

MST Satellite XT 4-20 mA Versions

- MST Satellite XT 9602-0200 4-20 mA
- MST Satellite XT 9602-0205 4-20 mA/R
- MST Satellite XT 9602-0250 4-20 mA/C

Including Options:

- MST Extractive Module XT
- MST Pyrolyzer Module XT



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This section provides basic understanding of the instrument and its operation.

1.1 Principle of Operation

The Satellite XT is a gas monitoring instrument especially designed for continuous surveillance of hazardous gas concentrations. The instrument is designed to interface with standard (0) 4 ... 20 mA alarm or control systems.

Target gas and measuring range depend on the type of sensor chosen. The sensor comes with the specific data in its internal data memory. When a new sensor is inserted, these data are loaded into the instrument's internal memory.

Satellite XT versions 4-20 mA and 4-20 mA/R use electrochemical sensors for the surveillance of toxic and corrosive gases at TLV levels (TLV = Threshold Limit Value). The sensor output signal is amplified electronically, digitised and the resulting concentration value is transmitted to the communication network.

The Satellite XT 4-20 mA/C is used for monitoring combustible gases and vapours. This instrument version uses catalytic sensors and is factory calibrated for the detection of methane in air mixtures with concentrations up to 5 %-vol. (100 % LEL Lower Explosion Limit). The sensor output signal is amplified electronically, digitised and the resulting concentration value is transmitted to the communication network. To allow the surveillance of a variety of other combustible gases, a correction factor called "K-factor" can be entered. Refer to section 8 for detectable gases and their corresponding K-factors.

The Satellite XT 4-20mA/R includes the relay option and provides 3 single-pole single-throw relays for activation of external alarm devices. When the actual 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.

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

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 provide on-line preventive maintenance information identifying electronics or sensor problems. For example a sensor selftest is performed every 24 hours. The sensor selftest is not available with instruments using oxygen sensors or catalytic sensors.

1.2.1.1 Alarm Level Settings

The settings for Alarm Level 1 and Alarm Level 2 are automatically loaded when installing the sensor. Standard settings are 1x and 2x TLV or 20 and 40 % LEL for the target gas. The Alarm Setup function in the Configuration Menu allows the user to change the alarm levels as required.

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.

Instruments with relay option will additionally trigger the associated alarm relays.

1.2.1.2 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 actuating the <set> key. If the password protection is enabled, the password must be entered (see Configuration Menu / Security Function).

Alarm Reset is not possible, if the alarm condition is still present.

1.2.1.3 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:

Actuate 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:

Actuate 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. A maintenance output signal is transmitted to external control systems. This maintenance output signal can be configured either steady, i.e. 2.4 mA, or alternating, i.e. 2.4 to 4.0 mA, 1 Hz.

Depending on the configuration, instruments with relay option will additionally activate the fault relay.

1.2.3 Warning Condition

A warning condition indicates that the Satellite XT requires some attention, but the instrument is still able to monitor and operate as programmed.

The following will occur when the Satellite XT detects a warning condition:

- the green status LED is flashing
- an alternating signal (2.8 to 4.0 mA, 0.1 Hz) is sent to external control systems; depending on the configuration, this function can be enabled or disabled.
- instruments with relay option will additionally activate the fault relay, depending on the configuration.

1.2.3.1 Reset Warning Condition

Actuate 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 Satellite XT from operating properly and interferes with the ability to monitor or document concentration alarms.

When the instrument has detected an instrument fault, a steady output signal in the range of 0 and 2.0 mA is sent to attached control systems. The green status LED is off. The LCD display is flashing while indicating the specific fault message.

Instruments with relay option will additionally activate the fault relay.

The Satellite XT 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 Satellite XT with a known concentration of the target gas or manually by entering a new correction K-Factor.

1.3.3 Configuration Menu

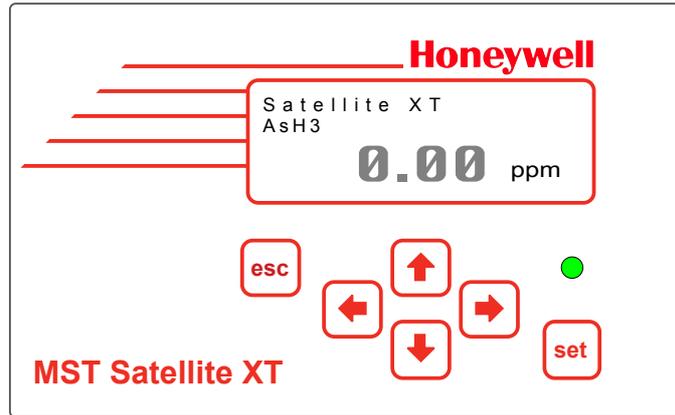
Use this function to configure the Satellite XT and to program instrument and monitoring parameters to suit individual requirements.



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 Satellite XT is
- the graphic display,
 - the keypad consisting of six keys,
 - the green status LED above the Set Key.



1.4.1 Keypad Functions

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

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

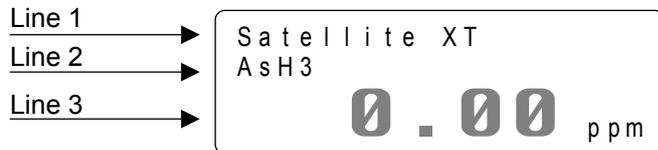
To move forwards and backwards in the menu, use the cursor keys <down> and <up>. Select a function by actuating the <set> key.

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 actuating the <esc> key.

1.4.2 Graphic Display

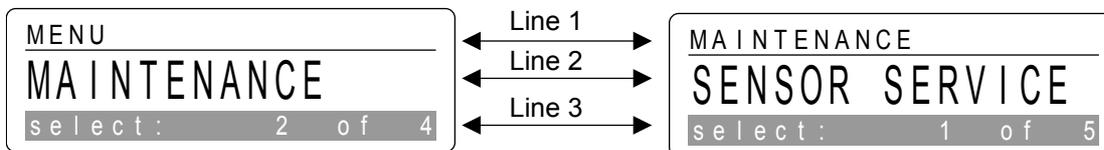
Depending on the operating mode the structure of the graphic display is different. Three basic versions are illustrated and explained below. A detailed description is given in the according sections.

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 submenu 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.

Note:

The number of selection possibilities is subject to the instrument version and may be different than indicated in this guide to operation.

1.5 Technical Specifications

| Satellite XT Version Part Number | 4-20 mA 9602-0200 | 4-20 mA/R 9602-0205 | 4-20 mA/C 9602-0250 |
|--|--|------------------------|------------------------|
| Sensor Type used | | | |
| electrochemical | X | X | |
| catalytic | | | X |
| Power Requirements | | | |
| voltage | 12 ... 24 VDC | | |
| consumption | max. 1 W | max. 1.8 W | max. 1.4 W |
| Analog Signal Output | | | |
| monitoring mode | 4 ... 20 mA | | |
| warning mode | 2.8 ... 4 mA, 0.1 Hz | | |
| maintenance mode | 2.4 ... 4 mA, 1 Hz | | |
| fault range | 0 ... 2 mA | | |
| Wiring | | | |
| analog interface | | | |
| 3-wire shielded cable 3x1.0 mm ² / 17 AWG (Instrument delivered with 2m of cable attached) | X | X | X |
| relay contacts | | | |
| 6-wire shielded cable 6x0.25mm ² / 23 AWG (Instrument delivered with 3m of cable attached) | | X | |
| Relay Outputs | | | |
| contacts 3 x SPST (Single-Pole Single-Throw) max. ratings 250 VAC / 30 VDC, 2A | | X | |
| Graphic Display | 122 x 32 dots with backlight | | |
| Status LED | green | | |
| Keypad | 6 touch-sensitive membrane function keys | | |
| Physical Dimensions | | | |
| size (LxWxH) | 145 x 95 x 50 mm 5.7 x 3.7 x 2.0 inches | | |
| weight | 480 grams 17 ounces | 650 grams 23 ounces | 520 grams 18 ounces |
| Mounting | DIN-rail mounting | | |
| Protection Class | IP 52 Option: IP 65 | | |
| RFI / EMC | EN 55022 EN 50082-2 | | |
| Operating Conditions | | | |
| temperature | -20 °C ... +40 °C | | -4 ... +104 °F |
| pressure | 700 ... 1300 hPa | | |
| humidity | 20 ... 90 % r.h. | | |

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. The maximum distance between instrument and junction box is 2 meters (6 feet).

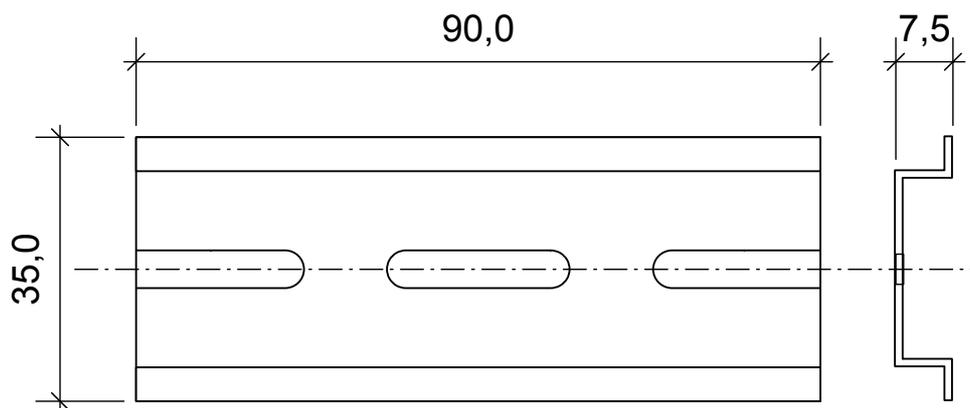
Regarding the power requirements and operating conditions, please follow the specifications indicated in Section 1, Technical Specifications, for wiring instructions refer to Section 2, Wiring.

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. Shipped with each instrument is the standard mounting rail, suitable for wall mounting. Mount the DIN-rail to a wall and fasten the instrument with the sensor downwards and the display facing the front.

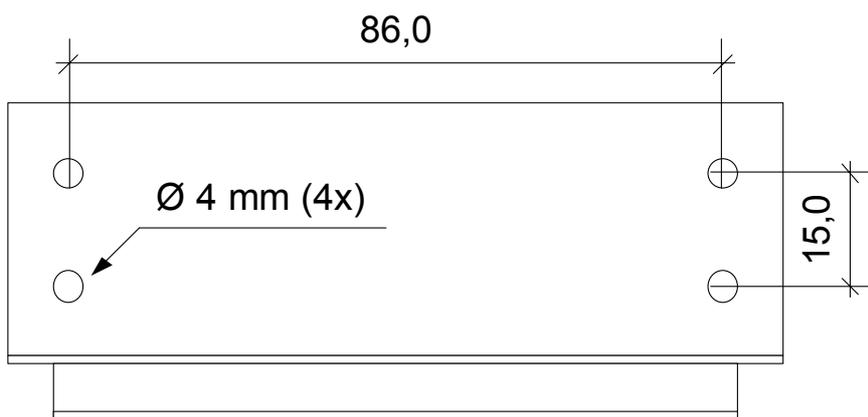
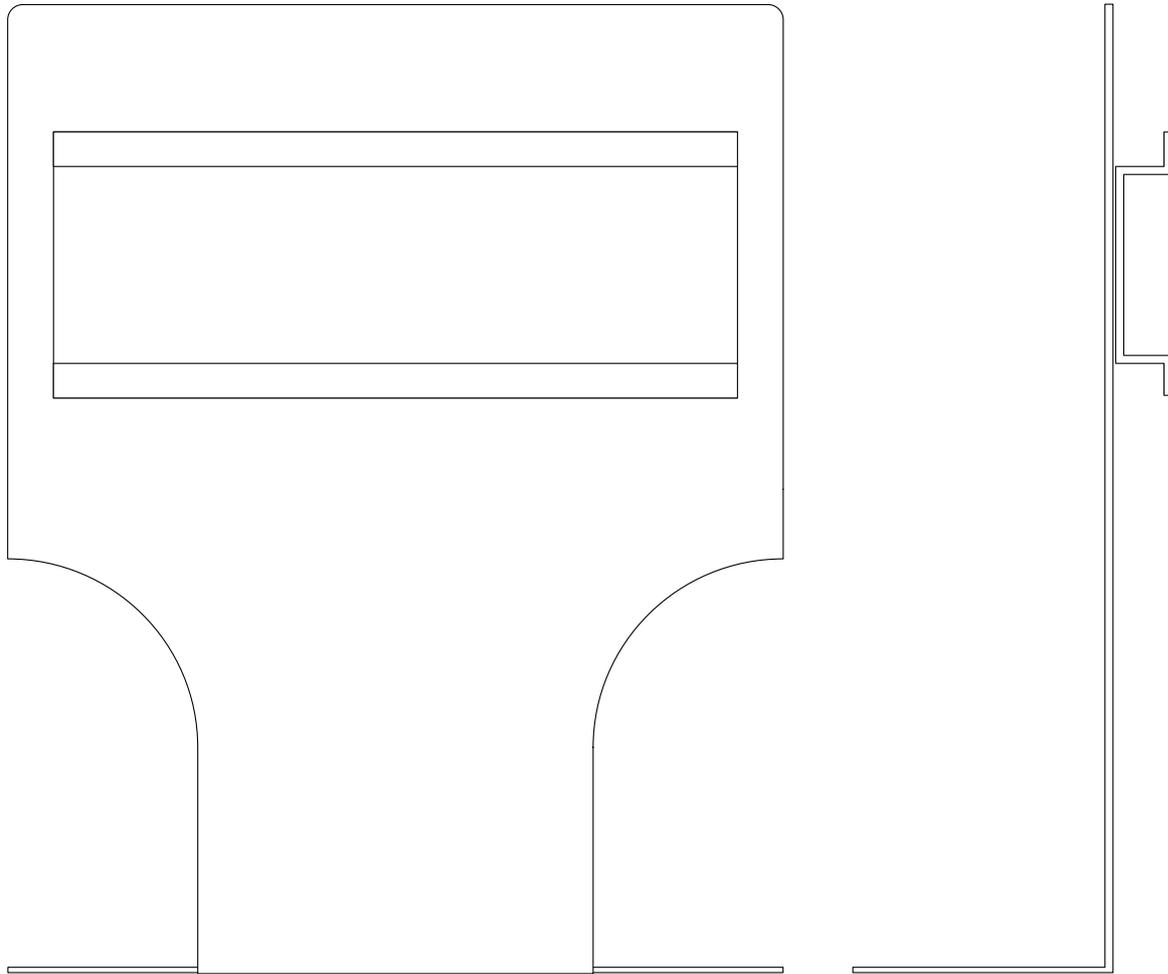
Attach the wires to the junction box according to the wiring diagram provided in the course of this section.



