

Guide to Operation

Honeywell

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.

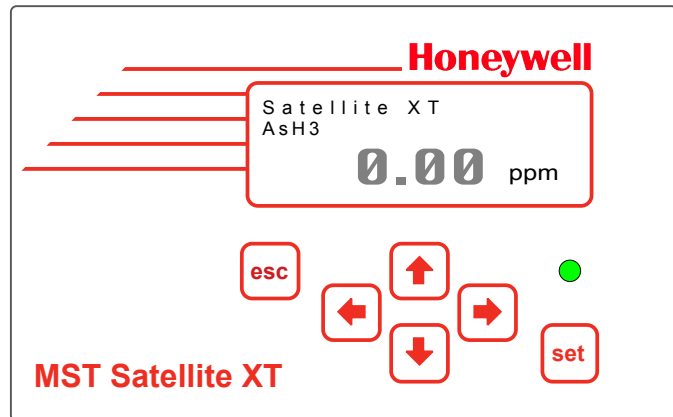
1.4 Operational Elements

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:

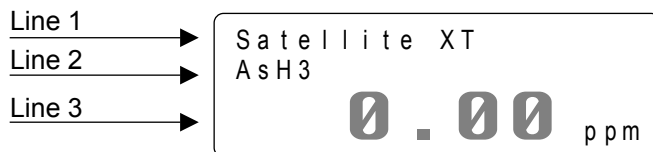
To move forwards and backwards in the menu, use the cursor keys <down> and <up>. Select a function by actuating the <set> key.

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

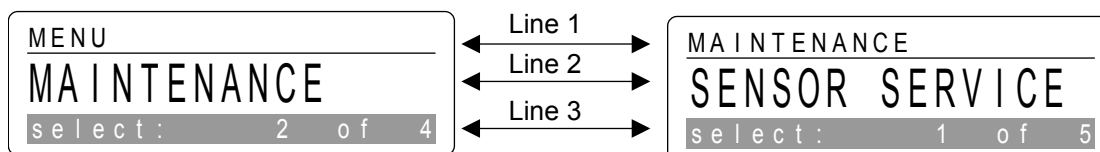
Depending on the operating mode the structure of the graphic display is different. Three basic versions are illustrated and explained below. A detailed description is given in the according sections.

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).

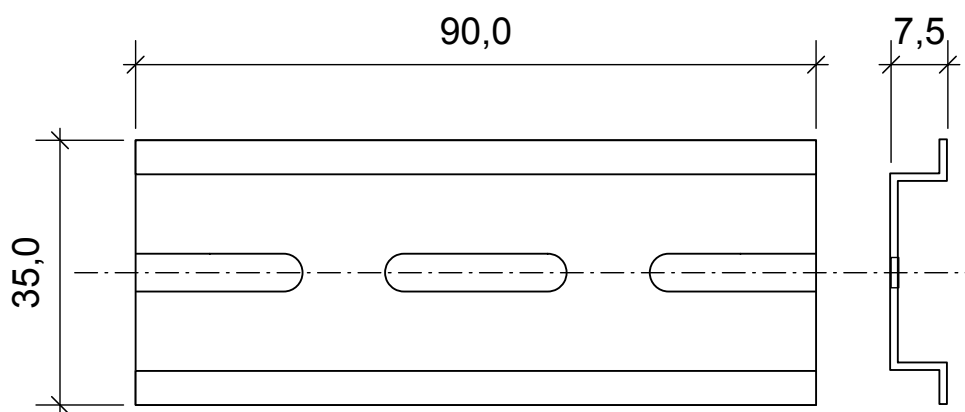
Regarding the power requirements and operating conditions, please follow the specifications indicated in Section 1, Technical Specifications, for wiring instructions refer to Section 2, Wiring.

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.

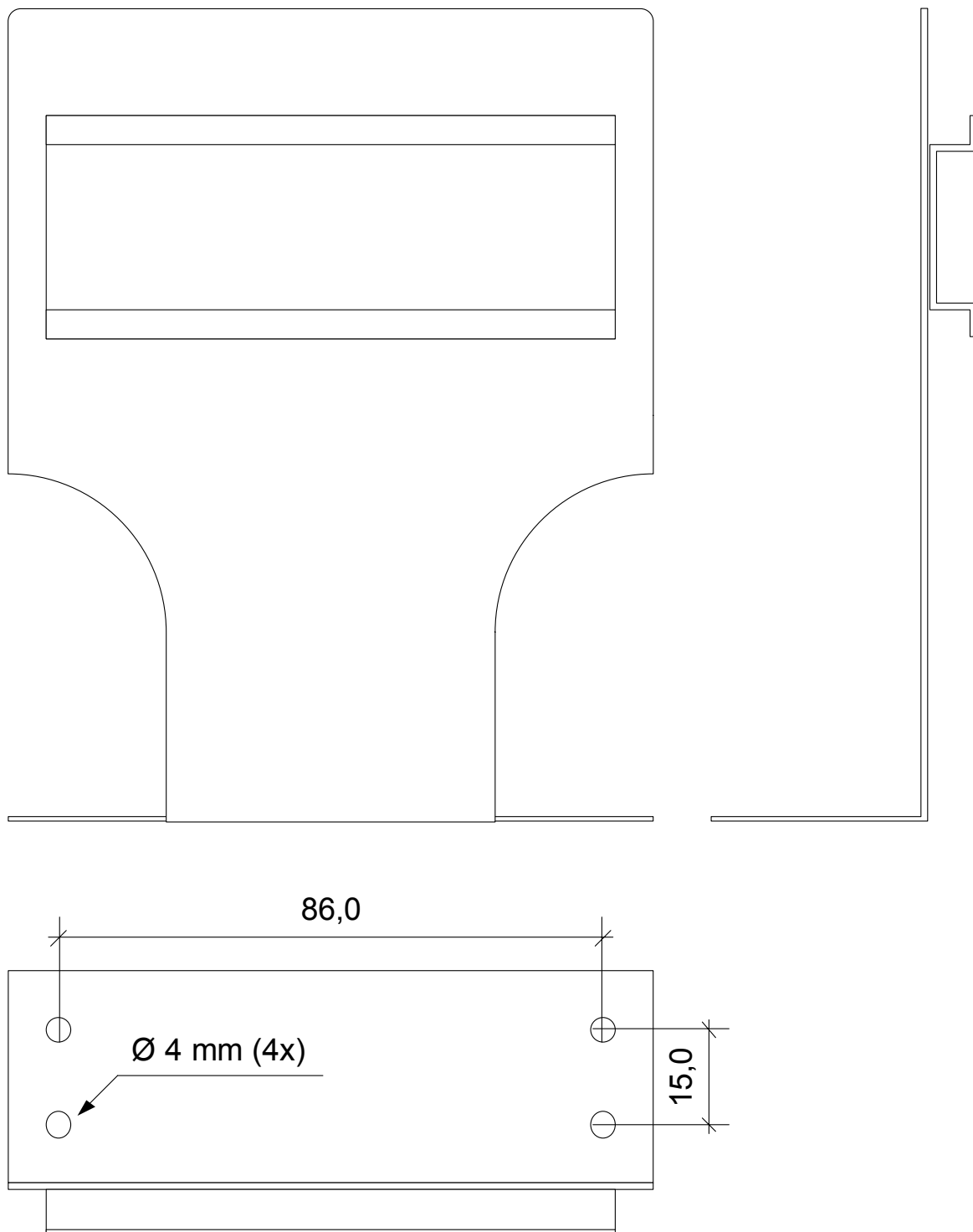
Attach the wires to the junction box according to the wiring diagram provided in the course of this section.



