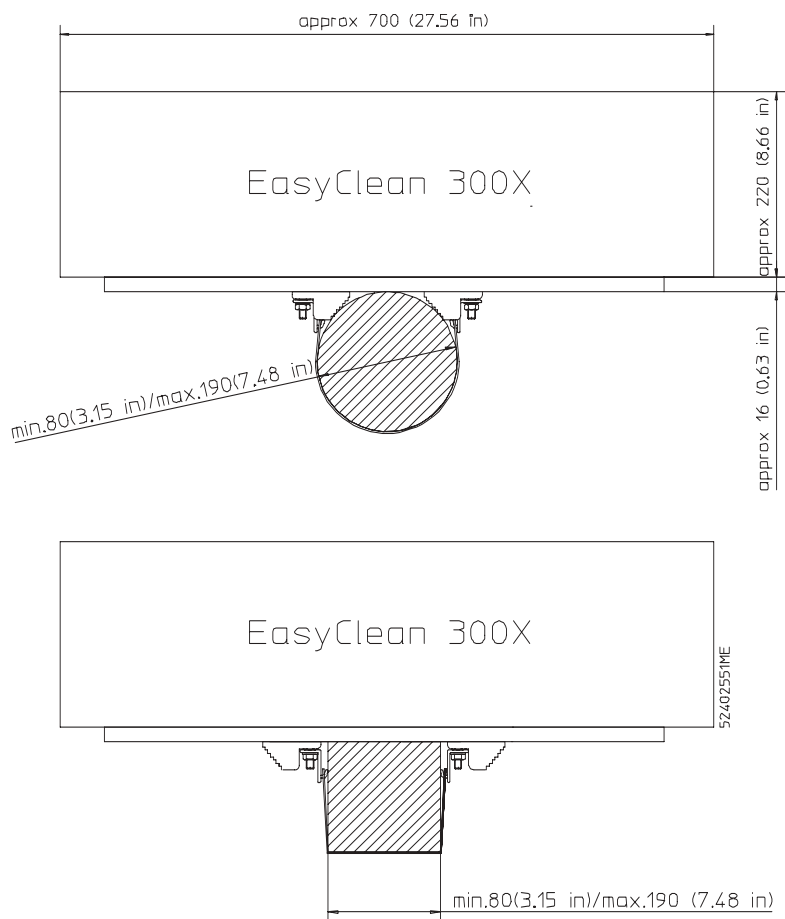
The fitting location must have sufficient stability and must as far as possible be free of vibration.

Please make sure that the lengths of the leads are as short as possible.

Wall mounting



Post/pipe mounting



NOTICE
For the detailed procedure when fitting the suspended item, please refer to the installation manual supplied separately.

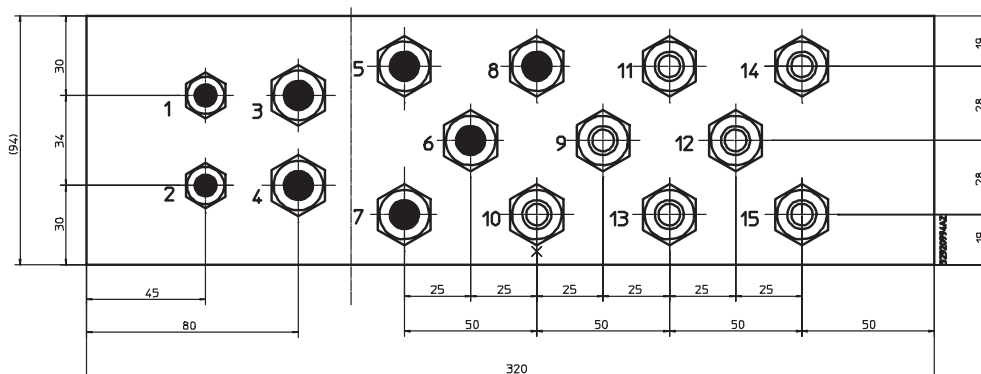
4.2 Connections



CAUTION

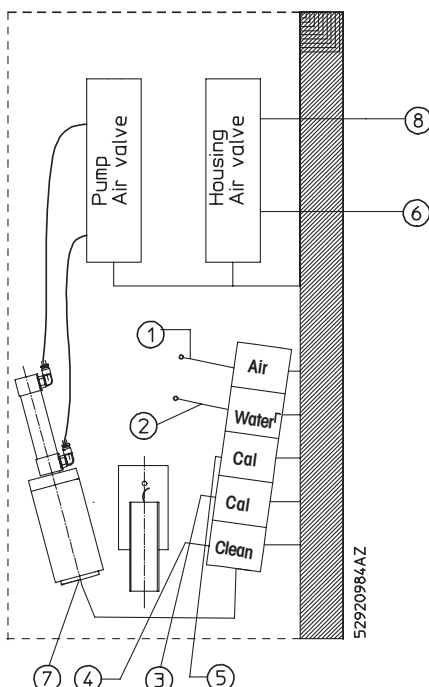
Before making connections, check that the connection values as described in section 1.3 «Data and key characteristics» are observed.

Connections to the housing floor control unit



- | | |
|---|------------------------|
| 1. Housing pos. indicator, «forward», M12 | 9. Buffer 2, M16 |
| 2. Housing pos. indicator, «back», M12 | 10. Cleaning, M16 |
| 3. Control cable gland Transmitter, M16 | 11. Valve housing, M16 |
| 4. Flow through sensor gland, M16 | 12. Valve pump, M16 |
| 5. Power cable gland, M16 | 13. Buffer 1, M16 |
| 6. Alarm gland, M16 | 14. Air, M16 |
| 7. Reserve gland, M16 | 15. Water, M16 |
| 8. Reserve gland, M16 | |

Connections in the valve unit



- | | |
|--|--|
| 1. Air pressure connection (Ø hose 6/4 mm) | 6. Exit air pressure housing «back» (Ø hose 6/4 mm) |
| 2. Water connection G ¹ / ₄ " female | 7. Mediumexit (Ø hose 6/4 mm) |
| 3. Buffer 1 connection (Ø hose 6/4 mm) | 8. Air pressure exit housing «forward» (Ø hose 6/4 mm) |
| 4. Cleaning solution connection (Ø hose 6/4 mm) | |
| 5. Buffer 2 connection (Ø hose 6/4 mm) | |

**NOTICE**

For purposes of efficiency, a valve is installed for water and compressed air from the building close to the EasyClean300X. This facilitates maintenance work and increases working safety during fitting and dismantling of the device.

The **compressed air feed must be at least 4 bar**. The control air must be **filtered and free of water and oil**.

Please observe the local regulations for pneumatic and water installations.

Connections to the immersion housing

For the installation of the retractable housing, please refer to the corresponding instruction manual for the housing.

Electrical connections

For the correct installation to transmitters, please refer to relevant manual.

**DANGER**

The main connection may only be performed by authorized specialist staff in accordance with electrical engineering rules.

Please also observe local regulations for the mains connection to the building.

**NOTICE**

The protective power switch has to be installed from the building installation and must be placed near the EasyClean300X system.

**Terminal loading
control PCB**

Connection no.	Function	Designation	Polarisation Color of cable	Connected to
1	Housing pos. indicator, forward	+24VDC	brown +Pol	—
2	Housing pos. indicator, forward	inp. 6	blue –Pol	—
3	Housing pos. indicator, back	+24VDC	brown +Pol	—
4	Housing pos. indicator, back	inp. 7	blue –Pol	—
5	Level	+24VDC	+Pol	—
6	Level	inp. 8	–Pol	—
7	Washing contact transmitter	+24VDC	—	12
8	Washing contact transmitter	inp. 1	—	11
9	Transmitter	hold	—	—
10	Transmitter	hold	—	—
11	Alarm contact	—	—	—
12	Alarm contact	alarm	—	—
13	—	—	—	—
14	—	—	—	—
15	Valve unit/return valve	—	—	—
16	Valve unit/housing	—	—	—
17	Valve unit/air	—	—	—
18	Valve unit/water	—	—	—
19	Valve unit/buffer 1	—	—	—
20	Valve unit/buffer 1	—	—	—
21	Valve unit/pump	—	—	—
22	Valve unit/cleaning/return valve	—	—	—
23	Valve unit/buffer 2	—	—	—
24	Valve unit/buffer 2	—	—	—
PE	Protective lead	grounding	customer	housing
N	Neutral	power supply	customer	logo power
L	Power	power supply	customer	logo power

4.3 Installation of the flow sensor

The flow sensor is to be installed in the valve unit, parallel to the pump.

Procedure:

1. Mount the sensor to the holder and align with the center of the line.
2. Insert the cable into the spare opening (8) of the control unit.
3. Connect cable according to section 4.2.

