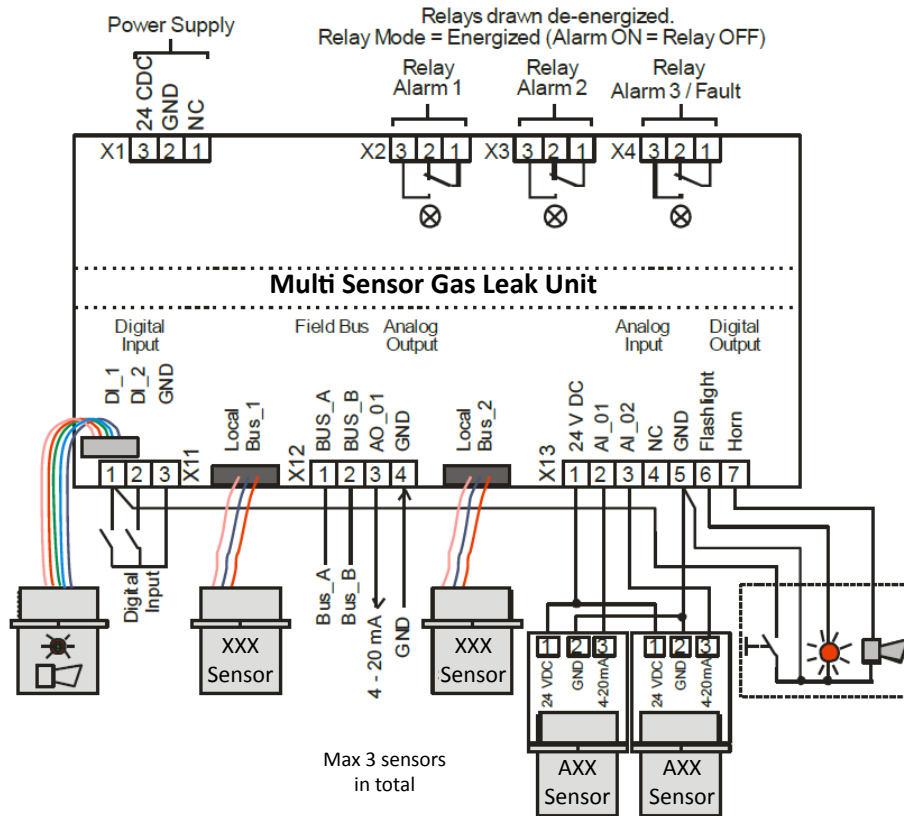




Multi Sensor Gas Leak Unit
User Manual
January, 2018

Electrical Connection



Relay Mode

Definition of the relay operation mode.

The terms energized / de-energized for this menu item come from the terms open-circuit and closed-circuit principle used for safety circuits.

The terms refer to the activation of the relay coil, not to the relay contacts (as they are executed as a changeover contact and available in both principles).

The LEDs attached to the modules show the two states in analogy. (LED off -> relay de-energized)

Relay Function Static / Flash

Definition of the relay function: The function “flashing” represents a connection option for warning devices to improve visibility.

If “flashing” is set, this must not be used as a safe output circuit any more.

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

Horn Function (not safe output circuit because resettable)

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

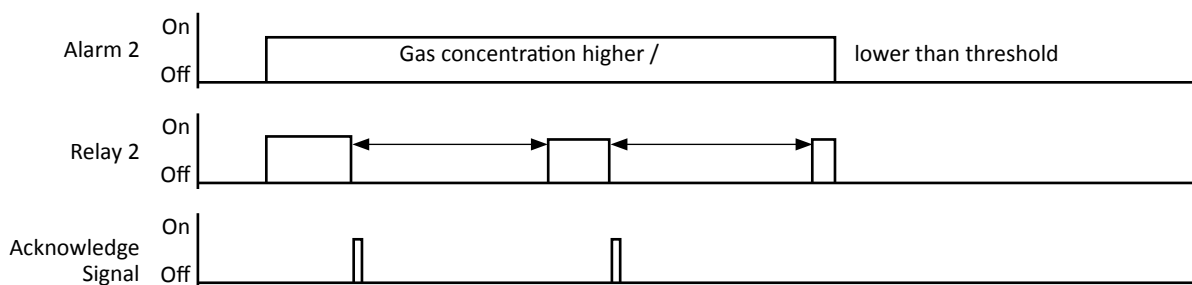
Special function: Recurrence of the horn relay

After an alarm has been triggered, the horn will remain active until it is acknowledged.

