Guide to Operation

Satellite XT R Version

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Pyrolyzer Module XT
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This section provides a basic understanding of the instrument and its operation.

1.1 **Principle of Operation**

The Satellite XT R Version is a generic gas monitoring instrument for the detection of a wide range of hazardous gases. Power is supplied by a local 12 to 24 VDC power supply.

Target gas and measuring range depend on the type of sensor chosen. The sensor comes with the specific data in its internal data memory.

The Satellite XT R Version provides 3 single-pole single-throw relays for activation of external alarm devices. If the gas concentration exceeds the alarm levels, the instrument will activate the appropriate alarm relay and display an according message. A relay will also be activated in case of an instrument fault.

1.2 **Operating States**

There are four different operating states for the Satellite XT: Monitoring Mode, Maintenance Mode, Warning Condition, and Diagnostics. Depending on the selected operating state, the green status LED is either on, off, or flashing.

1.2.1 **Monitoring Mode**

The Monitoring Mode is the instrument’s standard operating mode. In the Monitoring Mode, the instrument continuously monitors for hazardous gas concentrations and checks for alarm levels and instrument faults.

The instrument's self-diagnostics provides on-line preventive maintenance information identifying electronics or sensor problems, e.g. a sensor selftest is performed every 24 hours.

The green LED located above the <set> key is on.

The settings for Alarm Level 1 and Alarm Level 2 are automatically loaded when installing the sensor. Standard settings are 1x and 2x TLV (Threshold Limit Value) for the target gas. The Alarm Setup function in the Configuration Menu allows the user to change the alarm levels according to their specific requirements.

Whenever the concentration of the target gas exceeds the factory or user programmed alarm levels, the instrument will document this concentration alarm condition on its LCD Display and trigger the associated alarm relays.

1.2.1.1 **Reset Alarms Function**

Ex factory, Alarm 1 and Alarm 2 are preprogrammed “enabled” and “latching”. In the event of a concentration alarm, the alarm indication with latching alarms will continue until the alarm is manually acknowledged by pressing the <set> key. Alarm Reset is not possible, if the alarm condition is still present.

1.2.1.2 **Exiting the Monitoring Mode**

Exiting the Monitoring Mode and entering the Maintenance Mode may be password protected. To prevent the instrument from manipulations by unauthorized personnel, it is recommended to enable this function (see Configuration Menu / Security Function).

- **Password enabled:**
  Press the <esc> key to exit the Monitoring Mode and enter the password. The screen to enter the password is shown for one minute. During this period the Monitoring Mode remains active in the background. When the correct password has been entered, the instrument is in the Maintenance Mode, it is not monitoring, and the green LED is off.

- **Password disabled:**
  Press the <esc> key to exit the Monitoring Mode. The instrument is now in the Maintenance Mode, the instrument is not monitoring, and the green LED is off.
1.2.2 Maintenance Mode
The Maintenance Mode indicates a complete absence of monitoring capability. The green status LED is off. Depending on the configuration the fault relay will be activated.

1.2.3 Warning Condition
A warning condition indicates that the instrument requires some attention, but the instrument is still able to monitor and operate as programmed. The following will occur when the instrument detects a warning condition:
- the green status LED is flashing
- depending on the configuration the fault relay will be activated.

1.2.3.1 Reset Warning Condition
Press the <set> key to acknowledge and reset a Warning Condition. Refer to Section 7, Troubleshooting for specific warnings.

1.2.4 Diagnostics
Instrument faults refer to a problem which prevents the instrument from operating properly and interferes with the ability to monitor or document concentration alarms. If the instrument has detected an instrument fault, the fault relay is activated. The green status LED is off. The LCD display is flashing while indicating the specific fault message.
The instrument lists specific instrument responses to instrument faults. For information on the various fault messages and instructions on how to correct a fault condition, please refer to Section 7, Troubleshooting.

1.3 Menu structure
Besides the Monitoring Mode, there is also menu operation for the Satellite XT. Menu operation comprises three groups of functions, maintenance, calibration, and configuration. A password (if enabled) must be entered to exit the Monitoring Mode and to obtain access to the Main Menu.

1.3.1 Maintenance Menu
This function covers the realtime service procedures required for a regular maintenance of the instrument (e.g. sensor replacement).

1.3.2 Calibration Menu
Use the calibration function to dynamically calibrate the instrument with a known concentration of the target gas or manually by entering a new correction K-Factor.

1.3.3 Configuration Menu
Use this function to configure the Satellite XT and to program instrument and monitoring parameters to suit individual requirements.

! Note:
If the instrument was in the Monitoring Mode when last powered down, it will automatically return to the Monitoring Mode when power is restored.
1.4 Operational Elements

Located at the front of the instrument is the graphic display, the keypad consisting of six keys, and above the Set Key the green status LED.

1.4.1 Keypad Functions

- Escape Key <esc>
- Set Key <set>
- 4 Cursor Keys marked with an arrow, <up>, <down>, <left>, <right>.

In the Maintenance, Calibration, and Configuration Menu, these keys provide the following functions:

To move forwards and backwards in the menus, use the cursor keys <down> and <up>. Select a function by pressing the <set> key.

To enter text or figures, use the cursor keys <left> and <right> to reach the desired cursor position. Use the cursor keys <up> and <down> to select the letter, figure, or sign you wish to enter. Bring the cursor to the next position, select the next letter, figure, or sign. After entering the complete text, use the <set> key to confirm the changes. If you do not want to save the changes, abort by pressing the <esc> key.

1.4.2 Graphic Display

Line 1
Line 2
Line 3

Satellite XT
As H3
0.00 ppm

Depending on the operating mode the structure of the graphic display is different. Three basic versions are illustrated and explained below. A detailed description is given in the according sections.

Display Structure for Monitoring Mode

Line 1 offers the possibility to enter a user specific description, e.g. monitoring location (max. 13 spaces; the name of the instrument is entered here when delivered).
Line 2 shows the name of the gas monitored.
Line 3 indicates the actual gas concentration and the concentration unit. Gas name and concentration unit are data stored in the memory of the sensor installed.

Display Structure for Menu

Line 1 shows the actual position in the menu. In the left example the actual position is Main Menu, in the right example it is the Sub-Menu Maintenance.
Line 2 shows one of the selection possibilities.
Line 3 shows the number of the selection possibility presently displayed and indicates also the total of selection possibilities available in this menu.
1.5 Technical Specifications

**Power Requirements**
- **voltage**: 12 - 24 VDC (18 VDC minimum when using the Extractive Module)
- **consumption**: Max. 1.4 W

**Wiring**
- **power**: 2-wire shielded cable 2x0.5 mm² / 20.4 AWG
  (approx. 2 m delivered with instrument)
- **relay contacts**: 6-wire shielded cable 6x0.25 mm² / 23 AWG
  (approx. 3 m delivered with instrument)

**Relay Outputs**
- **contacts**: 3 x SPST (single-pole single-throw)
- **max. ratings**: 250 VAC / 30 VDC, 2 A

**Graphic Display**
- **122 x 32 dots with backlight**

**Status LED**
- **Green**

**Keypad**
- **6 touch-sensitive membrane function keys**

**Physical Dimensions**
- **size**: 145 x 95 x 50 mm (L x W x H)
  5.7” x 3.7” x 2.0” (L x W x H)
- **weight**: 620 grams
  22 ounces

**Mounting**
- **special mounting plate**
  (delivered with instrument)

**Housing Protection Class**
- **IP 52 option: IP 65**

**EMC Directive 2004/108/EC**
- **EN 50270**

**Operating Conditions**
- **temperature**: -20 °C ... +40 °C
  -4 °F ... +104 °F
- **pressure**: 700 ... 1300 hPa
- **humidity**: 20 ... 90 % r.h.

**Part Number**
- Satellite XT R 9602-0505
- Satellite XT R, IP 65 9612-0505
This section explains installation and initial start-up procedures.

2.1 General Guidelines

Please consider the aspects indicated below before locating the instrument.

