PSG NC / NCB / NCS
NOx Sample Gas Converters

Installation Manual
Operating Manual
Maintenance Manual
Spare Part List
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Erkelenz, 30.04.2020

Jörg Erens
Managing Director

AGT-PSG GmbH & Co.KG
Errors and printing mistakes excepted

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Technical Details Subject to Change
B. Used Terms and Signal Indications

**QUALIFIED PERSONNEL**
Persons with necessary qualification, who are familiar with installation use and maintenance of the product

**NOTE**
The signal is used according to DIN 4844 and EU Recommendation 91/C53/06

**IMPORTANT**
Important information about the product or parts referring to operating in hazardous areas

C. Electrical Standards

**CE – Certification**
The product described in this operating manual complies with following EC directives:

**EMV-Instruction**
The requirements of the EU directive 2014/30/EU "Electromagnetic compatibility" are met.

**Low Voltage Directive**
The requirement of the EU directive 2014/35/EU "Low Voltage Directive" are met.
The compliance with this EU directive has been examined according to DIN EN 61010.
D. Safety Instructions Warranty

Please read these operating instructions very carefully before start up and use of the equipment.

- Please check before installing the equipment if the device is suitable for:
  - the exposed pressure
  - the exposed temperature
  - the exposed ambient conditions (e.g.: rain, moist, dust,…)

- Attention must be paid to the requirements of **IEC 364 (DIN VDE 0100)** when setting high-power electrical units with nominal voltages of up to 1000 V, together with the associated standards and stipulations.

- Work on electrical equipment should only be carried out by trained specialists.

- Before connecting the equipment, be sure that the main voltage is equal to the voltage mentioned on the type plate on the inside of the electrical box.

- Beware that the apparatus and the control units are switched off before opening of the protection body.

- Installation, maintenance, monitoring and repairs can be done by authorised personnel.

**IMPORTANT:**
This equipment is not explosion-proofed!
E. Warranty

If the equipment fails, please contact your AGT-PSG dealer. The warranty is covered for a period of 1 year countable from the first day of delivery (as also specified in our normal terms and conditions of sale) when the apparatus is handled and assembled correctly, installed according good craftsmanship, treatment and use or operation of the equipment.

The warranty covers repair at the factory at no cost, or the replacement at no cost of the equipment free ex user location. In case of resend or reshipment, the probe must be properly packed or in his original protective packaging or in a sufficient adapted recipient.

⚠️ NOTE
Consumables are only covered by this warranty in case of production defaults.

Only the qualified personnel of the manufacturer are allowed to handle the cooling circuit during the guarantee period.

PSG NC converter must be in the original condition when guarantee claims are made.

F. Introduction

PSG NC / NCB / NCS converters are used in combustion processes where the nitrogen dioxide content amounts to more than 5% of the nitrogen oxide emission. Continuous measurement of nitrogen oxide NOx consisting of nitrogen monoxide NO and nitrogen dioxide NO$_2$ is prescribed in many countries.

F.1 Serial number

The serial number is mentioned on the type plate on the device.

F.2 Power supply

Depending on the type of the device can be operated on alternating current of 230V/50Hz or 115V/60Hz.
G. Description

Available models are:
PSG NC (without bypass valve), PSG NCB (with bypass valve),
PSG NCS (Compact version)

The PSG converters convert the NO₂ content of the sample gas by catalysis into NO. Therefore, the sample gas is conducted through a special stainless steel cartridge with a catalyst-filling based on a molybdenum composition. The conversion makes it possible to measure nitrogen oxides indirectly using commercially available NO-selective measurement devices.

The converter PSG NCB is equipped with a bypass valve. For test purposes, with the bypass valve the catalyst can be bypassed via a valve.

The converters type PSG NC & PSG NCB are designed as user-friendly and easy-to-service 19” plug-in units for mounting in 19”-rack systems.

The converter type PSG NCS is designed in a compact stainless-steel housing for applications with very limited mounting space. 2 mounting brackets are included for a universal mounting in various positions. The brackets can be mounted f. e. on top, on side or on several other positions.

The catalyst cartridge is filled, and formatted ex works factory and is ready-for-use immediately.

