



TELEDYNE
OLDHAM SIMTRONICS
Everywhereyoulook™

USER MANUAL

MX 256

DIGITAL CONTROLLER for Laboratories



User Manuals in other languages are available on Website
<https://teledynegasandflamedetection.com>



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- The *MX 256* model is not intended to be used as Life Safety Equipment.

GUARANTEE

- 2 years guarantee in normal conditions of use on parts and technical labour, return in our workshops, excluding consumables (sensors, filters, etc.).

General Information

Please read the following notice carefully before installation and start-up, paying particular attention to the end-user material safety instructions. This user's guide should be distributed to every individual involved in the installation, operation, maintenance or repair of the *MX 256* system.

The information contained in this manual, the data and technical drawings are correct as of the date of publication. Should questions arise, please contact TELEDYNE OLDHAM SIMTRONICS for additional information.

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This manual is a translation of the French original. In case of discrepancy between the French version and any translated version, the French version shall take precedence and shall prevail in all matters pertaining to any relationship between the parties.

Safety Warnings

Pictogram labels have been placed on the controller to call attention to general use safety precautions. These labels are an integral component of the controller. Replace any label that has peeled off or become illegible. The meanings of these labels are explained below.

Icon	Significance
	This symbol indicates useful additional information.
	This symbol indicates: Earth ground connection.
	This symbol denotes: Protective earth terminal. A cable of the adequate diameter must be connected to ground and to the terminal having this symbol.
	This symbol denotes: Attention! In the present mode of use, failure to adhere to the instructions preceded by this symbol can result in a risk of electric shock and/or death.
	This symbol indicates: You must refer to the instructions.



European Union (and EEA) only. This symbol indicates that this product must not be discarded with household waste, as per the EEA directive (2002/96/EC) and your own national regulations.

This product must be disposed of at a collection point that is reserved for this purpose, for example, an official site for the collection of electrical and electronic equipment (EEE) in view of their recycling, or a point of exchange for authorized products that is accessible when you acquire a new product of the same type.

Any deviation as regards these recommendations for the disposal of this type of waste can have negative effects on the environment and public health, as these electric and electronic products generally contain substances that can be dangerous. Your full cooperation in the proper disposal of this product promotes a better use of natural resources.

Important Information

The modification of any piece of equipment or the use of any third party parts will automatically void all guarantees.

The controller is intended to be used for precise applications of a technical nature. Exceeding the indicated values is strictly prohibited.

The use of the *OLCT 10N* unit has been projected for the applications specified in the technical characteristics. Exceeding the indicated values cannot in any case be authorized.

Poisoning may result from exposure to substances as:

- silicones (e.g. waterproofing, adhesives, release agents, special oils and greases, certain medical products, commercial cleaning agents).
- tetraethyl lead (e.g. leaded petrol, particularly aviation petrol 'Avgas').
- sulfur compounds (sulfur dioxide, hydrogen sulfide).
- halogenated compounds (R134a, HFO, etc.).
- organo-phosphorus compounds (e.g. herbicides, insecticides, and phosphate esters in fireproof hydraulic fluids).

TELEDYNE OLDHAM SIMTRONICS recommends regular testing of fixed gas detection installations (read chapter 6).



The installation of this product and all electrical connections should be performed by a qualified professional, in accordance with the manufacturer's specifications and with the standards of authorities in the field.

Failure to observe these warnings may result in serious injury. Exercise great caution, particularly when working with electricity during installation (couplings, network connections).

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1 Overview of the *MX 256* controller

The controller is designed to measure and monitor tertiary or laboratory application.

The system consists of:

- a controller for collecting readings and managing alarms,
- various addressable digital modules (sensor modules, relay modules, analog output modules, logic input modules),
- instruments and accessories to process alarms and actions

The *MX 256* system can manage the detection of **10 different gases**, and all detectors are clearly localized and identified.

Data from each sensor is collected in the controller in less than one second. If gas levels exceed the programmed limits, an audiovisual alarm is triggered and can activate the ventilation system in the affected area of the parking facility.

Use the *COM256* software to program the controller.

The system status can be quickly verified with semi-automatic calibration for various sensors.

1.1 The *MX 256* controller



Figure 1: *MX 256*

The controller is available in a wall-mount version. It is designed to control:

- **256 digital modules** distributed over 8 lines, with a maximum of 32 modules per line.
- **256 addressable relays** max. distributed across all relay modules.

- **224 logic inputs** max. distributed across all logic input modules and relay modules.
- **256 analog outputs** max. distributed across 4 analog outputs modules.

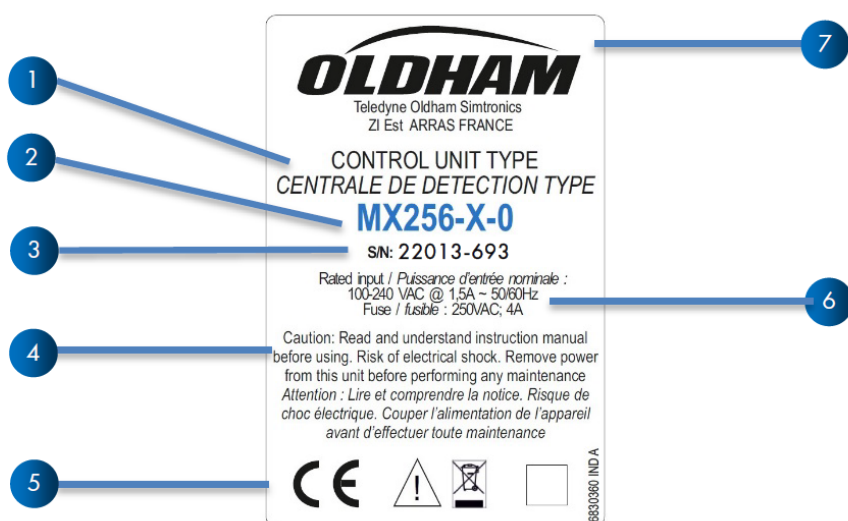
Modules are connected through a digital RS-485 network using JBUS/MODBUS protocol.

The controller can be connected to a supervision system via an RS-485 output interface using ModBus protocol.

Optional features include:

- **a battery back-up**, ensuring continual operation in case of a power outage (approx. 1 hour for 50 TOX-type sensors).
- **an external industrial controller module or remote HMI.**

1.2 Firmpate



Firmpate

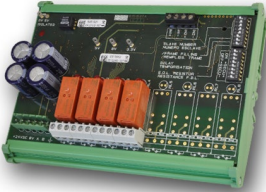
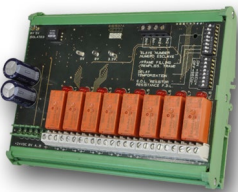
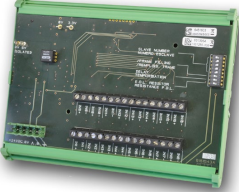
It contains relevant information with respect to the controller version.

Tag.	Description
1.	Product Name
2.	Part Number
3.	Serial Number. The first five digits (in this case 22013) correspond to the year and the month of manufacture (22 and 01 and 3 indicating manufacturing in the third week of January 2022)
4.	Warnings
5.	CE marking

- | | |
|----|---|
| 6. | Electrical characteristics |
| 7. | Name and mail address of the Manufacturer |

1.3 Digital addressable modules

Various digital addressable modules can be positioned on the same line.

	OLCT 10N	SENSOR MODULE See range of gases related to the OLCT 10N
4 relays 	8 relays 	RELAY MODULE 4 relays + 2 LI* 8 relays + 2 LI* (*) : LI = Logic Input
		LOGIC INPUT MODULE 16 Logic Inputs
		ANALOG OUTPUT MODULE 4 opto-isolated 4-20 mA outputs + 2 LI*

1.4 Digital linking

Modules are linked in-line via an MPI 22 or equivalent RS-485 double twisted pair cable, at least 0.22 mm² in diameter. One pair supplies power to the module, the second pair is used for the digital RS-485 link.

TELEDYNE OLDHAM SIMTRONICS – personnel should verify that the correct cable has been used in terms of type and capacity.