4.4 Commissioning procedure

1. Fit the EasyClean300X to a wall or a pipe/post, so that the connections are facing downwards (see section 4.1 «Fitting»).
2. Install the connections (see section 4.2 «Connections»):
 - Compressed air supply
 - Rinsing water connection from the building
 - Pneumatic and rinsing connections between the EasyClean and the retractable housing
 - Connect the container for detergent
 - Connect the containers for buffer 1 and 2
 - Signal lead to transmitter



NOTE

The leads are rinsed with compressed air and in the event of instability must be secured, e.g. using cable binders.

Make sure the lines between the EasyClean and the housing are as short as possible. **Do not exceed the maximum length of 5m/line.**

3. Check before commissioning:
 - Are compressed air, rinsing water and waste water correctly connected?
 - Are the retractable housing and transmitter installed and connected in accordance with the relevant instruction manual?
 - Are all unused screw threads sealed with rubber stoppers?
 - Have the containers been filled with detergent/buffer solution?
 - Have all hose connections been put carefully into place?
 - Is an electrode installed in the retractable housing?

4. First commissioning

Once the transmitter, water, compressed air, detergent and, if available, buffer have been correctly connected, the EasyClean300X can be connected to the mains.

When the EasyClean is connected to the mains, the housing and the sensor move after a few seconds into the process «measuring position». The message "Run" appears in the display.

4.5 Function test



NOTE

In de-energized state the sensor moves out of the process.

The **rinsing, cleaning** and **calibration functions**, as well as the **monitoring sensor functions**, can be tested without the transmitter.

The system is ready for operation if all procedures can be carried out according to the instructions. In case of malfunction consult section "6.2 Fault elimination and repairs".

Testing the response of the housing

1. For the test, separate all response cables from the connection terminals.
2. Approx. 12 seconds after separation of the position indicators, an alarm message appears in the display: «**housing, Armature, Armature**».
3. When this message has appeared, the cables can once more be fitted to the relevant terminal position.

Testing the «Flow sensor» option (only if present)

1. For the test, separate all connections of the sensor from the connection terminals.
2. Start a manual rinsing procedure by pressing the «**Water**» key.
3. After 12 seconds the message «**Füllstand, Check Levels, Niveau**» appears on the control display.
The «**Füllstand, Check Levels, Niveau**» message can be reset by simultaneously pressing the «**In/Out**» and «**Water**» keys.



NOTE

All processes can be interrupted by means of Reset (simultaneously pressing the «**In/Out**» and «**Water**» keys). After reset the EasyClean300X performs a rinse cycle. Finally, the housing always moves into the service position. If you want to move the housing back to the measuring position press the «**In/Out**» key.

EasyClean300X displays only its own errors, malfunction of the transmitter is indicated on the transmitter. Error messages remain until they are cleared with "Reset" or the unit returns to normal operation status.



NOTE

During the function test, check that all hose connections are sealed and securely attached.

You can check that the housing is working by pressing the «**In/Out**» key.

Check the rinsing, cleaning and calibration processes in the program sequence by pressing the relevant button («**Water**», «**Clean**» or «**Cal**»).

Set the cleaning timer of the transmitter to 0.1h. Automatic cleaning should take place 6 minutes thereafter.

4.6 Program sequence

The EasyClean is supplied with standard program sequences. Between the individual functions and always at the end of a process, the whole system is rinsed with water and air.

The following rinsing and cleaning times are preset as standard:

Rinsing:	60 seconds	TT3 (Timer)
Cleaning:	120 seconds	TT2 (Timer)
Water/air rinsing:	approx. 25 seconds	
Total cycle time:	approx. 4 minutes 45 seconds	

In order to match the rinsing and cleaning effect of the EasyClean to the amount of dirt on the sensor, the times of the rinse and clean functions can be individually adjusted (see section 5.4 «User interface of the programmable control/changing parameters»).

4.7 Program sequence EasyClean300X / Transmitter pH2220X

EasyClean300X in combination with the transmitter pH2220X (option 487) provides fully automatic flushing, cleaning and semi automated calibrating. Refer to chapter 5.3 for a detailed description of the functions and the communication between the two units.

The cleaning interval is set at the transmitter. For the performance check set the intervals to the following values:

Cleaning interval: 0.1 h



Note!

The Transmitter pH 2220X does not have an input for HOLD command from an external source, so that if a programmed cleaning cycle is initiated by the EasyClean 300X, it is not guaranteed that the transmitter is actually in HOLD mode.



Note!

At all events clock-check the length of the cleaning cycle in order to be sure that the setting at the transmitter corresponds to the actual cycle time.

5 Operation

5.1 Checks by the operator

When switching the device on, every day and when a new shift starts, check whether the supply of: **compressed air**, **rinsing water** and **electrical power** is guaranteed, that the **containers are full of cleaning/buffer solution**.



CAUTION

The retractable housing **may only be moved into the measuring position when the electrode has been installed**, as otherwise process medium might leak from the retractable housing.

5.2 Refilling with cleaning fluid and buffer solution



CAUTION

Wear the prescribed protective clothing (protective glasses, gloves, etc.).

The flow meter (optional accessory) indicates whether a liquid is being delivered. If no liquid can be detected during a delivery process, the EasyClean300X generates a «Level» alarm. In this event the following possibilities arise:

- no water flow
- detergent or buffer cannot be drawn in (the containers are not necessarily empty! see section 6.2 «Corrective action»).

5.3 Operating the EasyClean300X



NOTE

In the «Service» position the «HOLD contact» of the EasyClean300X is always closed.

The position of the housing is the same at the beginning and at the end of a procedure (rinsing, cleaning or calibration).

The transmitter does not save signals issued during a procedure.

Only one procedure can be carried out at a time.

Following a «Reset» the housing is always moved to the service position.



CAUTION

Do not remove the sensor from the retractable housing unless the «Service» message appears in the display of the PLC. Additionally check the position of the housing visually.

Description of keys



Note!

If the associated transmitter does not have an external HOLD input feature, it is not sure that the transmitter will be in HOLD mode if a programmed cleaning cycle is initiated by the Easy Clean 300X. In this case, the transmitter must be set manually to HOLD mode for the duration of the program cycle

Key	Function/process	Message/display on the prog. control display	Comments
«In/Out»	Key to switch from the service to the measuring position.	Run (Measure) or Service	Before or after each movement (25 sec.) to the service position the sensor will be rinsed with water and air
Press «In/Out» and «WATER» simultaneously for approx. 2 sec.	Reset or interrupt of routine in progress. Hold contact closes. Housing moves to the service position. Brief rinsing with water and air.	Rinsing H2O Service	The housing remains in the service position and can only be moved back to measuring position by pressing the «In/Out» key.
«Water»	The housing moves into the service position. Hold contact closes. Electrode is rinsed with water.	Rinsing H2O Run or Service	The procedure uses the preset rinsing time.
«Clean»	The housing moves into the service position. Hold contact closes. Electrode is rinsed with water. Cleaning with present cleaning agent. Rinsing.	Rinsing H2O Cleaning Run or Service	The procedure uses the preset rinsing and cleaning times.
«CAL»	Housing moves to service position. Transmitter switches to HOLD mode. Electrode is rinsed with water. Cleaning with present cleaning agent. Calibration. Rinsing.	Rinsing Cleaning Cal buffer 1 Cal buffer 2 Rinsing	The calibration must be initiated manually at the transmitter. Pressing the «CAL» key resumes the EasyClean300X program.



NOTE

While the sensor is prepared by the EasyClean300X for calibration (rinsing, cleaning), the transmitter must be set to «Calibration» mode. Please refer to the relevant instruction manual.

5.4 User interface of the programmable control

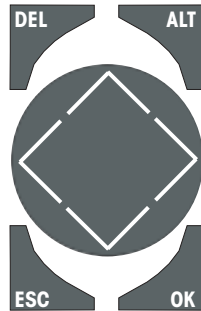


DANGER

To access the control user interface, the housing top plate must be opened.

The housing top plate may only be opened by authorized, trained specialist staff.

Key functions



«DEL»:	No function in normal status
«Alt»:	No function in normal status
«OK»:	Change to next menu level Call up menu item Save entries
«ESC»:	Change to previous menu level
«▲», «▼»	Select and change menu items or set values
«◀», «▶»	Change figures

Call up menu / menu items

Press «OK». Current selection flashes in the information display.

PASSWORD menu item

```
PASSWORD
STOP
PARAMETER
SET CLOCK
```

For safety reasons the EasyClean300X program is password-protected. There is no access to this menu.

Do not attempt to access this menu. After four unsuccessful attempts the entire program of the programmable control is deleted.

STOP menu item

```
PASSWORD
STOP
PARAMETER
SET CLOCK
```

STOP displayed: The **programmable control is ready** for operation. The program is active.