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:

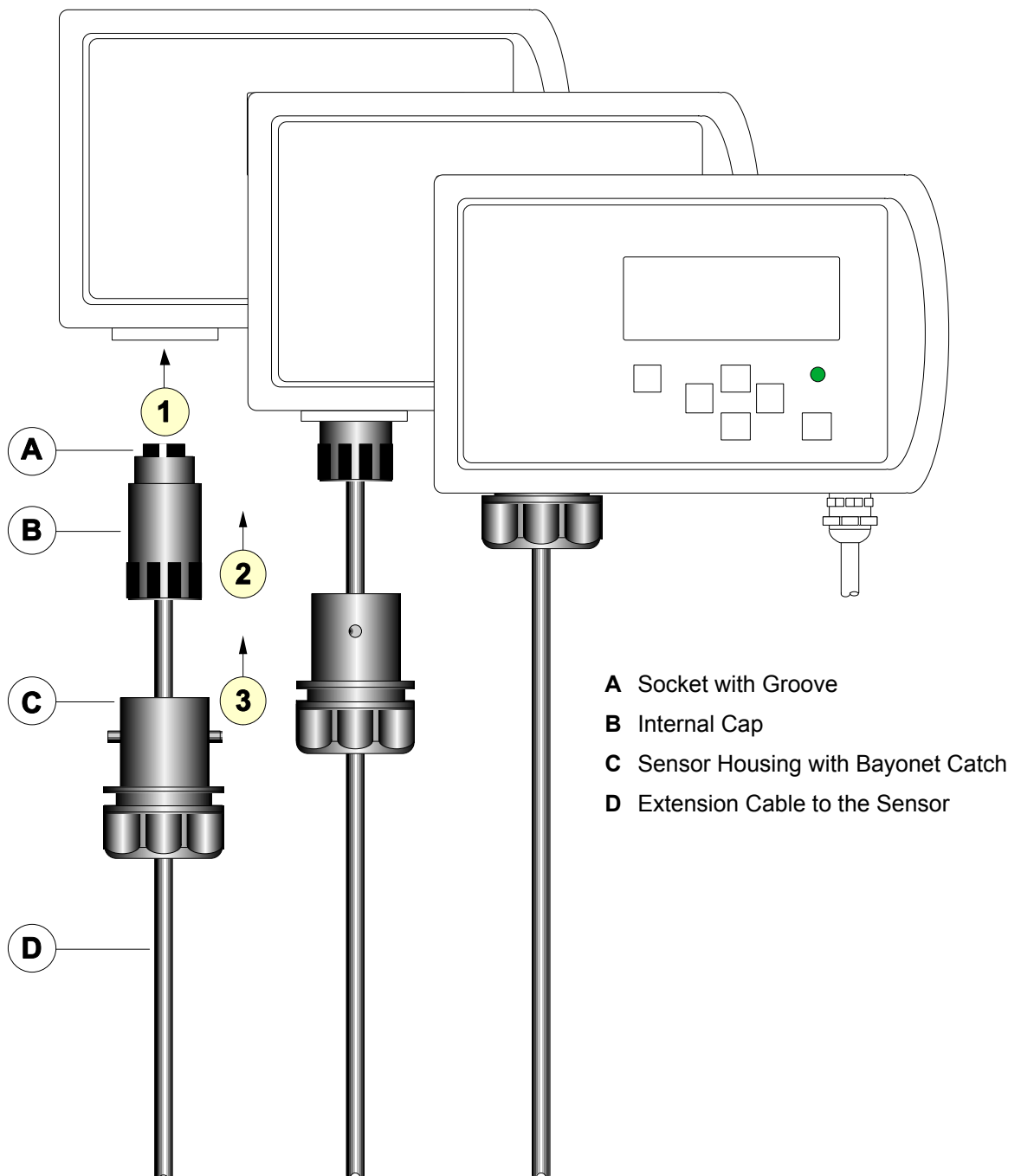
Do not apply power until system is ready for start-up!

2.3 Duct Mounting

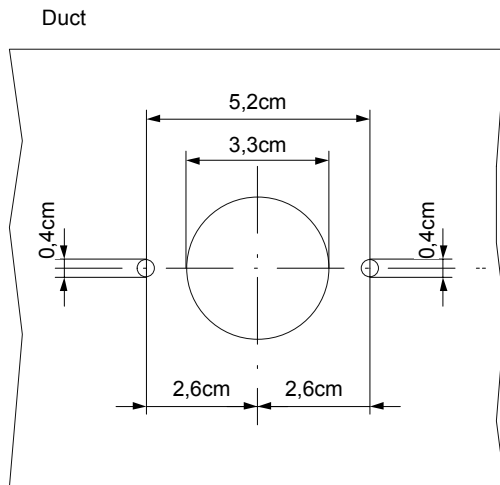
Observe the guidelines for installation of the instrument. For assembly and installation of the sensor extension see the schematics below and overleaf.

2.3.1 Connecting the Sensor Extension to the Instrument

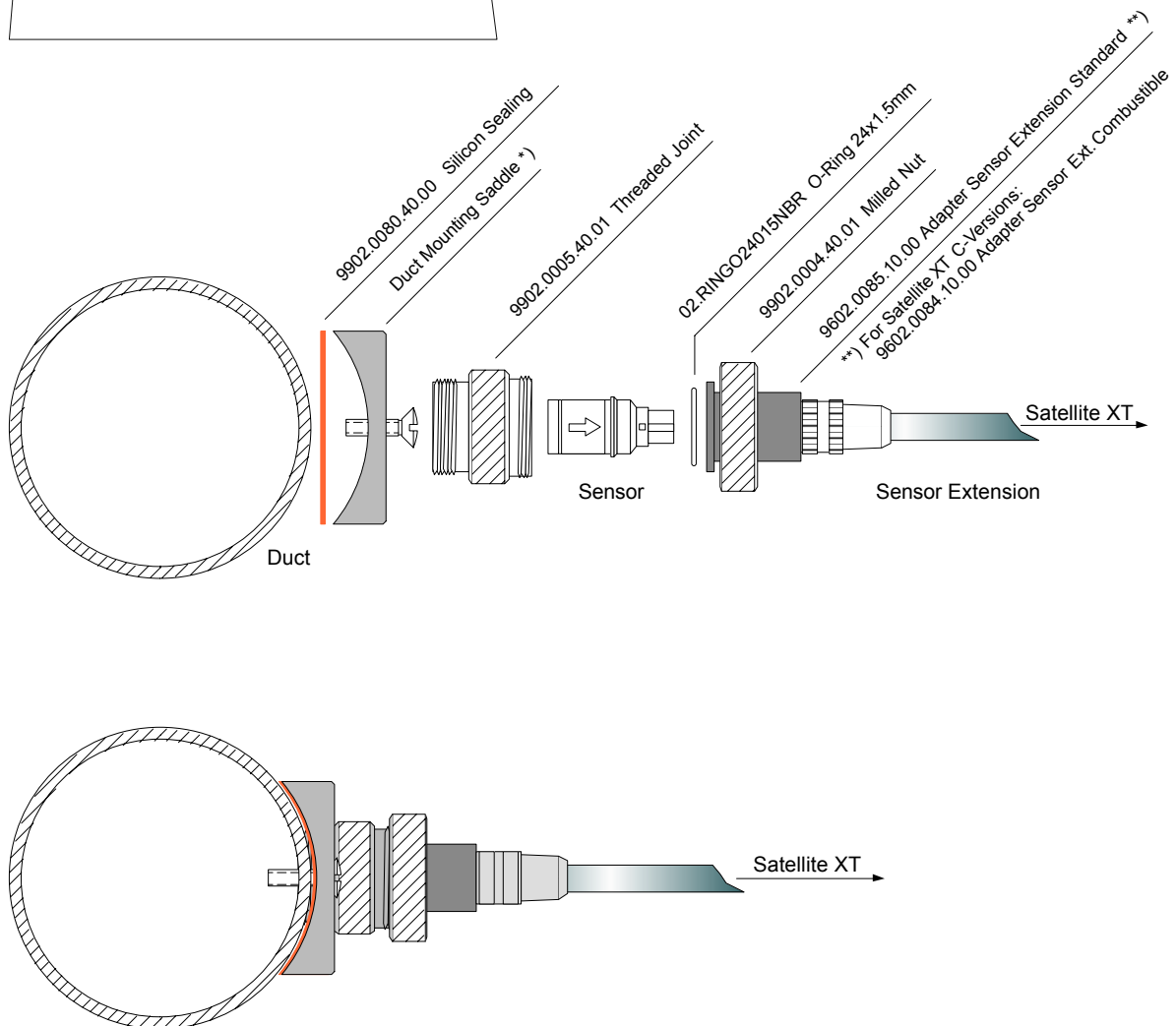
1. Connect the Socket (A) to the plug in the sensor compartment located at the bottom of the Satellite XT. The groove of the Socket must face to the front.
2. Screw in the Internal Cap (B) and fasten it hand-tight.
3. Insert the Sensor Housing (C) with the nose of the Bayonet Catch facing to the front.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