The property of the target gas (lighter or heavier than air) must be considered. The instrument should be mounted as close to the monitoring location as possible and should be easily accessible for operation and maintenance. For narrow monitoring locations or duct mounting a sensor extension with a standard length of 2m (6 feet) is available as an option.

The optimum position to mount the instrument is in an upright position on a flat surface. If the instrument is used for ambient air monitoring, ensure that the sensor is facing downwards. For personal monitoring applications the instrument should be mounted at head level.

Ensure that the area immediately surrounding the instrument is free from objects that might hinder free flow of air. The instrument should be installed away from any possible liquid sources, extreme dust and dirt sources and should be protected against rain and sunlight. An instrument version protection class IP 65 is available for outdoor applications.

A junction box is recommended to connect the instrument to external control systems. A distance of 2 m (6 feet) must not be exceeded.

Regarding the power requirements and operating conditions, please follow the specifications indicated in Section 1, Technical Specifications, for wiring instructions refer to Section 2, Wiring.

The sensors should be stored in a cool, dry place when not in use.

2.2 Standard Mounting

The instrument is designed for DIN–rail mounting. The mounting rail standard shipped with each instrument is used for wall mounting. Mount the DIN–rail to a wall and fasten the instrument with the sensor downwards and the display facing the front.

Attach the wires to the junction box according to the wiring diagram provided in the course of this section.

Mounting rail standard (P/N 9602.0050.10.03)
For applications where wall mounting is not possible, an L-shaped mounting plate with DIN–rail is available as an option.

Optional L-shaped mounting plate with DIN–rail (P/N 9602.0051.10.02)

! Note:
Do not apply power until system is ready for start-up!
2.3 Duct Mounting

Observe the guidelines for installation of the instrument. For assembly and installation of the sensor extension see the schematics below and overleaf.

2.3.1 Connecting the Sensor Extension to the Instrument

1. Connect the Socket (A) to the plug in the sensor compartment located at the bottom of the Satellite XT. The groove of the Socket must face to the front.

2. Screw in the Internal Cap (B) and fasten it hand-tight.

3. Insert the Sensor Housing (C) with the nose of the Bayonet Catch facing to the front. Lock the Bayonet Catch with a quarter-turn right.

A Socket with Groove
B Internal Cap
C Sensor Housing with Bayonet Catch
D Extension Cable to the Sensor
2.3.2 Mounting the Sensor Extension to the Duct

Duct Mounting Saddle Assembly various types available, see spare parts list, Section 8, Reference Information.
2.4 Wiring

There are two permanently attached cables extending from the bottom of the instrument, a 2-wire shielded cable with a length of 2 meters and a 6-wire shielded cable with a length of 3 meters.

The 2-wire shielded cable is required to power the instrument. The open end of the cable should be terminated in a junction box.

The 6-wire shielded cable provides a pair of connections for each of the 3 internal relays for activation of visual or audible external alarm devices.

### Power Supply Connections

<table>
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<tr>
<th>P+</th>
<th>White</th>
<th>Power +</th>
</tr>
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<tr>
<td>P-</td>
<td>Brown</td>
<td>Power -</td>
</tr>
<tr>
<td>S</td>
<td>Shield</td>
<td>cable shield</td>
</tr>
</tbody>
</table>

### Relay Contacts

| 1 | White | Alarm 1 Relay |
| 1 | Brown | Alarm 1 Relay |
| 2 | Green | Alarm 2 Relay |
| 2 | Yellow | Alarm 2 Relay |
| 3 | Grey | Fault Relay |
| 3 | Pink | Fault Relay |
| S | Shield | Cable shield |

**Note:** All wiring for the Satellite XT and its related equipment must be in compliance with any local electrical and fire codes. The Satellite XT wiring must be kept away from any high power lines. All shielding for the wiring must be connected together and grounded at only one point in the system.
Wiring Diagram Satellite XT R - Basic Configuration
2.5 Initial Start-Up

When wiring is completed, a sensor must be assigned to each instrument. Every sensor is gas calibrated and these sensor specific calibration parameters are stored in its integrated data memory. Make sure to use only sensors designed for use with the Satellite XT.

Ex factory the instruments are shipped either unconfigured or already preconfigured according to the customer’s specifications.

If the instruments are preconfigured, a certain sensor, which can be identified by its serial number printed on the packaging and the sensor label, is assigned and documented to one particular instrument. These data are stated in the test certificate provided with the shipment.

Switch on power supply. If no sensor is fitted, the display of the instrument shows the below message.

![---- F A U L T ---- NO SENSOR !]

For applications without sensor extension open the bayonet catch of the sensor housing located on bottom of the instrument with a quarter-turn left and remove the sensor housing. For applications with sensor extension hold the plastic fitting at the duct side with two fingers and unscrew the metal fitting.

Take the assigned sensor out of the packaging. Remove shorting strap or wire link placed in the sensor plug before inserting it into the instrument. Not all sensors will feature this strap or link.

**Caution:** Failure to remove the shorting strap or wire link may result in damage to the Satellite.

For applications without sensor extension insert the sensor into the instrument's sensor compartment with the arrow printed on the sensor label facing upwards and to the front. Fit sensor housing by fastening the bayonet catch with a quarter-turn right.

For applications with sensor extension insert the sensor into the socket inside the metal fitting, properly aligning notch, groove, and arrow printed on the sensor label.

A sensor warm-up is performed and the graphic display shows the according screen until the displayed value is zero.

This does not apply for oxygen sensors. The warm-up time required depends on the type of sensor installed. The instrument is in the Maintenance Mode and the green LED is off.

![SENSOR WARM-UP! S a t e l l i t e X T A s H 3]

As soon as the displayed value reads zero, the instrument automatically switches to the Monitoring Mode. The graphic display shows the according screen, the green status LED is on, the instrument is monitoring.

**! Note:**
If the instrument does not perform as described above and a fault message is shown, please refer to Section 7, Troubleshooting.

**! Instruments with OXYGEN sensors:**
Span Adjustment must be performed prior to start-up. It is recommended to repeat Span Adjustment every 4 to 6 weeks. For details refer to Section 5, Calibration.
This section explains the different monitoring conditions and the Sub-Menus available under the Main Menu.

### 3.1 The Main Menu Screens

When the `<esc>` key is pressed, the instrument will leave the Monitoring Mode and go to the Main Menu. The instrument is now in the Maintenance Mode and the green LED is off.

Press the cursor keys `<up>` or `<down>` to move forwards and backwards in the Main Menu.

Press the `<set>` key to select a Sub-Menu. Press the `<esc>` key to go back to the Main Menu.

To return to the Monitoring Mode, go to the menu 'MONITORING' and press `<set>` to select. The display shows the monitoring screen again and the illuminated green LED indicates that the instrument is in the Monitoring Mode.
The instrument is in the operating mode.
Maintenance and the green LED is off.
Press the cursor keys <up> or <down> to move forwards and backwards in the Main Menu.
Press the <set> key to enter the Monitoring Mode.

**<Normal Condition>**

This screen and the illuminated green LED indicate that the instrument is in the Monitoring Mode and is operating properly.

**<Alarm 1 Condition>**

This screen shows that Alarm Level 1 has been exceeded and that there is an actual gas concentration of 0.07 ppm AsH₃.
(f.i. Alarm 1 set at 0.05 ppm AsH₃)

**<Alarm 2 Condition>**

This screen shows that Alarm Level 2 has been exceeded and that there is an actual gas concentration of 0.12 ppm AsH₃.
(f.i. Alarm 2 set at 0.10 ppm AsH₃)
Main Menu - Section 3

Main Menu - Maintenance

The instrument is in the Maintenance Mode and the green LED is off.
Press the cursor keys <up> or <down> to move forwards and backwards in the Main Menu.
To select a Sub-Menu, press the <set> key to enter.

Sub-Menus - Maintenance

Sensor Service
screen 1 of 7

Alarm Reset
screen 2 of 7

Alarm/Warn Test
screen 3 of 7

Device Infos
screen 4 of 7

Sensor Infos
screen 5 of 7

Reset Device
screen 6 of 7

Service
screen 7 of 7
Main Menu - Calibration

The instrument is in the Maintenance Mode and the green LED is off. Press the cursor keys <up> or <down> to move forwards and backwards in the Main Menu.