RUN displayed: The **programmable control is inactive**. No process can be controlled.

PARAMETER menu item

```
PASSWORD
STOP
PARAMETER
SET CLOCK
```

In this submenu it is possible to adjust the rinsing and cleaning times. Using the «▲» or «▼» key (center) it is possible to locate and set the times for rinsing and cleaning.

T2 = Cleaning time
T3 = Rinsing time

Set the rinsing/cleaning time in MM:SS (min.: sec.) and confirm time by pressing «OK».

SET CLOCK menu item

```
PASSWORD
STOP
PARAMETER
SET CLOCK
```

Under this menu item you can set the current time. The time set here has no effect on the function of the EasyClean300X.

5.5 Procedure in the event of a failure in the power or the operating material supply

Failure of compressed air

Measuring position

- If the housing is in the Measure position, the sensor can be moved by process pressure in the direction of the Service position.
- As soon as the check-back position indicator (optional accessory) can no longer detect the end position, after 12 seconds an alarm is generated.
- The transmitter goes on Hold.

Service position

- A loss of compressed air has no direct effect in the Service position.
- As soon as the EasyClean300X attempts to move the housing into the Measure position, the check-back position indicators (optional accessory) indicate an error and after 12 seconds they generate an alarm.
- The transmitter remains on Hold.

Failure of power supply

- The housing moves out of the process and the transmitter goes on Hold, assuming it is still supplied with power.
- As soon as power is once more available, the housing always moves into the measuring position («Run» appears on the display) and the transmitter moves to Measure.
- The timers of the transmitter are reset to zero.

No water, detergent or buffer

- Not detectable without flow sensor (optional accessory)
- As an option the EasyClean300X generates an alarm if no liquid can be detected after 12 seconds.
- This message remains until the EasyClean300X is reset (press «In/Out» and «Water» buttons simultaneously). At the end of the process the housing is in the starting position.
- At the end of the process the housing is in the initial position again.
- A relevant measurement is continued.

6 Maintenance and fault elimination

If you have any questions about faults or repairs, please contact your local METTLER TOLEDO customer service. The addresses may be found at the end of this instruction manual.

6.1 Maintenance

The EasyClean300X service reduced, but not maintenance-free.

To remove dust, dirt and stains, the external surfaces of the device can be wiped with a soft, damp cloth. If necessary a mild detergent can also be used.



CAUTION

The housing may **not be cleaned with any solvent containing acetone.**

For further cleaning (e.g. blowing out the housing), you may use filtered compressed air that is free of oil and water (pressure < 6 bar).



CAUTION

The inside of the housing may **not be cleaned using a liquid or a damp cloth.**

Additional you should demount the piston pump once a year, clean it and replace the gaskets (O-ring) and spiral springs from the return valve. Depending on the cleaning solution and the stress, the interval might be reduced.



CAUTION

Take care not to scratch the surface while cleaning the piston pump.

6.2 Fault elimination and repairs



DANGER

Please refer to chapter 2 «Safety»!

Repair work may only be performed by specialists. Before the device is opened, it must be disconnected from the power supply!

Failure	Cause	Remedy
Sensor does not move out of the process, InTrac housing does not move	Compressed air not switched on. Air pressure is too low. Control air valve jams. Air hoses incorrectly fitted or defective. The valve is not receiving any power.	Switch on compressed air. Increase pressure. Clean, poss. replace valve.. Check hoses for leaks, bends or any kinks. Check the wiring as described in section 4.2 «Connections»

Failure	Cause	Remedy
Sensor does not move out of the process, InTrac housing does not move	No power supply. The housing does not reach the required end position (housing jams). The transmitter goes on hold and no further processes are performed. Programmable control fault function.	Check the wiring as described in section 4.2 «Connections» (EasyClean 300X terminal 15, black). Check position indicator, control pressure and power supply. Note: If the cause is rectified, the command started is completed. Check programmable control.
Insufficient rinsing of the electrode	Insufficient water flow. Rinse interval too long and/or rinse times too short. Rinsing chamber blocked. Water valve jammed in the valve unit.	Increase water flow or clean the pipe. Shorten the interval on the transmitter, increase rinse times on the EasyClean. Take out the electrode and housing and clean the rinsing chamber. Clean, poss. replace valve.
Automatic cleaning does not start	The cleaning interval from the transmitter is not recognized by the device. Wash contact not activated on the transmitter.	Check the wiring with reference to section 4.2 «Connections». Activate the wash contact in accordance with the transmitter manual.
The keys are not active	Process performed by EasyClean300X No power to the EasyClean300X. Poor contact connection to the keys.	Wait until message RUN or SERVICE appears in the display. Check power supply. Check contacts to the keys.
The pipes are not rinsed with air	Compressed air not switched on.. Air pressure is too low. Air valve jammed. Air hoses incorrectly fitted or defective. The air valve is not receiving any power.	The air valve is not receiving any power. Switch on compressed air (min. 4 bar). Clean or replace valve. Check correct fitting and installation of tubes. Check the wiring with reference to section 4.2 «Connections».
The piston pump does not start	Compressed air not switched on. Air pressure too low. Air hoses incorrectly fitted or defective. The control air valve is not receiving any power. Control air valve jammed. The pump is defective.	Switch on compressed air. Increase pressure (4 to 8 bar). Check hoses for leaks, bends or any kinks. Check the wiring with reference to section 4.2 «Connections». Clean, poss. replace valve. Replace pump.
The piston pump is delivering little or no liquid	The spring in the return valve is defective. The pump is not sealed.	Replace return valves and spring (see chapter 8.2.) Replace pistons. Replace return valves and spring (see chapter 8.2.)

Failure	Cause	Remedy
Liquid is not delivered by the piston pump (detergent or buffer)	Cleaning, buffer or water valve not supplied with power. Cleaning, buffer or water valve are blocked. Cleaning, buffer or water valve are defective.	Check the wiring with reference to section 4.2 «Connections». Remove valve and clean, poss. replace. Replace.
Transmitter does not go into Hold mode	Hold contact on the EasyClean300X does not close. Terminal contact dry.	Check the wiring with reference to section 4.2 «Connections». Check the wiring on the transmitter.
Check-back position indicator not recognized by EasyClean	Check-back position indicator defective. Terminal contact dry.	Replace check-back position indicator. Check the wiring with reference to the circuit diagram. Check cable.
Screen is blank	LCD screen defective. Power supply interrupted.	Replace the print unit with the PLC. Check the power supply.
Alarm message «Check Levels» appears on the display	The flow sensor cannot identify any media flow during a rinse, clean or calibration cycle.	Check flow sensor. Check water, detergent or buffer valve. Check pipe. Check pump function.

Error messages (ERROR) on the programmable control

Error message	Cause	Remedy
TEST EEPROM TEST DISPLAY TEST CLOCK	Self-test interrupted	Replace the print unit with the PLC.
ERROR 12C	Control defective	Replace the print unit with the PLC.
ERROR: EEPROM	Control circuit diagram storage is defective	Replace the print unit with the PLC.
ERROR : CLOCK	Clock error	Replace the print unit with the PLC.
ERROR: LCD	LCD defective	Replace the print unit with the PLC.
ERROR: ACLOW	Control defective	Replace the print unit with the PLC.

7 Decommissioning, storage, disposal



DANGER

Please refer to chapter 2 «Safety».

Decommissioning may only be performed by trained staff or specialists.

7.1 Decommissioning

Procedure

1. Switch off the power supply, the compressed air supply and the water supply to the device.
2. Disconnect the device from the main switch.
3. Disconnect any signal leads used.
4. Disconnect leads for compressed air.
5. Remove the EasyClean300X from its mounting.
6. Rinse the hoses and valves with fresh water.
7. Clean the device with a damp cloth.
8. Allow the device to dry.

7.2 Storage

Store the EasyClean300X in a dry place, as described in section 1.3.

7.3 Disposal

It is recommended that the operator dispose of the device in accordance with local regulations. The operator must deliver the device to either a licensed private or a public disposal company or dispose of it himself in accordance with prevailing regulations. Waste is to be recycled or disposed of without causing any risk to human health and without using procedures or methods that might damage the environment.

EC guideline 75/442/EEC
91/156/EEC

Sorting

Sorting takes place by placing the device into waste groups as listed in the current European Waste Catalogue (EWC). This catalogue is valid for all waste, whether it is intended for disposal or recycling.

The packaging contains the following materials:

- cardboard
- foam plastic.

The device contains the following materials:

- steel
- electronic materials (cables, components, programmable control)
- various components as described in the printed description.

8 Spare parts and accessories

When ordering spare parts, please state the following details:

- article number of the device
- serial number of the device
- ordering number from the following list of spare parts
- quantity required.