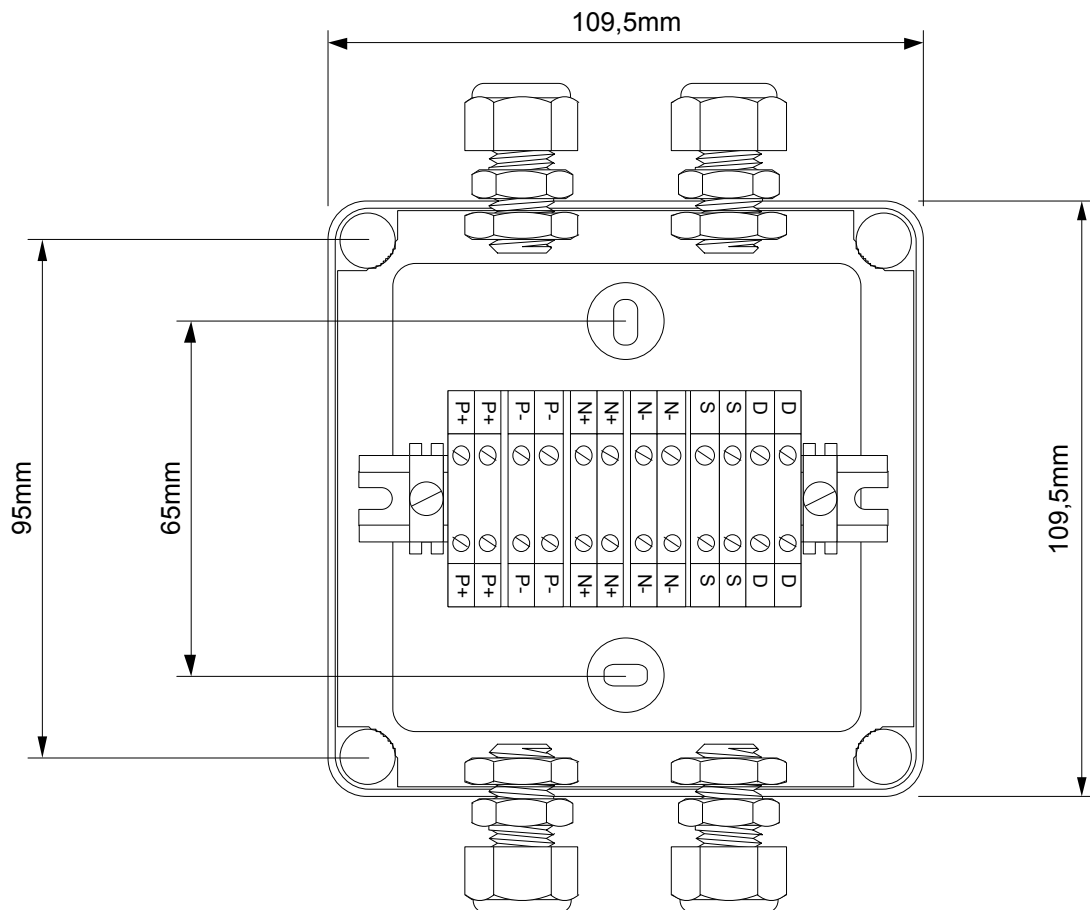
The open end of the cable should be terminated in a junction box:

- whitemarked D+to D
- brownmarked –to P–
- green.....marked P+to P+
- cable shield.....to 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



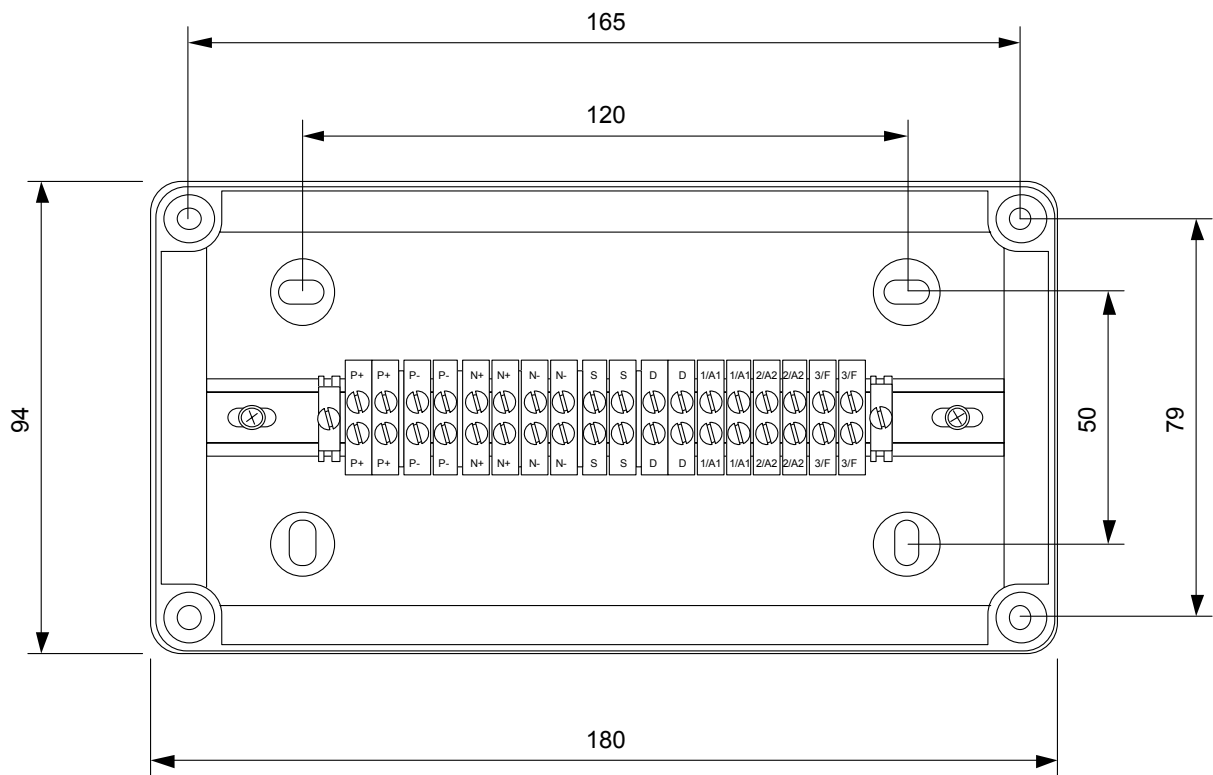
Junction Box 2 nodes, standard

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.

