



## STL6 (PG2-STL06)

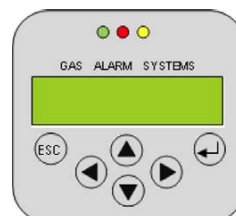
Hand-Held Service Tool for AT6, PG2 and PX2

## User Manual

August 2019

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## Display Unit for Series AT6, PG2 and PX2

### 1 Intended Use

The Service Tool / Display is used as visual indication, operating, commissioning and calibration unit for gas detecting and measuring instruments of the series PolyGard®2 (AT6/DT6/DC6/SGC6/SCM6) and PolyXeta®2 (PX2). The intended use is defined in the user manuals for the individual devices.

### 2 Description

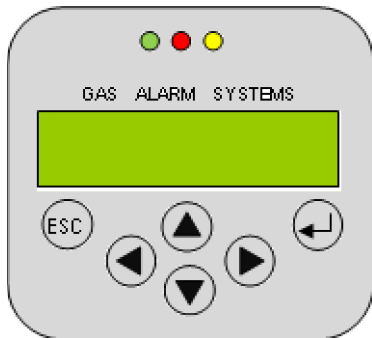
The parameters, gas types, units, etc. specified in the description are only examples, the actual values at the time of delivery are shown in the attached PolyXeta®2 configuration card.

This description contains the maximum possible functionality of this tool.

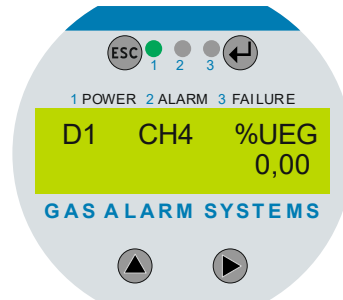
Depending on the version some features described here are not available and therefore the menu items may be hidden.

### 3 Operation

The complete configuration and service are made via operating keys in combination with the LC display screen. Security is provided via four code levels against unauthorized intervention.



Version for PG2  
(AT6/DC6/SGC6/SCM6/DT6)  
Operation is done via 6 pushbuttons.



Version for PX2 series  
The display is located behind a glass panel and is operated without opening the housing from the outside by briefly touching the control symbols using a magnetic pen.

#### 3.1 Function of the Keys and LEDs on the Keypad



Exits programming, returns to the previous menu level.



Enters sub menus and saves parameter settings.



Navigates within a menu, changes values.

PX2 only  function



Changes cursor position.


PX2 only  function

The status LEDs indicate the operating state.


- Green: Continuous: = Operating voltage
- Flashing: = Maintenance message
- Yellow: Continuous: = Failure
- Slowly flashing: = Warming-up
- Fast flashing: = Special mode
- Red: = Alarm


The backlight of the display changes from green to red when an alarm is active.



### 3.2 Setting / Changing of Parameters and Set Points


-  Open desired menu window.  
Code input field opens automatically, if no code is approved.


After input of valid code, the cursor jumps onto the first position segment to be changed.


-  Push the cursor onto the position segment, which is to be changed.

-  Set the desired parameter / set point with the keys.

-  Input of value finished.
-  Change further parameters in the same menu.

-  Save the changed value?

-  YES, and back to higher menu level.

-  NO, (previous value isn't overwritten) and back to higher menu level.

### 3.3 Measuring Point

The term measuring point (MP) refers to the representation and processing (parameterization) of the measured value of a connected gas sensor head.

For a measuring head with digital communication (SC2 or SX1 series), the display shows DP = digital measuring point.

For a measuring head with analog 4-20 mA signal (AT6 series) the display shows AP = Analog measuring point.

The following number defines the bus address of the gas transmitter at DP. With AP, the number indicates the number of the analog input used.

DP21: This is the measured value of the digital sensor head with bus address 21.

AP11: This is the measured value of the analog sensor head connected to analog input 11.

## 3.4 Code Levels

All inputs and changes are protected by a four-digit numeric code (= password) against unauthorized intervention according to the regulations of all national and international standards for gas warning systems. The menu windows of status messages and measuring values are visible without entering a code.

The access to a code level is cancelled if no button is pushed within 15 minutes or if there is no data communication between display and basic board.

The code levels are classified in order of priority: Code level 1 has top priority.

### Code level 1: (code not changeable)

Code level 1 is intended for the service technician of the installer to change parameters and set points. This password allows working on all settings. For opening the parameter menus, you must first activate the service mode after code release (see chapter 4.6).

- Project-based Service Tool Devices do NOT require a password. The authorization is transmitted via the internal device identifier. If the identifier is incorrect, 'Service not available' will be output if a non-compliance is detected.

### Code level 2: (code not changeable)

With code level 2, it is possible to temporarily lock/unlock sensors. This code word is only released by the installer to the end user in problem situations. To lock/unlock, the service mode must always be activated first after code release. This functionality is **not** available in the service tool and display.

### Code level 3: (customer password is settable)

Customer password is inactive in delivery state and is activated by entering a value. Same behaviour as code level 1, only changing the own customer password is not possible.

Only the service technician who has last changed it knows the code since it can only be changed individually via code level 1.

### Code level 4: (password 1234) (code not changeable)

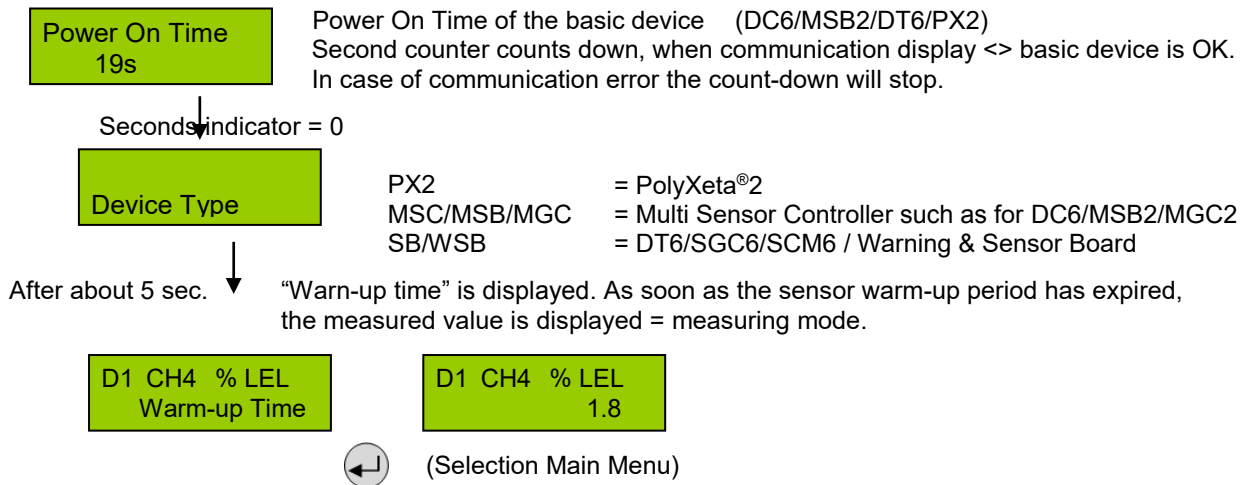
Code level 4 allows the **operator** after activation of the operation mode "Service Mode" to read all parameters as well as all test functions of the alarm relays, analog outputs and LCD.

- Manual test function of the alarm relays (functional test of the connected actuators),
- Manual test function of the analog outputs (functional test of the connected actuators),
- Manual test function of the LCD (functional test of the LCD display and the LEDs).

## 4 Menu Overview

Menu operation is done via a clear, intuitive and logical menu structure. The operating menu contains the following levels:

- Starting menu with indication of the device type if no MP is registered. Otherwise scrolling display of the gas concentrations of all registered sensors in 5-second intervals. If alarms are active, only the values of the sensors currently in alarm status are displayed.
- Main menu
- Submenu 1 to 3






Starting menu	Main menu	Submenu 1
	System Errors	Reading and acknowledgement of errors See from point 4.1
	Alarm Status	Display of the alarm status of active alarms See from point 4.2
	Relay Status	Display of the relay status See from point 4.3
	Measuring Values	Display of measuring values See from point 4.4
	Display Parameters	General display parameters without safety relations See from point 4.5
	Installation & Calibration	Reading and change of the relay, measuring point and system parameters as well as test and calibration functions See from point 4.6


The following submenu items of “Installation & Calibration” are only accessible in Service ON mode (password protected)



!! Service ON = Special mode = Fault message is active!!


- Digital Outputs






See 4.7 (only available for AT6 display)
-  
- Relay Parameters






See from point 4.8
-  
- MP Parameters






See from point 4.9
-  
- System Parameters






See from point 4.10
-  
- Operating Data






See from point 4.11
-  
- Relay Test Function






See from point 4.12
-  
- Analog Outputs Test Function



See from point 4.13
-  
- Calibration



See from point 4.14
-  
- Addressing



See from point 4.15



**4.1 Fault Management**

A pending fault activates the yellow LED (Fault).

The integrated fault management records the first 50 occurred faults with time stamps in the menu “System Errors”. The timestamp shows the days, hours and minutes that have elapsed since the fault has occurred.



Additionally, a record of the faults occurs in the “Error memory”, which can only be read and deleted by the service technician (code level 1 and 3).

**4.1.1 Error Memory**

The errors in the error memory can be viewed on the displays without entering a code but cannot be changed. The menu “Error Memory” in the main menu “System Errors” can only be opened via the code level 1 and 3.

In the error memory, the first 50 faults that have occurred and have already been acknowledged in the menu “System Errors” are listed for the service technician in a power failure safe way.

**Attention:**

This memory should always be read during maintenance, relevant faults should be tracked and entered in the service logbook, and finally the memory should be emptied.

**4.1.2 System Messages and System Errors**

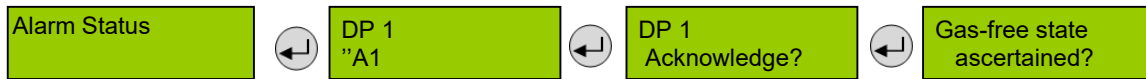
For details about the error messages please refer to the respective User Manual.