Standard mounting rail (P/N 9602.0050.10.03)

Installation and Start-Up - Section 2

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 9602.0051.10.01)

Note:

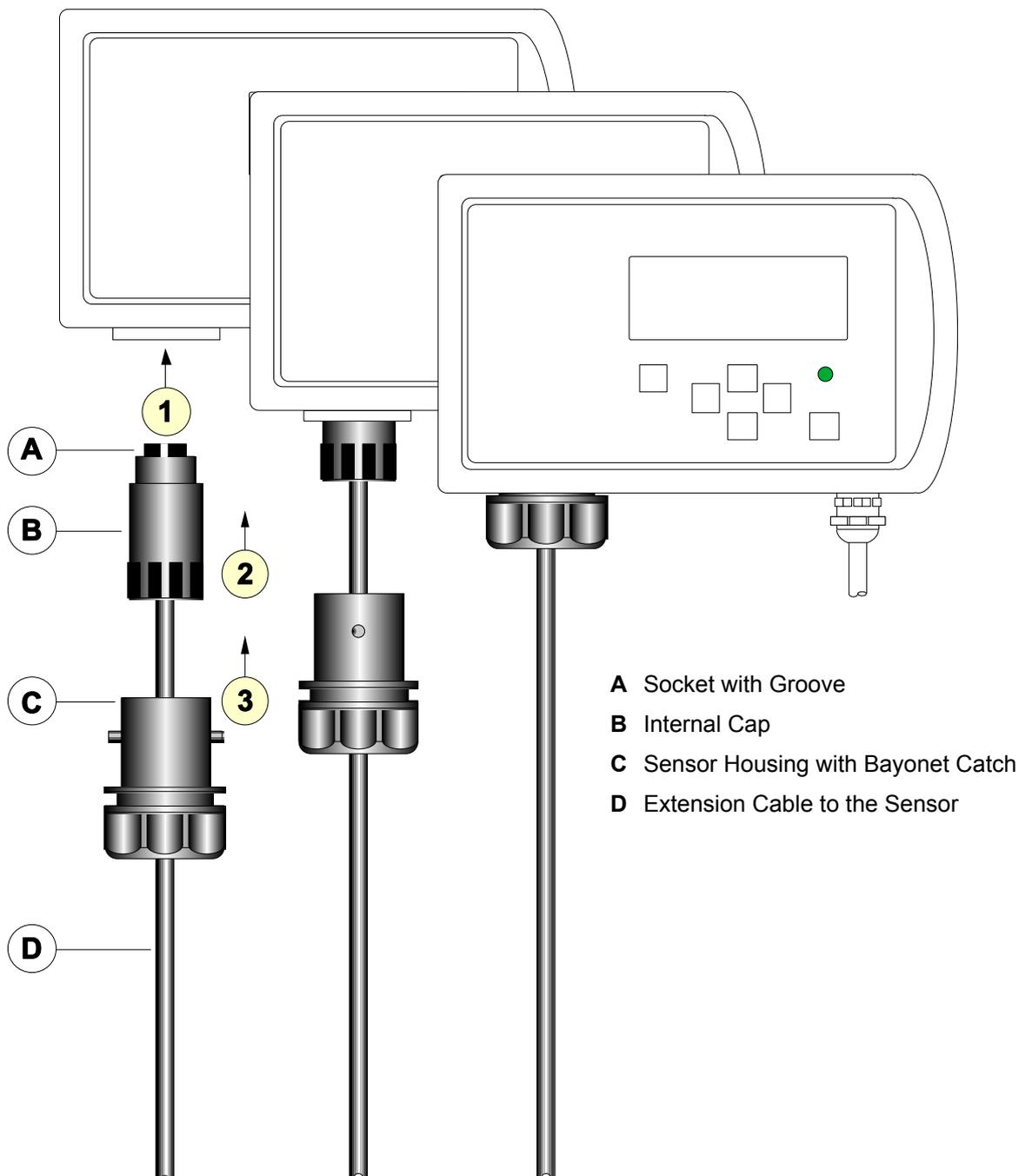
Do not apply power until system is ready for start-up!

2.3 Duct Mounting

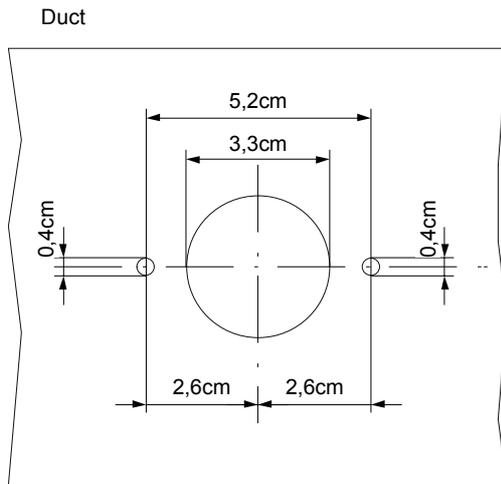
Observe the guidelines for installation of the instrument. For assembly and installation of the sensor extension see the schematics below and overleaf.

2.3.1 Connecting the Sensor Extension to the Instrument

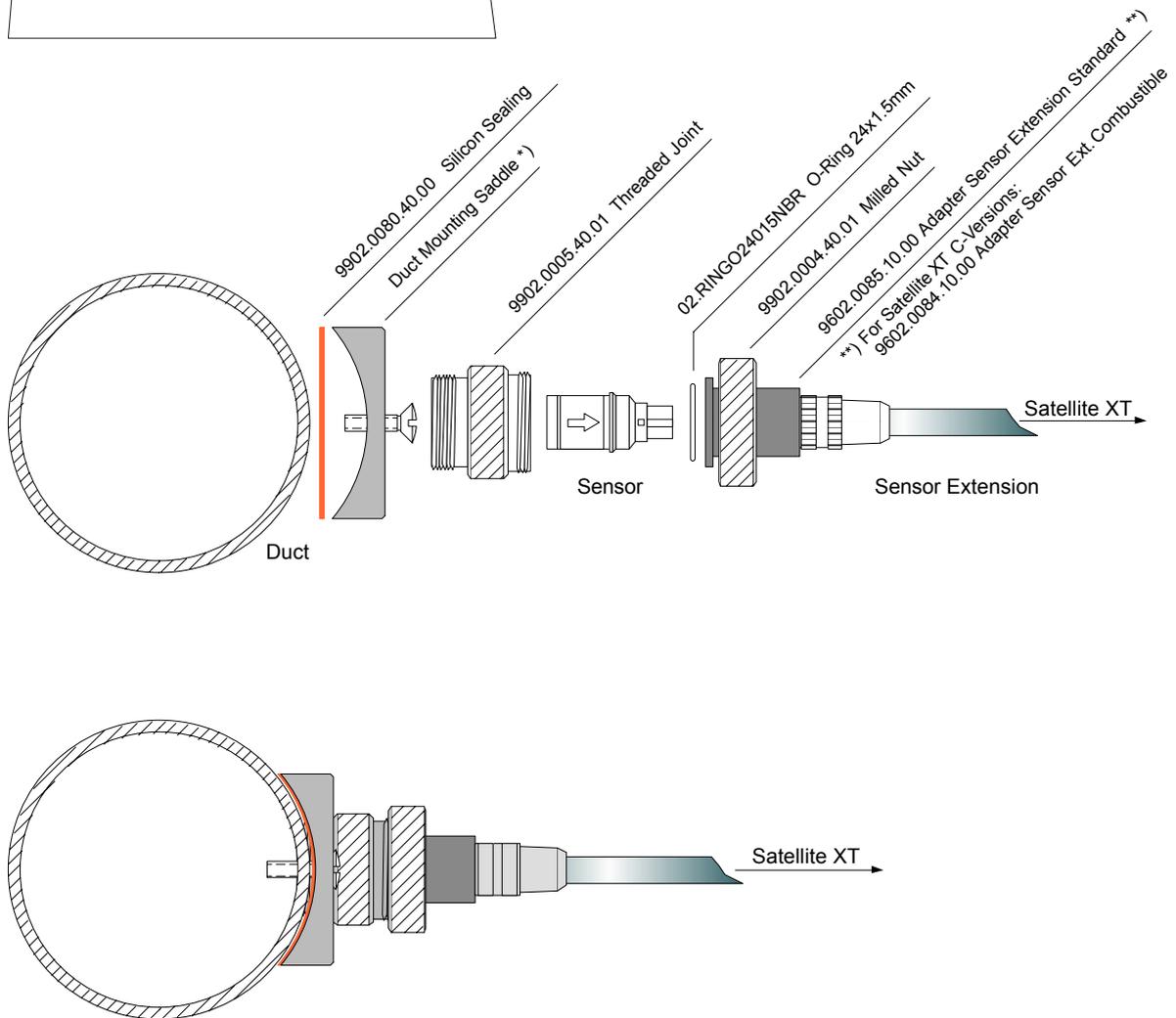
1. Connect the Socket (A) to the plug in the sensor compartment located at the bottom of the Satellite XT. The groove of the Socket must face to the front.
2. Screw in the Internal Cap (B) and fasten it hand-tight.
3. Insert the Sensor Housing (C) with the nose of the Bayonet Catch facing to the front. Lock the Bayonet Catch with a quarter-turn right.



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 Network Wiring

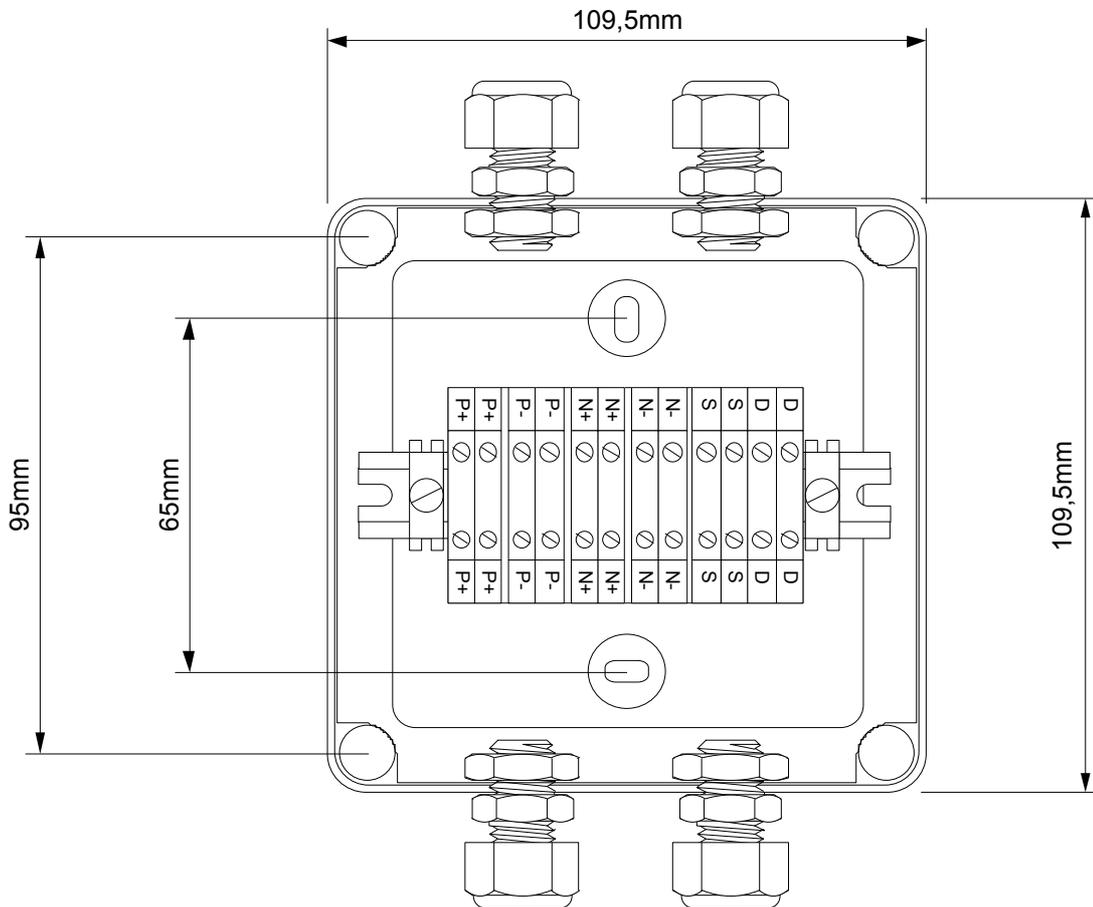
The instrument is shipped with 2 meters (6 feet) of permanently attached 3-wire shielded cable extending from the bottom of the unit.

The open end of the cable should be terminated in a junction box:

- whitemarked D+to D
- brownmarked -to P-
- greenmarked P+to P+
- cable shieldto S.