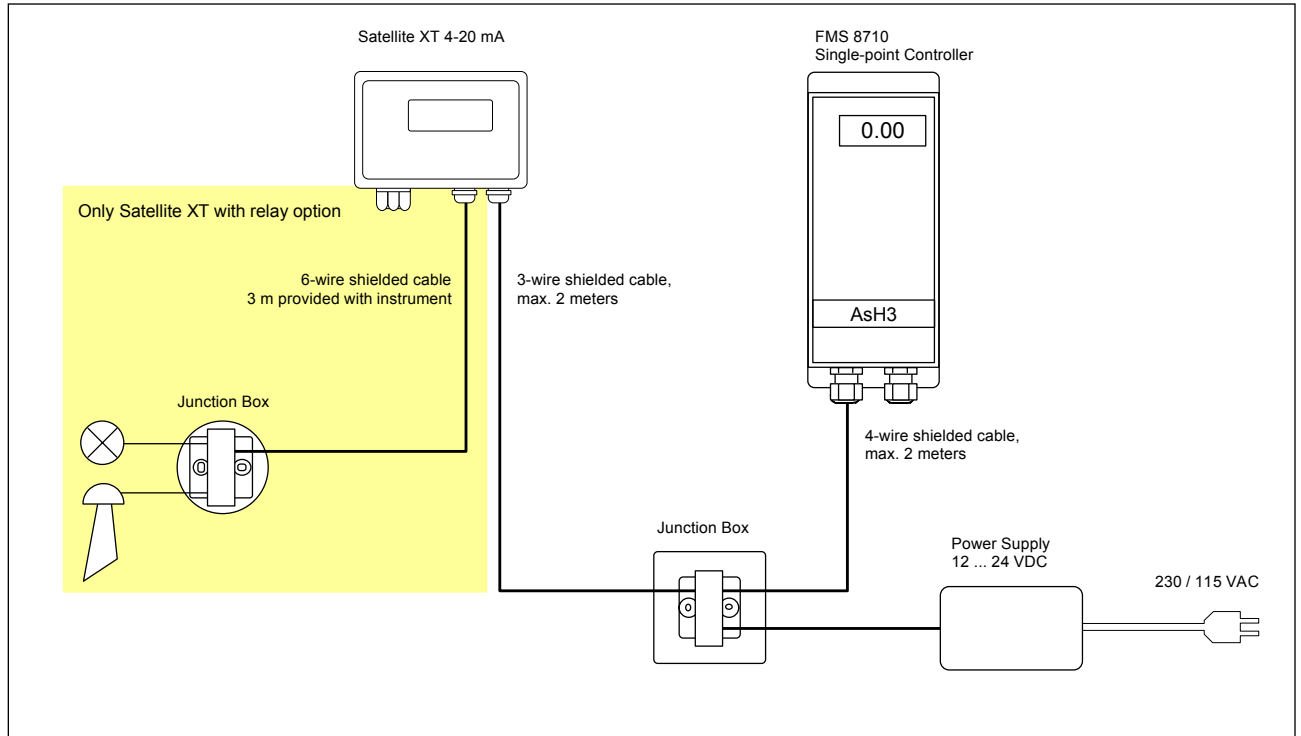
Relay Contacts		
1	white	Alarm 1 Relay
1	brown	Alarm 1 Relay
2	green	Alarm 2 Relay
2	yellow	Alarm 2 Relay
3	grey	Fault Relay
3	pink	Fault Relay
S	shield	cable shield



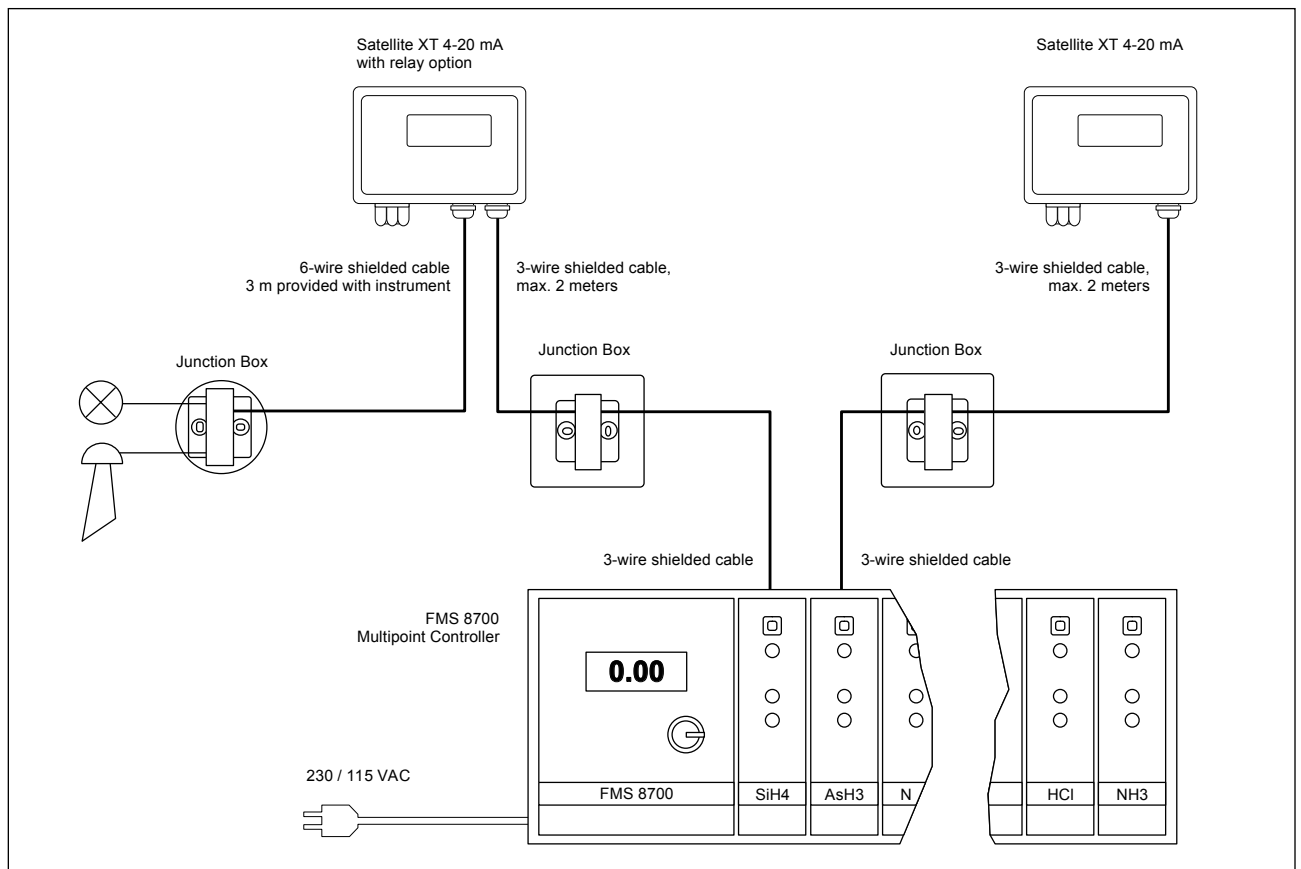
Junction Box for instruments with Relay Option (1 node, R-Version)

Note:

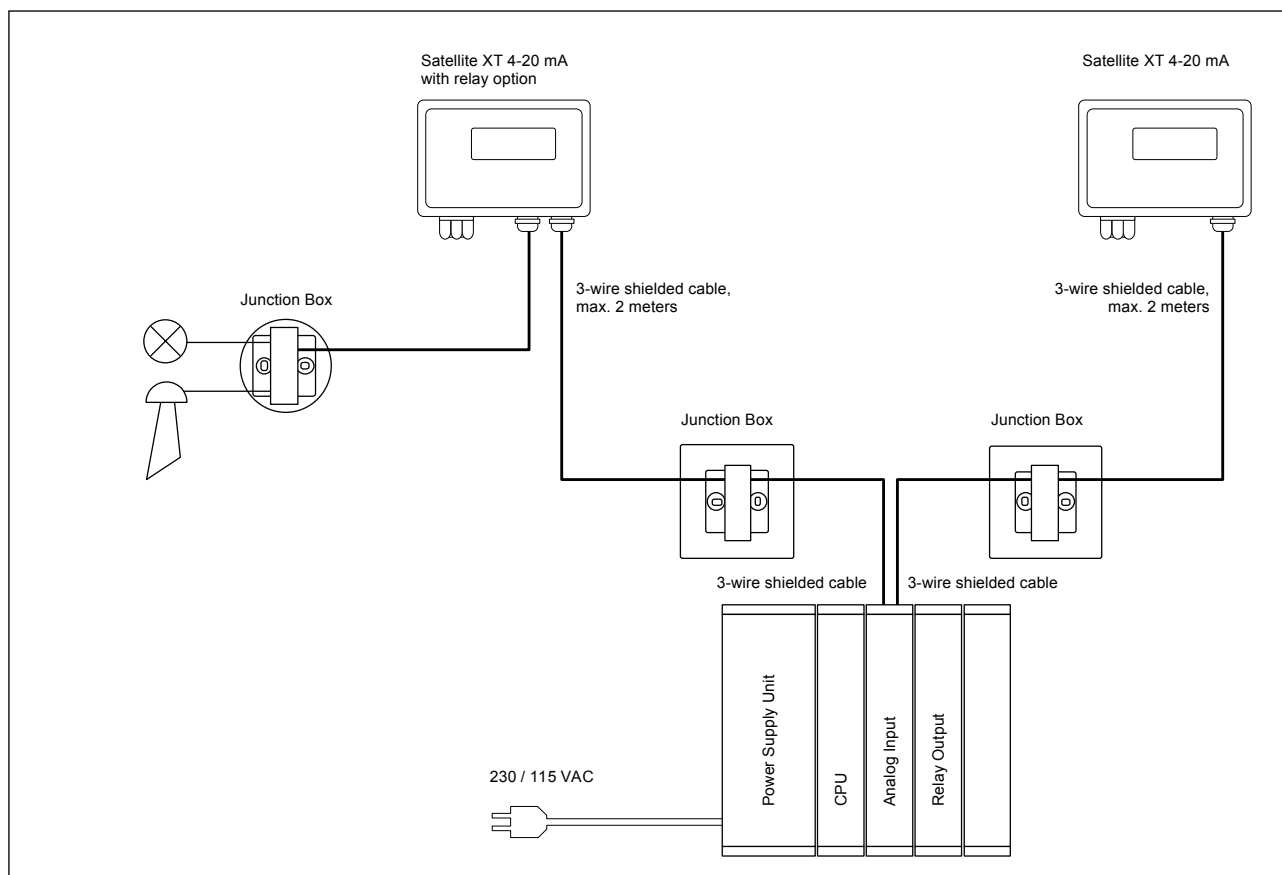
All wiring for the Satellite XT and its related equipment must be in compliance with any local electrical and fire codes. The Satellite XT wiring must be kept away from any high power lines. All shielding for the wiring must be connected together and grounded at only one point in the system.