The following operating elements are mounted on the front/rear panel of the converter for easy access:

- Mounting adapter with handle for the catalyst cartridge (all versions)
- Temperature controller with digital temperature display (all versions)
- Sub-D plug for bypass valve control (optional, pin 1+2) and temperature alarm
- (pin 6+7, standard: NO, function free programmable by controller) (only PSG NC / NCB)
- Mains connection, apparatus plug with fuse holder (only PSG NC / NCB)
- 8-pin socket for power supply IN and alarm contact OUT (only PSG NCS)
- Sample gas outlet (¼”f NPT) (only PSG NC / NCB)
- Sample gas inlet (¼”f NPT) (only PSG NC / NCB)
- Sample gas outlet (Swagelok connector for tube DN6) (only PSG NCS)
- Sample gas inlet (Swagelok connector for tube DN6) (only PSG NCS)
The catalyst cartridge is mounted in a heat-insulated tube furnace. The special mounting adapter on the front allows the hot catalyst cartridge to be released and removed without any tools by screwing the knob.

The converter temperature is electronically controlled and can be set continuously at the temperature controller on the converter’s front panel.

An alarm for high and low temperatures is provided as a status contact output at the 9-pin sub-D-plug (PSG NC / NCB) or 8-pin socket (PSG NCS) on the rear side of the converter.

With the version PSG NCB an internal bypass solenoid valve allows the catalyst to be bypassed, for example for test purposes. The desired sample gas can be switched externally via the 9-pin sub-D-plug located on the rear of the converter. A LED confirms which sample gas path is selected.

⚠️ WARNING
The sample gas path via bypass should only be used for the test or calibration lasts; otherwise it has to be inactive.

⚠️ NOTE
The built-in fan in conjunction with the ventilation slots in the converter’s housing provides the necessary ventilation.
H. The Principle of NO Conversion

The gas conversion of nitrogen dioxide NO₂ into nitrogen monoxide NO passes according to the following gross reaction equation:

\[ 2 \text{NO}_2 \rightleftharpoons 2 \text{NO} + \text{O}_2 \]

The reaction equilibrium is shifted entirely onto the side of the original material NO₂. A shift of the equilibrium towards the products and the resultant high product yield can only be achieved as subject to a high expenditure of energy, i.e. temperature. By using a catalyst, the activation energy of the above reaction is reduced considerably so that conversion rates of 99% are possible at lower temperatures. A molybdenum composition is used as catalyst. The catalyst is supplied as a ready-to-use formatted cartridge.

⚠️ NOTE
Humid and dust-loaded gases may choke up the catalyst filling. For this reason, an appropriate gas conditioning system is to be mounted upstream of the PSG converters in order to separate out suspended particles and to dry the sample gas.

I. Selection of the Appropriate Catalyst Temperature

The converter with molybdenum composition cartridge filling is pre-adjusted to 225°C ex works factory. The catalyst temperature can be adjusted continuously using the temperature controller on front of the converter.

⚠️ NOTE
Ammonia NH₃ in the sample gas converts a part of the NO₂ into N₂O and elementary N₂. Depending on the ammonia concentration this can cause a substantial reduction of the conversion rate.
### J. Technical Data

<table>
<thead>
<tr>
<th>Model</th>
<th>PSG NC</th>
<th>PSG NCB</th>
<th>PSG NCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part number</td>
<td>30000886</td>
<td>30000887</td>
<td>30000888</td>
</tr>
<tr>
<td>Housing version</td>
<td>19&quot;-rack</td>
<td>Bracket mounting</td>
<td></td>
</tr>
<tr>
<td>Housing color front panel</td>
<td>RAL 7035 (light-grey)</td>
<td>Steel grey</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 5 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas inlet &amp; outlet</td>
<td>Unheated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas inlet temperature</td>
<td>Max. +250°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>+225°C for standard molybdenum composition filling (+600°C for optional metal filling)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Max. temperature</td>
<td>+650°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas flow rate</td>
<td>Standard 60 Nl/h (max. 90 Nl/h)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating pressure</td>
<td>Max. 1,5 bar abs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample gas inlet</td>
<td>1/4&quot; NPT f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample gas outlet</td>
<td>1/4&quot; NPT f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversion rate NO2 in NO</td>
<td>Effectiveness &gt; 96% with a new catalyst</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life time of the catalyst</td>
<td>Approx. 6 months, depending on gas conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative air humidity</td>
<td>&lt; 80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>+5°C to 50°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials of gas wetted parts</td>
<td>Stainless Steel SS316, PTFE, FKM, Viton©</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Electrical data