**4.2 Alarm Status**

Display of the currently pending alarms in plain text in the order of their arrival. Only those measuring points are displayed, where at least one alarm is active.

Alarms in latching mode and the overrange message can be acknowledged in this menu via code levels 1, 3 and 4. (Acknowledgement only possible if the alarm isn’t generated anew.)

This menu is not available for AT6.



Symbol	Description	Function
AP 1	Measuring Point No.	Analog measuring point X = 1 - X, where an alarm is pending
DP 1	Measuring Point No.	Digital measuring point X = 1 - X, where an alarm is pending
'A1 "A1	Alarm status	'A1 = Alarm 1 active "A1 = Alarm 1 in latching mode, can be acknowledged

**4.3 Relay Status**

Reading of the current status of alarm relays.

The actual relay status is displayed, depending on the relay mode (energized <> de-energized).

This menu is not available for AT6.

Selection of the alarm relay 1 – X

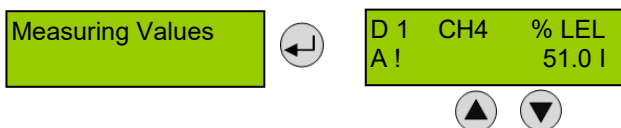


Selection of the next alarm relay

Symbol	Description	Function
1	Alarm Relay	Alarm relay = 1 - X
OFF	Relay Status	Relay OFF
ON	Relay Status	Relay ON

## 4.4 Menu Measuring Values

In this menu, the display shows the measuring value with gas type and unit. If the alarm evaluation is defined via the average, the display additionally shows the average value (A) to the left of the current value (C).



Selection of the next measuring point

Symbol	Description	Function
A 1 <sup>1</sup>	Meas. Point No.	Analog measuring point 1 = 1 - X
D 1 <sup>2</sup>	Meas. Point No.	Digital measuring point 1 = 1 - X
CH4	Gas type	Display of gas type (must comply with gas type of sensor head)
% LEL	Gas unit	Unit (depending on gas type)
51,0 C 48,0 A	Measured value	C = Current measured value (current value) of the gas concentration A = Arithmetic average of the gas concentr. (only if average is active)
A!	Alarm indication	At least one alarm has been released at this MP.
#	Maint. info	Sensor head: maintenance due (maintenance date exceeded)
?	ConfigError	Gas type or meas. range doesn't agree with sensor head.
Comm. err.	Fault MP	Communication error, sensor head <> I/O board
Underrange	Meas. range monitoring	Meas. signal < admissible range (< zero point – 6 %)
Overrange <sup>3</sup>		Meas. signal > admissible range (> full scale value + 6 %)
Gesperrt	MP Gesperrt	MP wurde vom Betreiber vorübergehend am Controller gesperrt.
Run-in	Run-in time	Running-in period of the sensor active

<sup>1</sup> Analog input number in the measuring point where the analog sensor head is connected to

<sup>2</sup> Display of the address number the measuring range is registered under in the field bus

<sup>3</sup> Acknowledgement in the menu Alarm Status

## 4.5 Display Parameters

In the menu Display Parameters, you can find the general, security irrelevant parameters in the display device. These parameters can be changed in operating mode.



### 4.5.1 Software Version

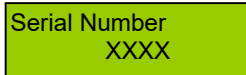


Software version of the display and of the basic board (factory set)

Symbol	Description	Function
XXXXX	Software Version of the display	XXXXX Software Version
YYYYY	Software Version of the basic board	YYYYY Software Version

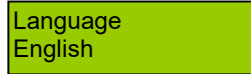
**4.5.2 Serial Number**

Menu only available with STL06 Tool.



Serial number of the Service Tool.

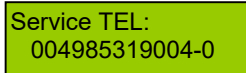
**4.5.3 Language**



Selection of the menu language (only code level 1 and 3)

Symbol	Description	Default	Function
English	Language	German	German English USA English French Italian

**4.5.4 Service Phone Number**

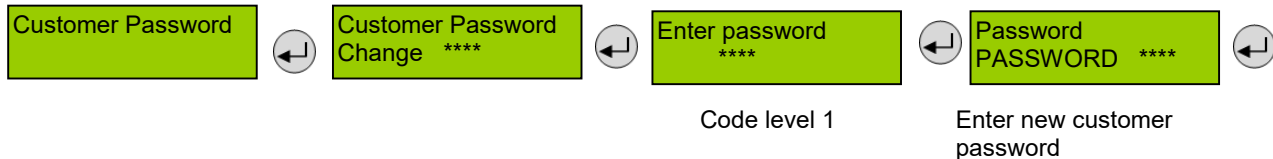


The service phone no. can be individually defined (only code level 1 and 3).

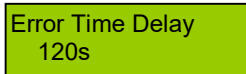
Symbol	Description	Default	Function
0853....	Phone No.		Definition of the individual service phone no.

**4.5.5 Customers password**

Storage of an individual customer's password in the display for changing parameters. See 3.3 Code Level 3. Changing the password only via code level 1. This menu item will only appear after having entered the password of code level 1.

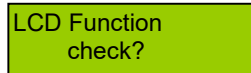


**4.5.6 Error Time Delay**



Symbol	Description	Default	Function
s	Delay	120s	(Only code levels 1 and 3) Definition of a delay time after a communication error Display <-> Basic Board has occurred (only fault indication on the display, no effect on the function or outputs)

**4.5.7 LCD Function**



Testing the LCD hardware. All LEDs light up for about two seconds. The backlight is yellow. (Green and red are activated at the same time). All points are displayed on the LCD.

## 4.6 Installation and Calibration Section



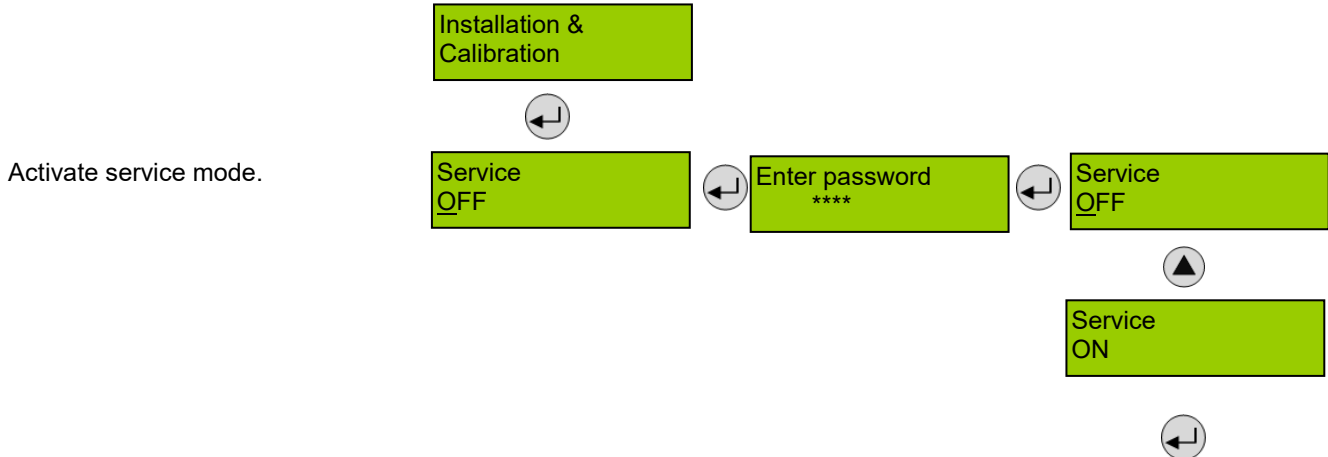
**If parameters are changed with the Service or PC Tool, they must be checked again for correctness by reading them back!**

**The following menus are only accessible in the Service ON state (password protected)**

!! Service ON = Special mode = Fault signal is active!

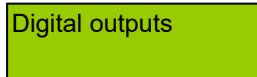
With code level 4 for reading the parameters

With code level 1 or 3 for changing the parameters



Activate service mode.

## 4.7 Digital Outputs



This menu item is only available with the AT6 display!

Alarm thresholds can be set for the two display-internal digital outputs.

For setting the thresholds and hysteresis, see section 4.9.3.

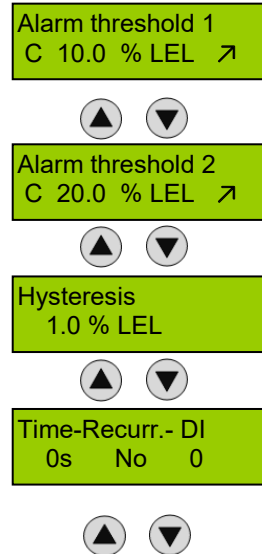
Unlike MP parameters, these alarm thresholds operate independently of each other.

The first alarm threshold refers to the second digital output, since the first is reserved for the horn. It controls the LED on the WAO, if connected.

The second alarm threshold refers to the horn of the WAO or the optional internal horn.

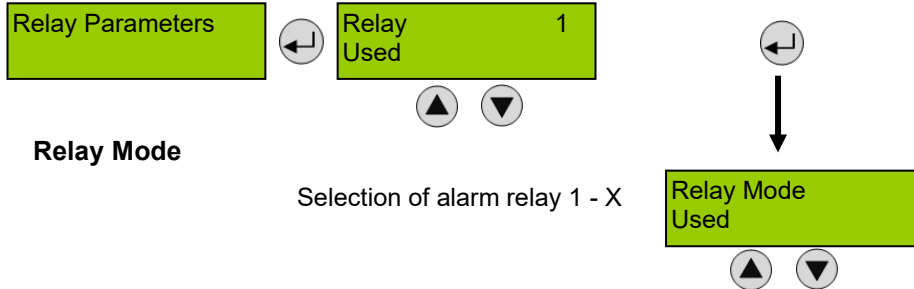
In addition to the alarm thresholds, the horn function for the internal horn can be set here (see section 4.8.6).