To select a Sub-Menu, press the <set> key to enter.

Sub menus - Calibration

Gas Calibration
screen 1 of 2

Manual K-Factor
screen 2 of 2
The instrument is in the Maintenance Mode and the green LED is off.
Press the cursor keys <up> or <down> to move forwards and backwards in the Main Menu.
To select a Sub-Menu, press the <set> key to enter.

Sub Menus - Configuration

Alarm Settings
screen 1 of 10

Language
screen 2 of 10

Date Format
screen 3 of 10

Auto Selftest
screen 4 of 10

! This function is not available with instruments using oxygen sensors.

Security
screen 5 of 10

Password
screen 6 of 10
Main Menu - Section 3

Main Menu - Configuration

Sub menus - Configuration

Location
screen 7 of 10

New Sensor Type
screen 8 of 10

Gas Name
screen 9 of 10

Relays
screen 10 of 10
This section explains routine maintenance procedures including sensor replacement and specific information on sensor and instrument.

**Main Menu - Maintenance**

The instrument is in the Maintenance Mode and the green LED is off. Actuate the cursor keys <up> or <down> to move forwards and backwards in the Main Menu. To select a submenu, actuate the <set> key to enter.

**Sub menus - Maintenance**

- **Sensor Service**
  - Screen 1 of 7

- **Alarm Reset**
  - Screen 2 of 7

- **Alarm / Warn Test**
  - Screen 3 of 7

- **Device Infos**
  - Screen 4 of 7

- **Sensor Infos**
  - Screen 5 of 7

**Continued**
Main Menu - Maintenance

Submenus - Maintenance

Reset Device
screen 6 of 7

Service
screen 7 of 7

Maintenance - Section 4

Continued
To perform a sensor replacement with a new sensor, which must have the same part number; see section 8 for Sensor Information. Use the <set> key to enter and follow the dialogue displayed at the bottom line of the screen. When the instrument has finished the sensor service procedure, it will automatically enter the Monitoring Mode.

Remove Sensor
Remove the sensor presently installed and actuate the <set> key to proceed.

Replacement
Insert the new sensor and actuate the <set> key to continue.

Load New Data?
If you want the data of the new sensor to be loaded, confirm this by actuating the <set> key.

Loading Data!
The new data are now loaded from the sensor into the instrument’s internal memory.

<Sensor Warm-Up Condition>
A sensor warm-up is performed and this screen is shown until the displayed value is zero. **This does not apply for oxygen sensors.**
The warm-up time required depends on the type of sensor.

<Normal Monitoring Condition>
The instrument will automatically switch to the Monitoring Mode when the sensor service procedure is finished.
Alarm Reset

Alarm Reset allows the user to reset the alarm indication of latched alarms. Use the <set> key to enter and follow the dialogue displayed at the bottom of the screen. Actuate the <esc> key to exit.

Alarms Off?

Actuate the <set> key to confirm the reset of alarm indication with latching alarm. For non-latching alarms, alarm indication will be reset automatically.

Alarm/Warn Test

Used to verify the alarm function of any associated external device by simulating an Alarm 1, Alarm 2, and warning condition. Use the <set> key to select or use the cursor keys <up> and <down> to continue in the menu.

Set Alarm 1?

Allows the user to simulate an Alarm 1 condition. Actuate the <set> key to enter.

Alarm 1 set!

The Alarm 1 Relay is activated. Use the <esc> key to exit.

Set Alarm 2?

Allows the user to simulate an Alarm 2 condition. Actuate the <set> key to enter.

Alarm 2 set!

The Alarm 2 Relay is activated. Use the <esc> key to exit.
**Alarm/Warn Test**

**Set Warning?**

Allows the user to simulate a warning condition. Actuate the <set> key to enter.

**Warning set!**

The Fault Relay is activated, depending on the configuration. Use the <esc> key to exit.

**Device Infos**

Used to obtain instrument specific information, i.e. software version and ID number. In general these informations are required for service purposes. Actuate the <set> key to select and move with the cursor keys <up> and <down>. Actuate the <esc> key to exit.

**<Actual Software Version>**

The version of the software presently installed is shown.

**<Specific Identification Number>**

The instrument’s specific ID identification number is shown.

*Note:*
Whenever a new sensor is installed, the K-factor will automatically revert to the default value 1.00. Any individual settings must be entered again; refer to section 5, Calibration.
Sensor Infos

Provides specific information about the sensor presently installed, i.e. part number, serial number, date of first calibration, sensitivity, and revision number. These data are stored in the sensor’s memory. Actuate the <set> key to select or use the cursor keys <up> and <down> to continue in the menu.

Part number

Actuate the <set> key to display the part number of the sensor presently installed.

<Actual Sensor Part Number>
Use this information to order replacement sensors. Additional order information is provided in Section 8, Sensor Order Information. Actuate <esc> to leave.

Serial Number

Actuate the <set> key to display the serial number of the sensor presently installed.

<Actual Sensor Serial Number>
This information may be required for service purposes. Actuate the <esc> key to leave.

First Calibration

Use the <set> key to display the date when the installed sensor was calibrated for the first time.

<Date of First Calibration>
This information may be required for service purposes and to check the age of the sensor. Actuate <esc> to leave.
**Sensor Infos**

**Sensitivity**

Use the `<set>` key to display the sensor sensitivity determined during the first calibration.

**<Actual Sensitivity>**

This information may be required for service purposes. Actuate the `<esc>` key to leave.

**Revision Number**

Use the `<set>` key to display the revision number of the gas related information stored in the sensor's memory.

**<Actual Revision Number>**

This information may be required for service purposes. Actuate the `<esc>` key to leave.
**Reset Device**

Offers the possibility to perform a “warm start” of the instrument. 
Actuate the <set> key to select.

**Are You Sure?**

This screen is to confirm that a software reset should be performed. Actuate the <set> key to confirm or use the <esc> key to exit.

**<Sensor Warm-Up Condition>**

A sensor warm-up is performed and this screen is shown until the displayed value is zero, except for Oxygen sensors.
The warm-up time depends on the type of sensor.

**<Normal Monitoring Condition>**

The instrument will automatically switch to the Monitoring Mode when the sensor service procedure is finished.

**Service**

This submenu is used exclusively by trained Service Personnel.
The functions are password protected.
This section describes calibration procedures for the Satellite XT. Calibration can be performed either automatically using a dynamic gas calibration or manually by entering a calculated correction factor called K-factor.

**Main Menu - Calibration**

The instrument is in the Maintenance Mode and the green LED is off. Actuate the cursor keys <up> or <down> to move forwards and backwards in the Main Menu. To select a submenu, actuate the <set> key to enter.

**Sub menus - Calibration**

- **Gas Calibration**
  
  screen 1 of 2

- **Manual K-Factor**
  
  screen 2 of 2

!Note:
If a high degree of accuracy in monitoring is required, monthly calibration with calibration gas of a known concentration is recommended.

When performing a dynamic calibration, a new correction factor (K-factor) is calculated automatically. The actual value can be displayed in the submenu Manual K-Factor.

Use appropriate safety precautions when handling toxic or corrosive gases and properly vent, if possible.

! Instruments with OXYGEN sensors:
Span Adjustment must be performed prior to start-up. It is recommended to repeat Span Adjustment every 4 to 6 weeks. For details refer to Section 5, Calibration.
Gas Calibration

The gas calibration submenu is used for dynamic calibration. For zero adjustment use clean or synthetic air free from measuring gas or any other interfering gases. The sensor must be warmed-up before calibration. For span adjustment it is recommended to use test gas of a known concentration at or slightly above the TLV for the target gas.

Always keep to the correct sequence, first perform zero adjustment, then Span Adjustment.

Zero Adjust

Zero adjustment applies for all sensors except oxygen sensors.

Use the <set> key to enter and follow the dialogue displayed.

Apply Air !