After acknowledgment of the horn relay/s (clicking a button or via external input) a timer starts.

When this time has run out and the alarm is still acting, the relay is set again.

This process is repeated endlessly as long as the associated alarm remains active.



MOUNTING / ELECTRICAL CONNECTION

The Gas Leak Unit is fixed to the wall through the four marked mounting points at the back side of the housing.

These mounting points are accessible after opening the housing. See figure.

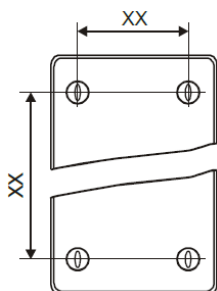
The dimensions XX depend on the type and can be read on the back of the housing, in the housing version of CX, it is 115 mm.

The mounting points are covered by closing the cover at the end of the assembly.

We recommend considering the following when choosing the mounting position:

- Installation height depending on the gas type, for CO₂ near the ground approx. 0.3 m above floor.
- Cables are introduced from above, the sensor head downwards.
- Observe possible constructor's instructions.

Installation of Gas Leak Unit



Wiring

The technical requirements and regulations for wiring, electrical security, fire protection, as well as project specific and environmental conditions etc. must be observed when mounting.

We recommend the following cable types¹

- | | |
|--|-------------------------------|
| - Power supply 230 V at least | NYM-J 3 x 1.5 mm ² |
| - Alarm message 230 V (also possible together with power supply) | NYM-J X x 1.5 mm ² |
| - Signal message, bus connection to GCD, warning devices 24 V | J-Y(St)Y 2x2 x 0.8 |
| - Possibly connected external analog transmitter | J-Y(St)Y 2x2 x 0.8 |

¹ The recommendation does not consider local conditions such as fire protection etc.

Analog sensors are connected directly to the spring type terminals of the module.

The correct polarity must be observed.

Digital gas sensors are directly plugged in the connector.

The alarm signals are available as potential-free change-over contacts.

If required the voltage supply is available at the terminals L1.

The exact position of the terminals for the sensors and alarm relays is shown in the connection diagram.

COMMISSIONING

For sensors that e.g. can be poisoned by silicones like all semiconductor and catalytic bead sensors, it is imperative to remove the protective cap supplied only after all silicones are dry, and then energize the device.

For fast and comfortable commissioning we recommend proceeding as follows.

For digital devices with self-monitoring all internal errors are visible via the LED.

All other error sources often have their origins in the field, because it is here where most of the causes for problems in the field bus communication appear.

Optical Check

- Right cable type used.
- Correct mounting height according to definition in Mounting.
- Led status

Selection Gas Type with Unit

The selection of the desired and connected gas sensor type is made by pre-set values.

If other gas sensor types are connected, you have to adjust them with the configuration tool, because otherwise the device will respond with an error message.

Connection possible as digital sensor cartridge.

The selection contains all necessary information for the controller and is also used for comparing the real, digital data with the settings.

This feature increases the user and operating security.



CONFIGURATION AND PARAMETER CARDS			
Commission:		Order number:	
Customer:		Service technician:	
Commissioning - company:		Date:	

Serial No.	Date of Production	Mainten. interval	Mainten. Password	AV Overlay		AV Time	Power On Time	Error Time	CFM dupl.
				V-time	ppm				
Note	Note down	1900	****	0	0	90	30	30	0

Analog Output 1		
Outp. Signal 100%	Source CV	Oper. Mode MAX

Relay Multiplication									
1		2		3		4		5	
In	Out	In	Out	In	Out	In	Out	In	Out
0	0	0	0	0	0	0	0	0	0

Configuration Card Alarm Relays / Signal Outputs												
Relay No.	Active Inactive	Mode	Stat. Flash	Reset Time	Horn Recur.	DI	Extern. On DI	Extern. Off DI	Delay at ON sec	Delay at OFF sec	Fault ORed	Maint. ORed
Default	inactive	de-en	Stat.	0	no	0	0	0	0	0	OFF	OFF
R 01	active	energ.										
R 02	active	energ.										
R 03	active	de-en										
Horn	active	de-en										
LED red	active	de-en	flash									