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



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
AsH3
0 . 00 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:

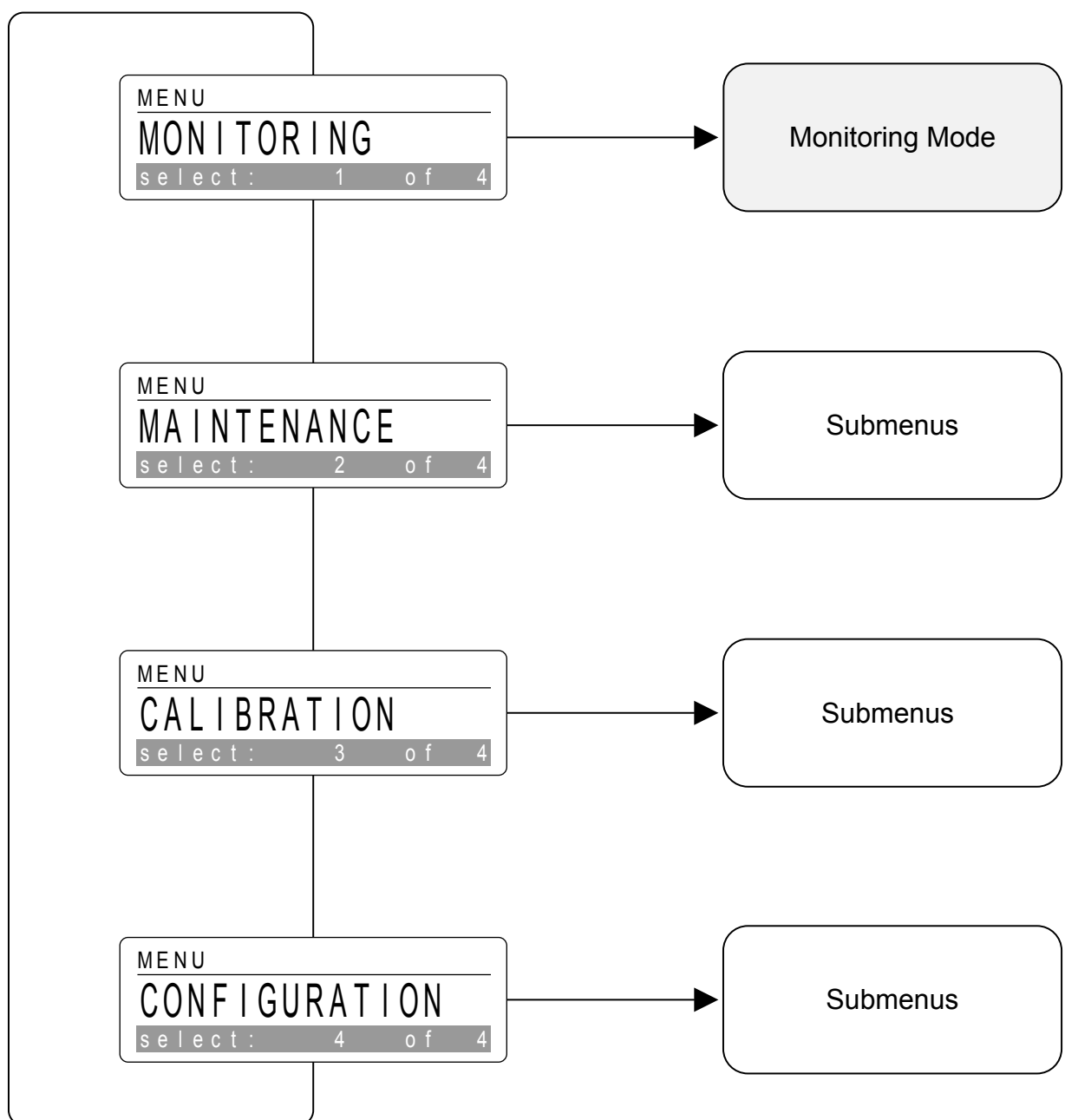
Span Adjustment must be performed prior to start-up. It is recommended to repeat Span Adjustment every 4 to 6 weeks. For details refer to Section 5, Calibration.

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

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

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.

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

Sensor Service
screen 1 of 5

MAINTENANCE

SENSOR SERVICE

select: 1 of 5

Device Infos
screen 2 of 5

MAINTENANCE

DEVICE INFOS

select: 2 of 5

Sensor Infos
screen 3 of 5

MAINTENANCE

SENSOR INFOS

select: 3 of 5

Reset Device
screen 4 of 5

MAINTENANCE

RESET DEVICE

select: 4 of 5

Service
screen 5 of 5

MAINTENANCE

SERVICE

select: 5 of 5

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

DEVICE 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.

DEVICE INFOS

SW: SXT_Xx.Xx

showing: 1 of 2

<Actual Software Version>

The version of the software presently installed is shown.

DEVICE 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

continued

Sensor Infos

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.

MENU
CALIBRATION
select: 3 of 4

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

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

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

ZERO ADJUST

select: 1 of 2

ZERO ADJUST

APPLY AIR !

use clean air !

ZERO ADJUST

0.01 ppm

Value stable ?

ZERO ADJUST

0.00 ppm

Value o.k. ?

ZERO ADJUST

SAVE ?

<set> to confirm

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.

Zero Adjust

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

Zero adjustment applies for all sensors except oxygen sensors.

Apply Air !

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

<Actual Zero Point>

Allow the zero reading to stabilize.

If the reading is already zero, zero adjustment is not necessary. Actuate the <esc> key to exit.

If the reading is not zero, actuate the <set> key to re-adjust the zero point and to continue the procedure.

<Re-adjusted Zero Point>

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

Save ?

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

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

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 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>.

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.

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

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.

RELAYS

RELAY STATE

select: 1 of 3

Relay State

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

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

Deenergized / NO

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.

ALARM 1 RELAY

ENERGIZED/NC

select: 2 of 2

Energized / NC

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.

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.

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:

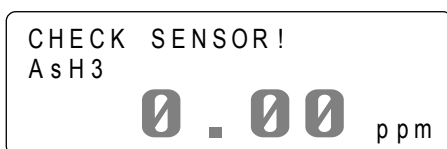
- the green status LED is flashing
- an alternating signal (2.8 to 4.0 mA, 0.1 Hz) is sent to external control systems; depending on the configuration, this function can be enabled or disabled.
- depending on the configuration, the fault relay will be activated.