Apply clean or synthetic air to the sensor and actuate the <set> key to continue.

<Actual Zero Point>

Allow the zero reading to stabilize. If the reading is already zero, zero adjustment is not necessary. Actuate the <esc> key to exit. If the reading is not zero, actuate the <set> key to re-adjust the zero point and to continue the procedure.

<Re-adjusted Zero Point>

The reading is zero. Actuate the <set> key to proceed.

Save ?

Actuate the <set> key to save the new zero point and store it in the unit’s internal memory.
Gas Calibration (Calibración de gas)

**Span Adjust**
Span adjustment applies for all sensors, including oxygen sensors. Use the <set> key to enter and follow the dialogue displayed.

**<Actual Calibration Gas>**
The instrument shows which calibration gas is required for the actual sensor type.

**<Actual Concentration for Calibration>**
The recommended concentration for span adjustment is displayed. Default value is TLV concentration for the target gas. When using calibration gas of a different concentration, change the value accordingly. After the new value has been entered, actuate the <set> key to continue.

**Apply Gas !**
Place the calibration cap over the sensor and start the calibration gas flow (18 l/h or 300 ccm/min). Actuate the <set> key to continue.

**<Actual Span Value>**
Allow the reading to stabilize. If the reading matches the concentration of the calibration gas, span adjustment is not necessary. Actuate the <esc> key to exit. If the reading does not match the concentration of the calibration gas, actuate the <set> key to re-adjust the span value and to continue the procedure.

**<Re-adjusted Span Value>**
The reading matches the concentration of the calibration gas. Actuate the <set> key to proceed.

**Save ?**
Actuate the <set> key to save the new span value and store it in the unit's internal memory.

**Remove Gas !**
Stop the calibration gas flow. Remove gas and calibration cap. Allow several minutes for the sensor to clear.
Manual K-Factor

This submenu is used to manually calibrate the instrument by entering a new K-factor. This factor is a multiplication or correction value used to calibrate the response of the instrument to a specific gas concentration. The factory default K-Factor for all gases is 1.00. Use the <set> key to enter. The instrument will display the actual K-factor.

< Actual K-Factor>

Use the cursor keys <left> or <right> to reach the desired position. Use the cursor keys <up> and <down> to select the figures you wish to enter. The K-factor must be in the range of 0.20 and 5.00. After a new value has been entered, actuate the <set> key to confirm or <esc> to exit.

! Note:
Individual settings for the manual K-factor will automatically revert to the default value 1.00, whenever the sensor is replaced by a new sensor.
This section describes the instrument’s default configuration and procedures how to adapt it to individual requirements.

**Main Menu - Configuration**

The instrument is in the Maintenance Mode and the green LED is off. Press the cursor keys <up> or <down> to move forwards and backwards in the Main Menu. To select a Sub-Menu, press the <set> key to enter.

**Sub menus - Configuration**

- **Alarm Settings**
  - Screen 1 of 10

- **Language**
  - Screen 2 of 10

- **Date Format**
  - Screen 3 of 10

- **Auto Selftest**
  - Screen 4 of 10

- **Security**
  - Screen 5 of 10
! Note:
Individual settings for alarm levels and gas name will automatically revert to the factory programmed settings, whenever a new sensor type with a part number different from the part number of the sensor used before is installed.
Alarm Settings

Allows the user to enter or change various settings for Alarm 1 and Alarm 2 activation. Use the <set> key to enter.

Alarm 1

For Alarm 1 settings, use the <set> key to enter or continue in the menu with the cursor keys <up> or <down>.

Alarm 2

For Alarm 2 settings, use the <set> key to enter or continue in the menu with the cursor keys <up> or <down>. 
Alarm 1

Allows the user to configure all parameters for Alarm 1 (lower alarm level) activation.

Alarm 1 State

Used to enable / disable the Alarm 1 activation.

Alarm 1 Level

Used to set individual alarm levels for Alarm 1 activation.

Alarm 1 Trigger

Used to define the trigger condition for Alarm 1 activation.

Alarm 1 Latch

Used to define the Alarm 1 activation to be latching or non-latching.
**Alarm 1 State**

Used to enable / disable the Alarm 1 activation. Default setting is enabled. Use the <set> key to enter. The instrument will show the actual setting.

**Disabled**

Allows the user to turn off the Alarm 1 activation. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

**Enabled**

Allows the user to turn on the Alarm 1 activation. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

**Alarm 1 Level**

Used to set individual alarm levels for Alarm 1 activation. Default setting is 1 x TLV (Threshold Limit Value) for the target gas. Press the <set> key to enter and show the actual setting.

**<Actual Alarm 1 Level>**

To change the value, use the cursor keys <left> or <right> to reach the desired position. Use the cursor keys <up> and <down> to select the figures you wish to enter. After the new value has been entered, press the <set> key to confirm or <esc> to exit.
**Alarm 1 Trigger**

Used to define the trigger condition for Alarm 1 activation. Default setting is Greater Than. Use the <set> key to enter. The instrument will show the actual setting.

Greater Than

Defines that an Alarm 1 condition will be indicated when the actual gas concentration exceeds the preset level for Alarm 1. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

Less Than

Defines that an Alarm 1 condition will be indicated when the actual gas concentration falls below the preset level for Alarm 1. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

**Alarm 1 Latch**

Used to define the Alarm 1 activation to be latching or non-latching. Default setting is enabled. Use the <set> key to enter. The instrument will show the actual setting.

When enabled, alarm reset must be done manually. Non-latching alarms will be reset automatically, upon correction of the alarm condition.

Disabled

Defines the Alarm 1 activation to be non-latching. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

Enabled

Defines the Alarm 1 activation to be latching. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.
Alarm 2

Allows the user to configure all parameters for Alarm 2 (upper alarm level) activation. For all subsequent Alarm 2 settings, please follow the procedures described in the corresponding section for Alarm 1 settings.

**Alarm 2 State**

Used to enable / disable the Alarm 2 activation.

**Alarm 2 Level**

Used to set individual alarm levels for Alarm 2 activation.

**Alarm 2 Trigger**

Used to define the trigger condition for Alarm 2 activation.

**Alarm 2 Latch**

Used to define the Alarm 2 activation to be latching or non-latching.
Language

Used to select the desired language for menu operation. Default setting is English. Use the <set> key to enter. The instrument will display the actual language.

German

Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

English

Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

Date Format

Used to define the format how to display the date (only used in the Sub-Menu Sensor Infos, Date of First Calibration). Default setting is International. Use the <set> key to enter. The actual date format is displayed.

International

International date format is DD.MM.YYYY. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

USA

USA date format is MM-DD-YYYY. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.
The instrument’s self-diagnostics provides an on-line preventive sensor selftest performed automatically every 24 hours, which may be enabled or disabled. Default setting is enabled.

Use the <set> key to enter. The display will show the actual setting.

The Auto Selftest function is not applicable for Oxygen sensors.

**Disabled**

Allows the user to turn off the Auto Selftest.

Press the cursor keys <up> or <down> to change.

Press the <set> key to confirm or <esc> to exit.

**Enabled**

Allows the user to turn on the Auto Selftest.

Press the cursor keys <up> or <down> to change.

Press the <set> key to confirm or <esc> to exit.

Exiting the Monitoring Mode and entering the Maintenance Mode, may be password protected, to prevent the instrument from manipulations by unauthorized personnel.

Ex factory the password protection is disabled.

Use the <set> key to enter. The instruments shows the actual setting.

**Password On**

Allows the user to enable the password protection.

Press the cursor keys <up> or <down> to change.

Press the <set> key to confirm or <esc> to exit.

**Password Off**

Allows the user to disable the password protection.

Press the cursor keys <up> or <down> to change.

Press the <set> key to confirm or <esc> to exit.
**Password**

Allows the user to enter or change the password. Ex factory the password is <000>. Use the <set> key to enter. The instrument will display the actual password.

*<Actual Password>*

To change the password, use the cursor keys <left> or <right> to reach the desired position. Use the cursor keys <up> and <down> to select the figures you wish to enter. After the new password has been entered, press the <set> key to confirm or <esc> to exit.