The addresses of manufacturers and customer service may be found at the end of this instruction manual.

**NOTICE**

Spare parts must correspond to the technical requirements of the manufacturer of the device!
Only use original spare parts.

Installation material: hoses and cables

Pos.	Art. no.	Description
2	52 402 283	Hose PTFE, 6/4 mm, 5 m/15 ft.
3	52 402 314	Hose LDPE 6/4 mm/20 m, for compressed air connection
4	52 401 322	Pneumatics hose PU, 6/4 mm, 10 m
5	52 300 265	Connecting cable: control unit > transmitter (5 m)
6	52 300 266	Connecting cable: control unit > transmitter (10 m)

Optional accessories

Pos.	Art. no.	Description
1	52 402 551	Pipe/post mounting kit, complete
7	52 402 553	Flow sensor EX

Documentation

Pos.	Art. no.	Description
—	52 500 190	Instruction manual EasyClean300X (e/g/f)

Upgrade kit to inductive feedback for InTrac777SP/SPR

Pos.	Art. no.	Description
8	52 402 371	Conversion kit pneum. to ind. back indicator Ex H-70/100
9	52 402 373	Conversion kit pneum. to ind. back indicator Ex H-200
10	52 402 399	Back indicator Ex

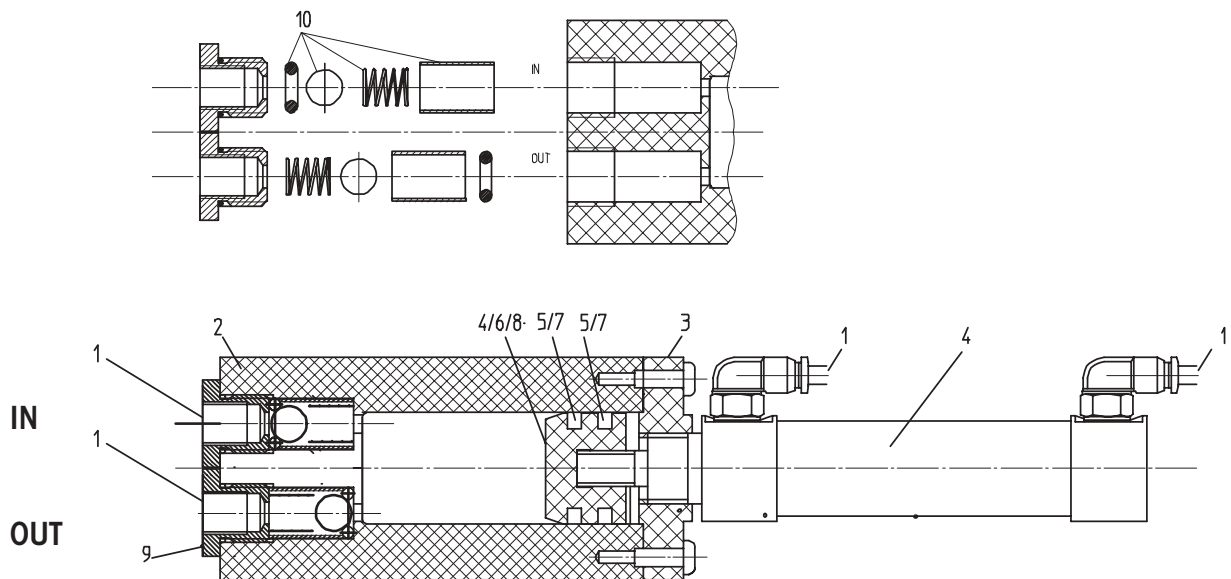
Buffers / Container / Rack

Pos.	Art. no.	Description
11	52 118 063	Compact canister, 5000 ml/empty
12	51 319 012	Buffer pH 4.01 red, 5000 ml
13	51 319 016	Buffer pH 7.00 green, 5000 ml
14	51 319 017	Buffer pH 9.21 blue, 5000 ml
15	52 402 348	Canister rack for 3 compact canister

Spare parts

Pos.	Art. no.	Description
16	52 402 684	Air-/ Water valve Ex
17	52 402 683	Housing or pump control valve 300X
18	52 402 685	Buffer/calibration valve 300X
19	52 402 686	Pump 300X
20	52 402 305	Power unit
21	52 402 400	Print with PLC EasyClean
—	52 402 377	Set of check valves for pump
—	52 402 687	Pump spare parts set 300X

8.2 Fitting spare parts for the piston pump



Fitting the seal set

1. Remove the hoses from the piston pump.
2. Remove the piston pump.
3. Release the top plate from the piston pump (4 screws).
4. Pull piston incl. drive from the cylinder.
5. Remove the O-ring.
6. Clean the piston with a clean cloth.
7. Fit a new O-ring into the groove provided in the piston. (Do not grease!)
8. Re-fit piston.

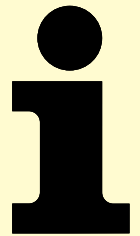
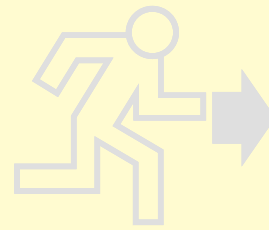
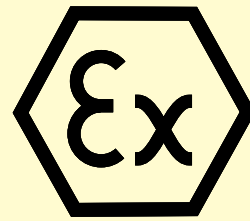
Removing the return valves

9. Remove the return valve using a screwdriver.
10. Replace the O-ring, ball, spring and guide pins.
11. Install with reference to the figure above (above = IN, below = OUT).

9 Instruction Manual of Ex conform enclosure

The EasyClean 300X is certified in accordance with current statutory regulations and guidelines relative to equipment intended for operation in hazardous zones.

See enclosed manual "Flameproof Control Unit".



Druckfeste Steuereinheit

Unité de commande antidéflagrante

Flameproof Control Unit

GHG 6..R....

Manual

PTB 99 ATEX 1036

Edition September 2000

Druckfeste Steuereinheit

Baureihe: GHG 6..R....

Zielgruppe

Erfahrene Elektrofachkräfte gemäss ElexV und unterwiesene Personen.

Inhalt

1. Sicherheitshinweise
2. Normenkonformität
3. Technische Daten
4. Installation
5. Instandhaltung

1. Sicherheitshinweise

Dieses Betriebsmittel ist nicht für den Einsatz in Zone 0 geeignet.

Berücksichtigen Sie bitte, dass weder die Betriebsanleitung noch andere Fremdkörper im Betriebsmittel belassen werden dürfen!

Betreiben Sie Steuereinheit bestimmungsgemäss im unbeschädigten und sauberen Zustand und nur dort, wo die Beständigkeit des Gehäusematerials gewährleistet ist!

Bei nicht korrektem Zusammenbau ist die Mindestschutzart IP 54 nach EN 60 529: 1991 nicht mehr gewährleistet.

Beachten Sie bei allen Arbeiten an der druckfesten Steuereinheit die nationalen Sicherheits- und Unfallverhütungsvorschriften und die nachfolgenden Sicherheitshinweise in dieser Betriebsanleitung, die wie dieser Text in Kursivschrift gefasst sind!

2. Normenkonformität

Diese explosionsgeschützte druckfeste Steuereinheit entspricht den Anforderungen der EN 50 014:1997, EN 50 018:1994 und der EN 50 019: 1994.

Unité de commande antidéflagrante

Série GHG 6..R....

Groupe ciblé

Électriciens expérimentés selon ElexV et personnel instruit.

Sommaire:

1. Sécurité
2. Conformité aux normes
3. Données techniques
4. Installation
5. Entretien

1. Sécurité

Ce matériel électrique n'est pas appropriées à une application en zone 0. Aucune transformation ni modification n'est autorisée.

Ne pas laisser la présente notice ou d'autres objets dans l'unité de commande durant le service.

Utiliser l'unité de commande conformément aux prescriptions, en parfait état de fonctionnement et de propreté dans des emplacements où l'intégrité du boîtier est assurée.

En cas de montage incorrect, l'indice minimal de protection IP 54 selon EN 60 529: 1991 n'est plus garanti.

Pour tous les travaux touchant l'unité de commande antidéflagrante, il y a lieu d'observer les prescriptions nationales de sécurité et de prévention des accidents ainsi que les indications de la présente notice ayant trait à la sécurité. A l'instar du présent alinéa, ces indications sont imprimées en italique.

2. Conformité aux normes

L'unité de commande antidéflagrante est conforme aux normes EN 50 014:1997, EN 50 018: 1994 et EN 50 019:1994.

Flameproof Control Unit Type Series GHG 6..R....

Target group

Experienced electricians as defined by ElexV and trained personnel.