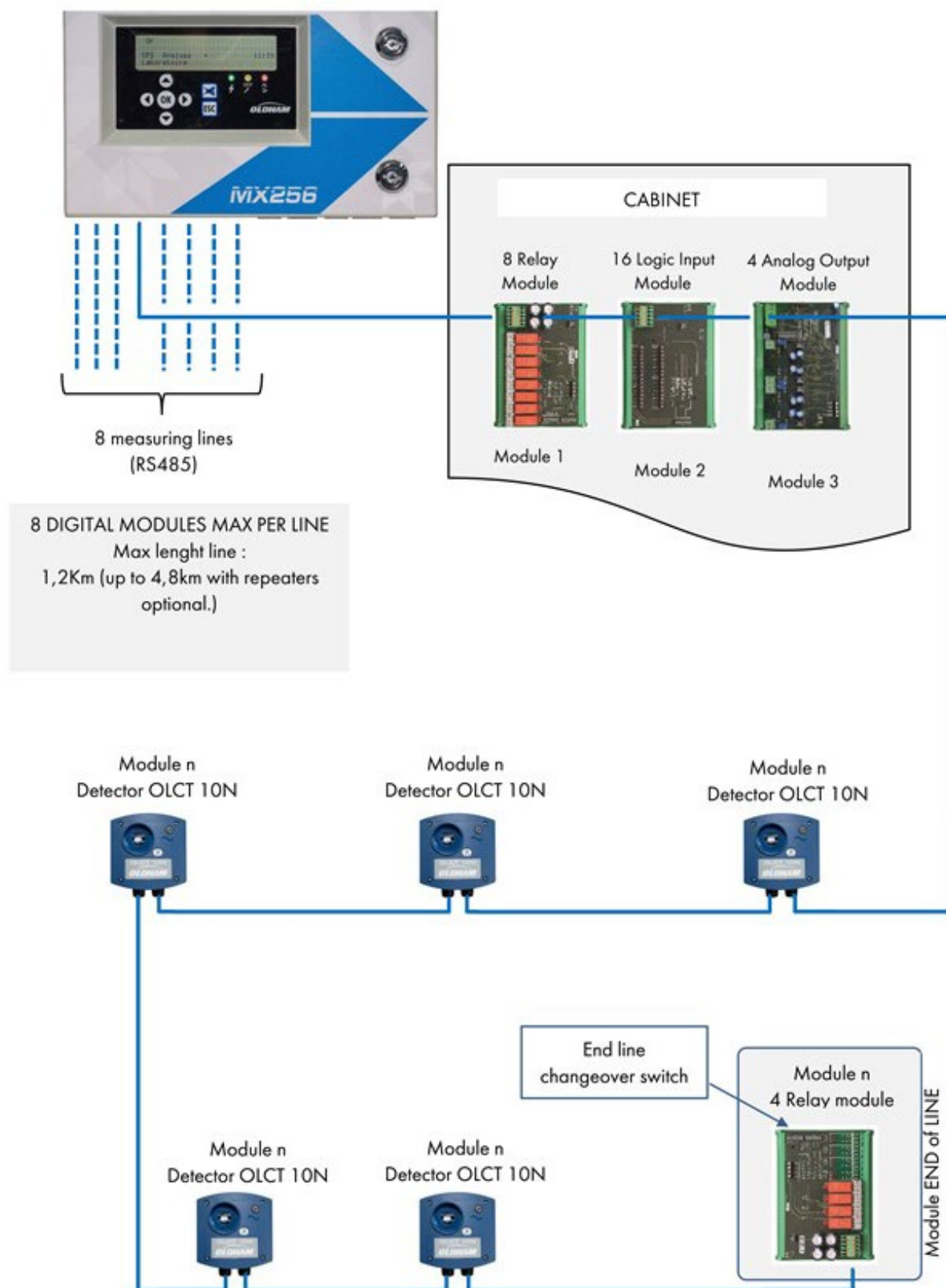


Figure 2: Digital line connection

1.5 The *COM256* software application

The *COM256* software application is designed to help configure the *MX 256* controller on a PC. *COM256* software operations are addressed in a separate manual.

1.5.1 System and Hardware Requirements:

COM256 must be installed on a PC running Windows.

The minimum requirements to install *COM256* are:

- Windows 98 SE, Windows NT, Windows 2000, Windows XP with 256 MB RAM, Windows VISTA, Windows 7, Windows 10.
- A USB drive
- At least 30 MB of free hard drive space
- A USB connection (cable not included) or a free RS-232 port (specific cable provided) to link the *MX 256* controller to the PC.

Refer to the *COM256* software instructions before installing or using the software, and before programming the controller.

The *COM256* software allows you to:

- configure one or more controller(s) via PC;
- save settings and upload them later to the *MX 256* controller(s).
- view or modify controller configuration data within the application.

The *COM256* software can be used to modify the following main configuration settings:

- STEL and TWA calculations
- Conditions that would activate an internal buzzer
- Communication speed for the RS-485 series connection with a master device
- Settings for various sensors and alarm values
- Personalized sensor add-on options
- Delay settings
- Rising edge or falling edge triggers
- Average alarm integration time
- Verification of explosive gasses
- Creation of installation architecture: sensors/relays

COM256

this sign appears in front of a chapter, the functions described in that chapter are configured with the *COM256* software.

2 Assembly / Installation

2.1 Installation of the *MX 256* controller

The *MX 256* controller should be installed in a dry, climate-controlled area protected from explosive gases and dust. Ideally, the station should be located in a secure, accessible location under surveillance (security office, control room, equipment room ...).

2.1.1 Mounting the metal wall casing

For the wall-mounted *MX 256* in a metal case: The controller cover opens at a 90° angle to the left. Make sure to leave adequate space to completely open the cover once the controller is mounted.

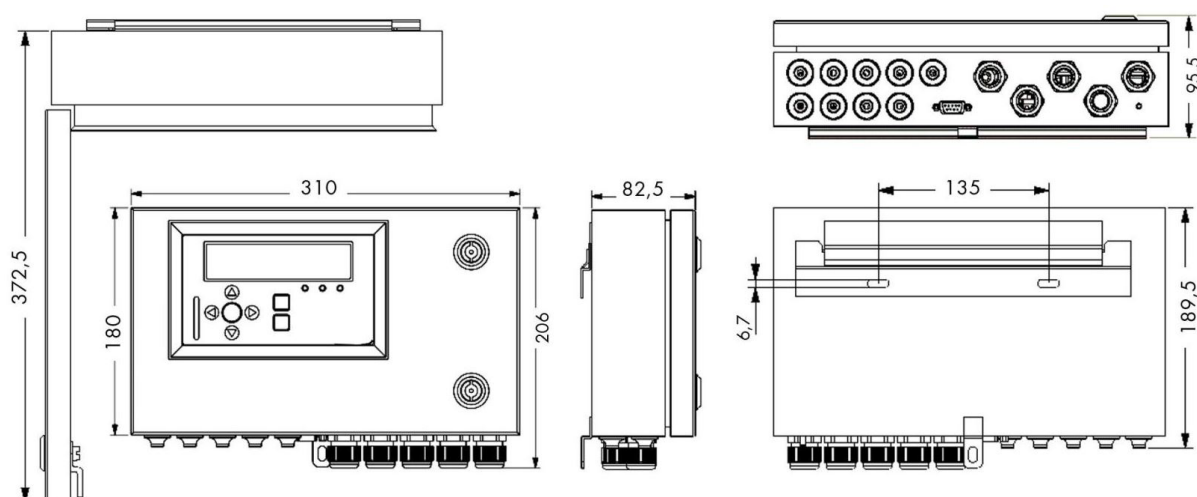


Figure 4 : dimensions

2.2 Installing digital modules

2.2.1 Mounting the OLCT 10N sensor module

Mount the sensor modules on a flat surface using two screws (Figure 4).

The modules should be placed in an accessible area, so that maintenance and inspection operations can be conducted as easily and as safely as possible. Nothing in the area should prevent the sensors from obtaining measurements of the ambient environment.

When mounting the sensor module on a vertical surface, position the cable glands on the underside of the module to ensure proper calibration.

2.2.2 Mounting the other modules

The other modules (relay, logic input, analog output) should be mounted on a DIN rail inside of a cabinet or an electric box (Figure 2).

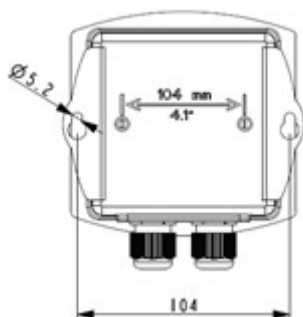


Figure 5: Detector module OLCT 10N



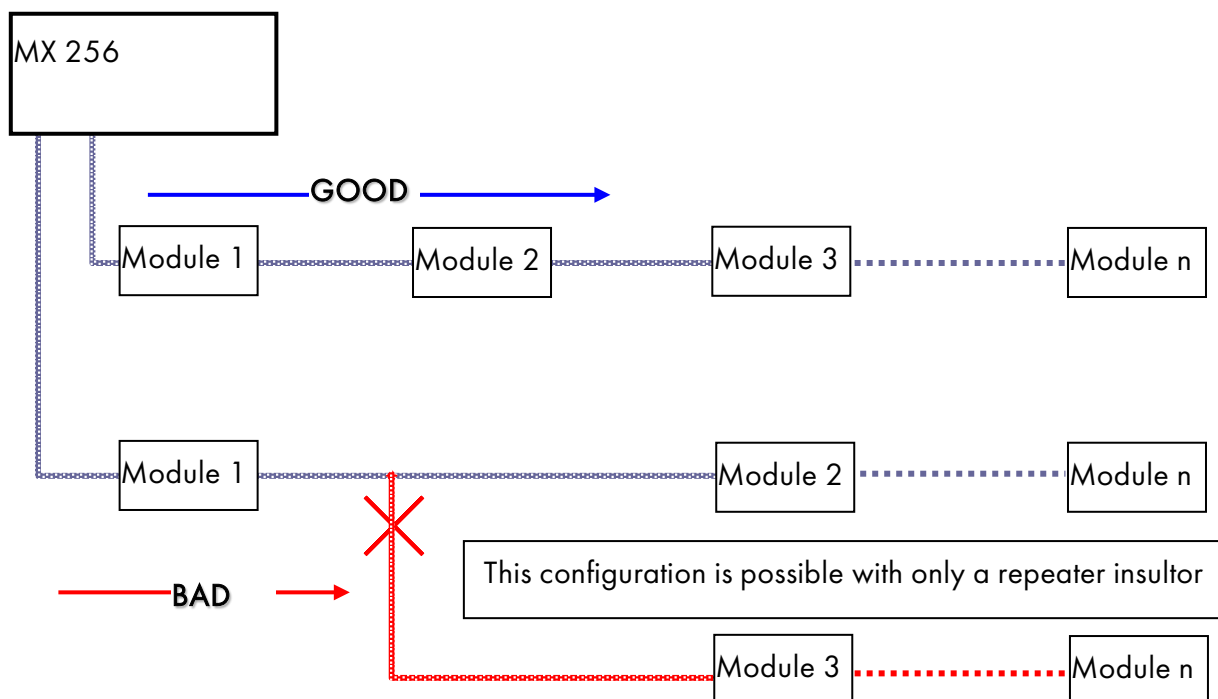
DIN Rail

Figure 6: Addressable digital module

2.3 Connection of modules in a line



All modules in a line should be wired in-line from the controller, not in a hub and spoke model.