To interface with external control systems, use of a 3-wire shielded cable 3x1.0 mm² / 17 AWG is recommended.

| Junction Box Terminals | | |
|------------------------|--------|---------------------|
| D | white | 4-20 mA Output |
| P- | brown | 0 V (common) |
| P+ | green | 12 ... 24 VDC Power |
| S | shield | cable shield |



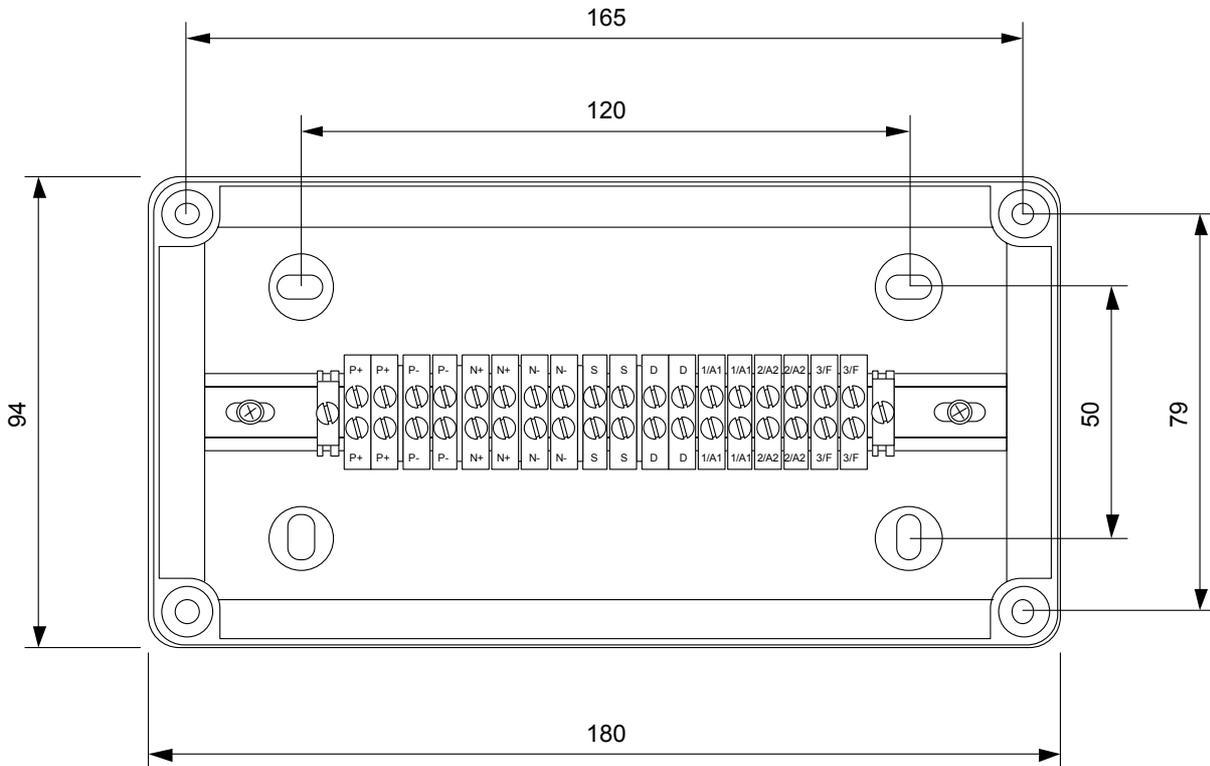
Junction Box 2 nodes, standard

2.5 Relay Wiring

Instruments with relay option have an additional 6-wire shielded cable extending from the bottom of the instrument. This cable has a length of 3 meters and is also permanently attached to the instrument.

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

| 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 |

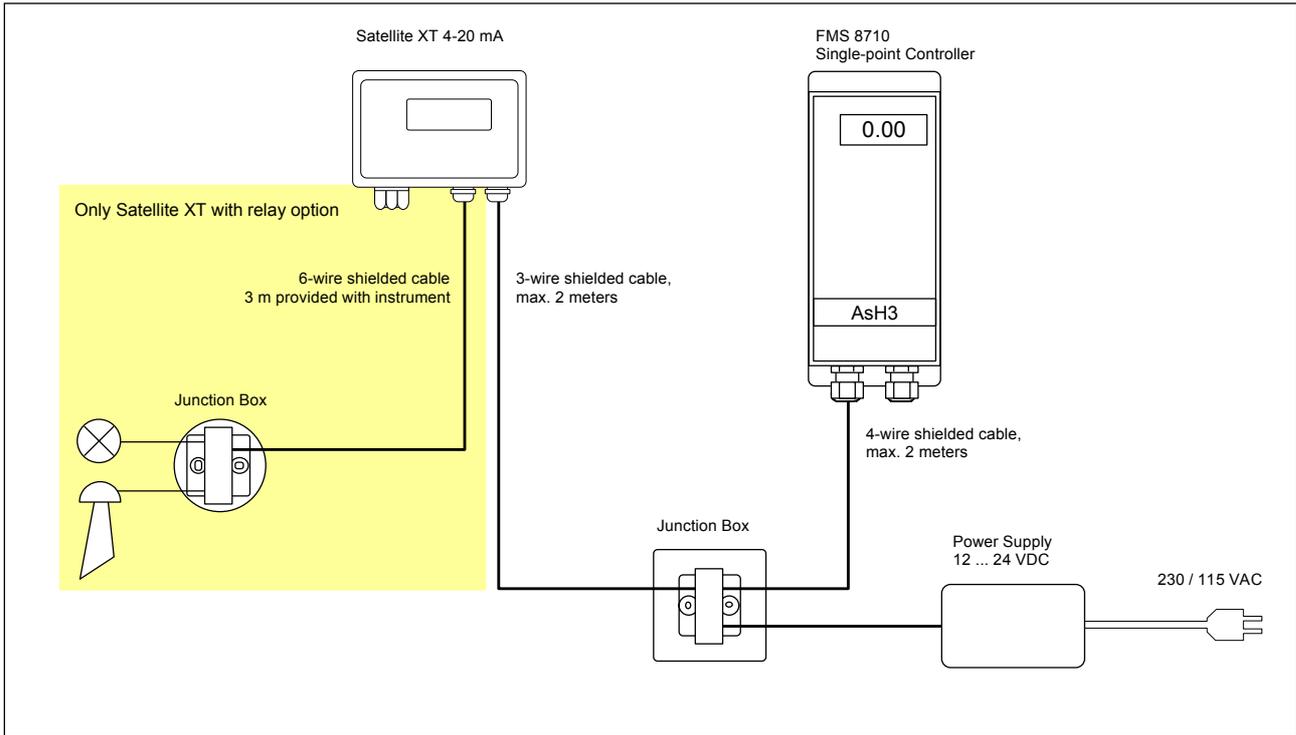


Junction Box for instruments with Relay Option (1 node, R-Version)

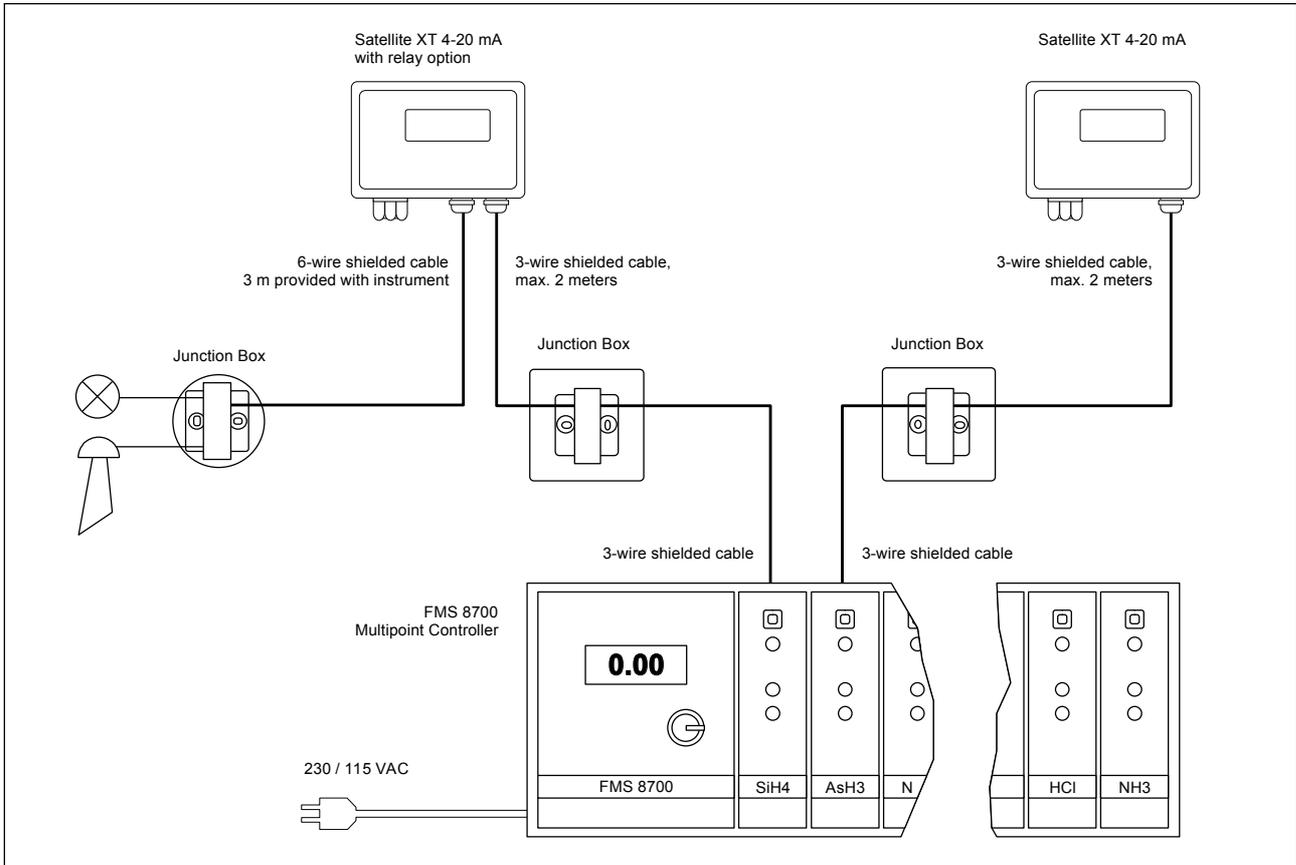
Note:



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.

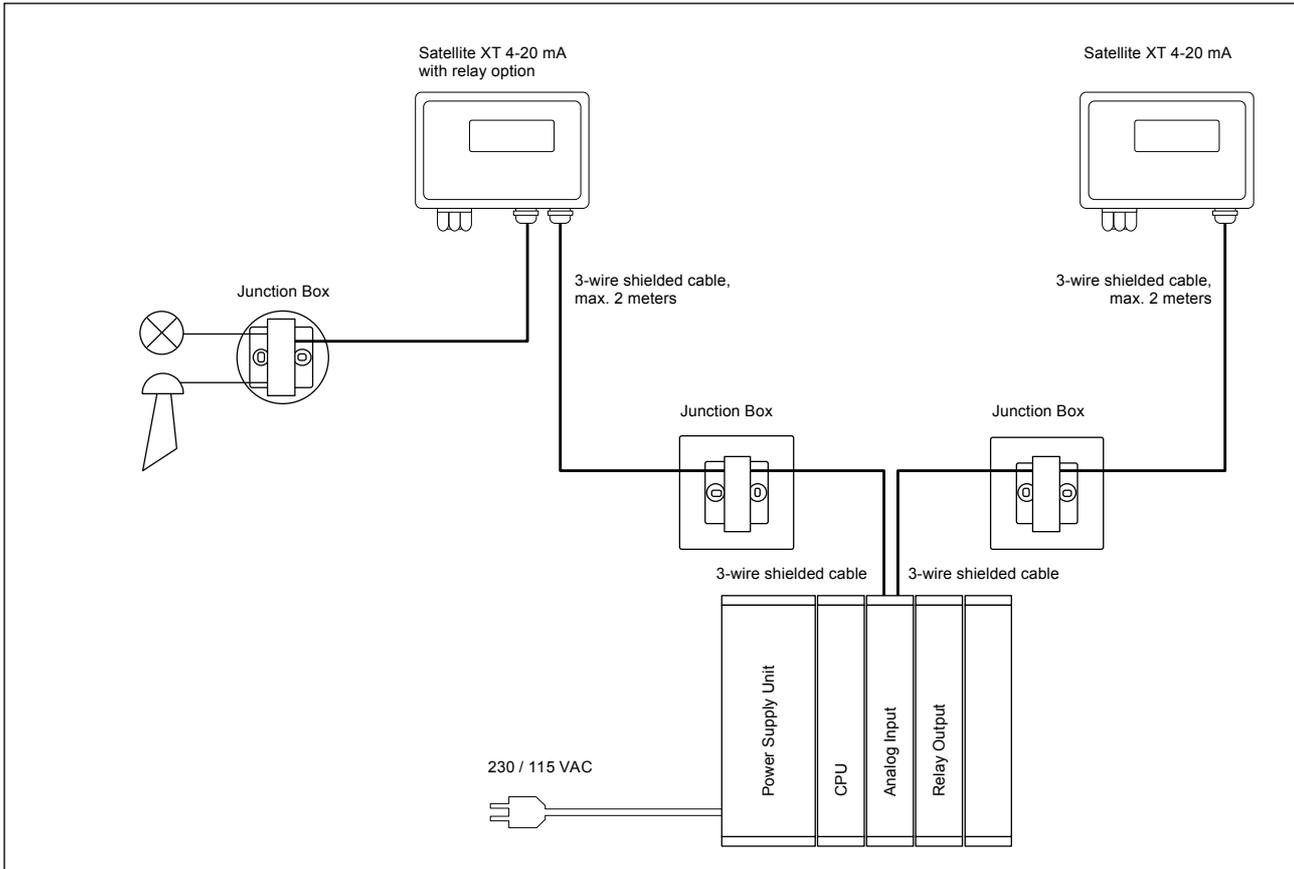


Wiring Diagram Satellite XT 4-20 mA and FMS 8710 Single-point controller



Wiring Diagram Satellite XT 4-20 mA and FMS 8700 Multipoint Controller

Installation and Start-Up - Section 2



Wiring Diagram Satellite XT 4-20 mA and PLC

2.6 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.