Acknowledgement on the display is made by pressing the ESC key in the main menu. External acknowledgement of the horn via the DI is only possible if a digital input is available.



### 4.8 Menu Relay Parameters

Reading and changing of the parameters separately for each alarm relay. Changes only via code level 1. For devices of the PolyXeta®2 series, the parameter changes can only be done at the alarm relay 1. This menu is not available for AT6.



#### 4.8.1 Relay Mode

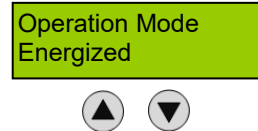
Selection of alarm relay 1 - X

The fault relay (listed for PolyXeta®2 as relay 2; for SGC6, SCM6, DC6, MSB2, MGC2 as relay 3) can be registered here as an additional alarm relay. This registration has no influence on the function as fault relay. No parameter changes possible here. The relay switches off in addition when the assigned alarm is active.

Symbol	Description	Default	Function
Used	Mode	Used	Used = Relay is registered and can be assigned to an alarm Not Used = Relay isn't registered

#### 4.8.2 Relay Operation Mode

Changes to the following relays are not accepted by the base unit:  
 For PolyXeta®2 for relay 2,  
 for SGC6/SCM6 for relays 2 and 3,  
 for DC6, MSB2, MGC2 for relay 3.



The terms energized / de-energized come from the terms “energized / de-energized to trip” principle used for safety circuits. The terms refer to the activation of the relay coil, not to the relay contacts (as they are executed as changeover contacts and available in both principles).

The LEDs at the modules show the state in analogy. (LED off -> relay coil current-free)

Symbol	Description	Default	Function
De-energ.	Mode	De-energ.	De-energ. = Alarm OFF= Relay (and LED) current-free Alarm ON = Relay (and LED) energized Energ. = Alarm OFF = Relay (and LED) permanently energized Alarm ON = Relay (and LED) current-free

**4.8.3 Relay Function Static / Flashing**

Changes to the following relays are not accepted by the base unit:

For PolyXeta®2 for relay 2,  
for SGC6, SCM6, DC6, MSB2, MGC2 for relay 3.



The function "Flashing" offers a connection option for warning devices to improve visibility. The frequency is about 1 second with an impulse / pause rate of 1:1.

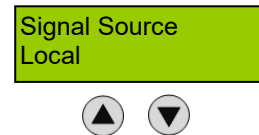
If "Flashing" is set, the output circuit mustn't be used as a safe output anymore.

The combination of relay mode energized with flashing operation makes no sense and is therefore suppressed.

Symbol	Description	Default	Function
No	Function	No	Yes = Relay function flashing in case of alarm No = Relay function static in case of alarm

**4.8.4 Signal Source**

This menu item is not available for PolyXeta®2 device series.



The signal source determines whether the relay is triggered by an alarm in the I/O board (local) or from the central unit (remote).

Symbol	Description	Default	Function
Local	Signal Source	Local	Local = The relay activation is based on local settings and alarms. Remote = The relay is activated by the central unit.

**4.8.5 Alarm Trigger Quantity**

Changes to the following relays are not accepted by the base unit:

For PolyXeta®2 for relay 2,  
for SGC6, SCM6, DC6, MSB2, MGC2 for relay 3.



In some applications it is necessary that the relay switches only at the n<sup>th</sup> alarm. Here you can set the number of active alarms necessary for relay tripping. For security applications, the relay must always switch on the first alarm. Therefore, the parameter cannot be changed in PolyXeta®2 device series.

Symbol	Description	Default	Function
1	No. of Alarms	1	1 = Number of pending alarms for triggering the alarm relay

## 4.8.6 Horn Function

Time- Recurr.- DI  
0s No 0

Changes to the following relays are not accepted by the base unit:

For PolyXeta®2 for relay 2,  
for SGC6, SCM6, DC6, MSB2, MGC2 for relay 3.



The horn function of the alarm relay is activated if at least one of the two parameters (time or assignment to digital input) is set. The horn function retains its functionality even for alarms in latching mode.

This feature is not allowed for safety-related alarm messages because the output is resettable.

Symbol	Description	Default	Function
Recurrence	Mode	No	No = Automatic reset of the relay after time has expired. Yes = Recurrence function
Time		120	Enter time for automatic reset function or recurrence function in s 0 = No reset function
DI		0	0 – X = Assignment, which digital input resets the relay

### Horn function resettable:

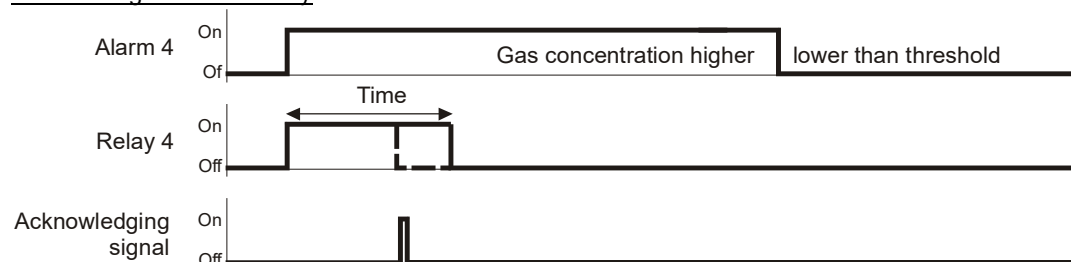
The activated horn can be reset with this function.

The following possibilities to acknowledge are available for the alarm relay as horn relay:

- By pressing the left button (ESC). Only available in main menu.
- Automatic reset at the end of the preset time (active, if value > 0).
- By a physically available internal/external pushbutton (assignment of the appropriate digital input DI 1-n).

Due to fixed polling cycles, external buttons must be pressed for a few seconds before the reaction occurs. After successful acknowledgment the horn remains permanently reset until all assigned alarms for this relay function are inactive again. Only then it is triggered anew in case of an alarm.

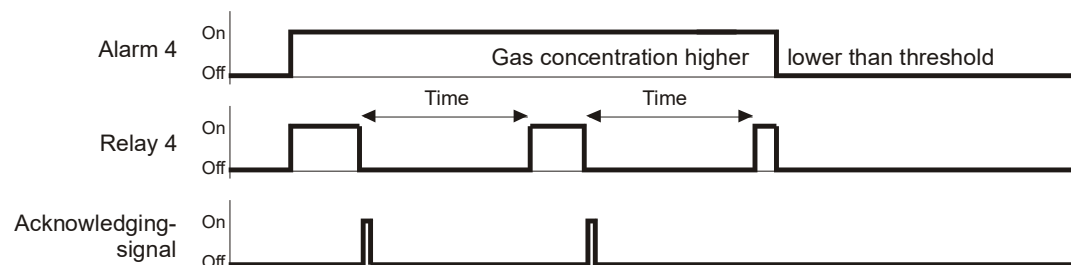
### Acknowledge the horn relay



Reset command by timer, external push-button or one of the operating keys.

### Recurrence of the horn relay

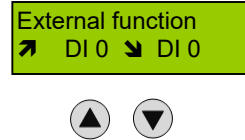
After an alarm has been triggered, the horn will remain active until a reset action is done. After acknowledgment of the horn relay (via a button or externally via digital input) a timer starts. When this time has run out and the alarm is still acting, the relay is set again. This process is repeated endlessly as long as the associated alarm remains active.



Reset command by external push-button or one of the operating keys.

### 4.8.7 External Override

This menu item is not available for PolyXeta®2 device series.  
Changes to the following relays are not accepted by the base unit: SGC6, SCM6, DC6, MSB2, MGC2 for relay 3.



Symbol	Description	Default	Function
↗ DI 0	External ON	0	As long as DI 1-X is closed, relay switches ON
↘ DI 0	External OFF	0	As long as DI 1- X is closed, relay switches OFF.

Manual operation of the alarm relays via DI does not start the "special mode", as this is a deliberate and configured functionality. The use of the override should be used with caution, particularly the function "External OFF".

Assignment of a digital input (DI) for the external switching on and off of the alarm relay.

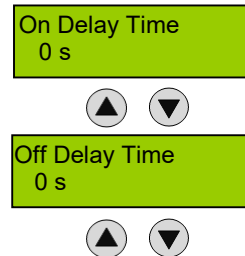
This function has priority to gas alarm.

If External ON and External OFF are configured to the same relay and both are active at the same time, so in this state, the External OFF command has priority. In this mode, too, the relay works respecting the parameter settings "Static / Flashing" and "Energized / De-energized".

### 4.8.8 Delay Mode of Alarm Relay

This menu item is not available for PolyXeta®2 device series.  
Changes to the following relays are not accepted by the base unit: SGC6, SCM6, DC6, MSB2, MGC2 for relay 3.

This menu item is not available for PolyXeta®2 device series.

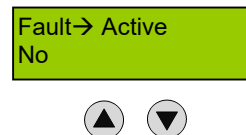


Definition of the time for switch-on and switch-off delay of the alarm relays. The menu (function) of switch-on delay is not available for the PolyXeta®2 device series.

Symbol	Description	Default	Function
0 sec.	Switch-ON Delay Time	0	≥ 1: Relay is only activated at the end of the defined time. 0 = No delay
0 sec.	Switch-OFF Delay Time	0	≥ 1: Relay is only deactivated at the end of the defined time. 0 = No delay

### 4.8.9 Assignment to Fault

PolyXeta®2: The parameter setting for relay 2 cannot be changed.



In case of a device fault, the alarm relay is triggered in addition.

This relay output must not be used as a safe error output.

Symbol	Description	Default	Function
No	No assignment	No	Relay is not activated in case of a device fault.
Yes	Assignment to fault	Yes	Relay is activated in case of a device fault.



4.8.10 Assignment to Maintenance Message

Maintenance → Active  
No



In case of a pending maintenance, the alarm relay is triggered in addition.

Symbol	Description	Default	Function
No	No assignment	No	Relay is not activated in case of a maintenance message.
Yes	Assignment to maintenance	Yes	Relay is activated in case of a maintenance message.

4.9 MP Parameters

Reading (code level 1) and changing (code level 1) of the parameters for each measuring point. This menu is not available for AT6.