3 The *MX 256* Controller

3.1 View of wall-mounted *MX 256*

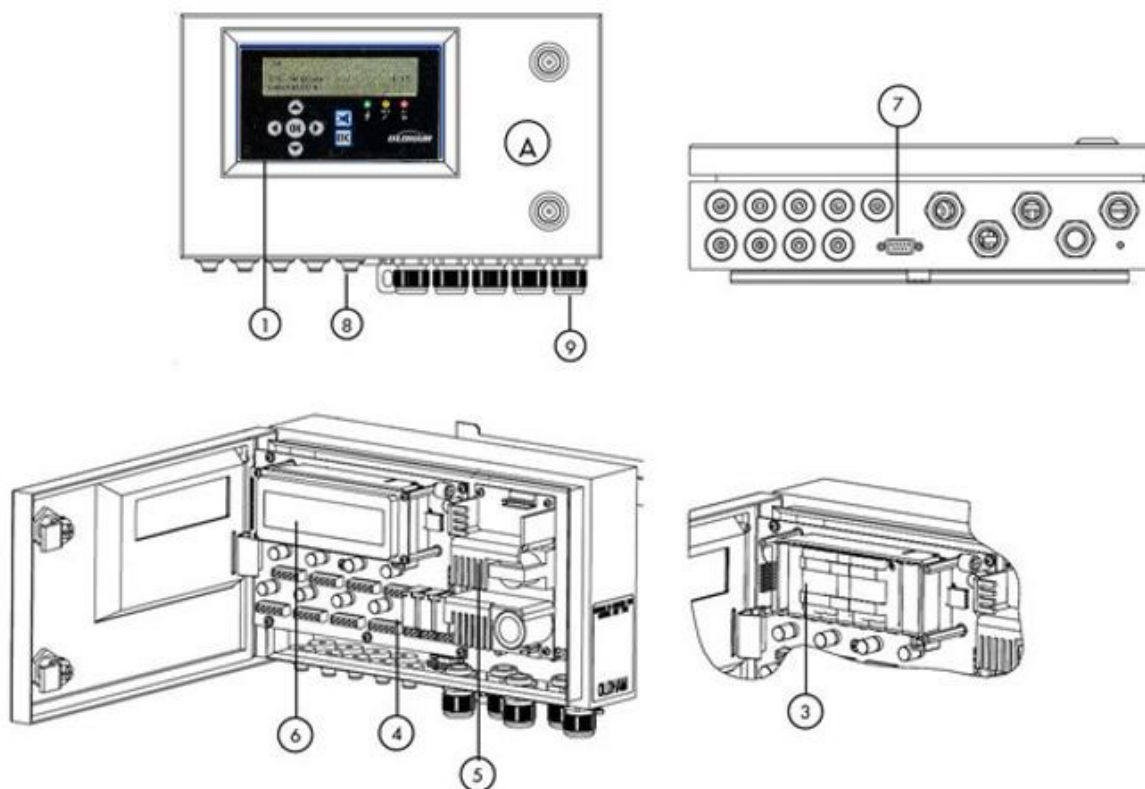


Figure 7

PART	DESIGNATION	PART NUMBER
A	<i>MX 256</i> WALL CASING	MX256-x- 0
1	<i>MX 256</i> FRONT PANEL	6122500
3	BATTERY PACK (OPTIONAL)	6311098
4	<i>MX 256</i> MOTHER BOARD	6451713
5	24V 60W POWER SYPLY	6111308
6	<i>MX 256</i> CONTROLLER DISPLAY	6314610
7	RS232 SUB D9 CONNECTOR	6116263
8	M16 GROMMET: D5 to D7mm	6131166
9	M20 CABLE GLAND : D6 to D12 mm PASTIC SCREW	6143577 6143578

3.2 Overview of the Motherboard

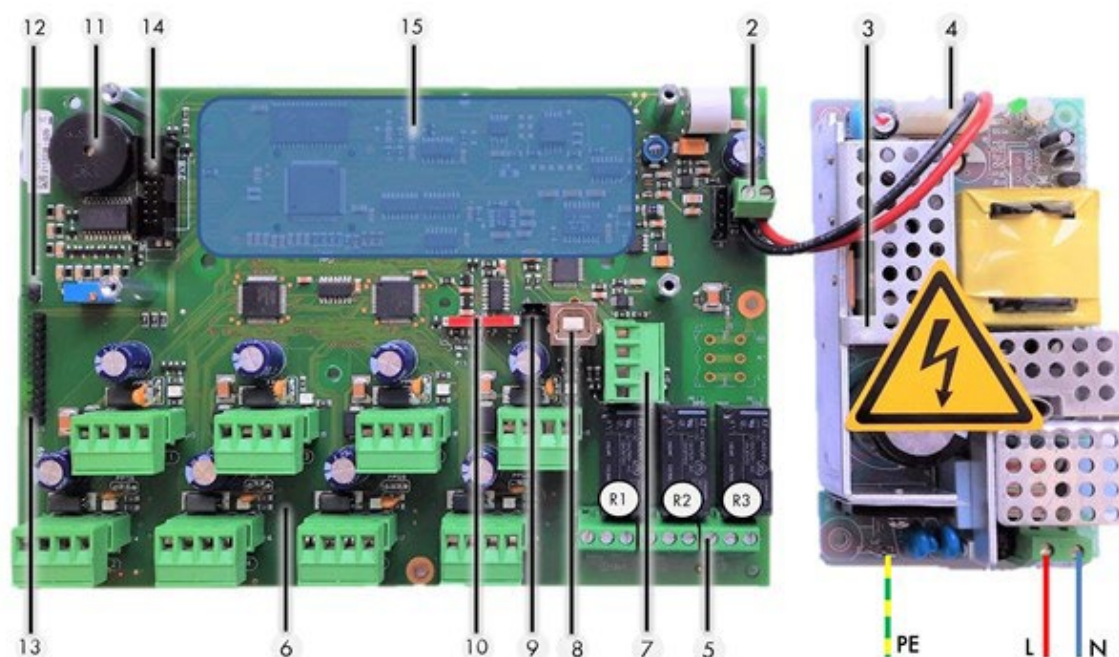


Figure 8

Part	Connector function
2	24 VDC external power supply connection
3	110-240VCA power supply for (wall-mount) power supply module
4	24 VDC power supply output for power supply module motherboard power
5	Internal contact relay outputs (RTC) dry contacts, potential free
6	Digital addressable modules 8 line connectors for connecting digital modules (OLCT 10N – MX 256RM – MX 256DI16 – MX 256AO4)
7	RS-485 digital output links to a supervision system
8	USB serial interface (PC/COM256 connection for configuration)
9	RS-232 serial interface link PC/COM256 connection for configuration, External serial printer connection
10	Mini-switches
11	Buzzer
12	Jumper (Buzzer Activation)

Part	Connector function
13	Front Panel connector
14	Display connector
15	Battery Pack (optional)
R1, R2, R3: controller shared internal relays	

3.3 Controller electrical connections

Electrical connections are wired through the controller MOTHERBOARD and the power supply 24V. For the *MX 256* controller, you must open the casing door to access the electrical panel.

Electrical connections must be done by a qualified professional. Observe all current Directives, notably the European Low Voltage Directive. Customers in France must observe standard NF C 15-100.

	WARNING		WARNING
Contact with voltage may result in serious injury or death.		Improper installation can result in incorrect gas level readings or system failure.	
Install all equipment and complete all wiring work before turning on the power.		Carefully follow all instructions to ensure proper system operation.	

3.3.1 Main power supply

Test the current and voltage running through a network before making any connections. Never connect the device without first disconnecting the power supply. The controller does not have an on/off switch.

Protect the controller from upstream current with a 4A bipolar differential circuit breaker with a type D response curve. This circuit breaker must be included in the electrical installation of the building and must be placed near of the device and must be available for the operator. On the circuit breaker will be indicated that it is the circuit breaker of the device.

Main power supply 100-240VCA: connector terminals L, N, and PE of the power supply 24V (Figure 8).

Pre-cabled wires are used to connect to the 24 VDC power supply module. The transformer output connector is also hardwired to link to the 24 VDC controller connector.

3.3.2 Grounding the controller

The controller is intended for use in areas that meet the Class II requirements for overvoltage and degree of pollution as per EN IEC 60947-1. In order to comply with the standard, the internal ground terminal *must* be grounded.