- - - - FAULT - - - -
 NO SENSOR !

For applications without sensor extension open the bayonet catch of the sensor housing located at 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 types require this strap or link.

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!
 1 . 23 p p m

Satellite XT
 A s H 3
 0 . 0 0 p p m

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 catalytic sensors:

Zero Adjustment must be performed prior to start-up. It is recommended to repeat Zero Adjustment every 4 to 6 weeks. For details refer to Section 5, Calibration.

Instruments with oxygen sensors:

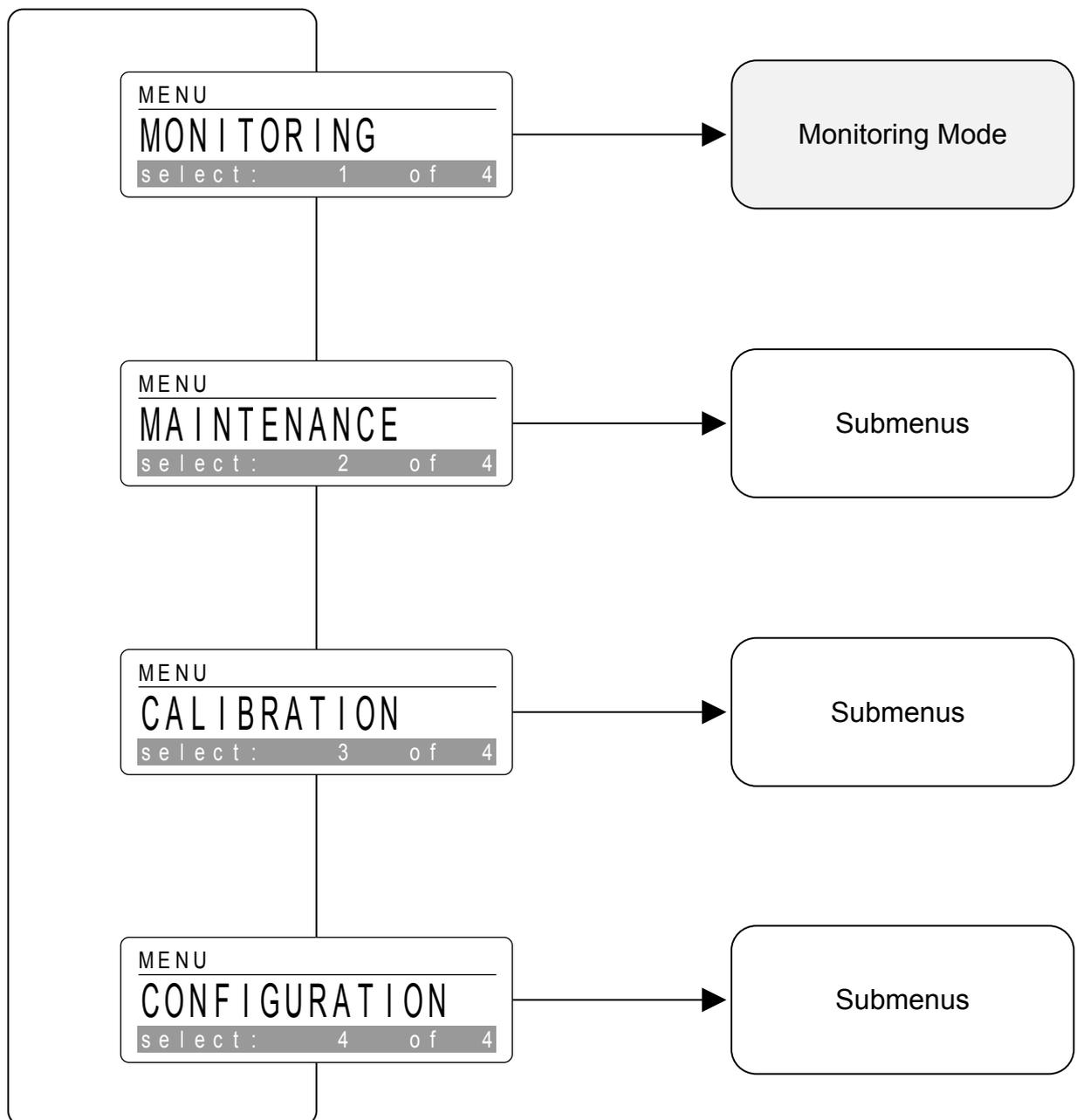
Span Adjustment must be performed prior to start-up. It is recommended to repeat Span Adjustment every 4 to 6 weeks. For details refer to Section 5, Calibration.

This section explains the different monitoring conditions and the submenus available under the Main Menu.

3.1 The Main Menu Screens

When the <esc> key is actuated, 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. Actuate the cursor keys <up> or <down> to move forwards and backwards in the Main Menu. Actuate the <set> key to select a submenu. Actuate the <esc> key to go back to the Main Menu.

To return to the Monitoring Mode, go to the menu 'MONITORING' and actuate <set> to select. The display shows the monitoring screen again and the illuminated green LED indicates, that the instrument is in the Monitoring Mode.



Main Menu - Section 3

MENU

MONITORING

select: 1 of 4

Main Menu - Monitoring

The instrument is in the operating mode Maintenance and the green LED is off.

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

Actuate the <set> key to enter the Monitoring Mode.

Satellite XT
AsH₃

0.00 ppm

<Normal Condition>

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

Satellite XT
AsH₃

0.07 AL 1 ppm

<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)

Satellite XT
AsH₃

0.12 AL 2 AL 1 ppm

<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)

MENU
MAINTENANCE
select: 2 of 4

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.

Submenus - Maintenance

MAINTENANCE
SENSOR SERVICE
select: 1 of 5

Sensor Service
screen 1 of 5

MAINTENANCE
DEVICE INFOS
select: 2 of 5

Device Infos
screen 2 of 5

MAINTENANCE
SENSOR INFOS
select: 3 of 5

Sensor Infos
screen 3 of 5

MAINTENANCE
RESET DEVICE
select: 4 of 5

Reset Device
screen 4 of 5

MAINTENANCE
SERVICE
select: 5 of 5

Service
screen 5 of 5

Main Menu - Section 3

MENU

CALIBRATION

select: 3 of 4

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.

Main Menu - Calibration

Submenus - Calibration

CALIBRATION

GAS CALIBRATION

select: 1 of 3

Gas Calibration

screen 1 of 3

CALIBRATION

MANUAL K-FACTOR

select: 2 of 3

Manual K-Factor

screen 2 of 3

CALIBRATION

CURRENT OUTPUT

select: 3 of 3

Current Output

screen 3 of 3

MENU
CONFIGURATION
 select: 4 of 4

Main Menu - Configuration
 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.

Submenus - Configuration

CONFIGURATION
ALARM SETTINGS
 select: 1 of 13

Alarm Settings
 screen 1 of 13

CONFIGURATION
LANGUAGE
 select: 2 of 13

Language
 screen 2 of 13

CONFIGURATION
DATE FORMAT
 select: 3 of 13

Date Format
 screen 3 of 13

CONFIGURATION
AUTO SELFTEST
 select: 4 of 13

Auto Selftest
 screen 4 of 13

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

CONFIGURATION
SECURITY
 select: 5 of 13

Security
 screen 5 of 13

CONFIGURATION
PASSWORD
 select: 6 of 13

Password
 screen 6 of 13

continued

continued

Main Menu - Configuration

Submenus - Configuration

Location
screen 7 of 13

New Sensor Type
screen 8 of 13

Gas Name
screen 9 of 13

Maintenance Signal
screen 10 of 13

Warning Signal
screen 11 of 13

4-20 mA Range
screen 12 of 13

Relays
screen 13 of 13

CONF IGURATION
LOCATION
select: 7 of 13

CONF IGURATION
NEW SENSOR TYPE
select: 8 of 13

CONF IGURATION
GAS NAME
select: 9 of 13

CONF IGURATION
MAINT. SIGNAL
select: 10 of 13

CONF IGURATION
WARNING SIGNAL
select: 11 of 13

CONF IGURATION
4 - 20 mA RANGE
select: 12 of 13

CONF IGURATION
RELAYS
select: 13 of 13

! This submenu is only available for instruments with relay option.

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.

Submenus - Maintenance



Sensor Service
 screen 1 of 5



Device Infos
 screen 2 of 5



Sensor Infos
 screen 3 of 5



Reset Device
 screen 4 of 5



Service
 screen 5 of 5

Maintenance - Section 4

MAINTENANCE
SENSOR SERVICE
select: 1 of 5

Sensor Service
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.

SENSOR SERVICE
REMOVE SENSOR
<set> when ready

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

SENSOR SERVICE
REPLACEMENT
please insert !

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

SENSOR SERVICE
LOAD NEW DATA ?
<set> to confirm

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

SENSOR SERVICE
LOADING DATA !
please wait !

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

SENSOR WARM-UP!
1.23 ppm

<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.

Satellite XT
AsH3
0.00 ppm

<Normal Monitoring Condition>
The instrument will automatically switch to the Monitoring Mode when the sensor service procedure is finished.
Only instruments with catalytic sensors:
If the displayed value is not zero, a zero adjustment must be performed; refer to section 5, Calibration.

Note:

When a new sensor is installed the K-factor will automatically revert to the default value 1.00. If individual settings are required, they must be entered again; refer to section 5, Calibration. Catalytic sensors are calibrated for methane. When monitoring for other combustible gases, a K-factor must be entered; a list of detectable gases and K-factors is provided in section 8.

```

MAINTENANCE
DEVI CE INFOS
select: 2 of 5
    
```

Device Infos
 Used to obtain instrument specific information, i.e. software version, and ID number.
 In general these data 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.

```

DEVI CE INFOS
SW: SXT_Xx.XX
showing: 1 of 2
    
```

<Actual Software Version>
 The version of the software presently installed is shown.

```

DEVI CE INFOS
ID: 000123456789
showing: 2 of 2
    
```

<Specific Identification Number>
 The instrument's specific identification number (ID) is shown.

MAINTENANCE
SENSOR INFOS
select: 3 of 5

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.

SENSOR INFOS
PART NUMBER
select: 1 of 5

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

PART NUMBER
9602-6000
<esc> to exit !

<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.

SENSOR INFOS
SERIAL NUMBER
select: 2 of 5

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

SERIAL NUMBER
31
<esc> to exit !

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

SENSOR INFOS
1st CALIBRATION
select: 3 of 5

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

1st CALIBRATION
27.09.2006
<esc> to exit !

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

continued

Sensor Infos

continued

```

SENSOR INFOS
SENSITIVITY
select: 4 of 5
    
```

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

```

SENSITIVITY
123 nA/ppm
<esc> to exit !
    
```

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

```

SENSOR INFOS
REVISION NUMBER
select: 5 of 5
    
```

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

```

REVISION NUMBER
0
<esc> to exit !
    
```

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

Maintenance - Section 4

MAINTENANCE

RESET DEVICE

select: 4 of 5

Reset Device

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

RESET DEVICE

ARE YOU SURE ?

<esc> to exit !

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!

1.23 ppm

<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.

Satellite XT
AsH3

0.00 ppm

<Normal Monitoring Condition>

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

MAINTENANCE

SERVICE

select: 5 of 5

Service

This submenu is used exclusively by trained Service Personnel.
The functions are password protected.

SERVICE

PASSWORD: ***

please enter !

This section describes calibration procedures for the Satellite XT. Calibration can be performed either automatically by a dynamic gas calibration or manually by entering a calculated correction factor called K-factor. Also included in this section are the electronic calibration procedures for the (0) 4-20 mA analog interface.



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.

Submenus - Calibration



Gas Calibration
screen 1 of 3



Manual K-Factor
screen 2 of 3



Current Output
screen 3 of 3

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.

Catalytic sensors must be protected from silicone vapours, which may permanently reduce the sensors' sensitivity.

CALIBRATION
GAS CALIBRATION
select: 1 of 3

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 TLV for the target gas.

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

GAS CALIBRATION
ZERO ADJUST
select: 1 of 2

Zero Adjust

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

Zero adjustment applies for all sensors except oxygen sensors.

ZERO ADJUST
APPLY AIR !
use clean air !

Apply Air !

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

ZERO ADJUST
0.01 ppm
Value stable ?

<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.

ZERO ADJUST
0.00 ppm
Value o.k. ?

<Re-adjusted Zero Point>

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

ZERO ADJUST
SAVE ?
<set> to confirm

Save ?

Actuate the <set> key to save the new zero point and store it in the unit's internal memory.

continued

continued

Gas Calibration

GAS CALIBRATION
SPAN ADJUST
 select: 2 of 2

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

SPAN ADJUST
AsH3
 is calibration gas !

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

SPAN ADJUST
0.05 ppm
 enter concentration

<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.

SPAN ADJUST
APPLY GAS !
 use calibration gas !

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.

SPAN ADJUST
0.04 ppm
 Value stable ?

<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.

SPAN ADJUST
0.05 ppm
 Value o.k. ?

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

SPAN ADJUST
SAVE ?
 <set> to confirm

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

SPAN ADJUST
REMOVE GAS !
 Value saved !

Remove Gas !
 Stop the calibration gas flow. Remove gas and calibration cap. Allow several minutes for the sensor to clear.

```
CALIBRATION
MANUAL K-FACTOR
select: 2 of 3
```

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.

```
MANUAL K-FACTOR
```

```
1.00
```

```
please enter !
```

<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.