Selection of measuring point (1 – X)



4.9.1 Activate – Deactivate MP

Deactivation not possible for PolyXeta®2 device series.

MP Mode  
Active

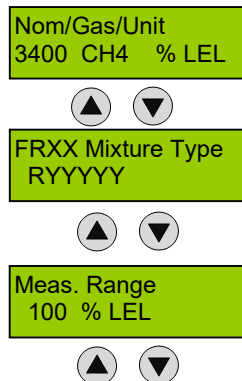
The physically present sensor head is registered at the basic device for its evaluation. After activation the measured gas signal is evaluated, and the sensor head specifications are monitored. Existing alarms and faults are cleared with deactivation of the sensor.

Attention: Deactivation of a sensor head does not cause a fault message.

Symbol	Description	Default	Function
Active	MP Mode	Not active	Active = Measuring point activated in the controller. Not active = Measuring point not activated in the controller.

## 4.9.2 Selection of Gas Type and Measuring Range

Selectable additional information of freon type:  
Menu only displayed if a Freon group has been selected as the gas type before and stored. In the second line then the actual Freon name is entered. These Freons are listed in the following table under the Freon groups in the column FORMULA.



Symbol	Description	Default	Function
3400	Internal Type	----	Selection of gas type from internal list (must correspond with the sensor head).
CH4	Formula of Gas Type	----	Formula (gas type) is firmly assigned to the type.
%LEL	Unit of Gas Type	----	Unit is firmly assigned to the type.
100	Measuring Range	----	Set measuring range (must correspond with the sensor head).

The gas type to be monitored and the range are set in the two menus. The basic unit continuously checks the set gas type and the measuring range if they match with the gas type and the measuring range of the connected digital sensor head. If they don't match, an error message is output.

In the analog sensor head, control for compliance is not possible; nevertheless, the correct gas type and measuring range for the display and evaluation must be selected as well.

Select the 4-digit, internal type; then the type of gas and the associated unit will appear on the right next to it.

It should be noted that for some gases there are various sensor technologies and units, therefore the associated sensor head types with the respective unit are listed in the table column.

The presentation of measured values, alarm thresholds and hysteresis depends on the measuring range. If the measuring range is <10, there are three, if <100, there are two, if <1000, there is one decimal place. If => 1000, the display is without decimal place. The resolution and accuracy of the calculation is not affected by the different measuring ranges.

Type	Sensor Head Type SC2-, SX1- AT6-	Gas Type	Formula	Meas. Range <sup>1</sup>	Unit
1110	E1110-X	Carbon monoxide	CO	0-300	ppm
1130	E1130-X	Nitrogen dioxide	NO <sub>2</sub>	0-30	ppm
1129	E1129-X	Nitrogen monoxide*	NO	0-100	ppm
1195	E1195-X	Oxygen	O <sub>2</sub>	0-25	% Vol
1125	E1125-X	Ammonia	NH <sub>3</sub>	0-300	ppm
I464	I1464	Carbon dioxide	CO <sub>2</sub>	0-2000	ppm
I564	I1564	Carbon dioxide	CO <sub>2</sub>	0-2000	ppm
S164	I1164-A	Carbon dioxide	CO <sub>2</sub>	0-2000	ppm
I464	I1464	Carbon dioxide	CO <sub>2</sub>	0-5	% Vol
I564	I1564	Carbon dioxide	CO <sub>2</sub>	0-5	% Vol
S164	I1164-B; -C	Carbon dioxide	CO <sub>2</sub>	0-5	% Vol
3400	P3400-A	Methane	CH <sub>4</sub>	0-100	% LEL
I400	I3400-A	IR-Methane	CH <sub>4</sub>	0-100	% LEL
I400		IR-Methane	CH <sub>4</sub>	0-100	% Vol
I500		IR-Methane	CH <sub>4</sub>	0-100	% UEG
I500		IR-Methane	CH <sub>4</sub>	0-100	% Vol

3480	P3480-A	Propane	C <sub>3</sub> H <sub>8</sub>	0-100	% LEL
I480	I3480-A	IR-Propane	C <sub>3</sub> H <sub>8</sub>	0-100	% LEL
I480		IR-Propane	C <sub>3</sub> H <sub>8</sub>	0-100	% Vol
I580		IR-Propane	C <sub>3</sub> H <sub>8</sub>	0-100	% UEG
I580		IR-Propane	C <sub>3</sub> H <sub>8</sub>	0-100	% Vol
3440	P3440-A	Hydrogen	H <sub>2</sub>	0-100	% LEL
3408	P3408-A	Ammonia	NH <sub>3</sub>	0-100	% LEL
3485	P3485-A	Acetone	(CH <sub>3</sub> ) <sub>2</sub> CO	0-100	% LEL
3430	P3430-A	Benzene	C <sub>6</sub> H <sub>6</sub>	0-100	% LEL
3425	P3425-A	Ethyl alcohol	C <sub>2</sub> H <sub>5</sub> OH	0-100	% LEL
3427	P3427-A	Ethyl acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	0-100	% LEL
3410	P3410-A	Ethylene	C <sub>2</sub> H <sub>4</sub>	0-100	% LEL
3460	P3460-A	n-Butane	C <sub>4</sub> H <sub>10</sub>	0-100	% LEL
3491	P3491-A	n-Heptane	C <sub>7</sub> H <sub>16</sub>	0-100	% LEL
3435	P3435-A	n-Hexane	C <sub>6</sub> H <sub>14</sub>	0-100	% LEL
3482	P3482-A	Isopropyl alcohol	(CH <sub>3</sub> ) <sub>2</sub> CHOH	0-100	% LEL
3498	P3498-A	JP8*	JP8	0-100	% LEL
3450	P3450-A	Methanol	CH <sub>3</sub> OH	0-100	% LEL
3458	P3458-A	Methyl ethyl ketone MEK	C <sub>4</sub> H <sub>8</sub> O	0-100	% LEL
3470	P3470-A	n-Octane	C <sub>8</sub> H <sub>18</sub>	0-100	% LEL
3475	P3475-A	n-Pentane	C <sub>5</sub> H <sub>12</sub>	0-100	% LEL
3490	P3490-A	Toluene	C <sub>7</sub> H <sub>8</sub>	0-100	% LEL
3448	P3448-A	Butyl acetate	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	0-100	% LEL
3415	P3415-A	Cyclohexane	C <sub>6</sub> H <sub>12</sub>	0-100	% LEL
3472	P3472-A	Cyclopentane	C <sub>5</sub> H <sub>10</sub>	0-100	% LEL
3420	P3420-A	Ethane	C <sub>2</sub> H <sub>6</sub>	0-100	% LEL
3468	P3468-A	Isobutanol / Isobutyl alcohol	C <sub>2</sub> H <sub>6</sub> O <sub>2</sub>	0-100	% LEL
3473	P3473-A	Methyl acetate	C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	0-100	% LEL
3495	P3495-A	Nonane	C <sub>9</sub> H <sub>20</sub>	0-100	% LEL
3402	P3402-A	LPG	LPG	0-100	% LEL
3496	P3496-A	Petrol Vapours	Petrol	0-100	% LEL
3497	P3497-A	Styrene*	C <sub>8</sub> H <sub>8</sub>	0-100	% LEL
3493	P3493-A	Xylene	C <sub>8</sub> H <sub>10</sub>	0-100	% LEL
3405	P3405-A	Acetylene*	C <sub>2</sub> H <sub>2</sub>	0-100	% LEL
I495		Acetylene	C <sub>2</sub> H <sub>2</sub>	0-100	% UEG
I595		Acetylene	C <sub>2</sub> H <sub>2</sub>	0-100	% UEG
C160		VOC	VOC	0-2000	ppm
2189		Ethylene	C <sub>2</sub> H <sub>4</sub>	0-1000	ppm
2125		Ammonia	NH <sub>3</sub>	0-3000	ppm
2053		Xylene	C <sub>8</sub> H <sub>10</sub>	0-300	ppm
D184		Sulphur hexafluoride	SF <sub>6</sub>	0-1000	ppm
1199	E1199-X	Ethylenoxid	C <sub>2</sub> H <sub>4</sub> O	0-10	ppm
1135	E1135-X	Bromine	Br <sub>2</sub>	0-2	ppm
1182	E1182-X	Hydrogen fluoride*	HF	0-10	ppm
1192	E1192-X	Nitrous oxide	N <sub>2</sub> O	0-2000	ppm
1183	E1183-X	Hydrogen cyanide	HCN	0-100	ppm
1185	E1185-X	Formaldehyde	CH <sub>2</sub> O	0-10	ppm
1186	E1186-X	Hydrogen chloride	HCL	0-20	ppm
1188	E1187-X	Silane*	SiH <sub>4</sub>	0-50	ppm
1189	E1189-X	Ethylene	C <sub>2</sub> H <sub>4</sub>	0-200	ppm
1190	E1190-X	Ozone	O <sub>3</sub>	0-200	ppm
1193	E1193-X	Chlorine	CL <sub>2</sub>	0-20	ppm
1196	E1196-X	Sulphur dioxide	SO <sub>2</sub>	0-100	ppm
1197	E1197-X	Hydrogen sulphide	H <sub>2</sub> S	0-200	ppm
1198	E1198-X	Fluorine*	F <sub>2</sub>	0-2	ppm
1187	E1187-X	Phosphine*	PH <sub>3</sub>	0-5	ppm
1194	E1194-X	Hydrogen*	H <sub>2</sub>	0-1000	ppm