3.3.3 Digital lines

The various digital modules are connected with “Bus” connectors (Fig. 5). Recommended cable: RS-485: 2 shielded twisted pairs, 100 Ω .

One pair is used to power the module, and the other is used for communication. The cable shield or tress should be connected to the terminal:



Data wires and the shield wires should be cut as short as possible.

3.3.4 Internal relay dry contacts

The RCT dry contacts for the 3 internal relays R1, R2, and R3 are available on the *MX 256* controller motherboard on connectors J23, J24, and J25 (Fig. 7).

Working load: 2 A at 250 VAC, 24 VCC.

Associated alarm type: R1 (alarm/fault), R2 (alarm), R3 (alarm).

3.3.5 RS-485 serial link out

Recommended cable: RS-485 cable: 1 shielded twisted pair, 100 Ω . (Fig. 6).

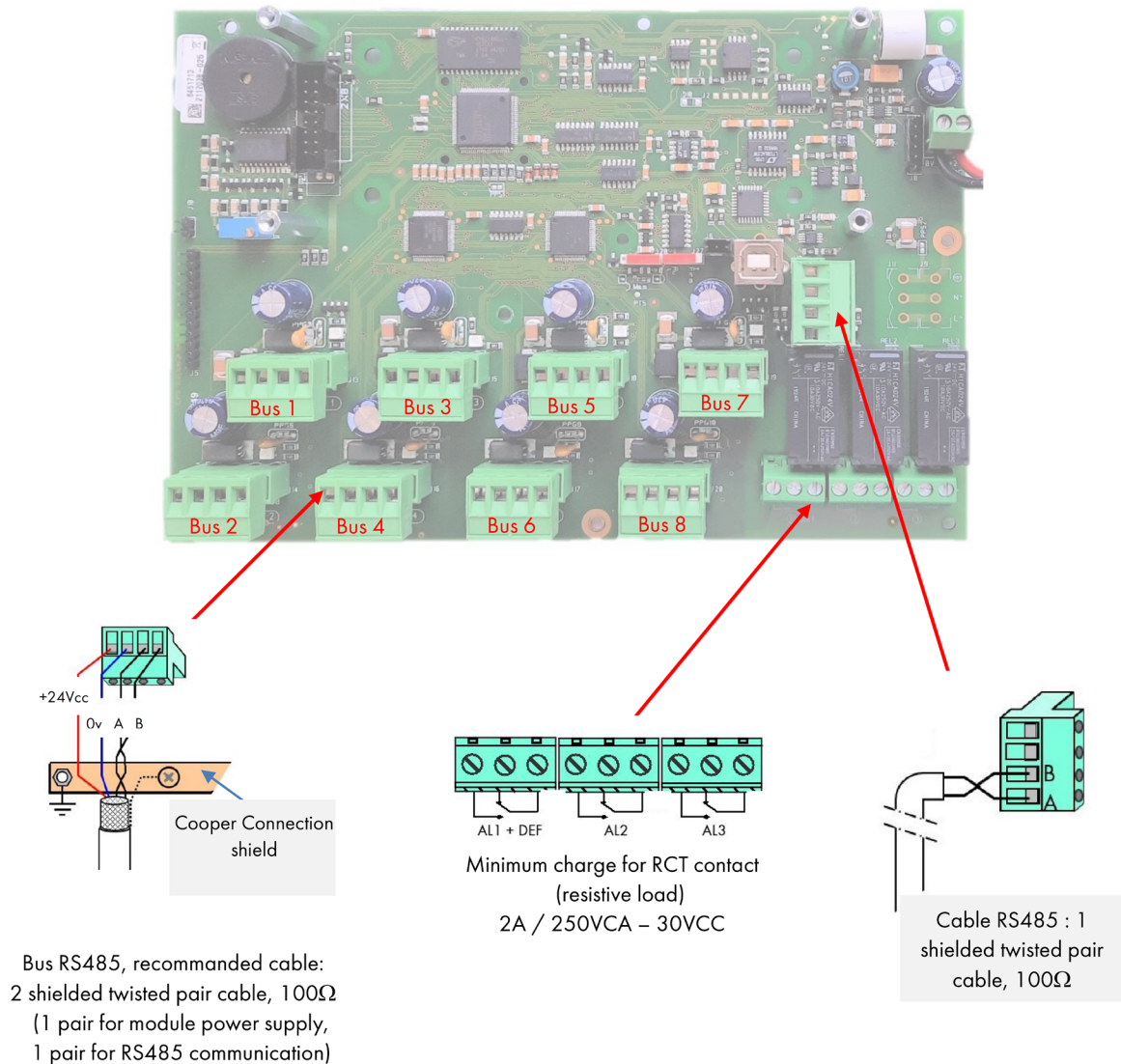


Figure 9

3.3.6 Inspecting the digital buses

Bicolor (red/green) LEDs located above each line start, on the motherboard, allows for inspection of the bus links as follows :

LED appearance	Status
Red + Green LEDs lit (LEDs blink rapidly, almost imperceptibly) Orange in appearance	Normal operation. Red LED → question Green LED ← response
Red LED blinks once per second (green LED is off) Red in appearance	Communication fault. Missing or faulting module.
Irregular blinking	Poor communication quality
Both LEDs off.	No active modules

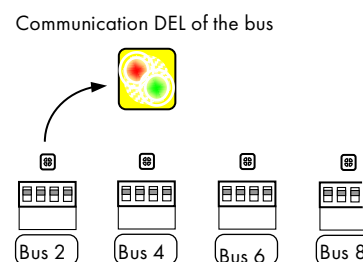


Figure 10

3.3.7 Mini-switches

Mini-switch A allows the *MX 256* controller to download and read the user program. When the switch is in the "MEM" position (open padlock), the user program memory is accessible and the message "switch open" is displayed on screen. The *MX 256* controller waits to download the program from the *COM256* software. The *MX 256* controller goes into "shut-down" mode when mini switch A is in the "MEM" position.

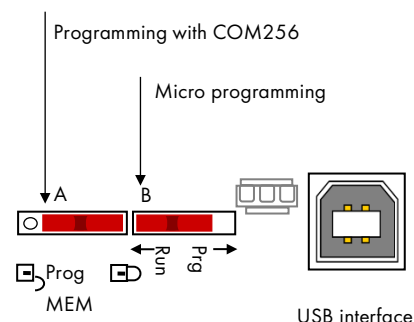


Figure 11

When the *COM256* software programming is complete, the mini switch should be flipped back to the "Prog" position (closed padlock), and the controller should be rebooted to initialize all of the newly loaded settings.

Mini-switch B only used for the controller's internal microprocessor. It should always be in the "Run" position.

3.3.8 **COM256** Internal relay and buzzer

The *MX 256* controller is equipped with **3** internal relays [R1, R2, R3] and a shared **Buzzer**. The operating settings for the relays and the buzzer can be set with the *COM256* software (see table below).

The internal buzzer is activated when a specific program-defined event occurs (fault or alarm). All lines share relays R1, R2, and R3.

The buzzer's pitch will vary according to the alarm threshold. Alarms 1 and 2 have the same frequency. Alarms 3 and 4 have a different pitch, allowing the operator to distinguish between alarm levels.

The buzzer can be disconnected by removing the "buzzer activation strap" (J10) located on the motherboard next to the buzzer (cf -: Overview of the Motherboard).

Function / Component	Relay R1	Relay R2	Relay R3	Buzzer
AL 1	X	X	X	X
AL 2	X	X	X	X
AL 3	X	X	X	X
AL 4	X	X	X	X
Module error		X	X	X
System fault*		X	X	X
Out of Range and Fault	X	X	X	X
Positive security		X	X	

* : (System fault) alarm is triggered if there is a communication fault between modules, a short-circuit in a power supply line, or a module inversion.

X: Function can be activated or deactivated

■ : Default configuration setting, cannot be changed by user.

3.3.9 USB / RS-232 serial connectors

The *MX 256* controller is equipped with a serial port which are used to:

- download the user software (see COM256 instructions);
- program the integrated micro application according to the position of mini switches on the board (factory setting).



The serial port has 2 interfaces: USB and RS-232. Only one can be used at a time.

The settings for the controller can be modified after the program has been created. (Use either the USB (rep1, Figure 12) or RS-232 adapter (rep2, Figure 12) to connect the PC to the *MX 256* controller. (See Chapter 6.1).