Configuration Card devices (digital measuring points)																											
DP Nr.	MP Status	Locked	Gas type		Range	Alarm Thresholds				Hyst	CV- Delay Alarm (Sec)	at ON	at OFF	CV-AV	Alignment Latching				Assignment Fault <>Alarm				Assignment Alarm <> Alarm Relay				Ao1
			Gas	Unit		A1	A2	A3	A4						A1	A2	A3	A4	A1	A2	A3	A4	A1	A2	A3	A4	
01	active	n	CO2	%Vol	5	0.5	1	1	1	0.2	0	0	CV	0	0	0	0					1	R1	R2	R3	R4	
02	inactive	n																									
03	inactive	n																									
Change of values after replugging the jumper (closed)																											
01	active	n	CO2	%Vol	5	1	1.8	1	1	0.2	0	0	IW	0	0	0	0					1	R1	R2	R3	R4	
02	inactive	n																									
03	inactive	n																									

Configuration Card devices (analog measuring points)																											
DP Nr.	MP Status	Locked	Gas type		Range	Alarm Thresholds				Hyst	CV- Delay Alarm (Sec)	at ON	at OFF	CV-AV	Alignment Latching				Assignment Fault <>Alarm				Assignment Alarm <> Alarm Relay				Ao1
			Gas	Unit		A1	A2	A3	A4						A1	A2	A3	A4	A1	A2	A3	A4	A1	A2	A3	A4	
01	inact.	no	CO2	ppm	300	30	60	120	120	15	0	0	AV	0	0	0	0					1	R1	R2	R3	R4	
02	inact.	no																									
03	inact.	no																									



FUNCTIONAL TEST (FOR INITIAL OPERATION AND MAINTENANCE)

The functional test should be carried out during each service, but at least once a year.

ZERO-POINT TEST WITH FRESH OUTDOOR AIR

Due to the employed optical measurement principle, there won't be any deterioration caused by ageing or chemical processes in the sensor. However, a zero offset may occur that has to be measured and documented at regular intervals.

Using the Service Tool STL 06 you can read out measured value.

If option "analog output" is available you can measure the voltage at the terminal X12, 3 with reference to 4 (analog output 2-10V), with a voltmeter. If the voltage exceeds 2.8V=5.6mA (corresponds to 0.5% by volume), the sensor cartridge has to be replaced.

TRIP TEST WITH REFERENCE GAS

The sensor is gassed with reference gas CO₂, concentration, 2-3 % vol, (for this you need a gas bottle with pressure regulator and a calibration adapter).

In doing so, the set alarm thresholds are exceeded, and all output functions are activated. It is necessary to check if the connected output functions are working correctly (e.g. the horn sounds, the fan switches on, devices shut down). By pressing the push-button on the horn, the horn acknowledgment must be checked. After removal of the reference gas, all outputs must automatically return to its initial position.

Other than the simple functional testing, it is also possible to perform a functional test by means of calibration. For further information, please refer to the User Manual.

CALIBRATION

New Sensor Cartridges SC2 are always delivered factory-calibrated by AP. This is documented by the calibration label indicating date and calibration gas. A repeated calibration is not necessary during commissioning if the device is still in its original packaging (air-tight protection by the red protective cap) and the calibration doesn't date back more than 12 months for CO₂ sensors and 3 months for all other gases.

Due to high operational stability of the sensor, and the intrinsically safe design of the gas detector, the gas detector doesn't need an annual calibration.

After an operating period of 5 years, only the sensor cartridge must be recalibrated & adjusted by the manufacturer or replaced. If this time has been exceeded, the device answers automatically with the green LED flashing. This replacement of the sensor cartridge can be repeated without limitation, as long as there isn't a malfunction (fault X4). The evaluation unit must not be exchanged. After exchange of the sensor, the LED shows the correct operation again (green).

For the calibration of the sensor cartridge, you need a PC tool or the MSC-06-STL Service Tool. There is an automatic routine in the calibration menu of the Service Tool STL.

As long as the calibration menu is open and the sensor is gassed with test gas, the alarm release is blocked.

Prior to calibration the sensor must be connected continuously to the power supply for stabilization for a running-in period.

This running-in period of some sensors can be taken from the following table:

	Sensor/Gas type	T _{on}
01	CO ₂	2 days fresh air
02	Combustible gases	1 h
03	NH ₃	18 h
04	Freons	8 days

Project protection

To prevent access to the sensitive calibration data by third parties, every customer receives his own internal project key. All projects of the customer are delivered with this key. The key is also stored in each MSC-06-STL Tool that the respective customer buys.

If the keys do not match, the following message appears

NO ACCESS AUTHORIZATION

The calibration is documented in the User Manual of the Service Tool.

We cannot be held responsible for errors in the manual/datasheet and reserve the right to correct any errors and to make product improvements, which may affect the accuracy of the manual/datasheet, without prior notice.