- **Mains connection**: Mains power plug connector incl. 1 fine fuse 5x20m (T3A/H250V) With. 2,5m cable with plug. Alarm- and control signals via 9-pin Sub D-connector 8-pin socket for power supply and alarm signals
- **Alarm contact**: Free programmable contact 1NO, rating: 250V, 5A AC
- **Alarm set points**: +/- 10°C of set-point (others on request)
- **Degree of Protection**: IP20, EN 60529
- **Electrical equipment standard**: EN 61010 / EN 60519-1
- **Power supply**: 230V/50Hz (Standard, others on request)
- **Power consumption**: Approx. 450W
J. Dimensions

PSG NC / PSG NCB

Mounting brackets (can be mounted in 4 different positions)

PSG NCS

Figure 1  PSG NC / NCB converter dimensions

Figure 2  PSG NCS converter dimensions
K. Versions, Options, Consumable and Spare Parts

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>30008673 O–ring set (4 rings) for PSG NC / NCB / NCS</td>
<td></td>
</tr>
<tr>
<td>30008674 Spare heater element for PSG NC / NCB / NCS</td>
<td></td>
</tr>
<tr>
<td>30008675 Spare temperature sensor for PSG NC / NCB / NCS</td>
<td></td>
</tr>
</tbody>
</table>

L. Receipt and Storage of Goods Parts

The PSG converters are pre-installed units. The converter cartridge is packed separately and not put together.

The arrived goods should be carefully unpacked as soon as possible in order to control the good and correct condition.

The goods and the delivery note should be compared. If any difference is noted please contact your AGT-PSG contact person.

The delivery should be checked for any transport damage. If any anomaly is noted, please contact the transport insurer immediately notifying of the damage.

The goods should be stored in a frost-protected area.
M. Preparation for Installation

The safety rules and regulations for the prevention of accidents must be observed when carrying out the installation.

⚠️ **NOTE**
Especially the information in chapter D. “Safety instructions” must be applied.

**Ensure unhindered cooling air circulation while installing the PSG converter. Do not install the PSG converter directly above possible sources of heat. Connect heated discharge lines to the PSG converter using suitable thermal decoupling!**

This device is to be used only in VERTICAL position. The devices are mountable on 19”-racks and cabinets (standard for PSG NC / NCB, optional for PSG NCS). The device has to be placed in a ventilated area, away from heat sources and magnetic fields.

The layout of the compact PSG converter guarantees problem-free integration into the analysis systems.

System and process-specific safety measures must be followed before start-up!

⚠️ **NOTE**
Requirements of VDE 0100 as well their relevant standards and guidelines must be followed while setting up high-voltage devices with rated voltages of up to 1000V!

The power supply circuit of the device is equipped with a fuse compatible with the rated current (over-current protection). Electrical specifications can be inferred from the technical specifications.

1) The NO\textsubscript{x} converter is placed in series, before a NO-analyzer. Any NO analyzer with a range adapted to the process value can be used.
2) Before inserting the cartridge, keep the metal tube vertical and knock it gently on a table, so the catalyst composition is compact formed inside. closed to the filter.
3) After installation and insertion of the holder with the cartridge, the converter has to be heated up to the operating temperature of +225°C.
4) The converter will start to transform the NO\textsubscript{2} to NO
5) Typical concentration of NO\textsubscript{2} = 10 to 30ppm
6) It is important to know, that for Emission measurements the total NO\textsubscript{x} (NO + NO\textsubscript{2}), NO\textsubscript{2} is only 5 to 10% of the total NO\textsubscript{x}.
7) First calibrate the NO analyzer with a NO gas cylinder; typical range is 100 up to 200ppm NO. Use as gas cylinder only NO in N\textsubscript{2}. Inject the calibration gas in front of the converter.
8) Then, for checking the transfer efficiency, use a gas cylinder with ONLY NO\textsubscript{2} in N\textsubscript{2}. Inject this calibration gas in front of the converter.
9) When using a gas cylinder with f. e. +/- 20ppm NO\textsubscript{2} sent through the converter, the NO analyzer shall indicate between 18 and 19ppm, NOT 20ppm or the value of the bottle!