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 4 - 20 mA Signal Output Range

Substance / Sensor		Part No.	4 - 20 mA Range				Alarm 1
		Sensor	Min	Default	Max	Unit	Setting
3MS	Trimethylsilane	9602-6210	0 ... 7.5	20.0	50.0	ppm	2.5
AsH3	Arsine (3 El.)	9602-6001	0 ... 0.15	1.00	10.00	ppm	0.05
AsH3	Arsine (2 El.)	9602-6000	0 ... 0.15	1.00	10.00	ppm	0.05
AsH3	Arsine (2 El.)	9602-6002	0 ... 3.0	10.0	10.0	ppm	1.0
B2H6	Diborane	9602-6200	0 ... 0.30	1.00	10.00	ppm	0.10
Br2	Bromine	9602-6800	0 ... 0.30	5.00	10.00	ppm	0.10
C4F6	Hexafluorobutadiene	9602-9732	0 ... 30.0	50.0	100.0	ppm	6.0
C5F8	Octafluorocyclopentene	9602-9730	0 ... 6.0	20.0	50.0	ppm	2.0
CH3F	Methyl Fluoride	9602-9720	0 ... 0.300	0.500	1.000	% vol.	0.100
CH4	Methane	9602-9900	0 ... 60	100	100	% LEL	20
Cl2	Chlorine	9602-5300	0 ... 1.50	5.00	10.00	ppm	0.50
ClF3	Chlorine Trifluoride	9602-7410	0 ... 0.30	1.00	5.00	ppm	0.10
ClO2	Chlorine Dioxide	9602-7400	0 ... 0.30	1.00	5.00	ppm	0.10
CO	Carbon Monoxide	9602-5400	0 ... 75	500	1000	ppm	30
COCl2	Phosgene	9602-6600	0 ... 0.30	1.00	10.00	ppm	0.10
DCE 1,2	Di-chloro-ethylene 1,2	9602-9600	0 ... 600	1000	1000	ppm	200
F2	Fluorine	9602-6400	0 ... 0.30	5.00	10.00	ppm	0.10
F2	Fluorine	9602-6401	0 ... 9	30	50	ppm	3
GeH4	Germane	9602-6900	0 ... 0.6	5.0	10.0	ppm	0.2
H2	Hydrogen (1 %)	9602-5100	0 ... 0.300	1.000	1.000	% vol.	0.100
H2	Hydrogen (4 %)	9602-5101	0 ... 3.00	4.00	10.00	% vol.	1.00
H2S	Hydrogen Sulfide	9602-5200	0 ... 30	100	500	ppm	10
H2S	Hydrogen Sulfide (org.)	9602-5201	0 ... 30.0	30.0	50.0	ppm	10.0
H2Se	Hydrogen Selenide	9602-5600	0 ... 0.15	1.00	10.00	ppm	0.05
HBr	Hydrogen Bromide	9602-7000	0 ... 6.0	30.0	50.0	ppm	2.0
HCl	Hydrogen Chloride	9602-5800	0 ... 15.0	30.0	50.0	ppm	5.0
HCl	Hydrogen Chloride (tropic)	9602-5801	0 ... 15.0	30.0	50.0	ppm	5.0
HCN	Hydrogen Cyanide	9602-5700	0 ... 15.0	30.0	50.0	ppm	10.0
HF	Hydrogen Fluoride	9602-6500	0 ... 9.0	10.0	50.0	ppm	3.0
HMDS	Hexamethyldisilazane	9602-6714	0 ... 300	500	1000	ppm	100
HMDS	Hexamethyldisilazane	9602-6715	0 ... 0.300	0.500	1.000	% vol.	0.100
N2H4	Hydrazine	9602-7600	0 ... 0.30	1.00	10.00	ppm	0.10
NF3	Nitrogen Trifluoride	9602-9700	0 ... 30.0	50.0	100.0	ppm	10.0
NH3	Ammonia (100 ppm)	9602-6704	0 ... 60	100	200	ppm	20
NH3	Ammonia (1000 ppm)	9602-6705	0 ... 300	1000	1000	ppm	100
NO	Nitric Oxide	9602-7200	0 ... 75	250	1000	ppm	25
NO2	Nitrogen Dioxide	9602-7300	0 ... 9.0	25.0	100.0	ppm	5.0
O2	Oxygen	9602-5500	0 ... 25.0	25.0	30.0	% vol.	18.0
O3	Ozone	9602-7100	0 ... 0.30	1.00	10.00	ppm	0.10
O3	Ozone	9602-7101	0 ... 0.30	1.00	10.00	ppm	0.10
		continued overleaf					

8.2 Continued - 4 - 20 mA Signal Output Range

Substance / Sensor		Part No. Sensor	4 - 20 mA Range				Unit	Alarm 1 Setting
			Min	Default	Max			
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.

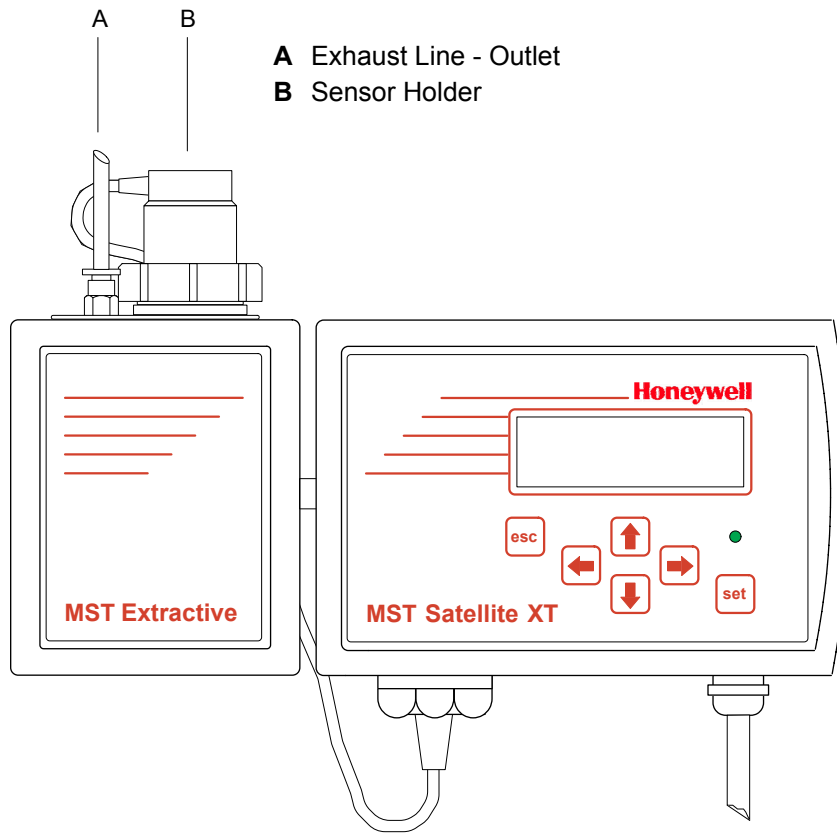


Note:

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.

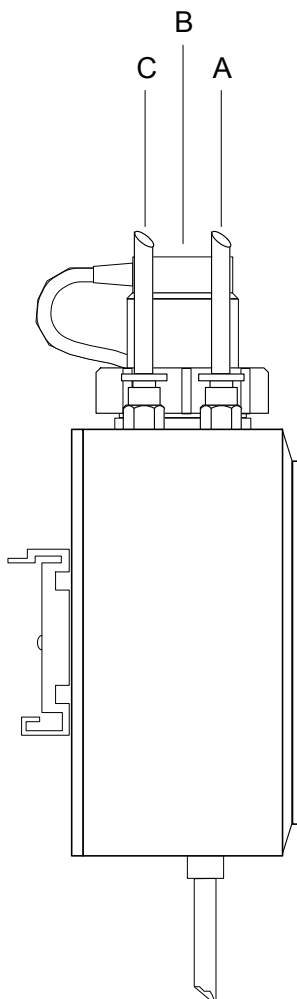
9.4 Instrument Design

Front View showing Extractive Module XT connected to Satellite XT



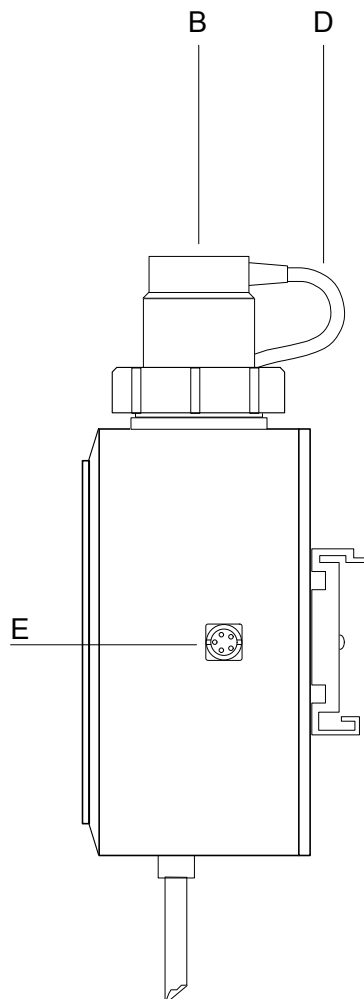
Side View (left)