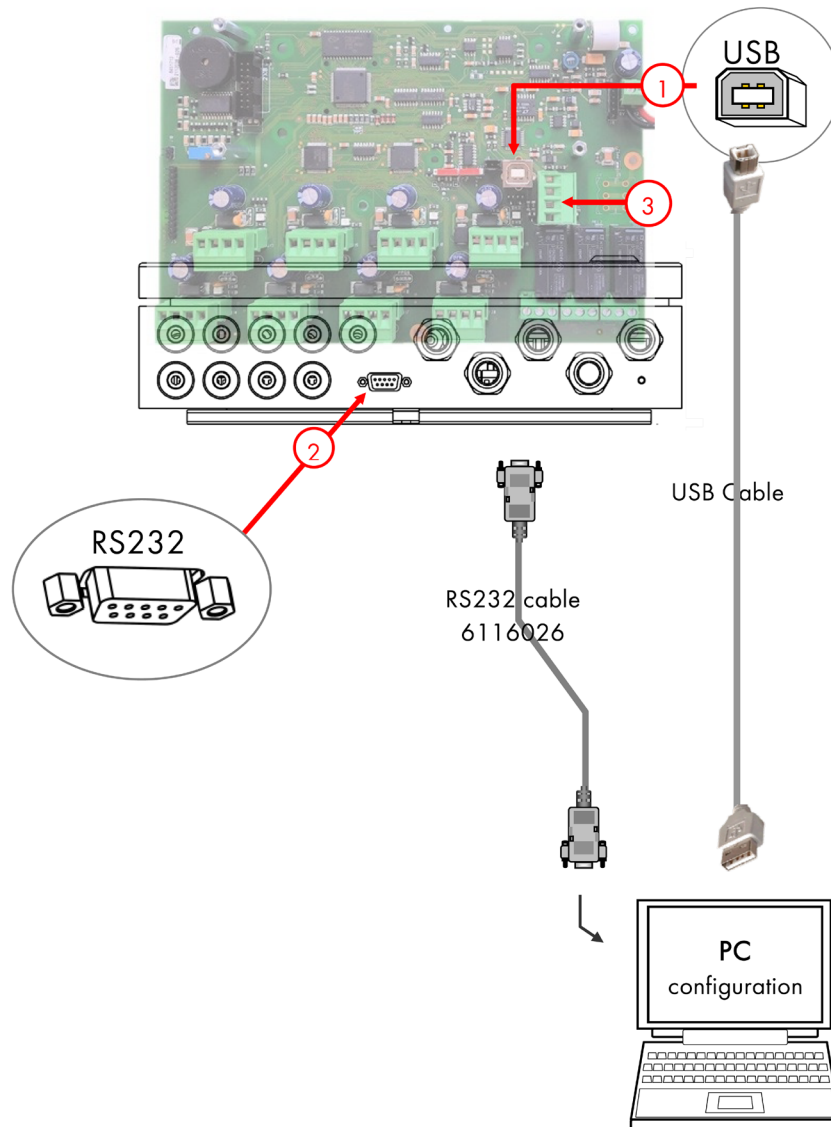


Figure 12

USB Interface (Rep 1, Figure 12)

Use a USB cable to connect the PC to the *MX 256* controller running the *COM256* application. The USB interface emulates a serial port and is preferable to an RS-232 serial connection. The corresponding USB driver must be installed before the PC is connected to the controller (see *COM256* instructions).

SUBD9 RS232 Interface (Rep 2, Figure 12)

Use a cross-over RS-232 serial cable to load the user software.

RS-232 cable series reference number: **6116026**

This would allow you to load the software via the USB interface without disconnecting the printer.

3.3.10 RS-485 serial connection

The RS-485 serial port (rep3, Figure 12) is reserved for the supervision system and is composed of an RS-485 interface using JBUS/MODBUS protocol.

A table containing all of the important information pertaining to the controller can be found in the corresponding annex of Chapter 8.

3.4 The front panel circuit

The controller front panel circuit is equipped with:

1 LCD display: backlit, 4 lines by 32 characters for viewing sensor readings and the zone in question, various test point data, settings, events, etc.

3 lights on the front panel of the controller (green for power, yellow for errors, and red for exceeding thresholds) serve as constant system status indicators.

7 keys to select on-screen information and/or validate certain operations via menus. The menus are available in English, French, German, Spanish and Dutch.



Display Screen		Keys	
OK	No alarms or errors		Keys primarily used to modify values (ex: line number)
Moy	Icon associated with one or more alarm icons indicates (by blinking) that the associated alarm is an averaged alarm.		Keys primarily used to navigate menus or to change variable current (ex: go from line number to sensor number)
AL1	SOLID = instantaneous alarm 1 BLINKING = averaged alarm 1 (takes priority over solid state)		Key used to validate a menu or an input that would alter system operation. (ex: activation of a relay)
AL2	SOLID = instantaneous alarm 2 BLINKING = averaged alarm 2 (takes priority over solid state)		Key used to return to a previous menu screen or to cancel a selected value before it has been validated.
AL3	SOLID = instantaneous alarm 3 BLINKING = averaged alarm 3 (takes priority over solid state)		Key used to acknowledge a locked alarm (programmed for manual acknowledgement) or to dismiss a buzzer relay after its holding time, even if an alarm is still active.

Display Screen	
AL4	SOLID = instantaneous alarm 4 BLINKING = averaged alarm 4 (takes priority over solid state)
S:→	SOLID = stable signal in hysteresis interval (calculated over 1 minute)
S:Λ	SOLID = signal increased in relation to the minute before BLINKING = Exceeding the scale (takes priority over solid state)

Keys

Display Screen	
S:v	SOLID = signal decreased in relation to the minute before BLINKING = Negative fault (takes priority over solid state)
BUZ	SOLID = buzzer on
WARN	SOLID = Error
PV	SOLID = LS (low speed) relay control active
GV	SOLID = HS (high speed) relay control active
DEF	SOLID = calibration underway
BAT	SOLID = mains power supply OK BLINKING = battery or mains power supply problem

Lights	
	
Green LED: power supply status indicator SOLID = OK BLINKING = power supply problem (no power to main or problem with the battery pack)	
Orange LED : indicates the presence of one or more faults.	
Red LED: signals the presence of one or more alarms.	

3.5 **COM256** Alarm thresholds

Six alarm thresholds can be programmed and adjusted for each sensor:

Alarm 1, Alarm 2, Alarm 3, Alarm 4, Out of Range and Fault.

Alarms 1 – 4 can be:

- **Instantaneous;**
- **delayed** (0 to 3,600 seconds);

- **averaged** (period of 1 to 480 minutes).

This makes it possible to calculate STEL and TWA values.

So, for example, you could choose to activate Alarm 1 if the average calculated levels over a period of *8 consecutive hours* exceeded *50 ppm*, and Alarm 2 if average levels over a period of *10 minutes* exceeded *100 ppm*, and Alarm 3 if the *instantaneous reading* exceeded *200 ppm*.

Averaged alarms are only triggered at the end of a complete time interval.

If the line or the detector module stops, average value calculations are halted and will only begin again once the line or the detector module has been reactivated.

Both the instantaneous and averaged alarms can be set to trigger on an increasing value (rising edge) or on a decreasing value (falling edge).

- **Rising edge:** alarm is activated when levels increase. Use this option for sensors measuring Explo, CO, H₂S, etc.
- **Falling edge:** alarm is activated when levels decrease. Use this option for O₂ sensors, for example.

Out of Range alarm: can activate an alarm, a relay, or an LED.

"Verification" option: this option is activated for explosive gases. When a "verification" alarm occurs, the level displayed will be frozen at the maximum value until it is acknowledged (manually or automatically) and on the condition that the gas levels have fallen under the alarm threshold.

3.6 **COM256** Alarm acknowledgement

Alarms can be rearmed in two ways:



Manual acknowledgement: the audible alarm can only be dismissed after the "Acknowledge" button on the *MX 256* controller has been pushed; or

Automatic acknowledgement: the audible alarm will be automatically dismissed once the alarm condition has ended.

If an alarm is triggered, a corresponding message will appear on the screen, an audible alarm (BUZZER) is activated, and the red LED on the front panel is illuminated.

Touching the "Acknowledge" button once will remove the message from the screen and will turn off the BUZZER.

Touching the "Acknowledge" button a second time will re-arm the programmed alarms. These alarms will not turn off until the concentration of gas falls below the threshold.

Hysteresis (0 à 1%) : the hysteresis corresponds to the value, in% relative to the measurement range, below which the alarm can be cleared (automatically or manually).

4 Digital Modules

4.1 View of Digital Modules

4.1.1 SENSOR MODULE OLCT 10N

See OLCT10N user manual

4.1.2 RELAY MODULES

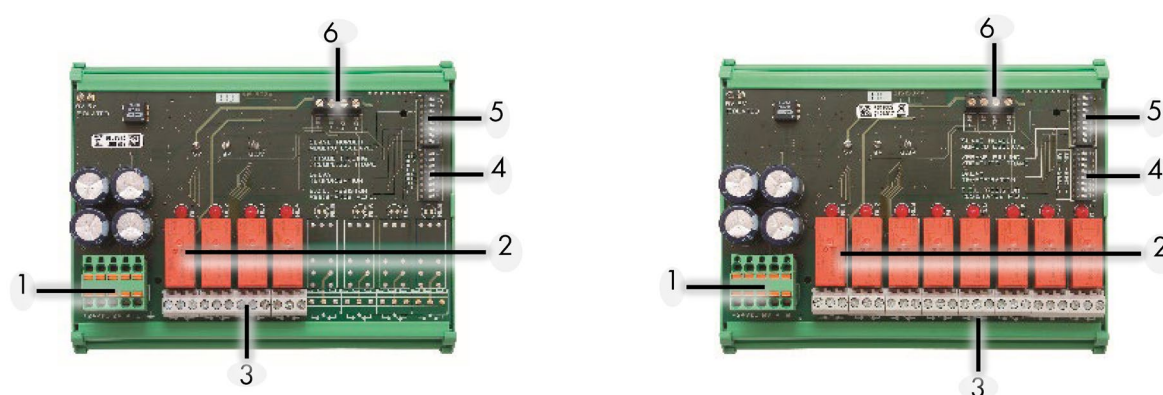


Figure 13

Designation	MX 256 RM4	MX 256 RM8
P/N	6313962	6313963
Par	Designation	
1	Power supply & network connector	
2	Programmable relays (8 or 4)	
3	potential free RTC output contact	
4	Safety switch + or - relays	
5	Configuration switches (Addresses)	
6	Logic Input terminals (2 Inputs)	