Contents

1. Safety instructions
2. Conformity with standards
3. Technical data
4. Installation
5. Maintenance

1. Safety instructions

This apparatus is not suitable for duty in Zone 0. No changes to or modifications of the apparatus are permitted!

Remember: Never leave this Instruction Manual or other foreign objects inside the apparatus!

Operate the control unit in undamaged and clean condition, only for its intended purpose, and only in ambient conditions the enclosure material is capable of withstanding.

An incorrectly assembled control unit may no longer meet the requirements of protection type IP 54 as defined by EN 60 529: 1991.

Whenever work is done on the flameproof control unit, be sure to observe the national safety and accident prevention regulations and the safety instructions given in this Instruction Manual, which are stated in italics (like this paragraph)!



2. Conformity with standards

This explosionproof, flameproof control unit meets the requirements of EN 50 014:1997, EN 50 018:1994 and EN 50 019:1994.

Sie wurden entsprechend dem Stand der Technik und gemäss EN ISO 9001 entwickelt, gefertigt und geprüft.

Diese druckfeste Steuereinheit ist zum Einsatz in explosionsgefährdeten Bereichen der Zone 1 und 2 gemäss EN 60 079-14:1997 und EN 60 079-10:1996 geeignet.

3. Technische Daten

Ident-Nummernschlüssel:

- Varianten, die auf den Explosionsschutz keinen Einfluss haben
- Schraubdeckelausstattung
 - 4 = mit Schalterbetätigung
 - 5 = ohne Schalterbetätigung
 - 6 = mit Schauscheibe und Schalterbetätigung
 - 7 = mit Schauscheibe ohne Schalterbetätigung
 - 8 = mit grosser Schauscheibe ohne Schalterbetätigung
- Gehäusegrösse
 - 1 = 210 x 210 x 203 mm
 - 2 = 320 x 320 x 203 mm flach
 - 4 = 320 x 320 x 327 mm tief
 - 5 = 430 x 430 x 329 mm
 - 7 = 430 x 650 x 329 mm (396 mm >200 A)
 - 6 = 650 x 650 x 505 mm nur Stahlblech
 - 8 = 650 x 1000 x 505 mm nur Stahlblech
- Gehäusewerkstoff
 - 6 = Aluminiumlegierung
 - 7 = Stahlblech
- GeräteKennziffer druckfestes Gehäuse

Kennzeichnung

Explosionsschutz

- EEx d IIC T6 oder T5
(mit direkter Leitereinführung)
- EEx de IIC T6 oder T5
- EEx de [ia/ib] IIC T6 oder T5
(mit eigensicheren Komponenten)

Elle a été développée, fabriquée et testée selon l'état actuel de la technique et conformément à la norme EN ISO 9001.

Cette unité de commande antidéflagrante est appropriée à une application en emplacement dangereux des zones 1 et 2, ceci conformément aux normes EN 60 079-14:1997 et 60 079-10:1996.

3. Données techniques

Numéro indicatif du boîtier antidéflagrant:

- Variantes sans influence sur la protection antidéflagrante
- Accessoirisation couvercle fileté
 - 4 = avec actionneur d'interrupteur
 - 5 = sans actionneur d'interrupteur
 - 6 = avec hublot et actionneur d'interrupteur
 - 7 = avec hublot, sans actionneur d'interrupteur
 - 8 = avec grand hublot, sans actionneur d'interrupteur
- Dimensions du boîtier
 - 1 = 210 x 210 x 203 mm
 - 2 = 320 x 320 x 203 mm plat
 - 4 = 320 x 320 x 327 mm profond.
 - 5 = 430 x 430 x 329 mm
 - 7 = 430 x 650 x 329 mm (396 mm >200 A)
 - 6 = 650 x 650 x 505 mm */
 - 8 = 650 x 1000 x 505 mm */
 - */ tôle d'acier seulement
- Matériel du boîtier
 - 6 = alliage aluminium
 - 7 = tôle d'acier
- Numéro indicatif du boîtier antidéflagrant

Signalétique

Protection antidéflagrante

- EEx d IIC T6 oder T5
(avec entrée directe du conducteur)
- EEx de IIC T6 ou T5
- EEx de [ia/ib] IIC T6 ou T5
(avec composant à sécurité intrinsèque)

It was developed in accordance with state-of-the-art engineering practice and manufactured and tested to EN ISO 9001.

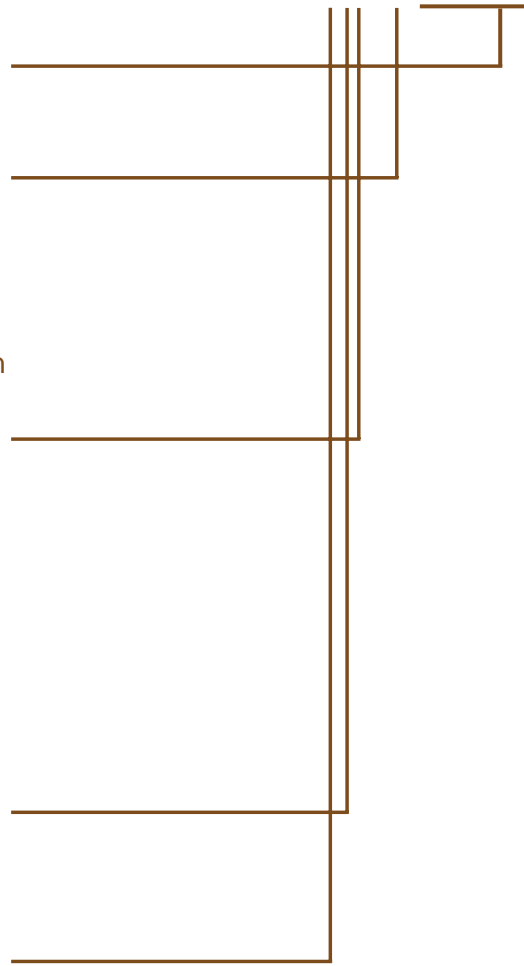
This flameproof control unit is suitable for duty in potentially explosive atmospheres of Zone 1 and 2 as defined by EN 60 079-14:1997 and EN 60 079-10:1996.

3. Technical data

Identification No. code:

GHG6..R....

- Versions that have not effect on explosion protection
- equipped with screw-down cover
 - 4 = with switch actuation
 - 5 = without switch actuation
 - 6 = with window and switch actuation
 - 7 = with window, without switch actuation
 - 8 = with large window, without switch actuation
- Enclosure size
 - 1 = 210 x 210 x 203 mm
 - 2 = 320 x 320 x 203 mm low
 - 4 = 320 x 320 x 327 mm high
 - 5 = 430 x 430 x 329 mm
 - 7 = 430 x 650 x 329 mm (396 mm >200 A)
 - 6 = 650 x 650 x 505 mm */
 - 8 = 650 x1000x 505 mm */
 - */ sheet steel only
- Enclosure material
 - 6 = aluminium alloy
 - 7 = sheet steel
- Type code for flameproof enclosure



Marking



Explosion protection:

- EEx d IIC T6 oder T5
(with direct conductor entry)
- EEx de IIC T6 or T5
- EEx de [ia/ib] IIC T6 or T5
(with intrinsically safe components)

EG-Baumusterprüfbescheinigung
PTB 99 ATEX 1036

Bemessungsspannung
z.B. max. 750 V (AC oder DC)
(gemäss Typenschild)

Bemessungsstrom
z.B. max. 63 A (je nach Ausführung)

Nennanschlussquerschnitt:
z.B. max. 95 mm² (je nach Ausführung)

Schutzgrad
IP 54 gemäss EN 60 529:1991
(IP 66 auf Anfrage)

Zulässige Umgebungstemperatur
–20 °C bis +40 °C (standardmässig)

Lagertemperatur in Originalverpackung:
–50 °C bis +80 °C

Deckelverschluss
Aussensechskant,
Schlüsselweite (SW) 10 mm

Elektrischer Anschluss
An den Anschlussteilen im EEx d-Raum
(direkte Leitereinführung)

Material
Druckfestes Gehäuse: Stahlblech
oder Aluminium-Legierung, siehe
Ident-Nummernschlüssel

Oberflächenschutz
Standardmässig: Kunststoffbeschichtung,
Farbe RAL 7032
(anderer Oberflächenschutz, z.B. für
Tropenklima, Seeklima, auf Anfrage)

4. Installation

Für das Errichten/Betreiben sind die Vorschriften gemäss ElexV und des Gerätesicherheitsgesetzes sowie die allgemein anerkannten Regeln der Technik (EN 60079-14) und diese Betriebsanleitung massgebend. Jeder druckfeten Steuereinheit ist ein Klemmenplan beigelegt. Der Klemmenplan

Certificat d'essai de type CE
PTB 99 ATEX 1036

Tension assignée
p. ex. max. 750 V (AC ou DC)
(cf. plaque signalétique)

Courant assigné
p. ex. max. 63 A (selon exécution)

Sections de raccordement assignées
par ex. max. 95 mm²

Indice de protection de l'enveloppe
IP 54 selon EN 60 529:1991
(IP 66 sur demande)

Température ambiante admise
–20 °C à +40 °C (standard)

Température de stockage dans emballage d'origine
–50 °C à +80 °C

Fermeture du couvercle
Hexagone mâle, clé 10 mm

Raccordement électrique
Dans le compartiment EEx, aux éléments de connexion (entrée directe du conducteur)

Matériel
Boîtier antidéflagrant: tôle d'acier ou
d'aluminium, cf. Code d'identification

Protection surface
Standard: revêtement matière synthétique,
teinte RAL 7032 (autre protection sur demande,
par ex. pour climat tropical, maritime, etc.)