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



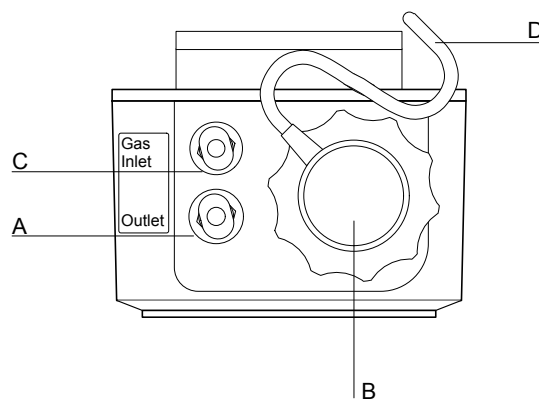
Side View (right)

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



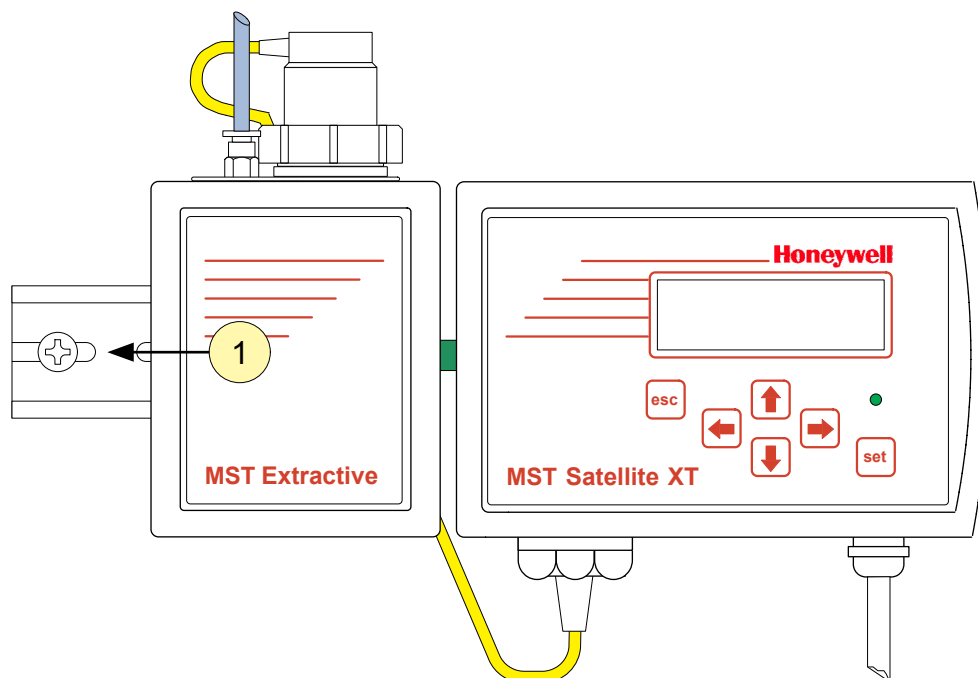
Top View (only Extractive Module XT)

- 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.

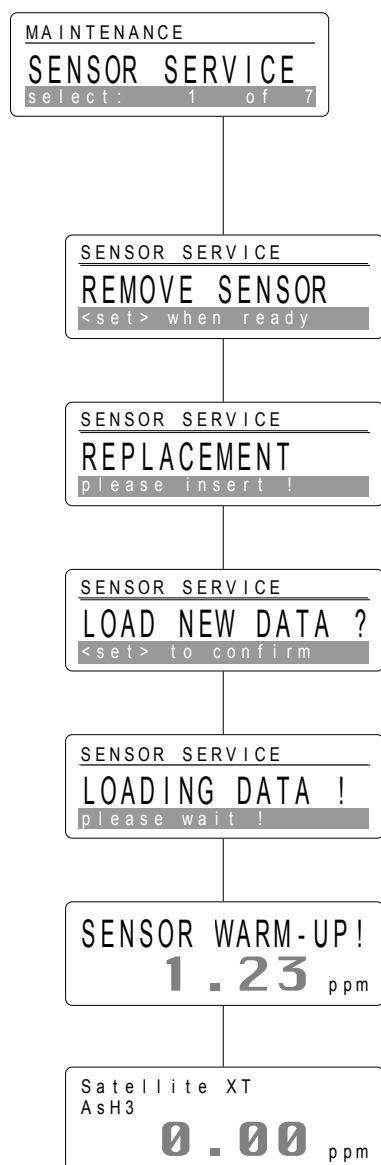


Note:
Do not apply power until the system is ready for start-up.

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.

Figure 2

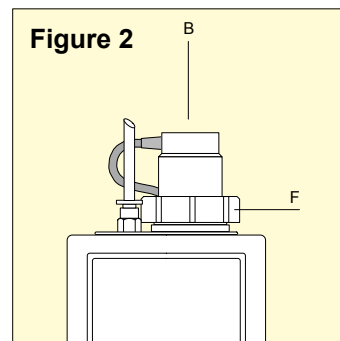


Figure 3

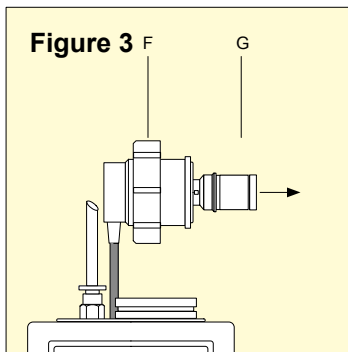


Figure 4

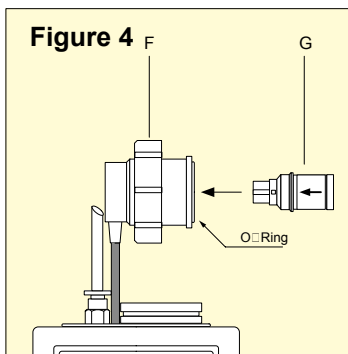
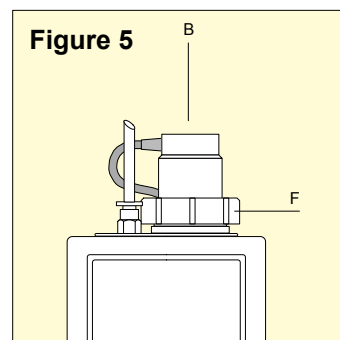


Figure 5



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.

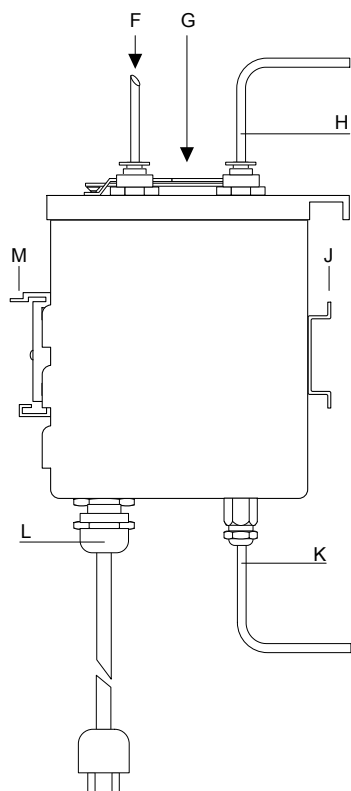


Figure 2: Front view of the complete assembly Pyrolyzer Module, Extractive Module, and Satellite XT.