**Location**

Allows the user to enter a description defining the monitoring point. Ex factory it reads <Satellite XT>. Up to 13 alphanumeric characters can be entered. Use the <set> key to enter. The instrument will display the actual location.

*<Actual Location>*

Use the cursor keys <left> or <right> to reach the desired position. Use the cursor keys <up> and <down> to select the characters you wish to enter. When the new location has been entered completely, press the <set> key to confirm or <esc> to exit.
New Sensor Type

Allows the user to configure the instrument for a new sensor type with a part number, which is different from the one presently used. See Section 8 for Sensor Information. Press the <set> key to enter and follow the dialogue displayed.

Remove Sensor

Remove the sensor presently installed and press the <set> key to proceed.

Load New Data?

If you want the data of the new sensor to be loaded, confirm this by pressing the <set> key.

Loading Data!

The instrument is now loading the new data from the sensor into the unit’s internal memory.

Gas Name

Allows the user to enter a different gas name than the one stored in the sensor’s data memory. Up to 7 alpha-numeric characters can be entered. Use the <set> key to enter. The instrument will display the actual gas name.

<Actual Gas Name>

Use the cursor keys <left> or <right> to reach the desired position. Use the cursor keys <up> and <down> to select the characters you wish to enter. When the new gas name has been entered completely, press the <set> key to confirm or <esc> to exit.
Relays

Allows the user to enter or change various settings for the internal relay contacts for Alarm 1, Alarm 2, and Fault.
Use the <set> key to enter.

Relay State

Used to individually define the relays to be either deenergized (normally open contact) or energized (normally closed contact).
Use the <set> key to enter or continue in the menu with the cursor keys <up> or <down>.

Alarm Delay

Used to set a delay for the relay activation in case of concentration alarms.
Use the <set> key to enter or continue in the menu with the cursor keys <up> or <down>.

Fault Trigger

Used to define the trigger conditions for activation of the Fault Relay.
Use the <set> key to enter or continue in the menu with the cursor keys <up> or <down>.
Relay State

Used to individually define the Alarm 1, Alarm 2, and Fault Relay to be either deenergized (normally open contact) or energized (normally closed contact). Ex factory the relays are deenergized (normally open contacts). Use the <set> key to enter.

Alarm 1 Relay

Allows to set the Alarm 1 Relay state.

Alarm 2 Relay

Allows to set the Alarm 2 Relay state.

Fault Relay

Allows to set the Fault Relay state.

Alarm 1 Relay

Allows the user to set the Alarm 1 Relay state. Use the <set> key to enter. The instrument will show the actual setting.

Deenergized / NO

Defines the Alarm 1 Relay to be deenergized (normally open contact). Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

Energized / NC

Defines the Alarm 1 Relay to be energized (normally closed contact). Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.
**Alarm 2 Relay**

Allows the user to set the Alarm 2 Relay state.
Use the <set> key to enter.
The instrument will show the actual setting.

**Deenergized / NO**
Defines the Alarm 2 Relay to be deenergized (normally open contact).
Press the cursor keys <up> or <down> to change.
Press the <set> key to confirm or <esc> to exit.

**Energized / NC**
Defines the Alarm 2 Relay to be energized (normally closed contact).
Press the cursor keys <up> or <down> to change.
Press the <set> key to confirm or <esc> to exit.

**Fault Relay**

Allows the user to set the Fault Relay state.
Use the <set> key to enter.
The instrument will show the actual setting.

**Deenergized / NO**
Defines the Fault Relay to be deenergized (normally open contact).
Press the cursor keys <up> or <down> to change.
Press the <set> key to confirm or <esc> to exit.

**Energized / NC**
Defines the Fault Relay to be energized (normally closed contact).
Press the cursor keys <up> or <down> to change.
Press the <set> key to confirm or <esc> to exit.
**Alarm Delay**

Used to define an alarm delay for concentration alarms. Minimum value is 0, maximum setting is 99.9 seconds. Default setting is 3.0 seconds. Press the <set> key to enter and show the actual setting.

**<Actual Alarm Delay>**

To change the value, use the cursor keys <left> or <right> to reach the desired position. Use the cursor keys <up> and <down> to select the figures you wish to enter. After the new value has been entered, press the <set> key to confirm or <esc> to exit.

**Fault Trigger**

Allows the user to define, which fault conditions will activate the Fault Relay. Ex factory the setting is Fault Only. Use the <set> key to enter. The instrument will show the actual setting.

**Fault Only**

Used to configure the Fault Relay to be activated in case of a fault condition only. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

**Fault + Warning**

Used to configure the Fault Relay to be activated in case of a fault or warning condition only. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

**Fault + Maintenance**

Used to configure the Fault Relay to be activated in case of a fault or maintenance condition only. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.

**All**

Used to configure the Fault Relay to be activated in case of a fault, warning, or maintenance condition. Press the cursor keys <up> or <down> to change. Press the <set> key to confirm or <esc> to exit.
This section will help to determine the source of a fault or warning condition and will provide a corrective action.

7.1 Warning and Fault Messages

There are two general indications, warnings and faults, which require different attention. If a fault or warning message does not appear in this section or if further assistance is required, contact your MST Service Department.

7.1.1 Warnings

A warning condition indicates that the instrument requires some attention, but the instrument is still able to monitor and operate as programmed. The following will occur when the instrument detects a warning condition:

- the green status LED is flashing
- depending on the configuration, the fault relay will be activated

Press the <set> key to acknowledge and reset a Warning Condition.

**Low Zero !**

This message indicates that the zero point of the sensor is out of the optimum range.
To correct this problem, check the zero adjustment and recalibrate, if necessary.

**Check Sensor !**

This message indicates that the sensor sensitivity does not comply with the specifications.
The sensor must soon be replaced.

Whilst most sensors will work for another 2-6 weeks, there are circumstances that may cause an earlier failure of the sensor cell. Honeywell therefore suggests that customers with more critical needs carry out the replacement of the sensor cell within 3 days (72 hours) of receiving the “check sensor” message.

To receive this message, the function Auto Selftest must be enabled; refer to Section 6, Configuration.

! This function is not available for instruments with oxygen sensor.
7.1.2 Faults

Instrument faults refer to a problem which prevents the instrument from operating properly and interferes with the ability to monitor or document concentration alarms.

If the instrument has detected an instrument fault, the green status LED is off and the fault relay is activated. The LCD display is flashing while indicating the specific fault message.

**Fault - ADC Not Ready !**

This indicates that there is a problem with the internal electronics. The AD Converter has failed. Switch power supply for this unit off and on again. If the instrument still shows this message, switch off power supply for this unit and contact MST for further instructions.

**Fault - No Sensor !**

This message indicates that no sensor is inserted or that a sensor type not suitable for the Satellite XT is used. To eliminate the problem, insert the correct sensor.

**Fault - Wrong Sensor !**

This message indicates that the sensor installed is not the sensor assigned to this particular instrument. To correct the problem, insert the sensor assigned and documented to this instrument. The data are stated in the test certificate provided with the shipment.

**Fault - Replace Sensor !**

This message indicates that the sensor presently installed is depleted (the warning CHECK SENSOR ! has been ignored). To correct the problem, replace the old sensor immediately.

* ! This function is not available for instruments with oxygen sensor.*
Fault - Extractive!

Only for instruments with Extractive Module.

This message indicates that there is a problem with the Extractive Module. Check power supply, sample tubing, sample tubing connections, and sample line filter. Perform any corrective action required.

If the message is still shown, please contact our service department for further instructions.

Fault - Pyrolyzer!

Only for instruments with Pyrolyzer Module.

This message indicates that there is a problem with the Pyrolyzer Module.