4. Installation

Les directives de l'ElexV et la législation sur la sécurité des appareils ainsi que les règles techniques généralement reconnues (EN 60079-14) et la présente notice sont déterminantes pour l'installation et le service. Un schéma des bornes doit être joint à l'unité de commande antidéflagrante. Ce schéma devra comporter les indications sur la

EC Type Examination Certificate:

PTB 99 ATEX 1036

Rated voltage:

e.g. max. 750 V (AC or DC) (per rating plate)

Rated current:

e.g. max. 63 A (depending on version)

*Nominal connection cross-section:*e.g. max. 95 mm² (depending on version)*Degree of protection:*IP 54 according to EN 60 529:1991
(IP 66 on request)*Admissible ambient temperature:*

-20 °C to +40 °C (standard)

Storage temperature in original packing:

-50 °C to +80 °C

Cover fastening:

External hexagon, width across flats 10 mm

*Power supply:*To connectors in the EEx d chamber
(direct conductor entry)*Material:*Flameproof enclosure: steel sheet, aluminium
alloy, see Identification No. code*Surface protection:*Standard: plastic coating, colour RAL 7032
(different surface protection, e.g. for tropical
climate, ocean climate, ... on request)

4. Installation

For installation/operation, always observe the provisions of ElexV and the Equipment Safety Law, the rules of generally accepted engineering practice (EN 60079-14), and the instructions stated in this Manual.

A terminal diagram is provided with each flameproof control unit. It provides informa-

enthält Angaben über die Kontaktbelegung und die beteiligten Baumusterprüfbescheinigungen und ist unbedingt zu beachten. Die Steuereinheit ist mit für den äusseren Anschluss bestimmten Klemmen und weiteren Komponenten wie Befehls- und Meldegeräte, Messinstrumente, Potentiometer, Steuer- und Wahlschalter, Flanschsteckdosen, Sicherungselemente, Sicherungsautomaten, Schütze, Motorschutzschalter, Transformatoren und Temperaturregler ausgerüstet.

4.1 Klemmen

Die Anzahl der vorhandenen, für den Schutzleiter bestimmten, Klemmstellen muss mindestens der Anzahl der Stromkreise entsprechen. Der maximal zulässige Querschnitt der jeweiligen Schutzleiterklemmstelle in Abhängigkeit vom maximal zulässigen Querschnitt der zugeordneten Aussen- und Neutraleiterklemmen muss mindestens den in der nachfolgenden Tabelle 1 zu entnehmenden Werten entsprechen.

Maximal zulässiger Querschnitt der Aussen- bzw. Neutraleiterklemme	Mindestens zulässiger Querschnitt der zugeordneten Schutzleiterklemmstelle
S [mm ²]	Sp [mm ²]
< 16	S
16 bis 35	16
> 35	0,5 S

Tabelle 1

Für eine übersichtliche Leitungsführung und einen sicheren Anschluss der Leitungen an die Reihenklemmen ist Tabelle 2 zu beachten.

Bei parallelen Klemmenreihen muss mindestens der 1,5-fache Abstand gemäss Tabelle 2 eingehalten werden. Bei Ausführungen mit Montageplatte, bei denen ein Durchführen der Leiter unter den Klemmen nicht möglich ist, muss zwischen den Klemmenreihen mindestens der doppelte Abstand gemäss Tabelle 2 eingehalten werden.

disposition des contacts ainsi que sur les attestations d'essais de type devant être pris en considération. L'unité de commande est équipées de bornes destinées à la connexion externes d'autres composants tels qu'appareils de commande, instruments de mesure, potentiomètres, commutateurs et interrupteurs, prises de courant à bride, éléments de protection, coupe-circuit automatiques, fusibles, rupteurs et démarreurs de moteur, transformateurs, régulateurs de température.

4.1 Bornes

Le nombre des points de serrage des bornes réservés aux circuits à sécurité intrinsèque doit au minimum correspondre au nombre de ces circuits. La section maximale des points de serrage des conducteurs de protection en fonction de la section maximale admise des bornes de phase et neutres doit au minimum répondre aux grandeurs du tableau 1 ci-après:

Section maximale admise des bornes de conducteur de phase, à savoir neutres	Section minimale admise points de serrage des points de serrage des conducteurs attribués
S [mm ²]	Sp [mm ²]
< 16	S
16 à 35	16
> 35	0,5 S

Tableau 1

Observer le tableau 2 pour un câblage clair et une connexion sûre des lignes aux blocs de jonction.

Pour les blocs de jonction parallèles, il y a lieu d'assurer des distances équivalant à 1,5 x celles indiquées dans le tableau 2. Pour les exécutions sur plaque de montage ne permettant pas le passage des conducteurs sous les bornes, la distance entre les blocs doit être au moins le double de celles indiquées dans le tableau 2.

tion on contact assignments and the pertinent type examination and should be followed to the letter. The control unit is equipped with the terminals required for external connection and with additional components such as control and indicating devices, measuring instruments, potentiometers, control and selector switches, flange-mounting receptacles, fuse elements, miniature breakers, contactors, motor protection switches, transformers and temperature controllers.



4.1 Terminals

The number of terminal positions provided for the protective earth conductors must at least equal the number of circuits. The maximum admissible cross-section of the individual earthing conductor terminals as a function of the maximum admissible cross-section of the associated phase and neutral conductor terminals must at least comply with the figures given in the following table 1.

Maximum admissible cross-section of the phase and neutral conductor terminal S [mm ²]	Minimum admissible cross-section of the associated earthing conductor terminal Sp [mm ²]
< 16	S
16 to 35	16
> 35	0,5 S

Table 1

For neat arrangement of the conductors and secure connection of the conductors to the terminal blocks (if any), observe the table 2.

In the case of parallel terminal blocks, clearances at least 1.5 times greater than those listed in table 2 must be maintained. For versions with a mounting plate, where the conductors cannot be brought in under the terminals, clearances at least 2 times greater than those listed in table 2 must be maintained between the terminal blocks.

4.2 Kabel- und Leitungseinführungen

Kabel- und Leitungseinführungen dürfen nur in vorgefertigte Bohrungen ergänzt werden, in denen Blindstopfen eingesetzt sind.

Die Kabel- und Leitungseinführungen müssen so montiert werden, dass eine selbsttätige Lockerung verhindert wird und eine dauerhafte Abdichtung der Kabel- und Leitungseinführungsstellen gewährleistet wird. Wenn Kabel- und Leitungseinführungen entfallen, müssen die Bohrungen mit Blindstopfen verschlossen werden.

Generell dürfen nur Kabel- und Leitungseinführungen bzw. Blindstopfen eingesetzt werden, für die eine separate Prüfbescheinigung einer anerkannten europäischen Prüfstelle gemäss den europäischen Normen EN 50 014: 1997 und EN 50 018: 1994 vorliegt.

5. Instandhaltung

Die für die Wartung/Instandsetzung/Prüfung geltenden Bestimmungen der ElexV §9, der ElexV §13 und der EN 60079-17:1997 sind einzuhalten. Im Rahmen der Wartung sind vor allem die Teile zu prüfen, von denen die Zündschutzart abhängt.

4.2 Entrées de câble et de conducteur

Les entrées de câble et de conducteur ne doivent être complétées que par les orifices pré-perforés munis d'obturateurs.

Elles doivent être montées de manière à ce qu'un relâchement spontané soit impossible et à assurer un calfatage durable des points de pénétration. Les orifices qui ne sont pas ou plus utilisés doivent être fermés par des obturateurs. D'une manière générale, on utilisera exclusivement des entrées, à savoir des obturateurs pour lesquels un certificat d'essai de type CE a été établi par un laboratoire reconnu selon les normes EN 50 014:1997 et EN 50 018:1994.