Only instruments using catalytic sensors:

Catalytic sensors are calibrated for methane. When monitoring for other combustible gases, a K-factor must be entered; a list of detectable gases and their K-factors is provided in section 8.

```

CALIBRATION
CURRENT OUTPUT
select: 3 of 3
    
```

Current Output

The 4-20 mA signal output range of the instrument is pre-programmed to correspond to the nominal range of the target gas with 4 mA representing the zero concentration and 20 mA representing the full scale concentration. This submenu provides the possibility to perform functional tests and to scale external control systems. To select a submenu actuate the <set> key to enter or use the cursor keys <up> and <down> to move backwards or forwards.

```

CURRENT OUTPUT
SET 0 mA
select: 1 of 3
    
```

Set 0 mA

Allows the user to simulate a fault condition. Use the <set> key to enter.

```

CURRENT OUTPUT
0 mA set !
<esc> to exit !
    
```

0 mA set !

An analog signal output of 0 mA is now transmitted to external control systems. Use the <esc> key to exit.

```

CURRENT OUTPUT
SET 4 mA
select: 2 of 3
    
```

Set 4 mA

Allows the user to scale external control systems with an output signal of 4 mA representing the zero concentration value. Use the <set> key to enter.

```

CURRENT OUTPUT
4 mA set !
<esc> to exit !
    
```

4 mA set !

An analog signal output of 4 mA is now transmitted to external control systems. Use the <esc> key to exit.

```

CURRENT OUTPUT
SET 20 mA
select: 3 of 3
    
```

Set 20 mA

Allows the user to scale external control systems with an output signal of 20 mA representing the full scale concentration value. This submenu also serves to simulate alarm conditions. Use the <set> key to enter

```

CURRENT OUTPUT
20 mA set !
<esc> to exit !
    
```

20 mA set !

An analog signal output of 20 mA is now transmitted to external control systems. Use the <esc> key to exit.

This section describes the instrument's default configuration and procedures how to adapt it to individual requirements.



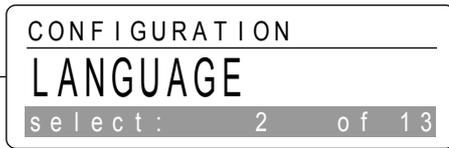
Main Menu - Configuration

The instrument is in the Maintenance Mode and the green LED is off.
 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.

Submenus - Configuration



Alarm Settings
 screen 1 of 13



Language
 screen 2 of 13



Date Format
 screen 3 of 13



Auto Selftest
 screen 4 of 13

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



Security
 screen 5 of 13



Password
 screen 6 of 13

continued

Main Menu - Configuration

Submenus - Configuration

Location
screen 7 of 13

New Sensor Type
screen 8 of 13

Gas Name
screen 9 of 13

Maintenance Signal
screen 10 of 13

Warning Signal
screen 11 of 13

4-20 mA Range
screen 12 of 13

Relays
screen 13 of 13

continued



CONF I G U R A T I O N
LOCATION
select: 7 of 13

CONF I G U R A T I O N
NEW SENSOR TYPE
select: 8 of 13

CONF I G U R A T I O N
GAS NAME
select: 9 of 13

CONF I G U R A T I O N
MAINT. SIGNAL
select: 10 of 13

CONF I G U R A T I O N
WARNING SIGNAL
select: 11 of 13

CONF I G U R A T I O N
4 - 20 mA RANGE
select: 12 of 13

CONF I G U R A T I O N
RELAYS
select: 13 of 13

! This submenu is only available for instruments with relay option.

```
CONFIGURATION
ALARM SETTINGS
select: 1 of 13
```

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 SETTINGS
ALARM 1
select: 1 of 2
```

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 SETTINGS
ALARM 2
select: 2 of 2
```

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

Configuration - Section 6

ALARM SETTINGS

ALARM 1

select: 1 of 2

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

Alarm 1

ALARM 1

ALARM 1 STATE

select: 1 of 4

Used to enable / disable the Alarm 1 activation.

Alarm 1 State

ALARM 1

ALARM 1 LEVEL

select: 2 of 4

Used to set individual alarm levels for Alarm 1 activation.

Alarm 1 Level

ALARM 1

ALARM 1 TRIGGER

select: 3 of 4

Used to define the trigger condition for Alarm 1 activation.

Alarm 1 Trigger

ALARM 1

ALARM 1 LATCH

select: 4 of 4

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

Alarm 1 Latch

```
ALARM 1
ALARM 1 STATE
select: 1 of 4
```

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.

```
ALARM 1 STATE
DISABLED
select: 1 of 2
```

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

```
ALARM 1 STATE
ENABLED
select: 2 of 2
```

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

```
ALARM 1
ALARM 1 LEVEL
select: 2 of 4
```

Alarm 1 Level
Used to set individual alarm levels for Alarm 1 activation. Default setting is 1 x TLV respectively 20 % LEL for the target gas. Actuate the <set> key to enter and show the actual setting.

```
ALARM 1 LEVEL
0.05 ppm
please enter !
```

<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, actuate the <set> key to confirm or <esc> to exit.

Configuration - Section 6

ALARM 1

ALARM 1 TRIGGER

select: 3 of 4

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.

ALARM 1 TRIGGER

GREATER THAN

select: 1 of 2

Greater Than

Defines that an Alarm 1 condition will be indicated when the actual gas concentration exceeds the preset level for Alarm 1.

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

ALARM 1 TRIGGER

LESS THAN

select: 2 of 2

Less Than

Defines that an Alarm 1 condition will be indicated when the actual gas concentration falls below the preset level for Alarm 1.

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

ALARM 1

ALARM 1 LATCH

select: 4 of 4

Alarm 1 Latch

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

Default setting is enabled. Use the <set> key to enter. The instrument will show the actual setting.

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

ALARM 1 LATCH

DISABLED

select: 1 of 2

Disabled

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

ALARM 1 LATCH

ENABLED

select: 2 of 2

Enabled

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

ALARM SETTINGS
ALARM 2
 select: 2 of 2

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
ALARM 2 STATE
 select: 1 of 4

Alarm 2 State
 Used to enable / disable the Alarm 2 activation.

ALARM 2
ALARM 2 LEVEL
 select: 2 of 4

Alarm 2 Level
 Used to set individual alarm levels for Alarm 2 activation.

ALARM 2
ALARM 2 TRIGGER
 select: 3 of 4

Alarm 2 Trigger
 Used to define the trigger condition for Alarm 2 activation.

ALARM 2
ALARM 2 LATCH
 select: 4 of 4

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

Configuration - Section 6

CONFIGURATION

LANGUAGE

select: 2 of 13

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.

LANGUAGE

GERMAN

select: 1 of 2

German

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

LANGUAGE

ENGLISH

select: 2 of 2

English

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

CONFIGURATION

DATE FORMAT

select: 3 of 13

Date Format

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

DATE FORMAT

INTERNATIONAL

select: 1 of 2

International

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

DATE FORMAT

USA

select: 2 of 2

USA

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

```

CONFIGURATION
AUTO SELFTEST
select: 4 of 13
    
```

Auto Selftest
 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 function Auto Selftest is not available with instruments using oxygen sensors or catalytic sensors.**

```

AUTO SELFTEST
DISABLED
select: 1 of 2
    
```

Disabled
 Allows the user to turn off the Auto Selftest. Actuate the cursor keys <up> or <down> to change. Actuate the <set> key to confirm or <esc> to exit.

```

AUTO SELFTEST
ENABLED
select: 2 of 2
    
```

Enabled
 Allows the user to turn on the Auto Selftest. Actuate the cursor keys <up> or <down> to change. Actuate the <set> key to confirm or <esc> to exit.

```

CONFIGURATION
SECURITY
select: 5 of 13
    
```

Security
 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.

```

SECURITY
PASSWORD ON
select: 1 of 2
    
```

Password On
 Allows the user to enable the password protection. Actuate the cursor keys <up> or <down> to change. Actuate the <set> key to confirm or <esc> to exit.

```

SECURITY
PASSWORD OFF
select: 2 of 2
    
```

Password Off
 Allows the user to disable the password protection. Actuate the cursor keys <up> or <down> to change. Actuate the <set> key to confirm or <esc> to exit.

Configuration - Section 6

CONF IGURATION

PASSWORD

select : 6 of 13

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.

PASSWORD

000

please enter !

<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, actuate the <set> key to confirm or <esc> to exit.

CONF IGURATION

LOCATION

select : 7 of 13

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.

LOCATION

Gas Cabinet

please enter !

<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, actuate the <set> key to confirm or <esc> to exit.

```

CONFIGURATION
NEW SENSOR TYPE
select: 8 of 13
    
```

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

```

NEW SENSOR TYPE
REMOVE SENSOR
<set> when ready
    
```

Remove Sensor

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

```

NEW SENSOR TYPE
NEW SENSOR
please insert !
    
```

New Sensor

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

```

NEW SENSOR TYPE
LOAD NEW DATA ?
<set> to confirm
    
```

Load New Data ?

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

```

NEW SENSOR TYPE
LOADING DATA !
please wait !
    
```

Loading Data !

The new data are now loaded from the sensor into the instrument's internal memory.

```

CONFIGURATION
GAS NAME
select: 9 of 13
    
```

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.

```

GAS NAME
ASH3
please enter !
    
```

<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, actuate the <set> key to confirm or <esc> to exit.

Configuration - Section 6

CONFIGURATION

MAINT. SIGNAL

select: 10 of 13

Maintenance Signal

The maintenance signal indicates a complete absence of monitoring capability and is transmitted to external control systems. The maintenance output signal can be configured either steady, i.e. 2.4 mA, or alternating, i.e. 2.4 to 4.0 mA, 1 Hz.

Default setting is alternating.

Actuate the <set> key to enter. The instrument shows the actual setting.

MAINT. SIGNAL

ALTERNATING

select: 1 of 2

Alternating

Defines the maintenance output signal to be alternating.

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

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

MAINT. SIGNAL

CONSTANT

select: 2 of 2

Constant

Defines the maintenance output signal to be constant.

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

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

CONFIGURATION

WARNING SIGNAL

select: 11 of 13

Warning Signal

The warning signal indicates that the instrument requires some attention, but is still able to monitor. The warning output signal is an alternating signal of 2.8 to 4.0 mA, 0.1 Hz and is transmitted to external control systems.

The warning output signal can be configured enabled or disabled. Default setting is enabled.

Actuate the <set> key to enter. The instrument shows the actual setting.

WARNING SIGNAL

DISABLED

select: 1 of 2

Disabled

Allows the user to turn off the warning output signal.

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

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

WARNING SIGNAL

ENABLED

select: 2 of 2

Enabled

Allows the user to turn on the warning output signal.

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

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

```

CONFIGURATION
4 - 20 mA RANGE
select: 12 of 13
    
```

4-20 mA Range
 The 4-20 mA signal output range of the instrument is pre-programmed to correspond to the nominal range of the target gas. The 4-20 mA range may be adjusted to individual requirements, but must not exceed the upper and lower values listed in Section 8. Actuate the <set> key to enter and display the actual setting.

```

4 - 20 mA RANGE
1.00 ppm = 20mA
please enter !
    
```

<Actual 4-20 mA Range>
 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, actuate the <set> key to confirm or <esc> to exit.

```

CONFIGURATION
RELAYS
select: 13 of 13
    
```

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.

Note:
 ! The RELAYS menu and all subsequent menu items are only available for instruments with relay option.

```

RELAYS
RELAY STATE
select: 1 of 3
    
```

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>.

```

RELAYS
ALARM DELAY
select: 2 of 3
    
```

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>.

```

RELAYS
FAULT TRIGGER
select: 3 of 3
    
```

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>.

Note:
 ! Individual settings for alarm levels, gas name, and the 4-20 mA output range, 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.

Configuration - Section 6

RELAYS

RELAY STATE

select: 1 of 3

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.

Relay State

RELAY STATE

ALARM 1 RELAY

select: 1 of 3

Allows to set the Alarm 1 Relay state.

Alarm 1 Relay

RELAY STATE

ALARM 2 RELAY

select: 2 of 3

Allows to set the Alarm 2 Relay state.

Alarm 2 Relay

RELAY STATE

FAULT RELAY

select: 3 of 3

Allows to set the Fault Relay state.

Fault Relay

RELAY STATE

ALARM 1 RELAY

select: 1 of 3

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

Alarm 1 Relay

ALARM 1 RELAY

DEENERGIZED/NO

select: 1 of 2

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

Deenergized / NO

ALARM 1 RELAY

ENERGIZED/NC

select: 2 of 2

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

Energized / NC

```

RELAY STATE
ALARM 2 RELAY
select: 2 of 3
    
```

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.

```

ALARM 2 RELAY
DEENERGIZED/NO
select: 1 of 2
    
```

Deenergized / NO

Defines the Alarm 2 Relay to be deenergized (normally open contact).
Actuate the cursor keys <up> or <down> to change.
Actuate the <set> key to confirm or <esc> to exit.

```

ALARM 2 RELAY
ENERGIZED/NC
select: 2 of 2
    
```

Energized / NC

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

```

RELAY STATE
FAULT RELAY
select: 3 of 3
    
```

Fault Relay

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

```

FAULT RELAY
DEENERGIZED/NO
select: 1 of 2
    
```

Deenergized / NO

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

```

FAULT RELAY
ENERGIZED/NC
select: 2 of 2
    
```

Energized / NC

Defines the Fault Relay to be energized (normally closed contact).
Actuate the cursor keys <up> or <down> to change.
Actuate the <set> key to confirm or <esc> to exit.

Configuration - Section 6

RELAYS

ALARM DELAY

select: 2 of 3

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. Actuate the <set> key to enter and show the actual setting.

ALARM DELAY

3.0 sec.

please enter !

<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, actuate the <set> key to confirm or <esc> to exit.