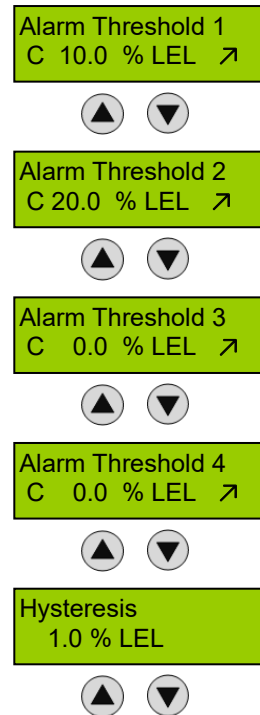
1181	E1181-X	Chlorine dioxide*	ClO <sub>2</sub>	0-1	ppm
1147	E1147-X	Phosgene*	COCl <sub>2</sub>	0-1	ppm
2059		FR01*	R12	20 - 2000	ppm
2061	2061-XX	FR02	R23 R508b	20 - 2000	ppm
063	2063-XX	FR03	R1234yf R452a R513a R454c R455a R454b R1234ze	20 - 2000	ppm
2064	2064-XX	FR04	R123 R1233zd*	20 - 2000	ppm
2066		FR05	R11	20 - 2000	ppm
2070	2070-XX	FR06	R22 R401a R401b R402a R402b R403a R408a R409a R411a	20 - 2000	ppm
2077	2077-XX	FR07	R134a R407a R416a R417a R422a R422d R427a R437a R438a R449a R407f R450a	20 - 2000	ppm
2080	2080-XX	FR08	R125 R32 R404a R407c R410a R434a R507a R448a R452b R143b	20 - 2000	ppm
1184		Arsine*	AsH <sub>3</sub>	0 - 1	ppm
EXT	Connection option for sensors with 4- 20 mA signal	Temp	Temp		°C
EXT		Temp	Temp		°F
EXT		Humidity	Hum.		% RH
EXT		Pressure	Press		mbar
EXT		TOX	TOX		ppm
EXT		Comb.	Comb		% LEL
EXT		External	External		%
EXT		Digital <sup>3</sup>	Digital		%

\*Not available yet.

<sup>1</sup> Different measuring ranges are possible, but not listed here.

<sup>3</sup> The use with the measuring range value: 1 results in a binary value output of the values 0 or 1

4.9.3 Alarm Thresholds / Hysteresis



Symbol	Description	Default	Function
C	Evaluation	C	C = Alarm evaluation with current value of MP A = Alarm evaluation with average value of MP
10 % LEL	Threshold 1 Threshold 2 Threshold 3 Threshold 4 Hysteresis	XX XX XX XX XX	Gas concentration > Threshold 1 = Alarm 1 Gas concentration > Threshold 2 = Alarm 2 Gas concentration > Threshold 3 = Alarm 3 Gas concentration > Threshold 4 = Alarm 4 Gas concentration < (Threshold X –Hysteresis) = Alarm X OFF
↗		↗	↗ = Alarm release at increasing concentrations ↘ = Alarm release at falling concentrations

Note:

Alarm evaluation: For monitoring flammable gases and oxygen, alarm evaluation via the average value (A) is not permitted. The type examination certificate according to EN60079-29-1 is only valid when the alarms are triggered by the current value (A) for the above-mentioned gases.

For each measuring point four alarm thresholds are available for free definition. If the gas concentration is higher than the set alarm threshold, the associated alarm is activated. If the gas concentration falls below the alarm threshold minus the hysteresis the alarm is reset again. In the mode “Alarm at falling” the corresponding alarm is set in case of falling below the set alarm threshold and reset again when exceeding the threshold plus hysteresis.

The presentation of the alarm thresholds depends on the set measuring range: See chapter Gas Type and Measuring Range.

The alarm thresholds are freely selectable in the range from 0 to 100 % of the measuring range.

The alarm threshold is only stored, if the value is ≥ the low-order alarm threshold.

Unused alarm thresholds have to be defined with 0, in order to avoid undesired alarms.

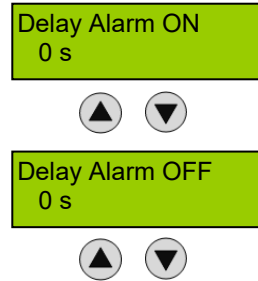
In case of a higher-level alarm the lower-level alarm remains triggered, too.

Lowest possible hysteresis: 3 % of the lowest alarm threshold

Highest possible hysteresis: 50 % of the lowest alarm threshold

**4.9.4 Delay for Alarm ON and/or OFF**

Menu item (function) "Delay Alarm ON" is not available for PolyXeta<sup>®</sup>2 device series.

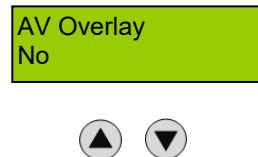


Symbol	Description	Default	Function
0 s	Delay Alarm	0 sec.	Gas concentration > alarm threshold + set time = Alarm ON Gas concentration < alarm threshold – hysteresis + set time = Alarm OFF

Function only active in Current Value Mode.

**4.9.5 Average Overlay**

Menu (function) not available for PolyXeta<sup>®</sup>2 device series.



The alarm evaluation of the operation mode "Average" is overridden by the current value, if this one exceeds the alarm threshold and delay time defined in the menu "System Parameters AV Overlay". The overlay is delayed by the time factor entered in the local menu. The function of the average overlay is only activated for the gas type CO.

Symbol	Description	Default	Function
No	Overlay of alarm release by current value	No	No = Average overlay not active. Yes = Average overlay active

**4.9.6 Latching Mode Assigned to Alarm**



In this menu you can assign the latching mode to each alarm.

Symbol	Description	Default	Function
Alarm			Presentation of the alarms 1 to 4; under each alarm you can activate the latching with 1.
SBH	Assignment of latching function yes/no	0 0 0 0	0 = no latching; alarm resets automatically if gas concentration again < alarm threshold minus hysteresis 1 = latching; alarm remains active, if gas concentration < alarm threshold minus hysteresis, until reset by the operator.

The acknowledgment of an alarm in latching mode is carried out in the menu Alarm status. See chapter 4.2.

4.9.7 MP Fault Assigned to Alarm

Alarm - 1234  
Fault - 0100



In this menu you can define, which alarms should be activated by a fault at the measuring point. If the fault is remedied, the alarm is automatically reset.

Symbol	Description	Default	Function
Alarm			Presentation of the alarms 1 to 4; you can define with 1 for each alarm that the alarm should be activated in case of MP fault.
Fault	Assignment of MP fault to alarm	0 0 0 0	0 = Alarm isn't activated in case of MP fault. 1 = Alarm is activated in case of MP fault.

4.9.8 Alarm Assigned to Alarm Relay

A1 A2 A3 A4  
1 0 0 0



Each of the four alarms can be assigned to any alarm relay 1 – X registered in the menu Relay Parameters by entering the relay address right under the alarm. One alarm relay can be assigned to multiple alarms. Unused alarms aren't assigned. The number of physically present alarm relays depends on the device type.

For PolyXeta®2 devices there is only one alarm relay (address 1), the fault relay can also be used for alarm message (address 2). When doing so, the relay has to be registered in the menu Relay Parameters. The fault message function, however, remains unaffected.

Symbol	Description	Default	Function
Alarm	A1 A2 A3 A4		Presentation of the alarms 1 to 4; you can assign an alarm relay to each alarm by setting a relay address.
	Assignment of alarm relay	A1 = X A2 = X A3 = X A4 = X	X = Assignment of an alarm relay (relay address) to an alarm

4.9.9 MP Assigned to Analog Output

Analog Output  
x y

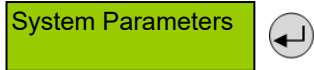


The measuring signal can be assigned to two analog outputs by entering the address of the analog output instead of x and y. The number of physically available analog outputs depends on the device type. If 0 is set here, there is no assignment and no output monitoring. If there is only one analog output as with the PolyXeta®2 device, no parameter input is possible for y.

The analog outputs are configured in the menu System Parameters, AO Function.

Symbol	Description	Default	Function
X y	Address AO		X = Assignment of an analog output by entering the AO address Y = Assignment of a second analog output by entering the AO address

**4.10 Menu System Parameters**

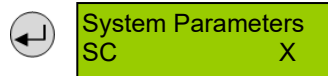
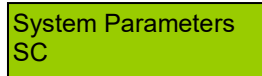
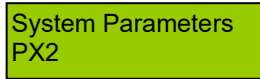


Selection of the device, sensor head or basic device whose data should be processed.

SX, SC = Sensor head

PX2; DC6; DT6; SGC6; SCM6; EP = Basic device

The display automatically recognizes the connected basic unit.

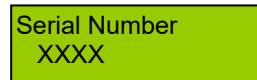


If the basic unit can manage more than one SC/SX, the selection is done at X. Only if SC/SX is connected, the menu “Serial Number” will open.

System parameters of the sensor heads can only be read, not changed. This menu is not available for AT6.

**4.10.1 System Information**

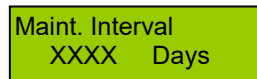
Menu not shown for sensor heads SC/SX (info only by laser engraving).



Menu not shown for sensor heads SC/SX (info only by laser engraving).

Symbol	Description	Defa	Function
XXXX	Serial Number		Serial number (factory set)
XX.XX.XX	Date of Production		Date of production (factory set)

**4.10.2 Maintenance Interval**



Input of the maintenance interval in days. If you enter < 10 days, the function is not active

The maintenance interval can be set on the basic unit for maintenance information on the connected analog inputs and individually adjusted downwards in each sensor head. This means that several maintenance messages are possible for each complete unit. If the maintenance interval is active, the accumulated maintenance message can only be acknowledged by a calibration (at the analog input or at the head).

See also description Maintenance Concept in the user manual of the corresponding device.

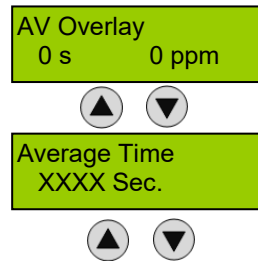
Symbol	Description	Default	Function
XXXX	Days	0	Maintenance interval



**4.10.3 Average Function**

Menu (function) not available for PolyXeta®2 devices.  
Menu not displayed with SC/SX sensor heads.

Value cannot be changed for SC.



In the menu “Average Time” you can define the time base for the calculation of the arithmetic average value (30 measurements within the time base). This average value can be used for alarm evaluation as an alternative to the current value. The selection which value should be used for evaluation is defined separately for each alarm in the menu “Alarm Threshold X”. In the average mode, the average value is indicated in the menu “Measuring Values” next to the current value.