Please contact our service department for further instructions.
### 8.1 Sensor Order Information

<table>
<thead>
<tr>
<th>Substance / Sensor</th>
<th>Part No. sensor</th>
<th>Nominal Range</th>
<th>Unit</th>
<th>Note</th>
<th>Dust Filter allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>AsH3 Arsine (3 El.)</td>
<td>9602-6001</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>AsH3 Arsine (2 El.)</td>
<td>9602-6004</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>AsH3 Arsine (2 El.)</td>
<td>9602-6002</td>
<td>0 ... 10.0 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>B2H6 Diborane</td>
<td>9602-6202</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Br2 Bromine</td>
<td>9602-6800</td>
<td>0 ... 5.00 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>C4F6 Hexafluorobutadiene</td>
<td>9602-9732</td>
<td>0 ... 50.0 ppm</td>
<td>ppm</td>
<td>3) no data</td>
<td></td>
</tr>
<tr>
<td>C5F8 Octafluorocyclopentene</td>
<td>9602-9730</td>
<td>0 ... 20.0 ppm</td>
<td>ppm</td>
<td>3) no data</td>
<td></td>
</tr>
<tr>
<td>CH3F Methyl Fluoride</td>
<td>9602-9720</td>
<td>0 ... 0.500 % vol.</td>
<td>% vol.</td>
<td>3) no data</td>
<td></td>
</tr>
<tr>
<td>Cl2 Chlorine</td>
<td>9602-5300</td>
<td>0 ... 5.00 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>ClF3 Chlorine Trifluoride</td>
<td>9602-7410</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>ClO2 Chlorine Dioxide</td>
<td>9602-7400</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>CO Carbon Monoxide</td>
<td>9602-5400</td>
<td>0 ... 50.0 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>COCl2 Phosgene</td>
<td>9602-6600</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DCE 1,2 Di-chloro-ethylene 1,2</td>
<td>9602-9600</td>
<td>0 ... 1000 ppm</td>
<td>ppm</td>
<td>3) no data</td>
<td></td>
</tr>
<tr>
<td>C2H4O Ethylene Oxide</td>
<td>9602-8000</td>
<td>0 ... 20.0 ppm</td>
<td>ppm</td>
<td>no data</td>
<td></td>
</tr>
<tr>
<td>F2 Fluorine</td>
<td>9602-6400</td>
<td>0 ... 5.00 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>GeH4 Germane</td>
<td>9602-6902</td>
<td>0 ... 5.0 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>H2 Hydrogen (1%)</td>
<td>9602-5100</td>
<td>0 ... 1.000 % vol.</td>
<td>% vol.</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>H2 Hydrogen (4 %)</td>
<td>9602-5101</td>
<td>0 ... 4.00 % vol.</td>
<td>% vol.</td>
<td>2) yes</td>
<td></td>
</tr>
<tr>
<td>H2S Hydrogen Sulfide</td>
<td>9602-5200</td>
<td>0 ... 100 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>H2S Hydrogen Sulfide (org.)</td>
<td>9602-5201</td>
<td>0 ... 30.0 ppm</td>
<td>ppm</td>
<td>1) yes</td>
<td></td>
</tr>
<tr>
<td>H2Se Hydrogen Selenide</td>
<td>9602-5601</td>
<td>0 ... 5.00 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>HBr Hydrogen Bromide</td>
<td>9602-7000</td>
<td>0 ... 30.0 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>HCl Hydrogen Chloride</td>
<td>9602-5800</td>
<td>0 ... 30.0 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>HCN Hydrogen Cyanide</td>
<td>9602-5700</td>
<td>0 ... 30.0 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>HF Hydrogen Fluoride</td>
<td>9602-6500</td>
<td>0 ... 10.0 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>HMDS Hexamethyldisilazane</td>
<td>9602-6714</td>
<td>0 ... 500 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>HMDS Hexamethyldisilazane</td>
<td>9602-6715</td>
<td>0 ... 0.500 % vol.</td>
<td>% vol.</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>N2H4 Hydrazine</td>
<td>9602-7600</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>NF3 Nitrogen Trifluoride</td>
<td>9602-9700</td>
<td>0 ... 50.0 ppm</td>
<td>ppm</td>
<td>3) no data</td>
<td></td>
</tr>
<tr>
<td>NH3 Ammonia (100 ppm)</td>
<td>9602-6704</td>
<td>0 ... 100 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>NH3 Ammonia (1000 ppm)</td>
<td>9602-6705</td>
<td>0 ... 1000 ppm</td>
<td>ppm</td>
<td>2) No</td>
<td></td>
</tr>
<tr>
<td>NO Nitric Oxide</td>
<td>9602-7200</td>
<td>0 ... 250 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>NO2 Nitrogen Dioxide</td>
<td>9602-7300</td>
<td>0 ... 25.0 ppm</td>
<td>ppm</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>O2 Oxygen</td>
<td>9602-5500</td>
<td>0 ... 25.0 % vol.</td>
<td>% vol.</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>O3 Ozone</td>
<td>9602-7100</td>
<td>0 ... 1.00 ppm</td>
<td>ppm</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

continued overleaf
<table>
<thead>
<tr>
<th>Substance / Sensor</th>
<th>Part No. sensor</th>
<th>Nominal Range</th>
<th>Unit</th>
<th>Note</th>
<th>Dust Filter allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH3 Phosphine (3 El.)</td>
<td>9602-6102</td>
<td>0 ... 1.00</td>
<td>ppm</td>
<td></td>
<td>Sí</td>
</tr>
<tr>
<td>PH3 Phosphine (2 El.)</td>
<td>9602-6100</td>
<td>0 ... 1.00</td>
<td>ppm</td>
<td>1)</td>
<td>Sí</td>
</tr>
<tr>
<td>SF6 Sulfur Hexafluoride</td>
<td>9602-9710</td>
<td>0 ... 0.500</td>
<td>% vol.</td>
<td>3)</td>
<td>Sin datos</td>
</tr>
<tr>
<td>SiH4 Silane</td>
<td>9602-6301</td>
<td>0 ... 50.0</td>
<td>ppm</td>
<td></td>
<td>Sí</td>
</tr>
<tr>
<td>SO2 Sulfur Dioxide</td>
<td>9602-5900</td>
<td>0 ... 25.0</td>
<td>ppm</td>
<td></td>
<td>Sí</td>
</tr>
<tr>
<td>TEOS Tetraethyl Orthosilicate</td>
<td>9602-7500</td>
<td>0 ... 100</td>
<td>ppm</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>TMB Trimethyl borate</td>
<td>9602-7510</td>
<td>0 ... 500</td>
<td>ppm</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>TMP Trimethyl phosphite</td>
<td>9602-7800</td>
<td>0 ... 30.0</td>
<td>ppm</td>
<td></td>
<td>Sí</td>
</tr>
</tbody>
</table>

Notas:  
1) Special application  
2) Special range  
3) Pyrolyzer Module required for detection

Further gases and ranges on request
### 8.2 Spares and Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9602.0050.10.03</td>
<td>Mounting Rail Standard</td>
</tr>
<tr>
<td>9602.0050.10.02</td>
<td>Mounting Plate DIN-Rail, Option</td>
</tr>
<tr>
<td>9602.0051.10.02</td>
<td>Mounting Plate L-shaped with DIN-Rail, Option</td>
</tr>
<tr>
<td>9602.0090.00.01</td>
<td>Sensor Extension, 2 meters</td>
</tr>
<tr>
<td>9602.0091.00.01</td>
<td>Sensor Extension, 3 meters</td>
</tr>
<tr>
<td>9602.0092.00.01</td>
<td>Sensor Extension, 1 meter</td>
</tr>
<tr>
<td>9602.0095.40.00</td>
<td>Calibration Cap</td>
</tr>
<tr>
<td>9902-4000</td>
<td>Duct Mounting Saddle Assy, 4 inches</td>
</tr>
<tr>
<td>9902-4010</td>
<td>Duct Mounting Saddle Assy, 6 inches</td>
</tr>
<tr>
<td>9902-4020</td>
<td>Duct Mounting Saddle Assy, 8 inches</td>
</tr>
<tr>
<td>9902-4030</td>
<td>Duct Mounting Saddle Assy, 10 inches</td>
</tr>
<tr>
<td>9902-4040</td>
<td>Duct Mounting Saddle Assy, 12 inches</td>
</tr>
<tr>
<td>9902-4100</td>
<td>Duct Mounting Saddle Assy, 1.5 inches</td>
</tr>
<tr>
<td>9902-4110</td>
<td>Duct Mounting Saddle Assy, 2 inches</td>
</tr>
<tr>
<td>9902-4120</td>
<td>Duct Mounting Saddle Assy, 2.5 inches</td>
</tr>
<tr>
<td>9902-4130</td>
<td>Duct Mounting Saddle Assy, 3 inches</td>
</tr>
<tr>
<td>9902-4200</td>
<td>Duct Mounting Saddle (Assy), flat</td>
</tr>
</tbody>
</table>
9.1 Principle of Operation

The Extractive Module XT is an add-on module for use in combination with the Satellite XT. It enables for keeping hazardous, difficult to reach, or otherwise inaccessible areas under continuous surveillance. It is capable of sampling areas up to 50 m away. Power is supplied via the Satellite XT. Status information is provided by the Satellite XT that provides the digital interface as well.