RELAYS

FAULT TRIGGER

select: 3 of 3

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 TRIGGER

FAULT ONLY

select: 1 of 4

Fault Only

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

FAULT TRIGGER

FAULT+WARNING

select: 2 of 4

Fault + Warning

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

FAULT TRIGGER

FAULT+MAINT

select: 3 of 4

Fault + Maintenance

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

FAULT TRIGGER

ALL

select: 4 of 4

All

Used to configure the Fault Relay to be activated in case of a fault, warning, or maintenance condition. Actuate the cursor keys <up> or <down> to change. Actuate 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 our 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
- an alternating signal (2.8 to 4.0 mA, 0.1 Hz) is sent to external control systems; depending on the configuration, this function can be enabled or disabled.
- depending on the configuration, the fault relay will be activated.

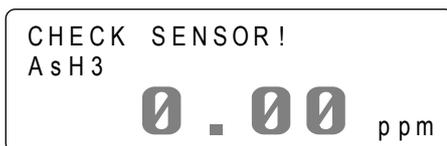
Press the <set> key to acknowledge and reset a Warning Condition.



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.

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

! This function is not available for instruments with oxygen sensor or catalytic 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, a fault signal of a defined output current for each different fault condition is sent to attached control systems. The green status LED is off. The LCD display is flashing while indicating the specific fault message.

---- FAULT ----
ADC NOT READY !

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. Output current is 2.0 mA.

---- FAULT ----
NO SENSOR !

Fault - No Sensor !

This message indicates that no sensor is inserted or that a sensor type not suitable for the Satellite is used. To eliminate the problem, insert the correct sensor. When using the Satellite in combination with the sensor extension, make sure that all connections are firmly attached. Output current is 1.8 mA.

---- FAULT ----
WRONG 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. Output current is 1.6 mA.

---- FAULT ----
REPLACE SENSOR!

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. Output current is 1.4 mA.

! This function is not available for instruments with oxygen sensor or catalytic sensor.

---- FAULT ----
EXTRACTIVE !

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.
Output current is 1.2 mA.

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

---- FAULT ----
PYROLYZER !

Fault - Pyrolyzer !

Only for instruments with Pyrolyzer Module.

This message indicates that there is a problem with the Pyrolyzer Module.
Output current is 1.0 mA.

Please contact our service department for further instructions.

8.1 Sensor Order Information

| Substance / Sensor | | Part No. Sensor | Nominal Range | Unit | Note | Dust Filter allowed |
|---------------------------|----------------------------|--------------------|------------------|--------|------|------------------------|
| 3MS | Trimethylsilane | 9602-6210 | 0 ... 20.0 | ppm | | no |
| AsH3 | Arsine (3 El.) | 9602-6001 | 0 ... 1.00 | ppm | | yes |
| AsH3 | Arsine (2 El.) | 9602-6000 | 0 ... 1.00 | ppm | 1) | yes |
| AsH3 | Arsine (2 El.) | 9602-6002 | 0 ... 10.0 | ppm | 1) | yes |
| B2H6 | Diborane | 9602-6200 | 0 ... 1.00 | ppm | | yes |
| Br2 | Bromine | 9602-6800 | 0 ... 5.00 | ppm | | no |
| C4F6 | Hexafluorobutadiene | 9602-9732 | 0 ... 50.0 | ppm | 3) | no data |
| C5F8 | Octafluorocyclopentene | 9602-9730 | 0 ... 20.0 | ppm | 3) | no data |
| CH3F | Methyl Fluoride | 9602-9720 | 0 ... 0.500 | % vol. | 3) | no data |
| CH4 | Methane | 9602-9900 | 0 ... 100 | % LEL | 4) | no data |
| Cl2 | Chlorine | 9602-5300 | 0 ... 5.00 | ppm | | yes |
| ClF3 | Chlorine Trifluoride | 9602-7410 | 0 ... 1.00 | ppm | | no |
| ClO2 | Chlorine Dioxide | 9602-7400 | 0 ... 1.00 | ppm | | no |
| CO | Carbon Monoxide | 9602-5400 | 0 ... 500 | ppm | | yes |
| COCl2 | Phosgene | 9602-6600 | 0 ... 1.00 | ppm | | yes |
| DCE 1,2 | Di-chloro-ethylene 1,2 | 9602-9600 | 0 ... 1000 | ppm | 3) | no data |
| F2 | Fluorine | 9602-6400 | 0 ... 5.00 | ppm | | no |
| F2 | Fluorine | 9602-6401 | 0 ... 30 | ppm | | no |
| GeH4 | Germane | 9602-6900 | 0 ... 5.0 | ppm | | yes |
| H2 | Hydrogen (1 %) | 9602-5100 | 0 ... 1.000 | % vol. | | yes |
| H2 | Hydrogen (4 %) | 9602-5101 | 0 ... 4.00 | % vol. | 2) | yes |
| H2S | Hydrogen Sulfide | 9602-5200 | 0 ... 100 | ppm | | yes |
| H2S | Hydrogen Sulfide (org.) | 9602-5201 | 0 ... 30.0 | ppm | 1) | yes |
| H2Se | Hydrogen Selenide | 9602-5600 | 0 ... 1.00 | ppm | | no |
| HBr | Hydrogen Bromide | 9602-7000 | 0 ... 30.0 | ppm | | no |
| HCl | Hydrogen Chloride | 9602-5800 | 0 ... 30.0 | ppm | | no |
| HCl | Hydrogen Chloride (tropic) | 9602-5801 | 0 ... 30.0 | ppm | | no |
| HCN | Hydrogen Cyanide | 9602-5700 | 0 ... 30.0 | ppm | | no |
| HF | Hydrogen Fluoride | 9602-6500 | 0 ... 10.0 | ppm | | no |
| HMDS | Hexamethyldisilazane | 9602-6714 | 0 ... 500 | ppm | | yes |
| HMDS | Hexamethyldisilazane | 9602-6715 | 0 ... 0.500 | % vol. | | yes |
| N2H4 | Hydrazine | 9602-7600 | 0 ... 1.00 | ppm | | no |
| NF3 | Nitrogen Trifluoride | 9602-9700 | 0 ... 50.0 | ppm | 3) | no data |
| NH3 | Ammonia (100 ppm) | 9602-6704 | 0 ... 100 | ppm | | no |
| NH3 | Ammonia (1000 ppm) | 9602-6705 | 0 ... 1000 | ppm | 2) | no |
| NO | Nitric Oxide | 9602-7200 | 0 ... 250 | ppm | | yes |
| NO2 | Nitrogen Dioxide | 9602-7300 | 0 ... 25.0 | ppm | | yes |
| O2 | Oxygen | 9602-5500 | 0 ... 25.0 | % vol. | | yes |
| O3 | Ozone | 9602-7100 | 0 ... 1.00 | ppm | | no |
| O3 | Ozone | 9602-7101 | 0 ... 1.00 | ppm | 1) | no |
| continued overleaf | | | | | | |

8.1 Continued - Sensor Order Information

| Substance / Sensor | | Part No. Sensor | Nominal Range | Unit | Note | Dust Filter allowed |
|--------------------|--------------------------|--|------------------|--------|------|------------------------|
| PH3 | Phosphine (3 El.) | 9602-6101 | 0 ... 1.00 | ppm | | yes |
| PH3 | Phosphine (2 El.) | 9602-6100 | 0 ... 1.00 | ppm | 1) | yes |
| SF6 | Sulfur Hexafluoride | 9602-9710 | 0 ... 0.500 | % vol. | 3) | no data |
| SiH4 | Silane | 9602-6300 | 0 ... 50.0 | ppm | | yes |
| SO2 | Sulfur Dioxide | 9602-5900 | 0 ... 25.0 | ppm | | yes |
| TEOS | Tetraethyl Orthosilicate | 9602-7500 | 0 ... 100 | ppm | | no |
| TMB | Trimethyl borate | 9602-7510 | 0 ... 500 | ppm | | no |
| TMP | Trimethyl phosphite | 9602-7800 | 0 ... 30.0 | ppm | | yes |
| | | | | | | |
| | | | | | | |
| Notes: | | 1) Special application | | | | |
| | | 2) Special range | | | | |
| | | 3) Pyrolyzer Module required for detection | | | | |
| | | 4) Only for use with Satellite XT C-versions | | | | |
| | | | | | | |
| | | | | | | |
| | | Further gases and ranges on request | | | | |
| | | | | | | |
| | | | | | | |

8.2 Continued - 4 - 20 mA Signal Output Range

| Substance / Sensor | | Part No. Sensor | 4 - 20 mA Range | | | | Alarm 1 Setting | |
|--------------------|--------------------------|--------------------|-----------------|---------|-------|-------|--------------------|-------|
| | | | Min | Default | Max | Unit | | |
| PH3 | Phosphine (3 El.) | 9602-6101 | 0 ... | 0.30 | 1.00 | 10.00 | ppm | 0.10 |
| PH3 | Phosphine (2 El.) | 9602-6100 | 0 ... | 0.30 | 1.00 | 10.00 | ppm | 0.10 |
| SF6 | Sulfur Hexafluoride | 9602-9710 | 0 ... | 0.300 | 0.500 | 1.000 | % vol. | 0.100 |
| SiH4 | Silane | 9602-6300 | 0 ... | 15.0 | 50.0 | 100.0 | ppm | 5.0 |
| SO2 | Sulfur Dioxide | 9602-5900 | 0 ... | 6.0 | 25.0 | 100.0 | ppm | 2.0 |
| TEOS | Tetraethyl Orthosilicate | 9602-7500 | 0 ... | 30 | 100 | 500 | ppm | 10 |
| TMB | Trimethylborate | 9602-7510 | 0 ... | 300 | 500 | 1000 | ppm | 100 |
| TMP | Trimethyl phosphite | 9602-7800 | 0 ... | 6.0 | 30.0 | 50.0 | ppm | 2.0 |

Min minimum settable range
 Default nominal (standard) range
 Max maximum settable range

Note:
 Alarm 2 Setting = 2 x Alarm 1 Setting
 Default and Alarm Settings are the standard values
 set ex factory.

8.3 K-Factors for Satellite XT C-Versions

Catalytic sensors are calibrated for methane. When monitoring for other combustible gases, a correction factor must be entered. See the below list for detectable gases and their K-Factors.

| Substance | K-Factor | Substance | K-Factor |
|------------------------|-------------|-----------------------|-------------|
| acetaldehyde | 1.79 | ethylene dichloride | 1.50 |
| acetic acid | 3.41 | ethylene oxide | 2.33 |
| acetic anhydride | 1.97 | iso-heptane | 2.38 |
| acetone | 2.21 | n-heptane | 2.69 |
| acetylene | 2.77 | 1,4-hexadiene | 1.50 |
| ammonia | 0.79 | iso-hexane | 2.70 |
| aniline | 2.96 | n-hexane | 2.35 |
| benzene | 2.51 | hydrazine | 2.11 |
| 1,3-butadiene | 2.55 | hydrogen | 1.24 |
| iso-butane | 1.83 | hydrogen cyanide | 1.98 |
| n-butane | 2.04 | hydrogen sulfide | 2.32 |
| 1-butene | 2.15 | methane | 1.00 |
| cis-butene-2 | 2.09 | methyl acetate | 2.16 |
| trans-butene-2 | 1.88 | methyl alcohol | 1.46 |
| iso-butyl alcohol | 2.54 | methyl amine | 1.25 |
| n-butyl alcohol | 3.04 | methyl bromide | 1.05 |
| tert-butyl alcohol | 1.78 | methyl chloride | 1.30 |
| iso-butylene | 1.95 | methyl cyclohexane | 2.56 |
| n-butyric acid | 2.43 | methyl formate | 1.86 |
| carbon monoxide | 1.25 | methyl mercaptan | 1.60 |
| carbonyl sulfide | 1.02 | methyl propionate | 2.09 |
| chlorobenzene | 2.98 | methyl propyl ketone | 2.70 |
| cyanogen | 1.06 | methylene chloride | 1.03 |
| cyclohexane | 2.49 | nitromethane | 2.15 |
| cyclopropane | 1.52 | n-nonane | 4.00 |
| n-decane | 3.41 | n-octane | 2.85 |
| diethyl ether | 2.28 | iso-pentane | 2.30 |
| di(iso-propyl) ether | 2.34 | n-pentane | 2.21 |
| dimethyl butane | 2.68 | neo-pentane | 2.39 |
| dimethyl ether | 1.71 | 1-pentene | 2.35 |
| dimethyl pentane | 2.32 | propane | 1.88 |
| dimethyl sulfide | 2.32 | propene | 1.84 |
| 1,4-dioxane | 2.51 | iso-propyl alcohol | 2.58 |
| ethane | 1.39 | n-propyl alcohol | 1.97 |
| ethyl acetate | 2.56 | n-propyl amine | 2.07 |
| ethyl alcohol | 1.69 | n-propyl chloride | 1.81 |
| ethyl amine | 1.39 | 1,2-propylene oxide | 2.59 |
| ethyl benzene | 2.78 | propyne | 2.30 |
| ethyl bromide | 0.94 | toluene | 2.47 |
| ethyl chloride | 1.75 | triethyl amine | 2.52 |
| ethyl formate | 2.37 | trimethyl amine | 1.94 |
| ethyl mercaptan | 1.75 | trimethyl butane | 2.30 |
| ethyl methyl ether | 2.30 | vinyl chloride | 1.82 |
| methyl ethyl ketone | 2.63 | m-xylene | 2.69 |
| ethyl pentane | 2.35 | o-xylene | 3.00 |
| ethylene | 1.54 | p-xylene | 2.77 |

8.4 Spares and Accessories

| Part Number | Description |
|-----------------|---|
| 9602.0050.10.03 | Mounting Rail Standard |
| 9602.0050.10.02 | Mounting Plate DIN-Rail, Option |
| 9602.0051.10.01 | Mounting Plate L-shaped with DIN-Rail, Option |
| | |
| 9602.0090 | Sensor Extension, 2 meters |
| 9602.0091 | Sensor Extension, 3 meters |
| 9602.0092 | Sensor Extension, 1 meter |
| | |
| 9602.0093 | Sensor Extension Combustible Gases, 2 meters |
| | |
| 9602.0095 | Calibration Cap |
| | |
| 9630-0423 | Junction Box for max. 2 nodes |
| 9630-0424 | Junction Box for max. 6 nodes |
| 9630-0505 | Junction Box 1 node /R-Version |
| | |
| 9630-0231 | 3-wire shielded cable, 3x1.0 mm ² , 100 m coil |
| | |
| 9630-0413 | Power Supply 24 VDC 2.5 A output, 230/115 VAC |
| 9630-0414 | Power Supply 24 VDC 5 A output, 230/115 VAC |
| 9630-0415 | Power Supply 24 VDC 10 A output, 230/115 VAC |
| | |
| 9902-4000 | duct mounting saddle (assembly), 4 inches |
| 9902-4010 | duct mounting saddle (assembly), 6 inches |
| 9902-4020 | duct mounting saddle (assembly), 8 inches |
| 9902-4030 | duct mounting saddle (assembly), 10 inches |
| 9902-4040 | duct mounting saddle (assembly), 12 inches |
| 9902-4100 | duct mounting saddle (assembly), 1,5 inches |
| 9902-4110 | duct mounting saddle (assembly), 2 inches |
| 9902-4120 | duct mounting saddle (assembly), 2,5 inches |
| 9902-4130 | duct mounting saddle (assembly), 3 inches |
| 9902-4200 | duct mounting saddle (assembly), flat |
| | |
| | |
| | |

8.5 Power Supply 24 VDC, 2.5 A Output

The 24 VDC, 2.5 A Power Supply is a rail-mounted unit for use in industrial applications. It is required to power optional Input / Output Modules in networks based on a free topology transmission technology or other external control devices.