4.1.3 LOGIC INPUT MODULE

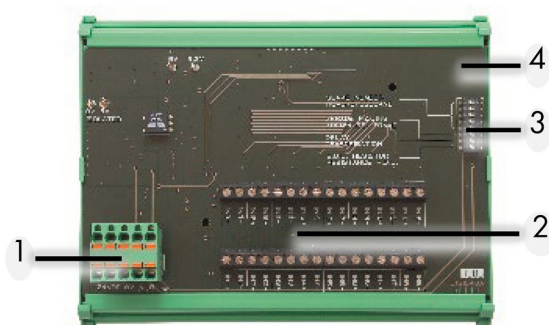


Figure 14

Designation		16 Logic input module
P/N		6313964
Part	Designation	
1	Power supply & network connector	
2	Logic input terminal (16 Inputs)	
3	Configuration switches (Adresses)	
4	Module board	

4.1.4 ANALOG OUTPUT MODULE

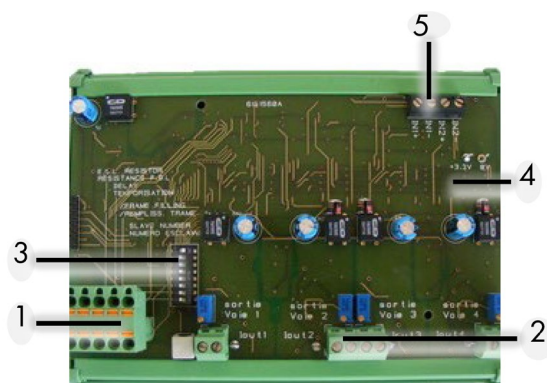


Figure 15

Designation		4 analog output module
P/N		6313980
Part	Designation	
1	Power supply & network connector	
2	Analog output terminal (4 outputs)	
3	Configuration switches (Adresses)	
4	Module board	
5	Logic Input terminals (2 Inputs)	

4.2 Connecting Digital Modules

4.2.1 General topology of the RS-485 network

Modules are connected in “parallel” in the RS-485 network, comprised of a 1 twisted pair cable for signals, 1 or more pairs to supply power to the modules, and 1 shield wire.

A 120 Ω end of line resistor (**EOL RESISTOR**) should be placed at the last module in the line, at the end of the bus (see chapter 4.3.2 - End of Line Resistor).

The modules are equipped with a double connector, which can be split to easily connect conductors and also allows you to isolate the module while maintaining line continuity.

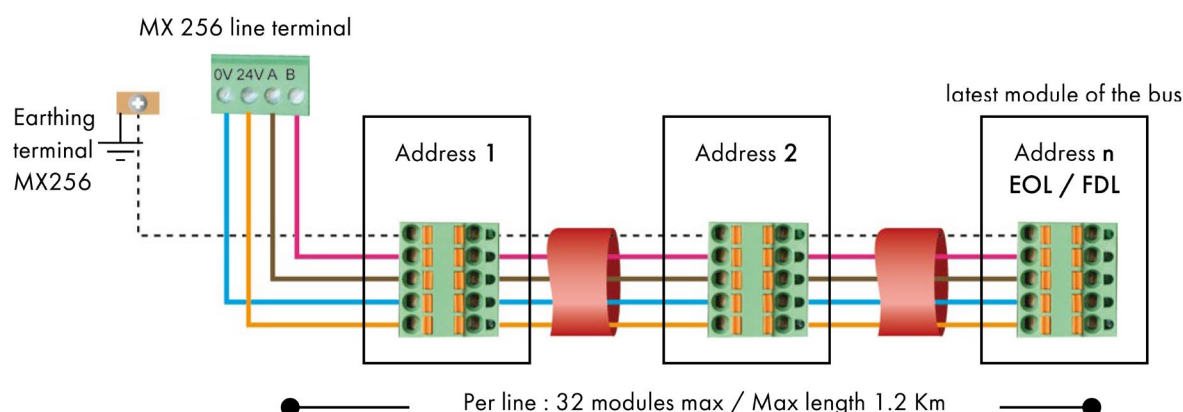


Figure 16: NETWORK RS485

4.2.2 Wiring the digital network

The sensor module has two cable glands. One connects to the input wire, and the other connects to the output wire which is routed to the next module.

The modules should be wired with RS-485 shielded twisted pair cable, with a normal impedance of 100 Ω , of at least 0.22mm² in diameter. +24VDC, 0V A and B terminals are linked to +24VDC, 0V terminals A and B in other modules in the line, and then linked to the connector corresponding to the controller. The cable shield should be connected to a ground terminal marked with the following symbol:

 (Figure 16).



Do not leave any stripped wire ends exposed. To guard against electromagnetic disturbances, the data cables and the screen (tress) cables should be cut as short as  possible.



WARNING

An improper installation can cause incorrect gas level readings or system failure.

Do not run cable near equipment such as motors, transformers, or any lines generating a large magnetic field.

Always check to ensure that the cables are completely separated from other circuits.

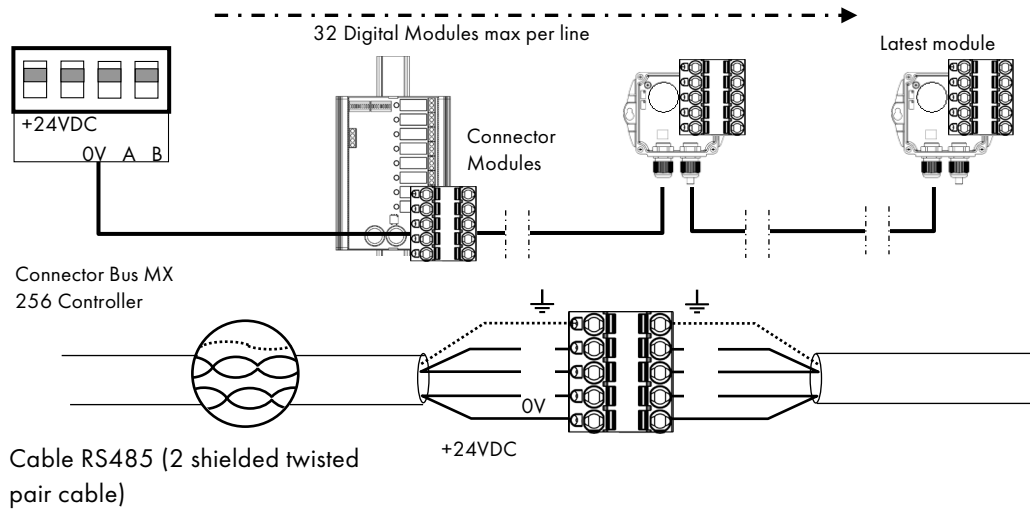


Figure 17: Digital line wiring

4.3 Configuring the communication settings

4.3.1 Slave address

All modules in a line should be identified with a unique slave number. Switches 1-5 on the Configuration Switches unit (Figure 18) contained in each module, allow you to set a binary numerical address (1...32)..

In the illustration to the right, the address 9 (10010) has been defined.

Possible combinations are listed in the address table below.

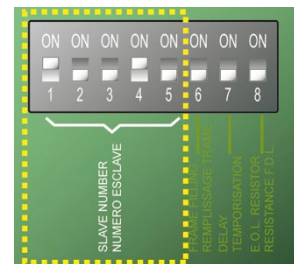


Figure 18 : interrupteurs de configuration

Address Table

Slave Address	SWITCHES ON = 1 ; OFF = 0				
	1	2	3	4	5
1	1	0	0	0	0
2	0	1	0	0	0
3	1	1	0	0	0
4	0	0	1	0	0
5	1	0	1	0	0
6	0	1	1	0	0
7	1	1	1	0	0
8	0	0	0	1	0
9	1	0	0	1	0
10	0	1	0	1	0
11	1	1	0	1	0
12	0	0	1	1	0
13	1	0	1	1	0
14	0	1	1	1	0
15	1	1	1	1	0
16	0	0	0	0	1

Slave Address	SWITCHES ON = 1 ; OFF = 0				
	1	2	3	4	5
17	1	0	0	0	1
18	0	1	0	0	1
19	1	1	0	0	1
20	0	0	1	0	1
21	1	0	1	0	1
22	0	1	1	0	1
23	1	1	1	0	1
24	0	0	0	1	1
25	1	0	0	1	1
26	0	1	0	1	1
27	1	1	0	1	1
28	0	0	1	1	1
29	1	0	1	1	1
30	0	1	1	1	1
31	1	1	1	1	1
32	0	0	0	0	0

Notes:

The physical address of a module (1...32) should be identical to the address recorded in the controller configuration program with *COM256*.

When replacing a module, set the configuration switches in the new module to the same position as those of the module being replaced.

Figure 19: Configuration switch



Switches 6 (FRAME FILLING) and 7 (DELAY) should be in the OFF position (unused options)

4.3.2 End of line resistor

The last module in each line should be equipped with an end of line resistor. To connect the resistor, flip the number 8 configuration switch (EOL RESISTOR) of the last module into the ON position (Fig. 10).