The module contains a diagnosis for electronics and pump. The correct gas flow is factory set and saved in the instrument. If there is a problem with the Extractive Module XT, the display of the Satellite XT shows the fault message FAULT EXTRACTIVE. For information on fault messages and instructions on how to correct a fault condition, please refer to Section 7, Troubleshooting.

9.2 General Instructions

Listed hereafter several aspects that should be reflected when locating monitoring point and instrument. When placing the sampling point, the property (lighter or heavier than air) of the target gas must be considered. The instrument should be mounted as close as possible to the monitoring location as possible to minimize sample transport time. The area immediately surrounding the sample inlet at the monitoring point must be free from objects that might hinder free flow of air. The instrument should be installed away from any possible liquid sources, extreme dust and dirt sources and should be protected against rain and sunlight.

The sample line should be run as direct as possible to improve transport time. Avoid running the sample line through areas of great temperature extremes. The sample outlet must be connected to an exhaust line and must be properly vented. Both, sample and exhaust tubing must not be crimped or placed in an area where weight could collapse the tubing.

Dust may be a result of construction as well as manufacturing activities. If unusual quantities of dust are expected at the monitoring location, an appropriate filter for the sample line must be installed. The use of a dust filter depends on the target gas, refer to the table Sensor Order Information in Section 8, Reference Information, or contact our service department.

As excess amounts of dirt in the filters will reduce the sample flow and will thus affect concentration readings of the instrument, make sure to regularly change sample line filters (every 1 to 6 months, depending on the ambient conditions). For order information refer to Section 8, Reference Information, Spares and Accessories.

Moisture may occur as rain entering a line at an outdoor sampling location or as condensation from outdoor-to-indoor temperature fluctuations. In case of unusual quantities of moisture, appropriate steps must be taken to protect the instrument; consult us for respective assistance.

9.3 Safety Instructions

Never use compressed air to clean the tubing while it is connected to the instrument.

Use isopropanol and a soft cloth to clean the housing. Do not use any aggressive detergents.

! Note:
To extend an existing Satellite XT to an extractive system, please contact our service department. This modification makes it necessary to open the housing of the Satellite XT, which is only allowed for authorized persons.
9.4 Instrument Design

Front View showing Extractive Module XT connected to Satellite XT.

A  Exhaust Line - Outlet
B  Sensor Holder
Side View (left)
A Exhaust Line - Outlet
B Sensor Holder
C Sample Line - Gas Inlet

Side View (right)
B Sensor Holder
D Sensor Connection to Satellite XT
E Connection Extractive Module XT and Satellite XT

Top View (only Extractive Module XT)
A Exhaust Line - Outlet
B Sensor Holder
C Sample Line - Gas Inlet
D Sensor Connection to Satellite XT
9.5 Mounting

The Extractive Module XT is prepared for DIN-rail mounting. An appropriate mounting rail is delivered with the instrument, which allows mounting the Extractive Module XT and the Satellite XT side by side.

Mount this rail to a wall with the appropriate fasteners and slide both modules onto it. Plug in male and female connector of Satellite XT and Extractive Module XT.

Module Connections

- sample tubing.
- sensor connection between Extractive Module XT and Satellite XT.
- Data link and power supply.

9.6 Tubing Connections

Tubing material is PTFE or PFA with an outer diameter of 1/4” and an inner diameter of 3/16”. Length and inner diameter of the sample line will affect the response time. Length of the sample lines should be kept as short as possible. With a sample line ID of 3/16” (4.7 mm) and a length of 10 m, the delay in response does not exceed 30 seconds.

Sample Line Inlet
The fitting for connecting the sample line inlet is located on top of the housing and marked “Gas Inlet”. Improper installation of the sample inlet tube may result in dilution or even complete loss of the sample.

Exhaust Line Outlet
The fitting for connection of the exhaust line outlet is located on top of the instrument and marked “Outlet”. Since hazardous gas concentrations may still be present at the exhaust line outlet, it is recommended to connect the exhaust line to an exhaust duct.

Note: If the pump is operated at the maximum sample line distance of 50 m, the maximum exhaust line length is 25 m to avoid flow failure due to back pressure in the pump.

Note:
Do not apply power until the system is ready for start-up.
9.7 Sensor Replacement

This procedure is used to replace a depleted sensor by a fresh sensor. The replacement sensor must have the same part number as the installed sensor. Press the <esc> key on the Satellite XT keypad and enter the password to exit the Monitoring Mode. The green status LED of the Satellite XT is off, the instrument is not monitoring. A maintenance message is transmitted to the communication network.

Go to the Maintenance Menu and press the <set> key to enter.
Go to the submenu Sensor Service and press the <set> key to enter.
Follow the dialogue displayed at the bottom line of the screen - Figure 1.

<REMOVE SENSOR>
Unscrew the gland nut (F) to remove the sensor holder (B) from the flow adapter of the Extractive Module XT - Figure 2. Remove the installed sensor (G) - Figure 3. Press the <set> key to continue. Unpack the replacement sensor and remove shorting device from the sensor plug, where necessary.

<REPLACEMENT>
Insert the new sensor (G) into the socket inside the sensor holder, aligning nose of the socket, groove of the sensor, and the arrow printed on the sensor label - Figure 4. Insert the sensor holder (B) with the replacement sensor installed into the flow adapter of the instrument and fasten the gland nut (F) - Figure 5. Press the <set> key to continue.

<LOAD NEW DATA ?>
If you want the data of the new sensor to be loaded, confirm this message by pressing the <set> key.

<LOADING DATA !>
The instrument is now loading the new data from the sensor into the unit's internal memory.

<SENSOR WARM-UP>
A sensor warm-up is performed and the display of the Satellite XT shows the according message, until the displayed value is zero. The warm-up time required depends on the type of sensor. After the sensor warm-up, the instrument will automatically switch to the Monitoring Mode. The Sensor Service procedure is also described in Section 4, Maintenance.
9.8 Technical Specifications

Power Requirements
- voltage: Power is provided by the Satellite XT, power supply range 18 - 24 VDC
- consumption: max. 2.4 W

Physical Dimensions
- size: 78 x 95.5 x 50 mm (W x H x D)
  3.1" x 3.8" x 2.0" (W x H x D)
- weight: 500 g
  17.6 oz

Housing Protection Class
- IP 30

RFI / EMC
- EN 50270

Operating Conditions
- sample tubing: OD 1/4" ID 3/16" PTFE or PFA
- response time: < 30 sec. with a tubing length of 10m
- temperature: 0 ºC ... +40 ºC
  +32 ºF ... +104 ºF
- pressure: 700 ... 1300 hPa
- humidity: 20 ... 90 % r.h.