5. Entretien

Les prescriptions de l'ElexV § 9 et 13 ainsi que de la norme EN 60079-17:1997 devront être respectées pour l'entretien, la maintenance corrective et le contrôle. Dans le cadre des contrôles d'entretien, toutes les parties dont dépend le mode de protection devront être vérifiées.

4.2 Cable and conductor entries

Install cable and conductor entries only in pre-drilled holes in which blind plugs are inserted. Install the cable and conductor entries in such a way that accidental loosening is prevented and permanent sealing of the entry points is ensured. Wherever cable and conductor entries are not needed, be sure to close off the holes with blind plugs.

Only cable/conductor entries and blind plugs may be used that possess a separate EC Type Examination Certificate issued by a recognized European test laboratory in accordance with European standards EN 50 014:1997 and EN 50 018: 1994.

5. Maintenance

The provisions of ElexV §9, ElexV §13 and EN 60079-17:1997 pertaining to servicing, maintenance and testing must be complied with. During servicing, it is particularly important to check those components upon which the type of protection depends.

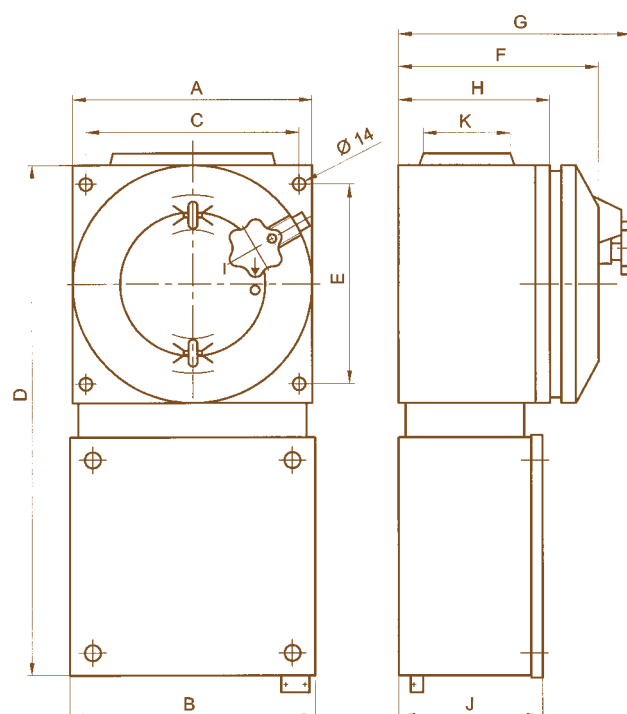


Leiterquerschnitt Section conducteur Conductor cross-section [mm²]	Anzahl der eingeführten ein- oder mehradrigen Leitungen; Mindestabstand der Reihenklammern von der Gehäusewandung bei Nombre de câbles à un ou plusieurs conducteurs; distance minimale des blocs de jonction des parois du coffret pour Number of single- or multicore conductors brought in; minimum distance of terminal blocks from enclosure wall for		
	1 Leitung 1 conducteur 1 conductor	2 Leitungen 2 conducteurs 2 conductors	3 oder mehr Leitungen oder 2 nebeneinander 3 conducteurs ou plus ou 2 parallèles 3 or more conductors or 2 side by side
1,5	20 mm	20 mm	20 mm
2,5	20 mm	20 mm	20 mm
4	20 mm	20 mm	25 mm
6	20 mm	25 mm	30 mm
10	25 mm	30 mm	40 mm
16	30 mm	40 mm	50 mm
25	40 mm	50 mm	60 mm
35	50 mm	60 mm	75 mm

Tabelle 2/ Tableau 2/Table 2

Typ Type Type	Gehäusegrösse/ <i>Dimensions boîtier</i> /Encloser dimensions [mm]								
	A	B	C	D	E	F	G	H	J
GHG 661.	210	216	187	450	145	172	203	120	128
GHG 662.	320	326	295	484	255	173	203	120	128
GHG 662.	320	326	295	634	255	173	203	120	128
GHG 664.	320	326	295	634	255	300	329	246	252
GHG 665.	430	436	405	744	365	300	329	246	252
GHG 667.	430	436	405	964	365	300	329	246	252
GHG 676.	650	656	600	1064	505	480	510	365	252
GHG 678.	650	656	600	1414	855	540	570	425	252

Grösse <i>Tailles</i> Size	Volumen <i>Volume</i> Volume (dm ³)	Gewicht <i>Poids</i> Weight (kg)	Verlustleistungen <i>Dissipation de puissance</i> Dissipated dissipation	
			T5 [Watt]	T6 [Watt]
GHG 661.	4,2	8	120	80
GHG 662.	10,6	16	210	150
GHG 664.	22,2	23	280	210
GHG 665.	40,0	40	420	300
GHG 667.	60,0	55	575	400
GHG 676.	110,0	195	975	700
GHG 678.	125,0	320	1350	975

Tabelle 3/ *Tableau 3*/Table 3Massbilder/ *Dimensionnement*/Dimension drawings



Konformitätserklärung
Déclaration de conformité
 Declaration of conformity
PTB 99 ATEX 1036

<p>Wir / Nous / We,</p> <p>erklären in alleiniger Verantwortung, dass das Produkt</p> <p><i>déclarons de notre seule responsabilité que le produit</i></p> <p>bearing sole responsibility, hereby declare that the product</p> <p>auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt:</p> <p><i>auquel se rapporte la présente déclaration est conforme aux normes ou aux documents normatifs suivants</i></p> <p>referred to by this declaration is in conformity with the following standards or normative documents.</p> <p>Bestimmungen der Richtlinie</p> <p><i>Désignation de la directive</i></p> <p>Provisions of the directive</p>	<p>thuba AG Postfach 431 CH-4015 Basel Switzerland</p> <p>Steuerkästen GHG 6 R</p> <p>Armoires de commande GHG 6 R</p> <p>Control boxes GHG 6 R</p> <p>Titel und/oder Nummer sowie Ausgabedatum der Norm(en)</p> <p><i>titre et/ou No. ainsi que date d'émission de la/des norme(s)</i></p> <p>title and/or No. and date of issue of the standard(s)</p>
<p>94/9 EG: Geräte und Schutzsysteme zur bestimmungsgemässen Verwendung in explosionsgefährdeten Bereichen</p> <p><i>94/9 CE: Appareils et système de protection destinés à être utilisés en atmosphère explosibles</i></p> <p>94/9 EC: Equipment and protective systems intended for use in potentially explosive atmospheres</p>	<p>EN 50014:1994-03 EN 50018:1995-03 EN 50019:1996-03 EN 50020:1996-04 EN 50028:1988-07 EN 1127-1:1997-10 EN 60529:1991-10 EN 60079-14:1997-08 EN 60079-17:1997-08 EN 50022:1978-05 EN 50024:1980-04 EN 50035:1980-04 VDE 0100 Teil 540:1991-11 VDE 0298 Teil 4:1998-11 VDE 0606 Teil 1:1988-12</p>
<p>89/336 EWG: Elektromagnetische Verträglichkeit</p> <p><i>89/336 CEE: Compatibilité électromagnétique</i></p> <p>89/336 EEC: Electromagnetic compatibility</p>	<p>EN 60947-1/A11:1994-11</p>
<p>Basel, 22. August 2000</p> <p><i>Ort und Datum</i> Lieu et date Place and date</p>	<p>Peter Thurnherr</p> <p><i>Geschäftsleiter/Inhaber, Elektroingenieur HTL</i> Administrateur/député, Ingénieur ETS Managing Proprietor, Electrical Engineer HTL</p>

Physikalisch-Technische Bundesanstalt



Braunschweig und Berlin

Anlage

(13)

(14) **EG-Baumusterprüfbescheinigung PTB 99 ATEX 1036**

(15) Beschreibung des Gerätes

Die Steuereinheit Typ GHG 6..R.... besteht aus Gehäusen der Zündschutzart Druckfeste Kapselung „d“, wahlweise mit Betätigungsachsen und/oder Schauscheiben, in die die elektrischen Betriebsmittel eingebaut sind.

Der Anschluß erfolgt über direkte Leitungseinführungen, Rohrleitungsanschlüsse (Conduit-System) oder Anschlußkästen in der Zündschutzart Erhöhte Sicherheit "e" jeweils nach getrennten Prüfbescheinigungen.

Elektrische Daten

Bemessungsisolationsspannung	bis	750 V
Bemessungsstrom	max.	220 A
Bemessungsquerschnitt	max.	120 mm ²

Bei Bedarf werden Betriebsmittel in der Zündschutzart Eigensicherheit "i" nach getrennter Prüfbescheinigung eingebaut.