The alarm evaluation of the operating mode “Average Value” is overlaid by the current value, when the current value exceeds the alarm threshold defined in the menu “AV-Overlay”. The overlay is delayed by the time factor defined in this menu. The average overlay function is only available for the gas type CO.

Both menus are available and operable in the basic device. The menu "Average Time" is also available in the sensor head for reading the time base.

Symbol	Description	Default	Function
XXXX	Seconds	900	Time base for average calculation
0 s	Seconds	120	Delay time in case of overlay by the current value
0 ppm	Alarm Threshold	100	Alarm threshold that triggers the overlay by the current value

**4.10.4 Power On Time**

Value can be read with sensor head SC/SX but cannot be changed.



Gas sensors need a running-in period, until the chemical process of the sensor reaches stable conditions. During this running-in period the sensor signal can lead to an unwanted triggering of a pseudo alarm. Therefore, the Power On time is started at each basic unit and each sensor head after power-on or voltage recovery. While this time is running out, the device is in special mode and doesn't activate alarms. The Power On time appears in the starting menu. During this phase the sensor head transmits "Warm-up time" instead of the measured value.

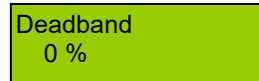
The Power On Time of the individual components may be different. Only when the longest time has expired, the system starts the measuring operation.

The recommended Power On Time is also dependent on the type of gas and can be found in the respective user manual. On SC and SX, the factory-set maintenance intervals can only be read out.

Symbol	Description	Default	Function
XX	Seconds	30	Power On time

## 4.10.5 Deadband

Menu not available for sensor heads SC/SX.



The unwanted noise of the measured value around the zero point, caused by the basic drift of the sensor, can be suppressed by activating a deadband.

With PolyXeta®2, the dead band is adjustable within  $\pm 2\%$  of the measuring range for oxygen and  $\pm 5\%$  for all other gases.

In the PolyGard®2 series, the dead band is adjustable up to  $\pm 10\%$ .

If the default value is 0, the suppression is switched off.

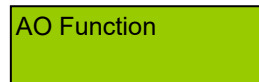
If the measured value is within the set % value, the display shows 0. Natural zero-point fluctuations of sensors downwards or upwards can thus be suppressed in the display. If the measured value is smaller than the dead band but still larger than -10 % of the measuring range, the measured value is displayed and the corresponding analog value is output. If the measured value is greater than -10 % of the measuring range, the fault message is triggered.

The suppression also affects the analog output, because the measured value must not have a different display depending on the output.

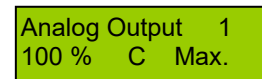
When the calibration mode is opened, the dead band function switches off automatically.

## 4.10.6 AO Function

Menu not available for sensor heads SC/SX.



For PolyXeta®2 devices, deviating values aren't accepted.



Next analog output

This menu is for the configuration of the analog outputs. The number of physically available analog outputs depends on the device type. PolyXeta®2 devices only have one AO.

After registration each analog output checks the current signal for plausibility. Signal deviations of more than 5% from the nominal value will generate an error message (causes: short circuit or interruption of cable, actuator not connected).

The analog output can be activated by the local device as well as by a higher-level controller. With the PX2 series, only the local control is possible.

The steepness of the current signal can be adjusted in the range of 10 to 100% in case of local control.

If several measuring points are assigned, you can define whether the minimum, the maximum or the average of all the assigned signals is output. It is likewise possible to define which signal of the measuring points (source) is output.

**If the 4 - 20 mA signal is used as a safe signal (SIL level), the following mandatory parameters must be used:**

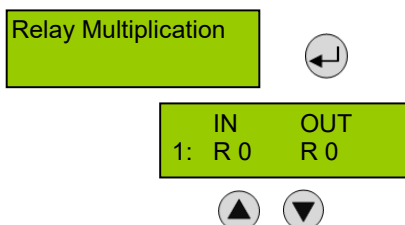
- Selection of analog signal:     **100:** 100 % gas signal = 20 mA (standard signal)
- Selection source:               **CF:** Source current value signal with fault message
- Selection of operating mode:   **Max:** Output of the maximum value of the assigned MP

Symbol	Description	Default	Function
Analog Output 1	Selection of channel		Selection of the analog output 1 - X
0	Selection of output signal	100 %	0 = Analog output is not used, no monitoring of the feedback
1			1 = Control by central controller
10-100 %			≥ 10 = Local control and definition of the signal slope 10 = 10 % gas signal = 20mA (high sensitivity) 100 = 100 % gas signal = 20mA (standard signal) For PolyXeta®2, the fixed setting is 100 and cannot be changed.
C	Selection of source	A	C = Source is current value A = Source is average value CF = Source is current value and additional fault message at AO AF = Source is average value and additional fault message at AO For PolyXeta®2, the fixed setting is CF and cannot be changed.
Max.	Selection of mode	Max.	Min. = Displays the minimum value of all assigned MP Max. = Displays the maximum value of all assigned MP Average = Displays the average value of all assigned MP For PolyXeta®2, the fixed setting is Max. and cannot be changed.

**4.10.7 Relay Multiplication**

Menu only available for GC06, DC6, MSB2 and MGC2.

With the relay multiplication table, it is possible to assign an additional alarm relay to an alarm. This corresponds in the end to one multiplication of the source alarm situation per entry.



The additional relay follows the alarm status of the source but uses its own relay parameters to allow different needs of the doubled relay. So, the source relay can be configured, for example, as safety function in de-energized mode, but the doubled relay can be declared with flashing function or as horn function.

There is a maximum of two entries for IN relays and OUT relays. Thus, it is possible, for example, to expand one relay to two others or to double max. two relays.

In the column IN (source), you can set the relay assigned to an alarm in the menu MP Parameter.

In the column OUT (target), you can enter the relay needed in addition.

Note:

Manual intervention in the menu Relay Status or override in external ON or OFF by external DI do not count as alarm status, so they do only affect the IN relay. If this is also desired for the OUT relays, it has to be configured separately for each OUT relay.

Number	Description	Default Status	Function
0-5	IN AR Relay	0	0 = Function off X = Relay X should be multiplied (information source).
0-5	OUT AR Relay	0	0 = Function off X = Relay X (target) should switch together with IN relay.

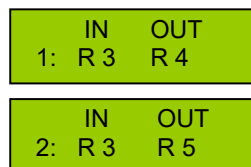
**Example:**

2 relay contacts are needed with the same effect as relay 3, (see assignment of the relays in chapter MP Parameters.)

Entry: 1: IN R3 OUT R4

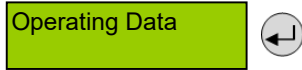
Entry: 2: IN R3 OUT R5

If relay 3 is activated via an alarm, the relays R3, R4 and R5 will switch at the same time.



## 4.11 Operating Data

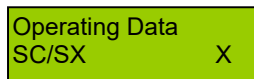
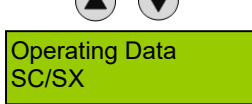
This menu is for retrieving relevant operational data of the sensor head and the basic unit. No changes or interventions are possible.



Selection of the device, sensor head or basic device the data should be read from.

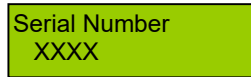


SX, SC = Sensor head  
 PX2; DC6; DT6; EP = Basic unit  
 The display recognizes the connected basic unit automatically.  
 This menu is not available for AT6



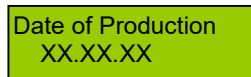
If more than one SC are connected to the basic unit, the selection is done at X.

Menu not available for sensor heads SC/SX.



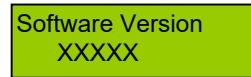
Serial number of the device

Menu not available for sensor heads SC/SX



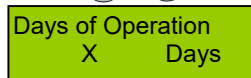
Date of production of the device

Menu only available for sensor heads SC/SX



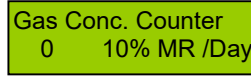
Software Version

Menu only available for SC/SX sensor heads and only released with Software Version 1.02.07.

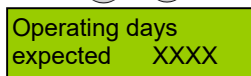


Current days of operation

Menu only available for SC/SX sensor, Heads and released with Software Version 1.02.07.



Gas concentration counter\*  
 Unit: 10 % of measuring range per day



Expected life time of the sensor head.  
 Is continuously recalculated on the basis of calibrations and concentrations counter.



Display of the lowest temperature detected (initial value = 70°C) is updated on new devices only after a few days.

\* Determination of the pending gas concentration as a function of the time per day (daily quantity) according to the formula:  

$$\frac{(\text{gas concentration} \times \text{time unit})}{24}$$

The total gas concentrates result from the addition of 10 % of all calculated daily quantities.

Gas concentration = % of measuring range

Time unit = Duration of exposure in h

24 = factor conversion into days

	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Max. Temperature 31 °C             </div> <div style="text-align: center;"> </div>	Display of the highest temperature detected at the device With restart, value (initial value = -35°C) is updated only after a few days.
	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Last Tool No.             </div> <div style="text-align: center;"> </div>	Displays the tool number the last access was performed with
	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Analog Outp. 1 Offset 295             </div> <div style="text-align: center;"> </div>	Display of the zero offset of analog output 1 (internal value)
Menu only available with EP06.	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Analog Outp. 2 Offset 295             </div> <div style="text-align: center;"> </div>	Display of the zero offset of analog output 2
Menu not available for PolyXeta®2 and SC/SX sensor head.	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Analog Inputs.....X             </div> <div style="text-align: center;"> </div>	Selection of analog input The operating data for analog input refer to the 4 – 20 mA signal!
Menu only available for SC/SX sensor head	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Number of Calibr. 1             </div> <div style="text-align: center;"> </div>	Number of calibrations performed
Menu only available for SC/SX sensor head	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Zero Gain xxxxx yyyyy             </div> <div style="text-align: center;"> </div>	Current zero offset and gain value (not standardized)
Menu only available for SC/SX sensor head	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Sensitivity 100%             </div> <div style="text-align: center;"> </div>	Sensitivity of the sensor at the last calibration compared to new sensor
Menu only available for SC/SX sensor head	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Maintenance Days Last xxx             </div> <div style="text-align: center;"> </div>	Display of the days differing from the nominal maintenance date (fixed value)
Menu only available for SC/SX sensor head	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Days of operation Last xxx             </div> <div style="text-align: center;"> </div>	Days of operation since the last calibration (fixed value)
Menu only available for SC/SX sensor head	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Maintenance Days Currently xxx             </div> <div style="text-align: center;"> </div>	Currently remaining days until next maintenance date (down counter)
Menu only available for SC/SX sensor head	<div style="border: 1px solid black; background-color: #90EE90; padding: 5px; text-align: center;">                 Max. Current Value 0             </div>	Maximum measured current value of the sensor head

**4.12 Test Function for Relays**

In this menu, the alarm relays can be manually turned on and off in order to test their function.