10) The difference is the Transfer efficiency.

11) There is only a small error because the total of NO\textsubscript{x} will be much higher (NO\textsubscript{2} is a minor fraction only)

12) The flow must be about 1l/min, not too high; or the efficiency will drop.

13) The NO\textsubscript{2} converting time is expressed in ppm x hour. This is about 120,000 ppm Hr. So if the NO\textsubscript{2} in the process is in average 20ppm, the cartridge will last for 6000 hours or 250 days. Then the cartridge needs to be replaced. When the NO\textsubscript{2} average is 10ppm, the cartridge will last 500 days.

**Important is:** The flow should be at 1l/min!

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### M.1 Mechanical Connection

<table>
<thead>
<tr>
<th>Model</th>
<th>PSG NC / NCB</th>
<th>PSG NCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample gas inlet</td>
<td>1/4” NPT f</td>
<td>Tube DN6</td>
</tr>
<tr>
<td>Sample gas outlet</td>
<td>1/4” NPT f</td>
<td>Tube DN6</td>
</tr>
</tbody>
</table>

⚠️ **NOTE**

The gas inlet and outlet is located on the rear panel of the converter. Do not mix hose/tube connections for sample gas inlet and outlet; the connections are labelled accordingly!

Ensure that the connections are sealed correctly and check for tightness after connection!

To grant a functional and proper mounting we recommend the use of union pieces with taper pipe and thread type NPT in connection with suitable sealing tape (PSG NC / NCB).
M.2 Electrical Connection

⚠️ NOTE
At connecting the equipment please check that the supply voltage is identical with the information provided on the type plate.
Attention must be paid to the requirements of IEC 364 (DIN VDE0100) when setting high-power electrical units with nominal voltages of up to 1000V, together with the associated standards and stipulations.

On the converters series PSG NC / NCB a cold device coupling, and a connector are used for supplying power. On the converter series PSG NCS an 8-pin socket is used for supplying power supply and alarm signals.

Correct voltage type as mentioned on the rating plate must be taken into account while establishing connections.

N. Mounting

The PSG NC converter should only be used in stationary conditions and with correct selection of the installation point and proper installation. When used and properly installed in the prescript area AGT PSG guarantee a long-time of maintenance-free and satisfaction use.

O. Maintenance

Before the maintenance it is necessary that the specific safety procedures regarding the system and operational process are observed.

⚠️ NOTE
It is necessary to switch off the power supply before any assembly, maintenance or repair work is carried out!

O.1 Changing the converter cartridge

The catalyst cartridge is mounted in a heat-insulated tube furnace. The special mounting adapter on the front allows the hot catalyst cartridge to be released and removed without any tools.
P. Determining the Catalyst Life-Time

The catalyst service life depends essentially on the following factors:
- Temperature
- NO₂ concentration in the sample gas
- O₂ concentration in the sample gas
- Gas flow rate

If the degree of efficiency falls notably below 95%, the used catalyst cartridge should be replaced.

Figures 2-4 are showing the service life curves of the NO₂/NO catalyst cartridge depending on above mentioned factors. During the stated service life, conversion is over 95%. If the degree of efficiency falls notably below 95%, the used catalyst cartridge should be replaced.

⚠️ NOTE

Adverse conditions in the installation can lead to a substantially shorter catalyst life time!
Catalysts life times according to the NO₂-concentration at varying flow rates and Oxygen concentrations:

**Flow rate 30NL/h**

![Chart showing catalyst life time at 30NL/h with NO₂-concentration varying from 5% to 21% O₂.]

**Flow rate 60NL/h**

![Chart showing catalyst life time at 60NL/h with NO₂-concentration varying from 5% to 21% O₂.]