A protective device (fuse) and an isolating device must be provided to assure interruption of the Power Supply. The main switch must be switched off and secured against reactivation before installation or maintenance.

The relevant local regulations must be observed during installation.

Technical Specifications

Power Requirements

| | |
|---------|---|
| voltage | 176 ... 264 VAC; switch position 230 V 85 ... 132 VAC, switch position 115 V |
|---------|---|

DC Power Output

| | |
|--------------|---------------------------------|
| voltage | 24 VDC +5% / -1% |
| max. current | 2.5 A |
| protection | shortcircuit and overload proof |

Functional Elements

| |
|--------------------------------|
| status LED |
| voltage selector 230 / 115 VAC |

Physical Dimensions

| | |
|--------|---|
| size | 50 x 125 x 103 mm (W x H x D) 2" x 5" x 4" (W x H x D) |
| weight | 460 grams 1 lb |

Mounting

DIN rail

Housing Protection Class

IP 20

RFI / EMC

EN 50081-1 and EN 50081-2 Class B
EN 50082-1 and EN 50082-2

Operating Conditions

| | |
|-------------|---------------------------------------|
| temperature | 0 °C ... +60 °C +32 °F ... +140 °F |
| humidity | 20 ... 90 % r.h. |

Part Number

9630-0413

8.6 Power Supply 24 VDC, 5 A Output

The 24 VDC, 5A Power Supply is a rail-mounted unit for use in industrial applications. It is required to power optional Input / Output Modules in networks based on a free topology transmission technology or other external control devices.

A protective device (fuse) and an isolating device must be provided to assure interruption of the Power Supply. The main switch must be switched off and secured against reactivation before installation or maintenance.

The relevant local regulations must be observed during installation.

Technical Specifications

Power Requirements

| | |
|---------|---|
| voltage | 176 ... 264 VAC; switch position 230 V 85 ... 132 VAC, switch position 115 V |
|---------|---|

DC Power Output

| | |
|--------------|---------------------------------|
| voltage | 24 VDC +5% / -1% |
| max. current | 5 A |
| protection | shortcircuit and overload proof |

Functional Elements

| |
|--------------------------------|
| status LED |
| voltage selector 230 / 115 VAC |

Physical Dimensions

| | |
|--------|---|
| size | 65 x 125 x 103 mm (W x H x D) 2.6" x 5" x 4" (W x H x D) |
| weight | 620 grams 1.4 lbs |

Mounting

DIN rail

Housing Protection Class

IP 20

RFI / EMC

EN 50081-1 and EN 50081-2 Class B
EN 50082-1 and EN 50082-2

Operating Conditions

| | |
|-------------|---------------------------------------|
| temperature | 0 °C ... +60 °C +32 °F ... +140 °F |
| humidity | 20 ... 90 % r.h. |

Part Number

9630-0414

8.7 Power Supply 24 VDC, 10 A Output

The 24 VDC, 10A Power Supply is a rail-mounted unit for use in industrial applications. It is required to power optional Input / Output Modules in networks based on a free topology transmission technology or other external control devices.

A protective device (fuse) and an isolating device must be provided to assure interruption of the Power Supply. The main switch must be switched off and secured against reactivation before installation or maintenance.

The relevant local regulations must be observed during installation.

Technical Specifications

Power Requirements

| | |
|---------|-------------------------------------|
| voltage | 176 ... 264 VAC for 230 V operation |
| | 85 ... 132 VAC for 115 V operation |

DC Power Output

| | |
|--------------|---------------------------------|
| voltage | 24 VDC +5% / -1% |
| max. current | 10 A |
| protection | shortcircuit and overload proof |

Functional Elements

| |
|--------------------------------|
| status LED |
| voltage selector 230 / 115 VAC |

Physical Dimensions

| | | |
|--------|--------------------|-------------|
| size | 122 x 125 x 103 mm | (W x H x D) |
| | 4.8" x 5" x 4" | (W x H x D) |
| weight | 1050 grams | |
| | 2.3 lbs | |

Mounting

DIN rail

Housing Protection Class

IP 20

RFI / EMC

EN 50081-1 and EN 50081-2 Class B
EN 50082-1 and EN 50082-2

Operating Conditions

| | |
|-------------|--------------------|
| temperature | 0 °C ... +60 °C |
| | +32 °F ... +140 °F |
| humidity | 20 ... 90 % r.h. |

Part Number

9630-0415

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 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.

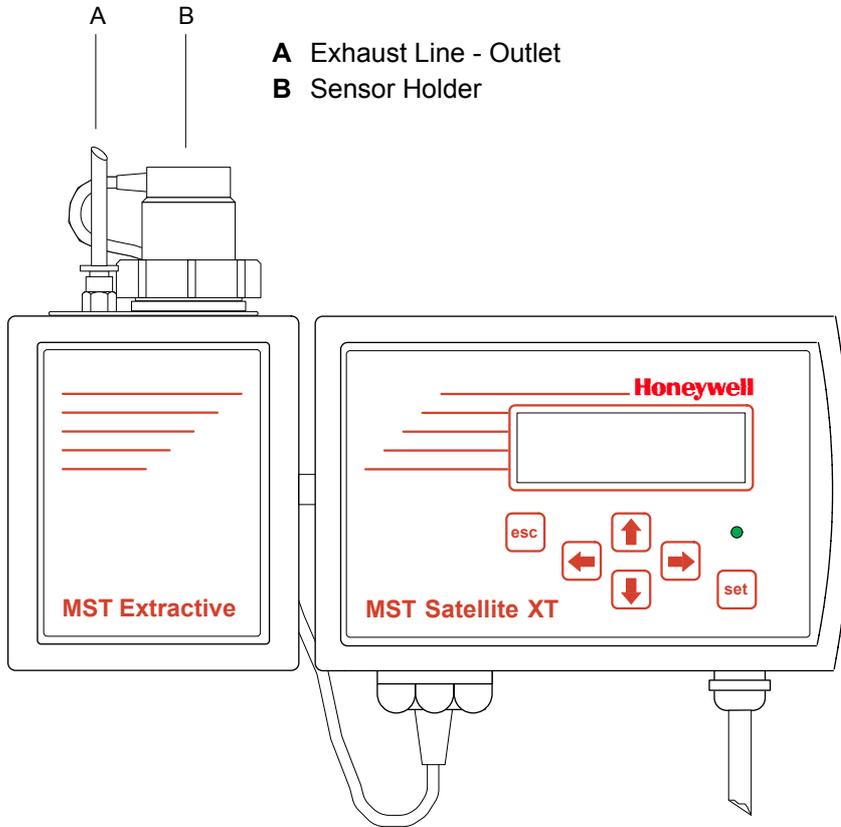


Note:

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.

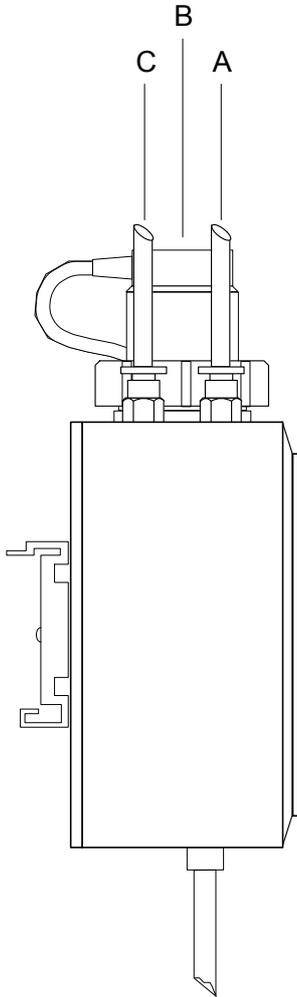
9.4 Instrument Design

Front View showing Extractive Module XT connected to Satellite XT



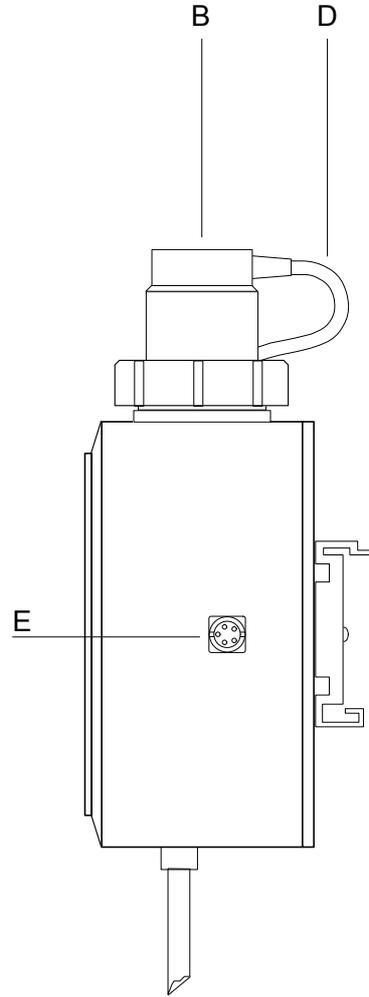
Side View (left)

- A Exhaust Line - Outlet
- B Sensor Holder
- C Sample Line - Gas Inlet



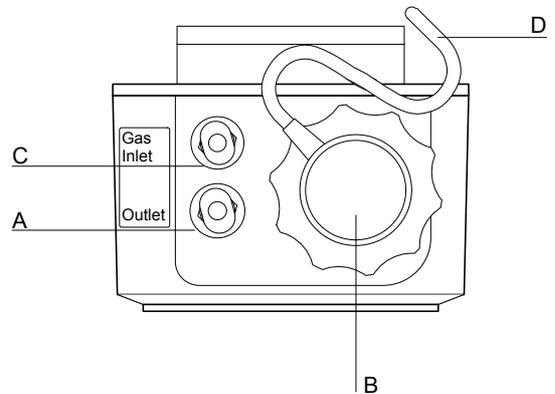
Side View (right)

- B Sensor Holder
- D Sensor Connection to Satellite XT
- E Connection Extractive Module XT and Satellite XT



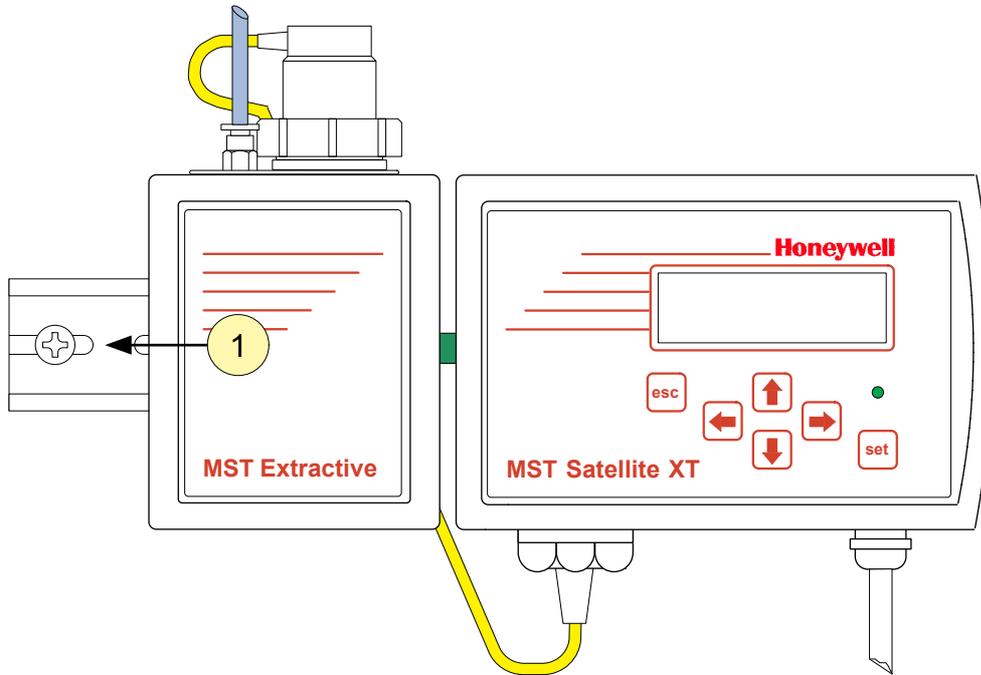
Top View (only Extractive Module XT)

- 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.