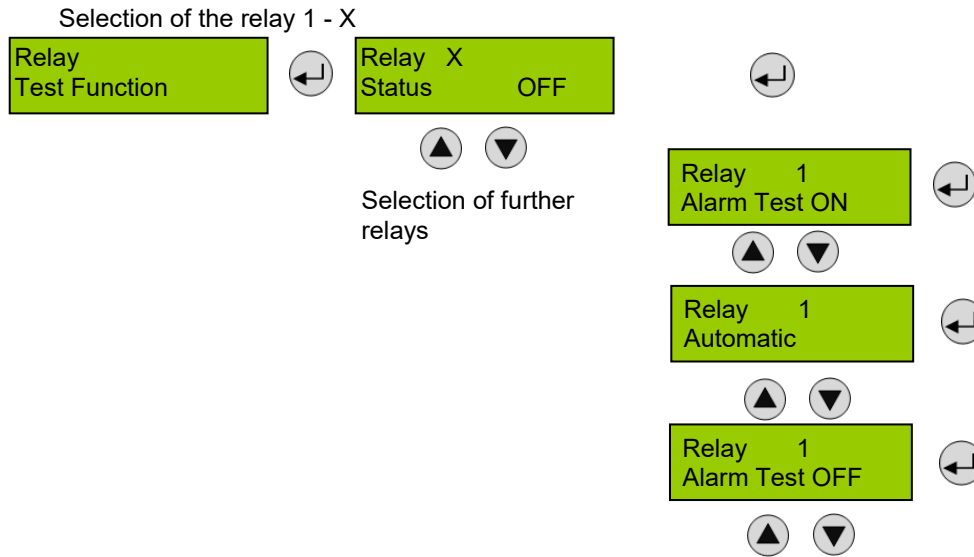
This menu is only available in special mode and only for the locally controlled relays. The relays in remote mode must be tested from DGC06.

The manual operation takes priority over activation by a gas alarm. However, the external activation of the alarm relays via a digital input takes priority over the manual test function.

The test mode simulates an alarm for the relay and the relay accepts the alarm status. The test function is deleted by selecting "Automatic" or by exiting the Special Mode.

The testing is possible via code levels 1, 3 and 4.

This menu is not available for AT6.



Symbol	Description	Default	Function
Status	Relay No. X		X = 1 – X Select the relay
OFF	Relay Status	OFF	Status OFF = Relay off (no gas alarm) Status ON = Relay on (alarm)
Test ON	Test of the alarm message	Autom	Alarm Test ON = Relay manually set in alarm status Alarm Test OFF = Relay manually set in "no alarm" status Automatic = Reset of manual intervention, relay in automatic mode

## 4.13 Test Function for Analog Output

In this menu, you can define a desired value in mA for the analog output in order to test its function. This value is then directly available at the output.

This menu is only available in special mode.

The manual operation has priority over the activation by the gas concentration.

The testing is possible via code level 1, 3 and 4.

When the menu is exited, the actual current signal is immediately output again. The entry field shows 0 meaning test function inactive.

The test function is only possible for an active analog output.

This menu is not available for AT6.

Analog Output  
Test Function

AO 1	Set Value
4.02 mA	0.00 mA

On the left you can see the current set-point as calculated from the gas concentration.

AO 1	Set Value
4.02 mA	<u>12.00</u> mA

Enter the required current under “Set Value”, e.g. 12 mA

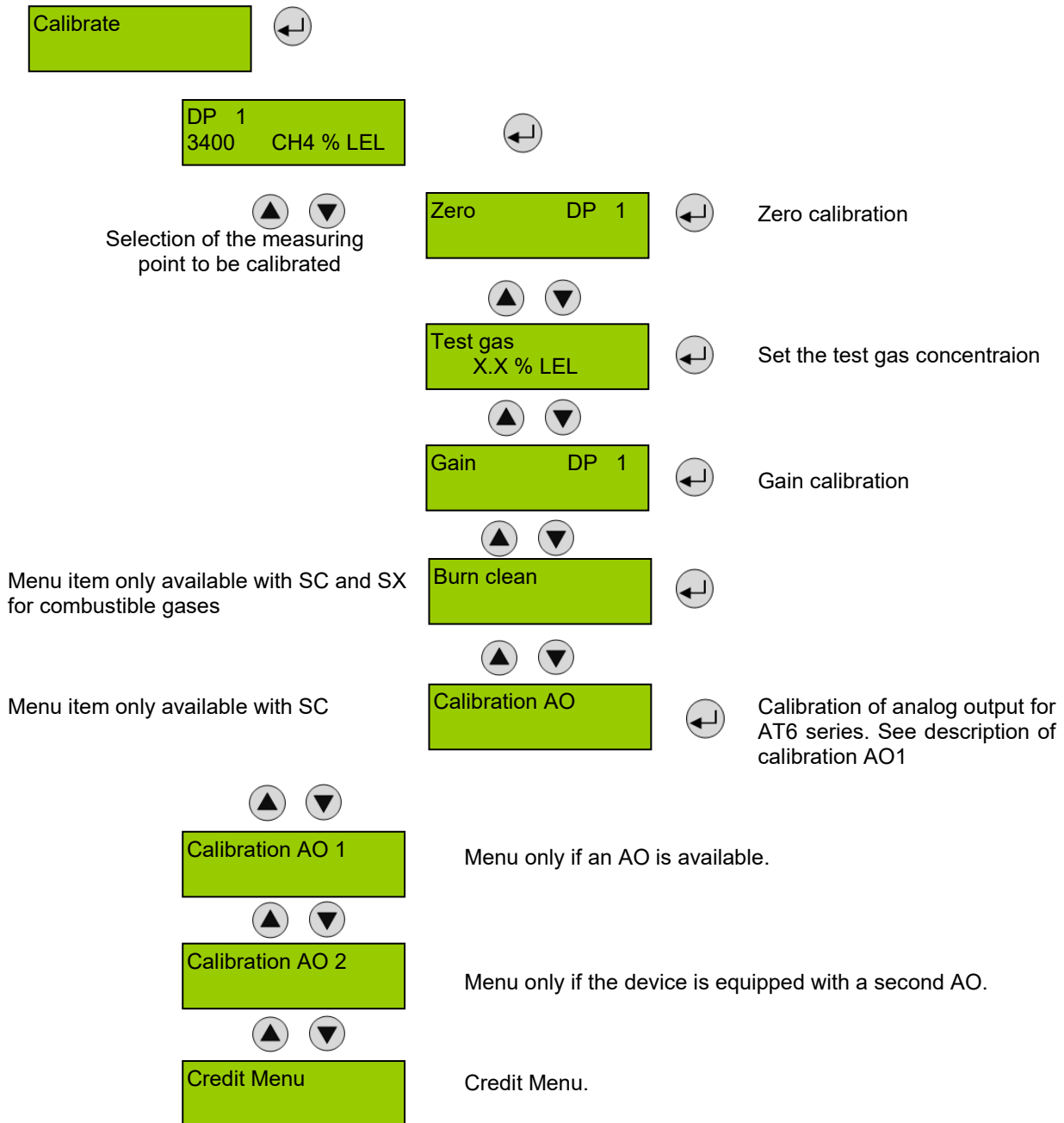


AO 1	Set Value
12.00 mA	12.00 mA

The set value is accepted as set-point (by displaying it on the left) and is physically output.

4.14 Calibration

On this page there is the menu overview of the calibration. The calibration description can be found on the following pages.





4.14.1 Zero Calibration

The gas application with the defined calibration adapter, the allowable gas pressure and flow rate and the zero gas to be used can be found in the operating instructions of the respective sensor head. The specified warm-up times etc. must be strictly observed.

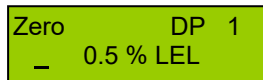


Step 1: Display of the current value

Apply test gas according to instructions.



Start calibration process.

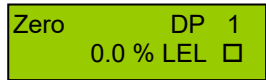


Step 2: Calculation of the new zero offset  
During calculation an underscore in line 2 runs from left to right and the current value drops to zero.

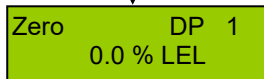
When the current value is stable, press for terminating the calculation of the new value.



Step 3: Save the newly calculated zero offset  
„SAVE“ is displayed, as long as the function is executed.



After the value has been successfully stored, a square appears on the right for a short time = Zero point calibration is finished and new zero offset has been stored with success.



The display automatically goes to step 1: Display of new zero point

During the calculation phase, the following messages may occur:

Message	Description
Current value too high	Wrong gas for zero point calibration (>10 %)
Current value unstable	Is displayed as long as the deviation between two measuring cycles (100mS) is > 3 %. It automatically extinguishes when the sensor signal becomes stable.
Time too short	The message "value unstable" starts an internal timer (20 s). Once the timer has run out and the current value is still unstable, the text is displayed. The process starts over again. If the value is stable, the current value is displayed and the calibration procedure is continued. If the cycle is repeated several times, an internal error is present. Stop the calibration process by exiting the calibration menu and replace the sensor head.

When aborting the zero-offset calibration, the offset value will not be updated. The sensor head continues to use the "old" zero offset.