This switch should be in the OFF position for all other modules in the line

4.4 OLCT 10N Detector Module

The *MX 256* controller accepts 10 types (or 10 different configurations) of sensors. The type of sensor used in the module depends on the gas being monitored. Electrochemical sensors are

used to measure CO, NO, NO₂, for example, while catalytic sensors measure gases such as GPL, CH₄, and H₂).

Available Detector Types

See OLCT 10N user manual

Sensor module fault

In the event of a sensor module fault, gas levels are no longer taken into account, and all alarms are cancelled, except for the negative threshold (or fault) which is activated. Average values are no longer taken into consideration and the calculation of average values is paused.

If a sensor faults, it can be replaced while the controller is still running (hot swap) without replacing the detector.

4.4.1 Detector settings

The following settings apply to each type of detector:

- **The abbreviated name** to be displayed on the controller: NO, CO, CO₂...
- **The name of the gas**: Carbon monoxide, Nitric oxide, Oxygen, Methane ...
- **Unit**: ppm, LEL, %v/v ...
- **Range with display format**: 100, 10.0, 1.00, ...
- **Actionable thresholds**:
 - 4 instantaneous thresholds: 0-100% measuring range,
 - 4 averaged thresholds: 0-100% measuring range, (time interval programmable from 1 to 480 minutes).

If the operating time is inferior to the averaging time interval, the averaging time interval is ignored.

An instantaneous threshold is associated with an averaged threshold to generate an alarm. These two thresholds can be set to trigger on the rising edge (increasing alarm) or the falling edge (decreasing alarm).

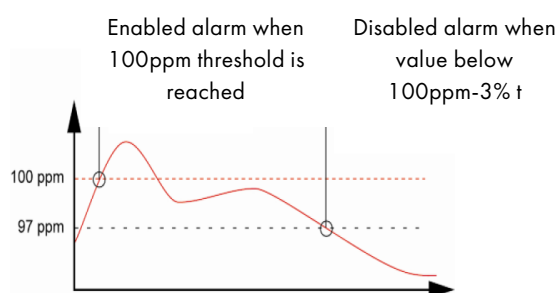
- **Alarm delays** (0s to 60 min):

Each of the 4 alarm thresholds can be delayed. If gas levels are in excess of an alarm threshold for an amount of time inferior to the programmed delay, the alarm will not activate.

The alarms can be acknowledged automatically once the alarm is turned off, or manually when the gas levels are once again under the threshold.

- **Fault thresholds**:
 - “underscale” negative signal (exceeding the lower threshold): -10% of the range.
 - “SUP” out of range (exceeding the upper threshold): +120% of the range.
 - “Verification” for all explosive gas sensors, in case an LEL threshold is passed, the SUP alarm remains on even after levels fall under the threshold. The fault alarm is also triggered
- **Hysteresis** :

Max. 1% of range. Default value= 0%.



Example (see opposite page):

Measurement range = 300 ppm; Alarm = 100 ppm

Hysteresis (1% of range) = 3 ppm

Level at which alarm can be dismissed = 97

4.5 External relay module

The relay module is available in two versions: *MX 256 RM4* (with 4 relays) and *MX 256 RM8* (with 8 relays). It also has two logic inputs (LI) which can be activated.

In maximum configuration, the *MX 256* can manage 256 relays (ex: 32 modules with 8 relays each). For more information about the logic inputs: see: Logic inputs module.

The relays are individually programmable. The operation of each relay depends on its configuration and its function.

Each of the 6 sensor alarms [AL1 - AL2 - AL3 - AL4 - Out of Range - Fault] can control one or more of the 256 relays. Several events can be linked to one relay.

In case of a module relay fault, all relays of this module are restarted.

The *MX 256* controller will change the relay status unless they belong to a different module type. Restarting will resolve the problem.

4.5.1 Relay status lights

Each relay has a red LED to indicate its status		
Red LED appearance	Status	
DEL lit	Activated relay (alarm condition exists)	
DEL off	Non-activated relay (no alarm condition)	

4.5.2 “Positive/negative” relay security

In addition to switches of CONFIGURATION, RELAY MODULES INCLUDE SWITCHES OF POSITIVE AND NEGATIVE SECURITY CONFIGURATION. Flip the switch to **ON (positive security)** or **OFF (negative security)** as desired. Each switch acts on its corresponding relay (switch 1 → relay RL1, switch 2 → relay RL2, etc.). (Figure 20).

Note: Only switches 1-4 are active in the 4 relay module.

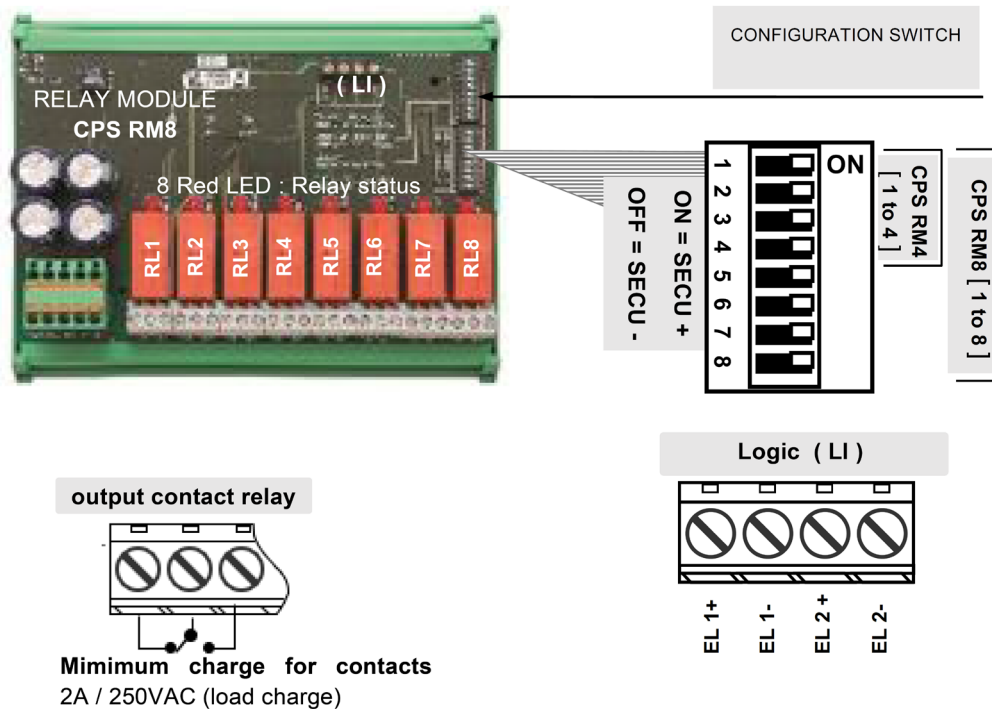


Figure 20 : positive / Negative relay Security

4.5.3 **COM256** Relay configuration

“Normal” relays

The relay is activated when an alarm occurs and is deactivated when the alarm condition ends.

The variables acting on a relay in alarm status are:

- Alarm delay
- Automatic / Manual acknowledgement
- Forced state change via the *MX 256* menu
- Forced state change via a logic input command

“Buzzer” relays

The “Buzzer” relay is used to control an audible alarm.

It can be re-armed with the [**Acknowledge**] key on the controller, even if the alarm condition has not changed.

The occurrence of a new alarm will reactivate the relay and reset the delays.

The “Buzzer” relay can be automatically dismissed before the end of the alarm with a 15 to 900 second delay (standard setting for “Buzzer” relays) or manually, even if the alarm condition has not changed. It can be configured with a minimum operating time of 1 sec. to 5 min.

The variables acting on a relay after an alarm has occurred are:

- Alarm delay
- Automatic / Manual acknowledgement
- Forced state change via the *MX 256* menu
- Forced state change via a logic input command

Alarm and/or “Buzzer” relay delays

Alarm delays		Relay delays
Instantaneous Alarms	Averaged Alarms	“Buzzer modes”
1 ... 3600 seconds	1 ... 480 minutes	Min. activation time: 0 ... 300 seconds
		Acknowledgement time: 15 ... 900 seconds
Standard settings for each sensor type		Standard settings for all “Buzzer relays”

“LS/HS” Relays

Low speed (LS) relays and high speed (HS) relays are always used together, allowing you to control a parking facility ventilation system at two speeds.

LS (low speed) : The relays are designed to control slow ventilator speed (star-triangle configuration for a two-speed ventilator).

HS (high speed) : The relays are designed to control high speed ventilator speed (star-triangle configuration for a two-speed ventilator).