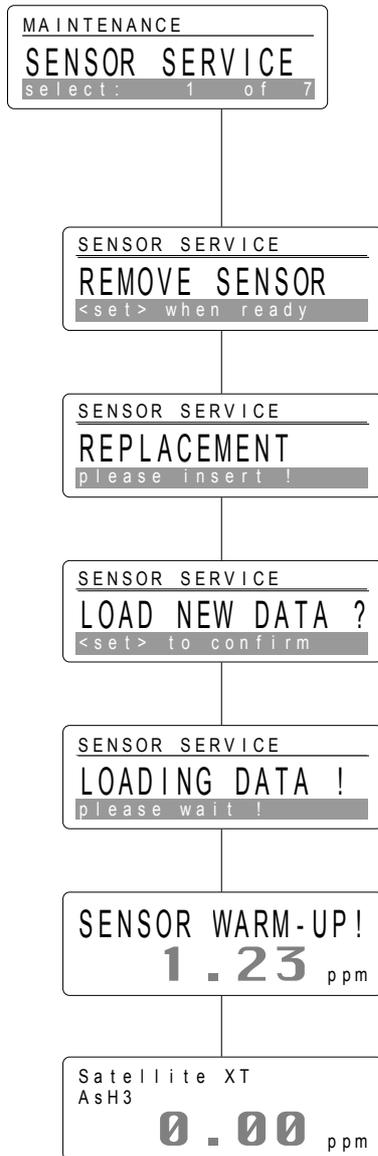


Note:
Do not apply power until the system is ready for start-up.

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.

Figure 1



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 !>

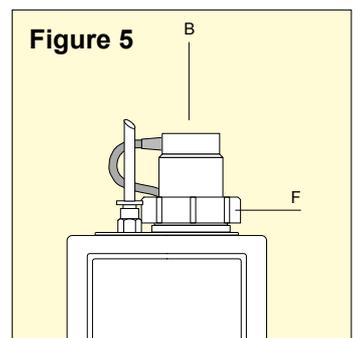
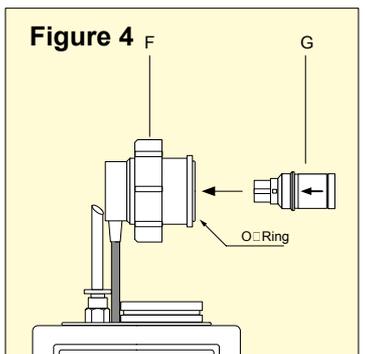
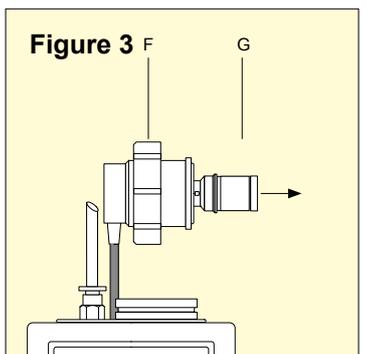
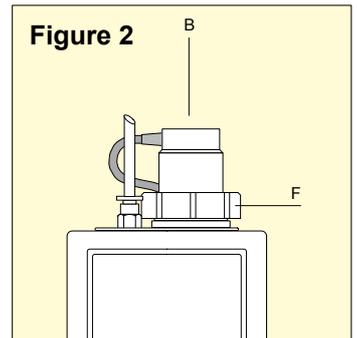
The instrument is now loading the new data from the sensor into the unit's internal memory.

<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 | power is provided by the Satellite XT |
| voltage | 12 VDC |
| consumption | 0.7 W typically 60 mA |
| 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 | 330 grams 11.6 ounces |
| Housing Protection Class | IP 30 |
| RFI / EMC | EN 55011 EN 50082-2 |
| 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. |
| Part Number | 20404-0100 |

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 the housing 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.

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.

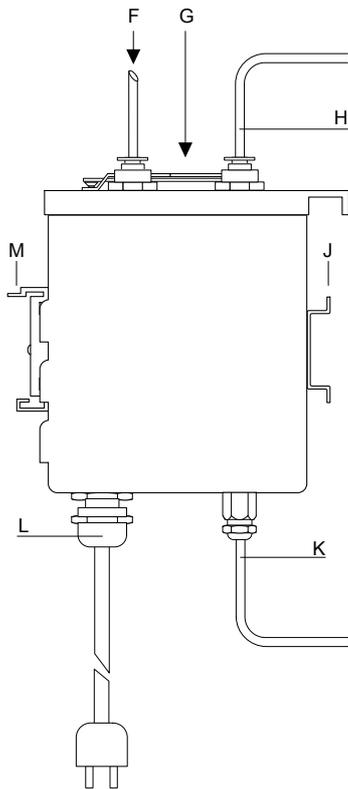


Figure 2: Front view of the complete assembly Pyrolyzer Module, Extractive Module, and Satellite XT.

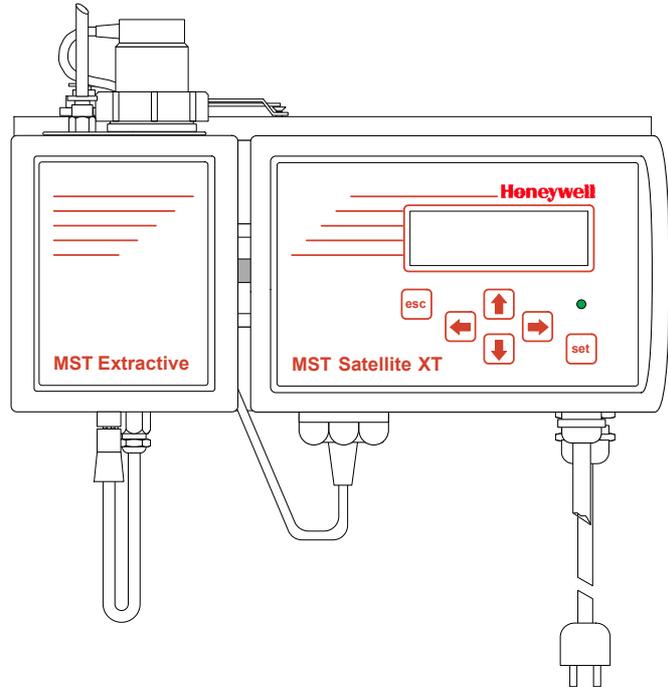
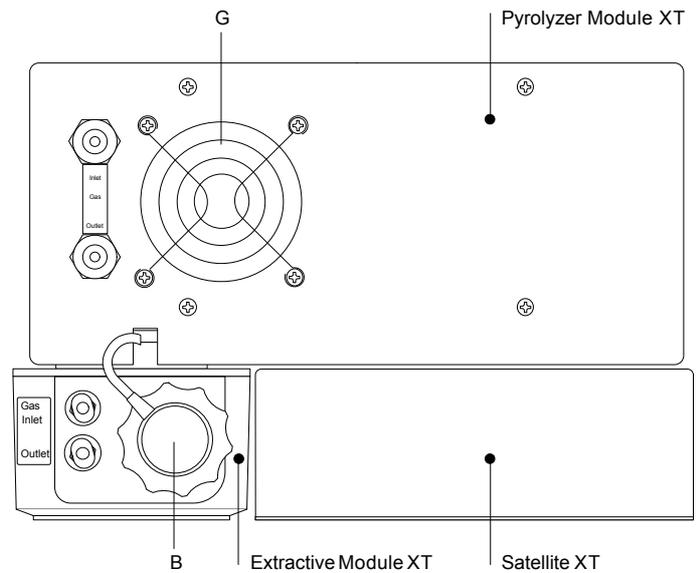


Figure 3: Top View of the complete assembly



- 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

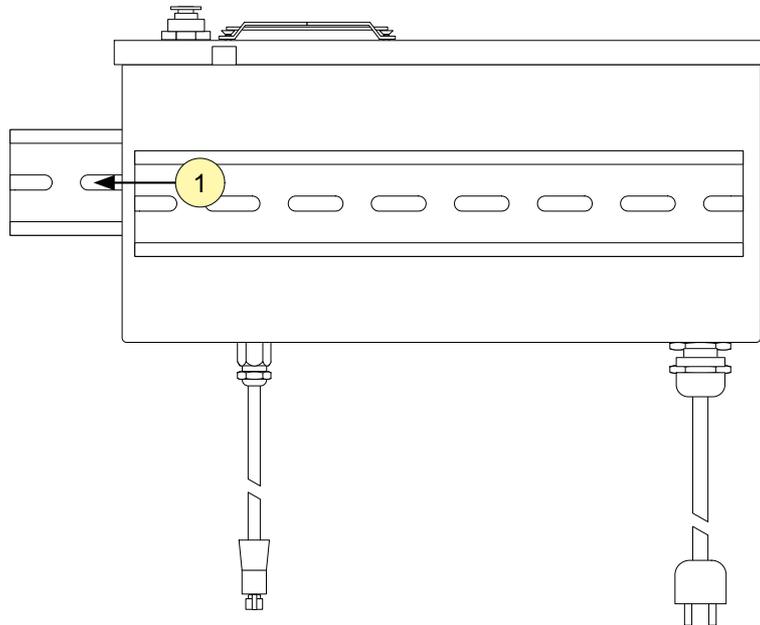
10.5 Mounting

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:

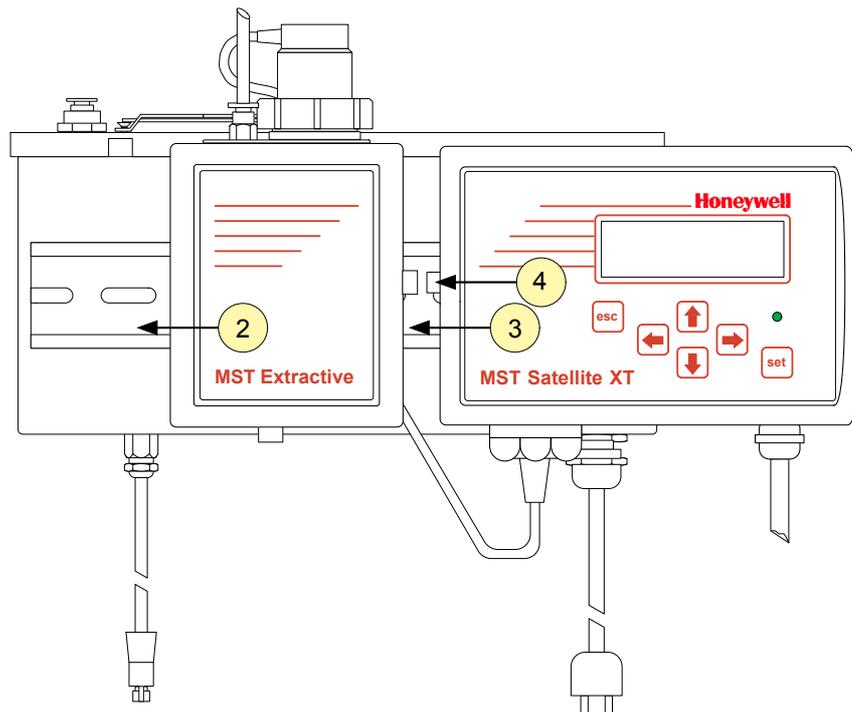
1. Slide the Pyrolyzer Module XT onto the rail mounted to the wall, see Figure 4.

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.

Figure 5



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

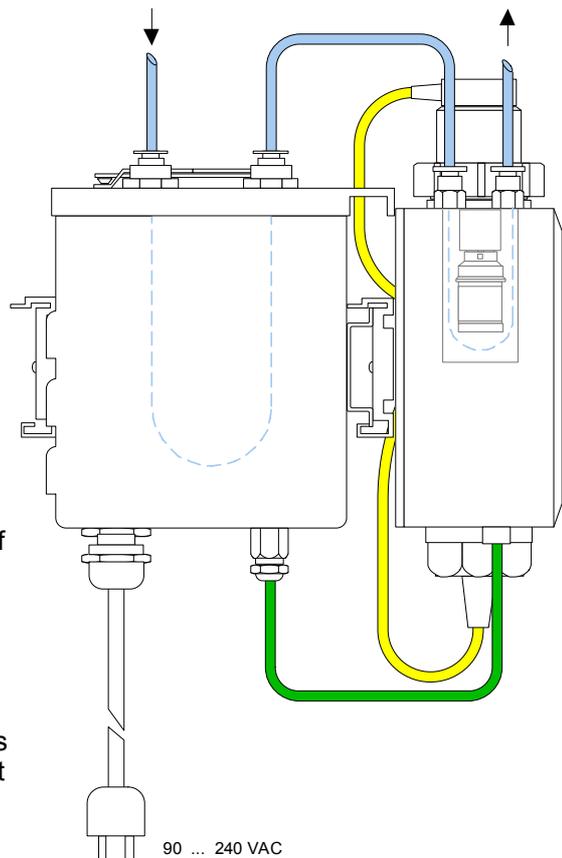
-  sample tubing.
-  sensor connection between Extractive Module XT and Satellite XT.
-  data link connecting Pyrolyzer Module XT and Extractive Module XT / Satellite XT.

10.7 Data Link

Plug the cable (pictured green) from the bottom plate of bottom of the Extractive Module XT.

10.8 Power Connection

Use a standard power cable (obey any local regulations the module. Open the module from the top and connect



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) 8,8" x 3,8" x 3,9" (W x H x D) |
| Weight: | 1800 g 4 lbs |

Housing Protection Class IP 30

RFI / EMC EN 55011
EN 50082-2

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. |

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 |