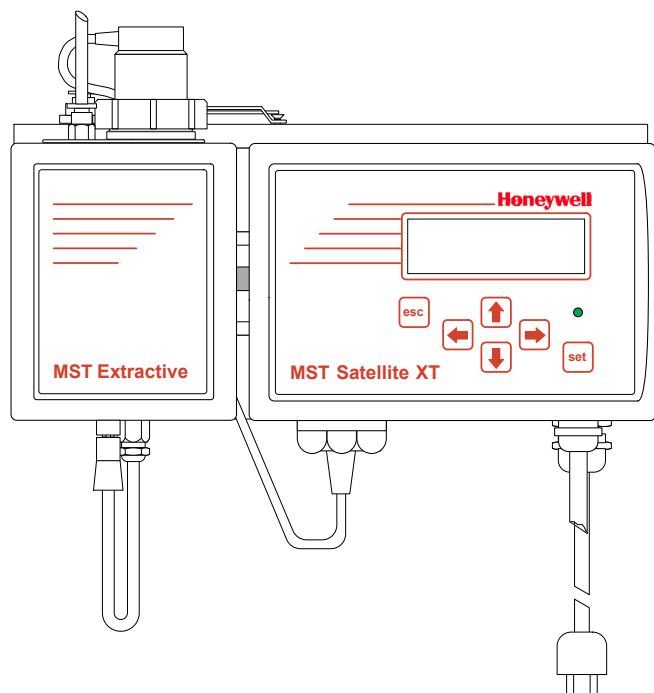
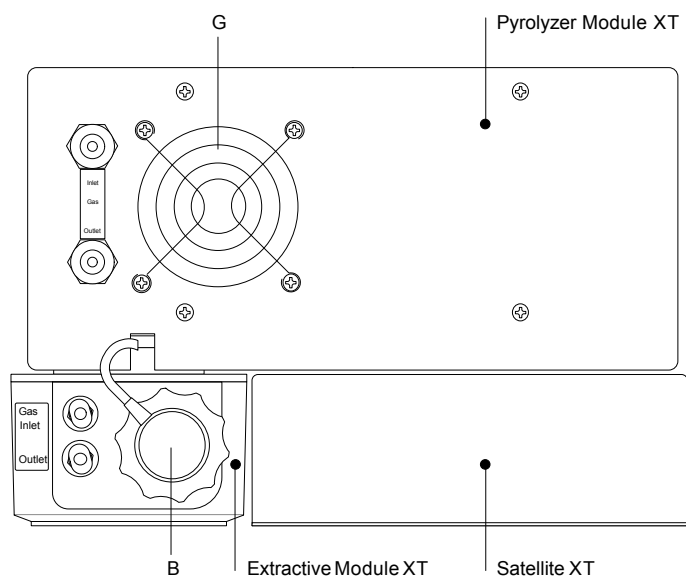


Figure 3: Top View of the complete assembly



- 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

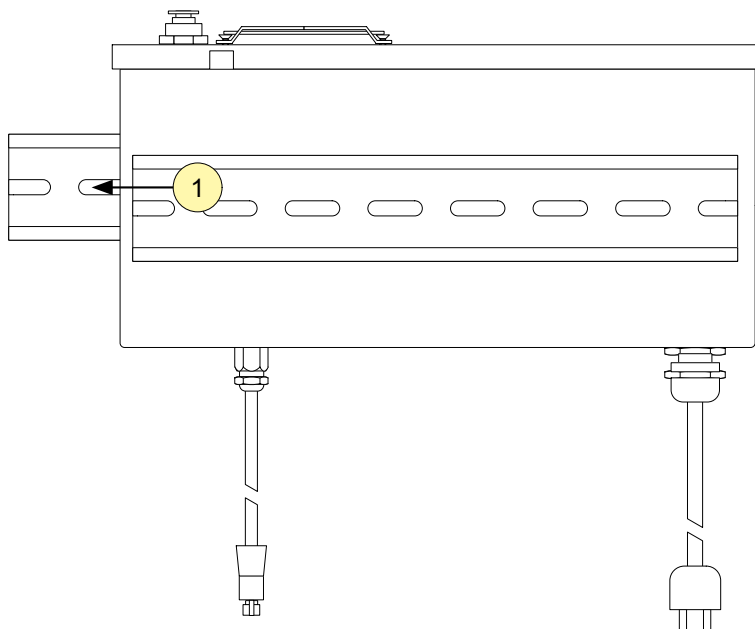
10.5 Mounting

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:

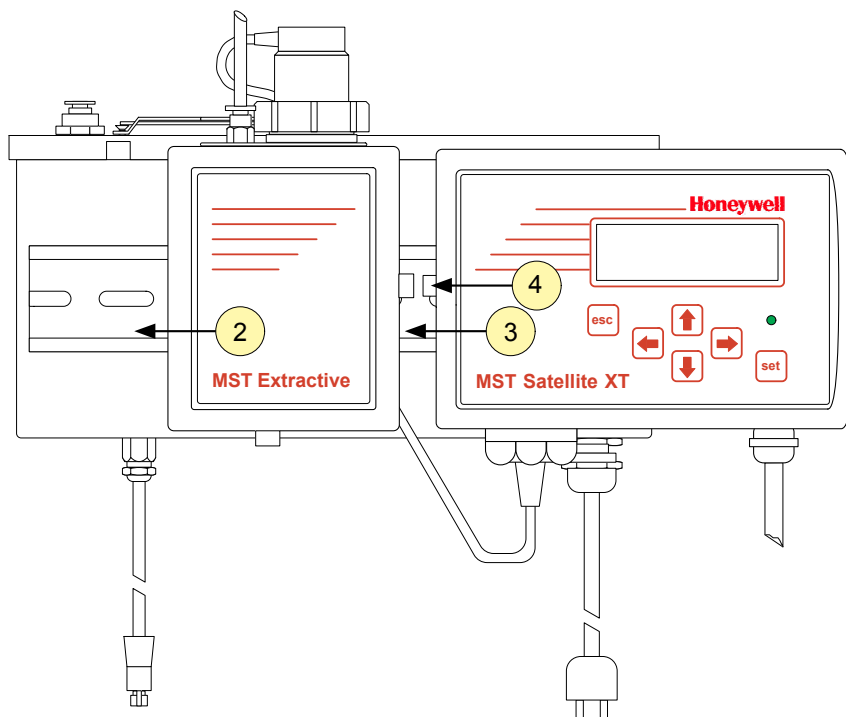
1. Slide the Pyrolyzer Module XT onto the rail mounted to the wall, see Figure 4.

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

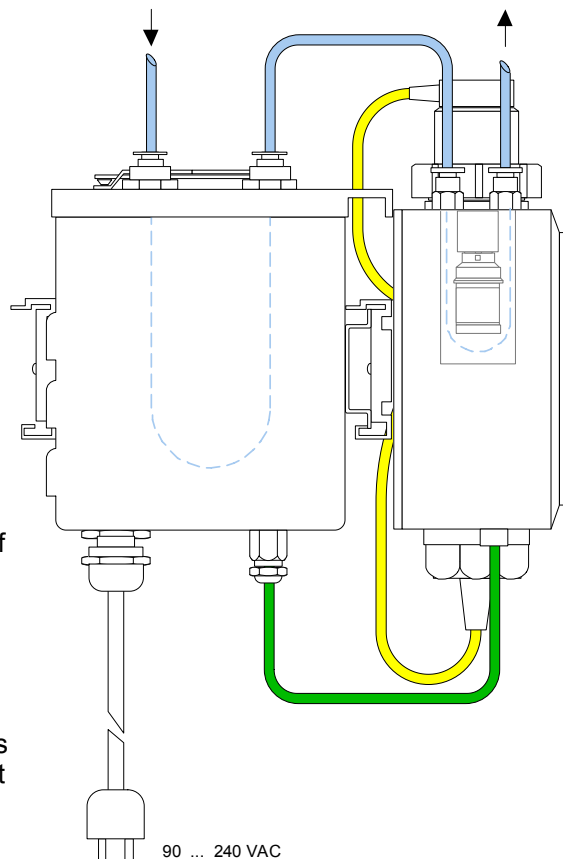
-  sample tubing.
-  sensor connection between Extractive Module XT and Satellite XT.
-  data link connecting Pyrolyzer Module XT and Extractive Module XT / Satellite XT.

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
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RFI / EMC	EN 55011 EN 50082-2
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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