Maximum negative pressure
(at pump): -150mbar

Maximum sample line length: 50 m (see note in section 9.6)

Recommended sample line length: 10 m

Part Number
- version for toxic/corrosive gases (except C₅F₆ and SF₆): 20404-0200
- version for combustible gases: 20404-0250
- version for C₅F₆ and SF₆: 20404-0300

Warning:
Extractive Module 20404-0200 must only be used with Pyrolyzer Modules 20408-0110, 20408-0112, 20408-0116 and 20408-0122.
Extractive Module 20404-0300 must only be used with Pyrolyzer Modules 20408-0114 and 20408-0120.
10.1 Principle of Operation

The Pyrolyzer Module XT is an add-on module for monitoring gases requiring pyrolytic sample preparation for detectability. It requires both, a Satellite XT and an Extractive Module XT. The connected Satellite XT displays the module's status of operation and provides the digital interface.

Each instrument is only configured for monitoring the substance specified on the identification label. The instrument is delivered with a certain sensor installed. Reference for assignment of instrument and sensor is the serial number. These data are also documented in the Certificate of Quality Control provided with the shipment. Instrument and sensor have been gas calibrated and these specific calibration parameters are stored in the integrated data memory of sensor and instrument.

Make sure to use only sensors for the substance specified on the module's identification label. Use only sensors designed for use with the Pyrolyzer Module XT.

The Pyrolyzer Module XT is powered by a wide range power supply. The module contains a diagnosis for electronics and filament. The filament voltage is factory set and saved in the instrument. If there is a problem with the Pyrolyzer Module XT, the display of the Satellite XT reads FAULT PYROLYZER. Information on fault messages and instructions on how to correct a fault condition, are provided in Section 7, Troubleshooting.

10.2 General Instructions

Listed hereafter are several aspects that should be reflected when locating monitoring point and instrument. When placing the sampling point, the property (lighter or heavier than air) of the target gas must be considered. The instrument should be mounted as close to the monitoring location as possible to minimize sample transport time. The area immediately surrounding the sample inlet at the monitoring point must be free from objects that might hinder free flow of air. The instrument should be installed away from any possible liquid sources, extreme dust and dirt sources and should be protected against rain and sunlight.

The instrument must be mounted in an upright position. The ventilation apertures on top and rear of the instrument must not be covered. The instrument must be easily accessible for operation and there must be sufficient space above the instrument to allow sensor replacement or to open the housing for maintenance purposes.

The sample line should be run as direct as possible to improve transport time. Avoid running the sample line through areas of great temperature extremes. The sample outlet must be connected to an exhaust line and must be properly vented. Both, sample and exhaust tubing must not be crimped or placed in an area where weight could collapse the tubing.

10.3 Safety Instructions

Always disconnect the Pyrolyzer Module XT from mains power before you open the housing. The vents on top and rear of the instrument must not be covered. Do not enter any tapered or sharp items into the vents.

Use isopropanol and a soft cloth to clean the housing. Do not use any aggressive detergents.

Never use compressed air to clean the tubing when connected to the instrument. This will destroy the internal pressure switch.

WARNING: The Pyrolyzer Module XT will not respond to the target gas in conditions of less than 20 % r.h. Observe the specified operating conditions for humidity.
10.4 Instrument Design

The Pyrolyzer Module XT can only be operated in combination with the Satellite XT and the Extractive Module XT. All three modules are prepared for DIN-rail assembly.

Figure 1: Side view of the Pyrolyzer Module only.

Figure 2: Front view of the complete assembly Pyrolyzer Module, Extractive Module, and Satellite XT.

Figure 3: Top View of the complete assembly

B Sensor Holder
F Sample Line - Inlet
G Vent
H Sample Line - connection to Extractive Module XT
J DIN-rail
K Data Link - Pyrolyzer Module XT to Extractive Module XT
L Power Fitting
M Adapter for DIN-rail
10.5 Mounting

The Pyrolyzer Module XT is prepared for DIN-rail assembly. An appropriate mounting rail is delivered with the instrument. Mount this rail to a flat surface with the appropriate fasteners.

When the rail is mounted, follow the steps below:

1. Slide the Pyrolyzer Module XT onto the rail mounted to the wall, see Figure 4.

2. Slide the Extractive Module XT onto the rail at the front of the Pyrolyzer Module XT, see Figure 5.

3. Slide the Satellite XT onto the rail at the front of the Pyrolyzer Module XT, as illustrated in Figure 5.

4. Plug in male and female connector of Satellite XT and Extractive Module XT.

See also Section 9, Extractive Module XT Installation.
10.6 Tubing Connections

Tubing material is PTFE or PFA with an outer diameter of 1/4” and an inner diameter of 3/16”. Length and inner diameter of the sample line will affect the response time. Length of the sample lines should be kept as short as possible. With a sample line ID of 3/16” (4.7 mm) and a length of 10 m, the delay in response does not exceed 30 seconds.

Moisture may occur either as rain entering a line at an outdoor sampling location or as condensation from outdoor-to-indoor temperature fluctuations. In case of unusual quantities of moisture, appropriate steps must be taken to protect the instrument; consult us for respective assistance.

Sample Line Inlet

The fitting for connecting the sample line inlet is located on top of the housing and marked “Inlet”. Improper installation of the sample inlet tube may result in dilution or even complete loss of sample.

Sample Line Filter

Dust may be a result of construction as well as manufacturing activities. If unusual quantities of dust are expected at the monitoring location, an appropriate filter for the sample line must be installed. The use of a dust filter depends on the target gas, refer to the table Sensor Order Information in Section 8, Reference Information, or contact our service department. As excess amounts of dirt in the filters will reduce the sample flow and will thus affect concentration readings of the instrument, make sure to regularly change sample line filters (every 1 to 6 months, depending on the ambient conditions). For order information refer to Section 8, Reference Information, Spares and Accessories.

Module Connections

- sample tubing.
- sensor connection between Extractive Module XT and Satellite XT.
- data link connecting Pyrolyzer Module XT and Extractive Module XT / Satellite XT.

10.7 Data Link

Plug the cable (pictured green) from the bottom plate of the Pyrolyzer Module into the connector in the bottom of the Extractive Module XT.

10.8 Power Connection

Use a standard power cable (obey any local regulations) and bring it through the power cable fitting into the module. Open the module from the top and connect

---

Satellite XT R Version 10-4
Pyrolyzer XT with bypass for C5F8

When the Pyrolyzer is used with C5F8, the flow needs to be adjusted at the outlet of the Extractive Module XT to 0.5 l/min or 30 l/h.

On the underside of the Extractive Module XT is the interconnection to the Pyrolyzer Module XT, and next to it, two small holes which gives access to two pushbuttons. The left hand button will increase the flow, and the right hand button will decrease it.

The adjustment is required as the internal flow resistance is different to the other types of the Pyrolyzer Module XT and this resistance would damage the Extractive Module XT.
10.9 Technical Specifications

Power requirements

Voltage  90 ... 240 VAC  
Consumption  approx. 22 W / 2.13 A  

Physical dimensions

Size:  223 x 97 x 100 mm (W x H x D)  
5,7" x 3,8" x 3,9" (W x H x D)  
Weight:  1800 g  
4 lbs  

Housing Protection Class  IP 30  

RFI / EMC  EN 50270  
EN 61010-1  

Operating Conditions

Sample tubing  OD 1/4" ID 3/16"  
Response time  < 30 sec. with a tubing length of  
10m  
Temperature  0 °C ... +40 °C  
+32 °F ... +104 °F  
Pressure  700 ... 1300 hPa  
Humidity  20 ... 90 % r.h.  

Note: For applications where the humidity is less than 20 % r.h., consider using the MST Sample Conditioning System - Humidifier, part number 20408-4010.  

Minimum Oxygen content of sample  3 %v/v  

Part Numbers

Pyrolyzer Module XT NF3  20408-0110  
Pyrolyzer Module XT 1,2-DCE  20408-0112  
Pyrolyzer Module XT SF6  20408-0114  
Pyrolyzer Module XT CH3F  20408-0116  
Pyrolyzer Module XT C5F8  20408-0120  
Pyrolyzer Module XT C4F6  20408-0122  

Warning:  
Pyrolyzer Modules 20408-0110, 20408-0112, 20408-0114 and 20408-0116 must only be used with Extractive Module 20404-0200.  
Pyrolyzer Modules 20408-0114 and 20408-0120 must only be used with Extractive Module 20404-0300.
Find out more
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