**Flow rate 90NL/h**

![Chart showing catalyst life time at 90NL/h with NO₂-concentration varying from 5% to 21% O₂.]

Figure 3  Catalyst life at 30NL/h

Figure 4  Catalyst life time at 60NL/h

Figure 5  Catalyst life time at 90NL/h
Q. Getting Started

If all needed steps from the “previous chapters are accomplished, you can start here.

Before starting up check whether the mains power supply voltage corresponds with the information stated on the probe's nameplate.

Switch on mains power supply.

The display of the regulation unit will indicate the temperature in real time.

The setting temperature is set by our manufacturing department.

Change of set-point value on temperature controller

The display normally shows process value (ex. measured temperature), but can also visualize set-points or value of entering data.

The total heating-up time depends on the ambient temperature. After about 30min the device is already sufficiently heated up to the set-point temperature.

Q.1. Analogue Input

<table>
<thead>
<tr>
<th>With controller ATC 142 (until Feb. 2020)</th>
<th>With controller ATC 144 (from Feb. 2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For thermocouples K, S, R, J,</strong></td>
<td><strong>For thermocouples K, S, R, J, T, E, N, B.</strong></td>
</tr>
<tr>
<td>• Comply with polarity</td>
<td>• Comply with polarity</td>
</tr>
<tr>
<td>• For possible extensions, use a</td>
<td>• For possible extensions, use</td>
</tr>
<tr>
<td>compensated cable and terminals</td>
<td>compensated cable and terminals</td>
</tr>
<tr>
<td>suitable for the thermocouples used</td>
<td>suitable for the thermocouples used</td>
</tr>
<tr>
<td>(compensated)</td>
<td>(compensated)</td>
</tr>
<tr>
<td>• When shielded cable is used, it should</td>
<td>• When shielded cable is used, it should</td>
</tr>
<tr>
<td>be grounded at one side only</td>
<td>be grounded at one side only</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>For thermoresistances PT100, Ni100</strong></td>
<td><strong>For thermoresistances PT100, Ni100</strong></td>
</tr>
<tr>
<td>• For the three-wire connection use</td>
<td>• For the three-wire connection use</td>
</tr>
<tr>
<td>wires with the same section</td>
<td>wires with the same section</td>
</tr>
<tr>
<td>• For the two-wire connection short-circuit terminals 10 and 12</td>
<td>• For the two-wire connection short-</td>
</tr>
<tr>
<td>• When shielded cable is used, it should</td>
<td>circuit terminals 10 and 12</td>
</tr>
<tr>
<td>be grounded at one side only to avoid</td>
<td>• When shielded cable is used, it should</td>
</tr>
<tr>
<td>ground loop currents</td>
<td>be grounded at one side only</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>**For thermoresistances NTC, PTC, PT500,</td>
<td>**For thermoresistances NTC, PTC, PT500,</td>
</tr>
<tr>
<td>PT1000 e potentiometers**</td>
<td>PT1000 and linear potentiometers.</td>
</tr>
<tr>
<td>• When shielded cable is used, it should</td>
<td>• When shielded cable is used, it should</td>
</tr>
<tr>
<td>be grounded at one side only to avoid</td>
<td>be grounded at one side only to avoid</td>
</tr>
<tr>
<td>ground loop currents</td>
<td>ground loop currents</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>For linear signals in Volt and mA</strong></td>
<td><strong>For linear signals in Volt and mA</strong></td>
</tr>
<tr>
<td>• When shielded cable is used, it should</td>
<td>• When shielded cable is used, it should</td>
</tr>
<tr>
<td>be grounded at one side only to avoid</td>
<td>be grounded at one side only to avoid</td>
</tr>
<tr>
<td>ground loop currents</td>
<td>ground loop currents</td>
</tr>
</tbody>
</table>
Q.2 Control Unit

Before starting up check whether the mains power supply voltage corresponds with the information stated on the front plate. Switch on mains power supply. The display normally shows the process value (ex. measured temperature), but can also visualize set-points or value of entering data. Password to enter the parameter settings is: 1 2 3 4

With controller ATC 142 (until Feb. 2020)

With controller ATC 144 (from Feb. 2020)

R.1 Numeric Indicators (Display)