### 4.14.2 Gain Calibration

The gas application with the defined calibration adapter, the allowable gas pressure and flow rate and the test gas to be used can be found in the operating instructions of the sensor head. The specified warm-up times etc. must be strictly observed.

Test Gas  
XX.X % LEL

Enter concentration of the test gas used.  
Special case Cross calibration for combustible gases: For combustible gases, a sensitivity factor related to methane is given in the operating instructions for each gas. The concentration of the methane test gas is multiplied by this factor (factor ZP). The product thereof is entered as test gas value.  
This value isn't cleared when exiting the menu, therefore before restarting calibration, always check if the value is correct.



Gain DP 1



Gain DP 1  
48.0 % LEL 89.0%

Step 1: Display of the current value and of the sensitivity from the last calibration

Apply test gas according to instructions.



Start calibration process.

Gain DP 1  
50.1 % LEL 82 %

Step 2: Calculation of the new gain  
During calculation an underscore in line 2 runs from left to right and the current value adapts to the set test gas concentration. The sensitivity is recalculated, too.

When the current value is stable, press for terminating the calculation of the new value.

Gain DP 1  
SAVE

Step 3: Save the newly calculated gain  
,SAVE' is displayed as long as the function is executed.



Gain DP 1  
50.1 % LEL 89%□

After the value has been successfully stored, a square appears on the right for a short time. = Gain calibration is finished and new gain offset has been stored with success.



Gain DP 1  
50.1 % LEL 89 %

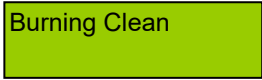
The display automatically goes to step 1: Display

During the calculation phase, the following messages may occur:

Message	Description
Current value too high	Test gas concentration > than set value Internal error → Replace sensor head.
Current value too low	No test gas or wrong test gas applied to the sensor
Test gas too high	The set test gas concentration must be between 30% and 90% of the measuring range.
Test gas too low	
Current value unstable	Appears when the sensor signal does not reach the zero point within the target time. Disappears automatically when the sensor signal is stable.
Time too short	The message "value unstable" starts an internal timer. Once the timer has run out and the current value is still unstable, the text is displayed. The process starts over again. If the value is stable, the current value is displayed and the calibration procedure is continued. If the cycle is repeated several times, an internal error is present. Stop the calibration process and replace the sensor head.
Sensitivity <	Sensitivity of the sensor head < 30 %, calibration no longer possible → Replace sensor head.
Interner Fehler	Internal , unrecoverable error → Replace sensor head.

### 4.14.3 Burning Clean

With the function "Burning Clean", the Pellistor sensor is operated with a higher heating temperature for a limited period in order to remove any soiling on the heating wire which may adversely affect the sensitivity.



Start: = Starting the cleaning function  
 Cancel: = Manual abort

The menu is only displayed for SC2 and SX2 Pellistor sensors.

Before the start and during the complete burning process, test gas must be applied in the middle LEL range, preferably hydrogen, in order to achieve an increased combustion.

The gas supply is carried out with the specified calibration adapter, the permissible gas pressure and the flow rate can be found in the operating manual of the sensor head.

The operation can be stopped at any time with abort.

The special mode is activated when burning clean is active.

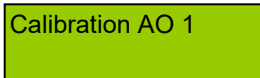
Note:

**The cleaning cannot reverse or improve a natural aging!**

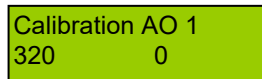
### 4.14.4 Zero-point Calibration of Analog Output

With this menu item you can correct the zero-point of the analog output (4mA). The zero-point correction is only possible when the analog output is in active mode.

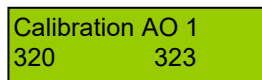
The error message of the output monitoring is suppressed as long as the menu Calibration AO is open. Therefore, connect the amperemeter (measuring range 20 mA DC) to the analog output only after having opened the menu.



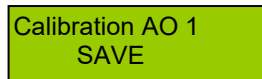
Connect amperemeter to the analog output.



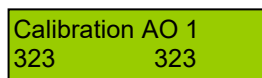
Display of the current zero offset on the left.



Adjust the zero offset on the right by changing the offset value slowly, until the amperemeter shows 4 mA.



Save the adjusted zero offset.

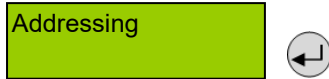


Return to the display of the current zero offset.

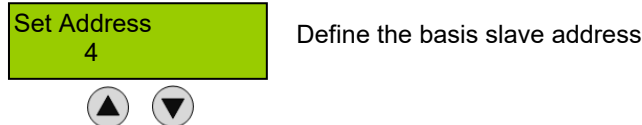
## 4.14.5 Credit Menu

This menu item is reserved.

## 4.15 Addressing



Assignment of the basis slave address of the device for field bus operation

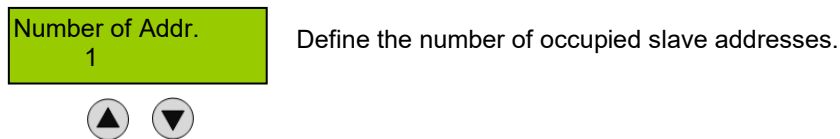


The data of the sensor head (SC, SX) assigned at input 1 are sent with this basis slave address to the gas controller via the fieldbus.

The base unit requires / occupies a slave address for each connected sensor head. In the next menu, you can enter the number of occupied addresses. When the number is > 1, the address(es) following the basis address is / are automatically occupied.

If an address is assigned, it is displayed in the menu Measurement Values next to the letter D (digital measuring point).

For PolyXeta®2, parameter only readable, not changeable.



Symbol	Description	Default	Function
4	Basis Slave Address	0	0 = Device is not addressed, bus not used. The admissible address range depends on the device to be addressed. DT6/PX2/DC6 = 1 – 96 EP06 = 1 – 7
1	Number of Occupied Addresses	1	The number of addresses depends on the number of connected sensor heads. Permitted number max. PX2 = 1 DT6; DC6 = 3 EP06 = 4

Example:

DT6 with two sensor heads (SC2 1110 at Input 1 and SC2 3400 at Input 2).

Slave address 4 was assigned to the DT6 Board. The number of occupied addresses is 2. Thus, the SC2 1110 occupies Address 4 and SC2 3400 Address 5. The next available address of the system is Address 6.

No intervention is possible for devices with fixed number of occupied addresses (e.g. PX2 with only one sensor head).

Note: The system doesn't prevent the addresses to be assigned twice.

Registration of the sensor head at the basic device and definition of the communication (bus or analog)  
For PolyXeta®2, parameter only readable, not changeable.

Config. DP 1  
active



This menu appears for each set address.  
From example above: DP4 = SC2 1110  
DP5 = SC2 3400

For PolyXeta®2, parameter only readable, not changeable.

MP Mode  
active bus

Define the MP mode.



Symbol	Description	Default	Function
active	MP mode	inactive	active = Measuring point is activated on the device. inactive = Measuring point is not activated on the device.
bus	Connection mode	bus	bus = Measured value comes from the connected SC. analog = Measured value comes from 4 – 20mA input.

Selection gas type and range (see also chapter 4.9.2)

Nom. / Gas / Unit  
1110 CO ppm

Define gas type.



Meas. Range  
300 ppm

Define measuring range.  
See 4.9.2



Config. DP X  
not available

If the number of addresses is less than the number of possible measurement points, the remaining measuring points are displayed as "not available". No intervention is possible here.

## 4.16 Hardware Connections

The STL6 is a versatile tool for the programming, calibration and troubleshooting of the AT6, PolyGard®2 and PolyXeta®2 Series. To function properly, it must be attached onto the specific products with the corresponding keyed plugs. Observe the connection types below and make sure that the components are correctly and firmly latched before attempting any operation outlined in this manual.



## 5 Notes and General Information

For the installation and the use, it is important to read the respective user manual carefully. The PolyGard®2 and PolyXeta®2 Systems (further mentioned as system) may only be used for applications in accordance to the intended use. The appropriate operating and maintenance instructions and recommendations must be strictly followed.

Due to permanent product developments, INTEC Controls and MSR-Electronic GmbH reserves the right to change specifications without notice. The information contained herein is based on data considered to be accurate. However, no guarantee or warranty is expressed or implied concerning the accuracy of these data.

### 5.1 Intended Product Application

The system is designed and manufactured for control applications, for energy savings and air quality compliance in commercial buildings and manufacturing plants.

### 5.2 Installer's Responsibilities

It is the installer's responsibility to ensure that the system is installed in compliance with all national and local regulations and OSHA requirements. All installation shall be executed only by technicians familiar with proper installation techniques and with codes, standards and proper safety procedures for control installations and the latest edition of the National Electrical Code (ANSI/NFPA70).

The equipotential bonding required (also e.g. secondary potential to earth) or grounding measures must be carried out in accordance with the respective project requirements. It is important to ensure that no ground loops are formed to avoid unwanted interference in the electronic measuring equipment.

It is also essential to follow strictly all instructions as provided in the user manual.

### 5.3 Maintenance

We recommend checking the system regularly. Due to regular maintenance differences in efficiency can easily be corrected. Re-calibration and replacement of parts can be realized on site by a qualified technician with the appropriate tools. Alternatively, the removable Gas Controller can be returned to INTEC Controls and MSR-Electronic GmbH for services; a pre-approved RMA number is required.

### 5.4 Limited Warranty

INTEC Controls and MSR-Electronic GmbH warrants the system against defects in material or workmanship for a period of one (1) year beginning from the date of shipment. Should any evidence of defects in material or workmanship appear within the warranty period, INTEC Controls and MSR-Electronic GmbH will either repair or replace the product at his own discretion, without charge. This warranty does not apply to units that have been altered, had attempted repair, or been subjected to abuse, accidental or otherwise. The above warranty is in lieu of all other explicit warranties, obligations or liabilities.

This warranty extends only to the system. INTEC Controls and MSR-Electronic GmbH shall not be liable for any incidental or consequential damages arising out of or related to the use of the system.