Die Bemessungswerte sind Höchstwerte, die tatsächlichen elektrischen Werte werden von den eingebauten elektrischen Betriebsmitteln bestimmt. Der Hersteller legt im Rahmen dieser Grenzwerte bei Einhaltung der zutreffenden Normen und abhängig von Netzbedingungen, Betriebsart, Gebrauchskategorie usw. die endgültigen Bemessungswerte fest. Die Kennwerte der eigensicheren Stromkreise sind vom Hersteller in eigener Verantwortung zu benennen. Weitere technische Einzelheiten sind in den Prüfungsunterlagen festgelegt.

Die Zusammensetzung des Zündschutzartkurzeichens richtet sich nach den Zündschutzarten der jeweils verwendeten Komponenten.

(16) Prüfbericht PTB Ex 99-19112, Beschreibung (6 Blatt), 2 Zeichnungen

(17) Besondere Bedingungen

Die Steuereinheit darf auch über dafür geeignete Leitungseinführungen oder Rohrleitungssysteme angeschlossen werden, die den Anforderungen von EN 50 018 Abschnitt 13.1 und 13.2 entsprechen und für die eine gesonderte Prüfbescheinigung vorliegt.

Nichtbenutzte Öffnungen sind entsprechend EN 50 018 Abschnitt 11 zu verschließen.

Seite 2/3

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Anlage zur EG-Baumusterprüfbescheinigung PTB 99 ATEX 1036

Der Einbau der Betriebsmittel in Zündschutzart Eigensicherheit "i" muß so erfolgen, daß die nach EN 50 020 geforderten Abstände, Luft- und Kriechstrecken zwischen eigensicheren und nichteigensicheren Stromkreisen eingehalten sind.

Werden die Abstandsforderungen für die Anschlußmittel nach EN 50 020 nicht durch die Errichtung sichergestellt, sind Leitungen der Qualität Erhöhte Sicherheit "e" zu verwenden, oder die Leitungen sind entsprechend ausfallsicher festgelegt.

Bei Verwendung von mehr als einem eigensicheren Stromkreis sind die Regeln der Zusammenschaltung zu beachten.

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Die durchgeführten Prüfungen und deren positive Ergebnisse zeigen, daß die Steuereinheit die Anforderungen der Richtlinie 94/9/EG und der auf dem Deckblatt angegebenen Normen erfüllt.

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Dr.-Ing. U. Klausmeyer
Oberregierungsrat



Braunschweig, 06. Juli 1999

Seite 3/3

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Braunschweig und Berlin

PTB

(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and Protective Systems Intended for Use in
Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 99 ATEX 1036



(4) Equipment: Control unit type GHG 6..R....

(5) Manufacturer: thuba AG

(6) Address: CH-4015 Basel

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 99-19112.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 014:1997

EN 50 018:1994

EN 50 019:1994

EN 50 020:1994

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

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

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

 **II G 2 EEx deia/ib[ia/ib] IIC T6 resp. T5**

Zertifizierungsstelle Explosionsschutz

By order:

Dr.-Ing. U. Klausmeyer
Oberregierungsrat



Braunschweig, July 06, 1999

sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1036**

(15) Description of equipment

The type GH 6.. ...R... control unit is composed of enclosures of the type of protection flameproof enclosure "d", optionally with operation rods and/or inspection windows into which the electrical equipment is incorporated.

Direct cable entries, conduit entries (conduit system) or terminal boxes of the type of protection increased safety "e", for which a separate test certificate has been issued, are used for connection.

Electrical data

Rated insulation voltage	up to	750 V
Rated current	max.	220 A
Rated cross-section	max.	120 mm ²

If and when required, equipment of the type of protection intrinsic safety "i" is incorporated, for which a separate test certificate has been issued.

The rated values are maximum values, the actual electrical values depend on the electrical equipment incorporated. Within the scope of these maximum permissible values and with due regard to the standards applicable, the manufacturer specifies the final rated values dependent on the system conditions, mode of operation, utilization category, etc. The characteristic values of the intrinsically safe circuits are to be given by the manufacturer on his own responsibility. Further technical details have been specified in the test documents.

The composition of the symbol specifying the type of protection depends on the types of protection of the components used.

(16) Report PTB Ex 99-19112, description (6 sheets), 2 drawings

(17) Special conditions for safe use

The control unit may also be connected via suitable cable entries or conduit entries which meet the requirements of EN 50 018, sections 13.1 and 13.2 and for which a separate certificate has been issued.

Openings which are not used are to be sealed in accordance with EN 50 018, section 11.

sheet 2/3

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Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1036

Equipment of the type of protection intrinsic safety "i" is to be installed in such a way that the distances, creepage distances and clearances between intrinsically safe circuits and non-intrinsically safe circuits required according to EN 50 020 are complied with.

If the distances required according to EN 50 020 for connection facilities are not ensured by the installation, cables of increased safety "e" quality or fail-safe cables are to be used.

When more than one intrinsically safe circuit is used, the rules for interconnection are to be observed.

(18) Essential health and safety requirements

The tests carried out and their positive results show that the control unit complies with the requirements of Directive 94/9/EC and of the standards stated on the cover sheet.

Zertifizierungsstelle Explosionsschutz

Braunschweig, July 06, 1999

By order:


Dr.-Ing. U. Klausmeyer
Oberregierungsrat



sheet 3/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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(1) **Mitteilung**
über die Anerkennung der Qualitätssicherung Produktion

(2) Geräte oder Schutzsysteme oder Komponenten zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**



(3) **Mitteilungsnummer: PTB 96 ATEX Q004-1**

(4) **Produktgruppe(n):** Heizeinrichtungen,
Steuer- und Regeleinrichtungen,
Leergehäuse,
Abzweig- und Verbindungskästen
in den bestimmenden Zündschutzarten
Druckfeste Kapselung "d" und Erhöhte Sicherheit "e"

Die benannte Stelle führt eine Liste der EG-Baumusterprüfbescheinigungen, für die diese Mitteilung gilt.

(5) **Antragsteller:** thuba AG
Blauensteinerstr. 16, CH-4015 Basel

(6) **Hersteller:** thuba AG
Blauensteinerstr. 16, CH-4015 Basel

(7) Die Physikalisch-Technische Bundesanstalt (PTB), benannte Stelle Nr. 0102 für Anhang IV nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften 94/9/EG vom 23. März 1994, teilt dem Antragsteller mit, daß der Hersteller ein Qualitätssicherungssystem für die Produktion unterhält, das dem Anhang IV dieser Richtlinie genügt.

(8) Diese Mitteilung basiert auf dem vertraulichen Auditbericht Nr. 99/341/09, ausgestellt am 1999-11-04. Die Mitteilung ist gültig bis 2002-11-04 und kann zurückgezogen werden, wenn der Hersteller die Anforderungen des Anhangs IV nicht mehr erfüllt.

Die Ergebnisse der regelmäßigen Begutachtung des Qualitätssicherungssystems sind Bestandteil dieser Mitteilung.

(9) Gemäß Artikel 10 (1) der Richtlinie 94/9/EG ist hinter der CE-Kennzeichnung die Kennnummer 0102 der PTB als der benannten Stelle anzugeben, die in der Produktionsüberwachungsphase tätig wird.

Zertifizierungsstelle Explosionschutz
Im Auftrag

Braunschweig, 05. November 1999

Dr.-Ing. U. Klausmeier
Regierungsdirektor



Seite 1/1

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Braunschweig und Berlin



(1) **Production Quality Assessment Notification**

(Translation)



(2) Equipment or protective systems or components intended for use in potentially explosive atmospheres - **Directive 94/9/EC**

(3) Notification Number: **PTB 96 ATEX Q004-1**

(4) Product group(s): heating devices, controlling devices, empty enclosures, junction boxes

in the decisive types of protection flameproof enclosures 'd' and increased safety 'e'

A list of the EC-Type Examination Certificates covered by this notification is held by the notified body.

(5) Applicant: thuba AG
Blauensteinerstr. 16, CH-4015 Basel

(6) Actual manufacturer: thuba AG
Blauensteinerstr. 16, CH-4015 Basel

(7) The Physikalisch-Technische Bundesanstalt (PTB), notified body No. 0102 for Annex IV in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994 notifies to the applicant that the actual manufacturer has a production quality system which complies to the Annex IV of the Directive.

(8) This notification is based on the confidential audit report No. 99/341/09, issued the 1999-11-04. This notification is valid until 2002-11-04 and can be withdrawn if the actual manufacturer no longer satisfies to the requirements of Annex IV.

Results of periodical reassessment of the quality system are a part of this notification.

(9) According to Article 10 (1) of the Directive 94/9/EC the CE-Marking shall be followed by the identification number 0102 of PTB as the notified body which is involved in the production control stage.

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, November 05, 1999


Dr.-Ing. U. Klausmeyer
Regierungsdirektor



Sheet 1/1

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Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig



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