<table>
<thead>
<tr>
<th>1</th>
<th>234</th>
<th>Normally displays the process. During the configuration phase, it displays the parameter being inserted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>234</td>
<td>Normally displays the setpoint. During the configuration phase, it displays the parameter value being inserted.</td>
</tr>
</tbody>
</table>

R.2 Meaning of status lights (LED)

<table>
<thead>
<tr>
<th>3</th>
<th>C</th>
<th>ON when the command output 1 is active. In case of motorized valve control it is ON during valve opening and flashes during valve closing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>A1</td>
<td>ON when alarm 1 is active.</td>
</tr>
<tr>
<td>5</td>
<td>A2</td>
<td>ON when alarm 2 is active.</td>
</tr>
<tr>
<td>6</td>
<td>T</td>
<td>ON when the controller is executing an auto-tuning cycle.</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>ON when &quot;Manual&quot; function is active.</td>
</tr>
<tr>
<td>8</td>
<td>R</td>
<td>ON when the controller communicates via serial. Flashes when the remote setpoint is enabled.</td>
</tr>
</tbody>
</table>
R.3 Keys

- Allows to increase the main setpoint.
- During the configuration phase, allows to slide through parameters. Together with the \( \text{alt} \) key it modifies them.
- Pressed after the \( \text{alt} \) key it allows to increase the alarm setpoint.

- Allows to decrease the main setpoint.
- During the configuration phase, allows to slide through parameters. Together with the \( \text{alt} \) key it modifies them.
- Pressed after the \( \text{alt} \) key it allows to decrease the alarm setpoint.

- Allows to display the alarm setpoint and runs the autotuning function.
- Allows to modify the configuration parameters.

- Allows to display the alarm setpoint and runs the autotuning function.
- Allows to modify the configuration parameters.

<table>
<thead>
<tr>
<th>Press</th>
<th>Effect</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>( \text{alt} )</td>
<td>Increases the main setpoint.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>During configuration allows to scroll the parameters or the groups of parameters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increases the setpoints.</td>
</tr>
<tr>
<td>10</td>
<td>( \text{alt} )</td>
<td>Decreases the main setpoint.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>During configuration allows to scroll the parameters or the groups of parameters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decreases the setpoints.</td>
</tr>
<tr>
<td>11</td>
<td>( \text{alt} )</td>
<td>Allows to visualize command and alarm setpoints.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>During configuration allows to enter the parameter to be modified and confirms the variation.</td>
</tr>
<tr>
<td>12</td>
<td>( \text{alt} )</td>
<td>Allows to enter the Tuning launch function, automatic/manual selection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>During configuration works as exit key (ESCAPE).</td>
</tr>
</tbody>
</table>

S. Modifying main set-point and Alarm set-point values

The setpoint value can be changed from the keyboard as follows:

<table>
<thead>
<tr>
<th>Press</th>
<th>Effect</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>( \text{alt} )</td>
<td>Value on display 2 changes. Increase or decrease the main setpoint.</td>
</tr>
<tr>
<td>2</td>
<td>( \text{alt} )</td>
<td>Visualize alarm setpoint on display 1.</td>
</tr>
<tr>
<td>3</td>
<td>( \text{alt} )</td>
<td>Value on display 2 changes. Increase or decrease the alarm set point value.</td>
</tr>
</tbody>
</table>
T. Closing Down

⚠️ **NOTE**
The area in which the converter is placed when not in use must be kept free of frost at all times. If the converter unit is putting out of action for a short time no particular measures need to be taken.

We recommended sweeping the converter with inert gas or ambient air while the unit is putting out of action for a longer time.

⚠️ **NOTE**  **Aggressive residues possible!**
Wear protective glasses and proper protective clothing!

The following steps must be executed before shut-down of the PSG Converter:

- Switch off PSG Converter using power switch at cold device plug
- Disconnect the device from the mains
- Remove the feed lines;
  Please follow the simple guidelines mentioned while handling the condensate
- If PSG Converter has come in contact with toxic gases, the corresponding guidelines must be followed
- PSG Converter must be disposed off in a specialised manner. Please contact your manufacturer or an adequately qualified person for the disposal