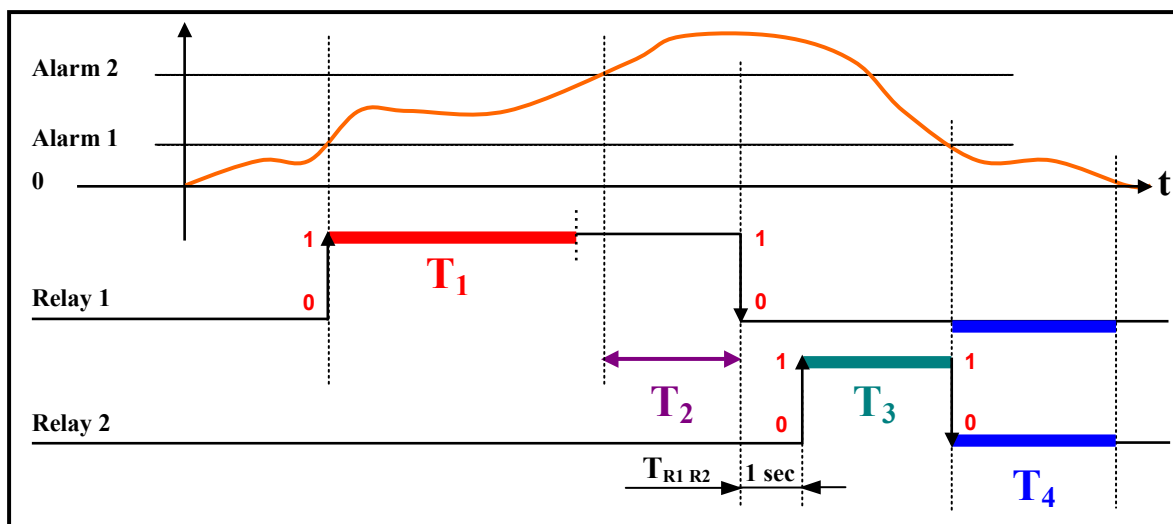
The working logic of the relays defined hereafter, takes into consideration the start-up and shut-down intervals during which very high levels of current may occur, capable of damaging motor windings if phases occur in the incorrect sequence.

“LS / HS” Operation

Requirements: Alarm level 1 < Alarm level 2

The LS relay is activated by Alarm 1

The HS relay is activated by Alarm 2



Phases		Action operation	Default Delay*
T ₁	Min. duration LS operation Adjustment(s): [1 ... 32767]	Minimum duration, in seconds, during which the ventilator operates at low speed	5 min.
T ₂	HS operation delay Adjustment(s): [2 ... 32767]	Minimum duration for Alarm 2, after which the ventilator switches to high speed	15 min.
T _{R1 R2}	LS/HS transition time 1 second (cannot be changed)	Transition time between Relay 1 and Relay 2 is 1 second (standardized throughout the controller)	1 sec.
T ₃	Min. duration HS operation Adjustment(s): [1 ... 32767]	Minimum duration, in seconds, for the ventilator to operate at high speed. HS relay deactivated if Alarm 1 condition ends	10 min.
T ₄	LS-HS stop delay Adjustment(s): [1 ... 32767]	Duration, in seconds, after low or high speed ventilator operation has been stopped, before the ventilator can be restarted at low speed.	10 min.

Time values T₁, T₂, T₃ and T₄ can be modified. When the “**Sensor simulation**” menu is used (see the chapter on the maintenance menu/simulation on page 43) the times are decreased, by default, to 12 seconds, 24 seconds, 36 seconds, and 24 seconds, respectively.



An underscale alarm (= fault) activating a LS or HS relay will force the relay into HS position (with respect to the defined time).

“Forced ventilation” function

This is a forced relay state change via the *MX 256* menu. This function allows you to block or release the HS (high speed) command at specified times.

Forced relay state change via a logic input command

In both cases the response is immediate and priority safety settings are maintained: HS takes precedence over LS, and both relays are shut-down if there are contradicting signals.

4.6 **COM256** Logic Input Module

This module contains 16 logic inputs, linking priority commands, such as fire extinguishers directly to the controller.

A maximum of 224 total logic inputs across all modules can be activated.

Example 1: 112 modules having 8 relays each, with activated inputs.

Example 2: 7 modules with 16 logic inputs with activated inputs.

Each input can override all other commands to activate or block up to 256 relays.

Priority inputs

Two levels of input priority can be managed on each module with the *COM256* software.

Priority inputs have control of the other inputs (all of the non-priority inputs are “blocked” when a priority input is activated).

In the event that two different inputs of the same priority level send contradicting orders, the relay is shut-down.

In the event of a fault, the inputs are set to zero.

However, other logic input priority levels are added to them. Here is the list of entries, from the highest priority to the lowest priority :

- Supervision remote screen Input
- Priority logic Input
- Logic Input
- Control from the control unit keypad or forcing relays via supervision
- Module alarm / fault

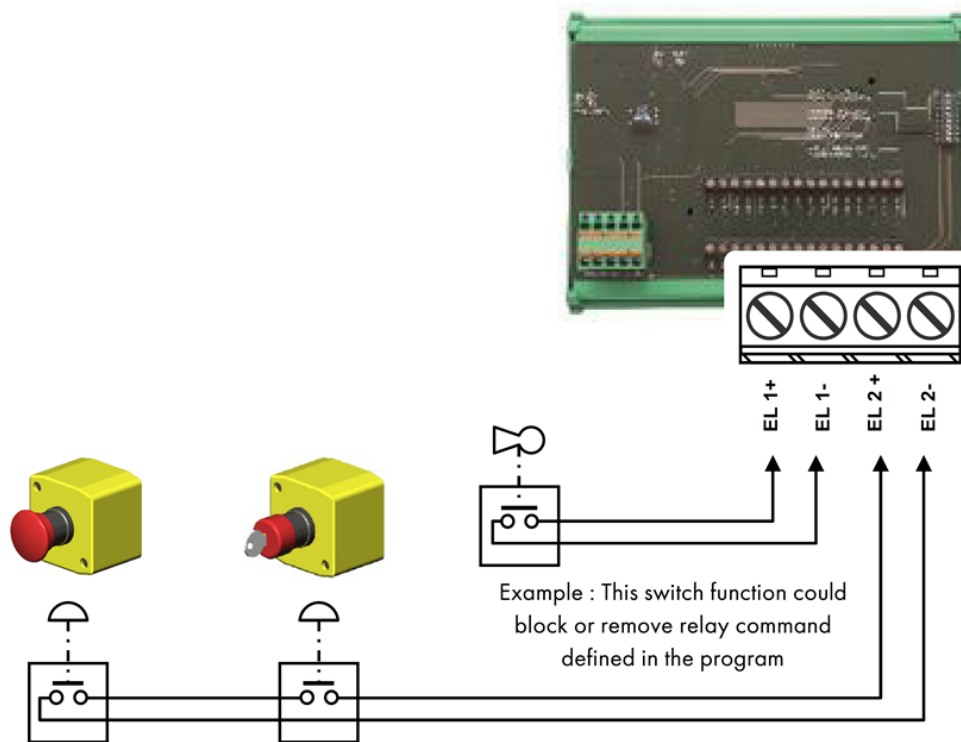


Figure 21 : Logic Input Module

4.7 COM256 Analog Outputs Module

This module is comprised of 4 opto-isolated 4-20 mA analog outputs which can be individually activated or deactivated.

Activated: the output analog signal (4-20 mA) varies, according to the input

Deactivated: the analog output signal will be frozen at 0mA, regardless of the input signal.

Several events can be linked to one output. In this case, the largest analog value will be recopied onto the analog output.

The output module also has two logic inputs (LI), identical to those on the "Logic input" module.

A "slave address" for the module can be set with the "DIP" switch (DIP1).

An analog output OFF command from the controller corresponds to 4 mA.

An analog output ON command from the controller corresponds to 20 mA.

Example of use with analog output module

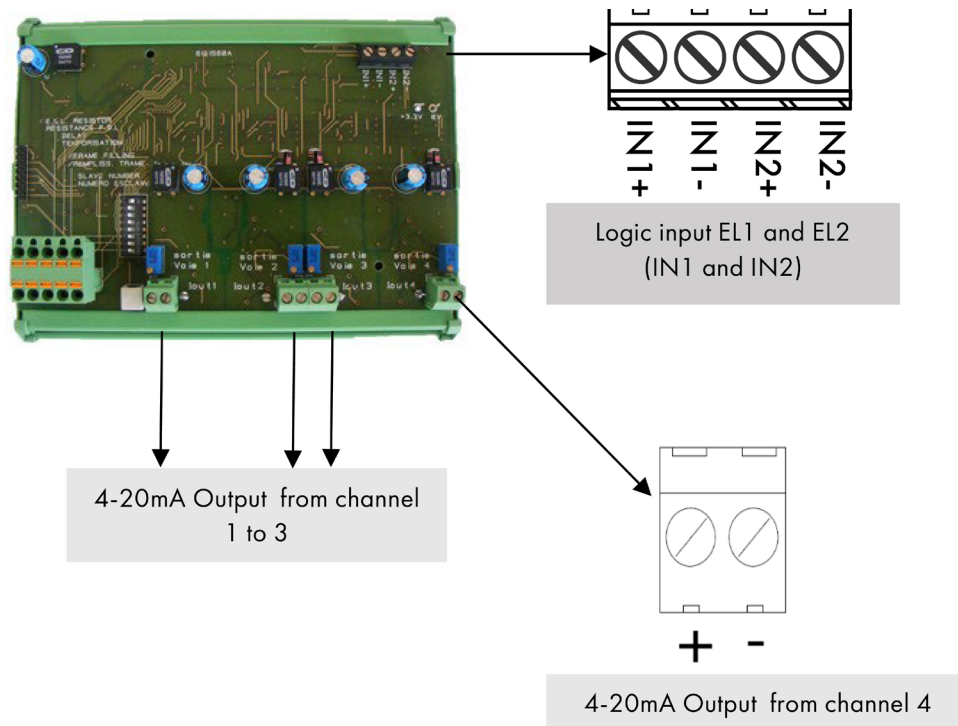
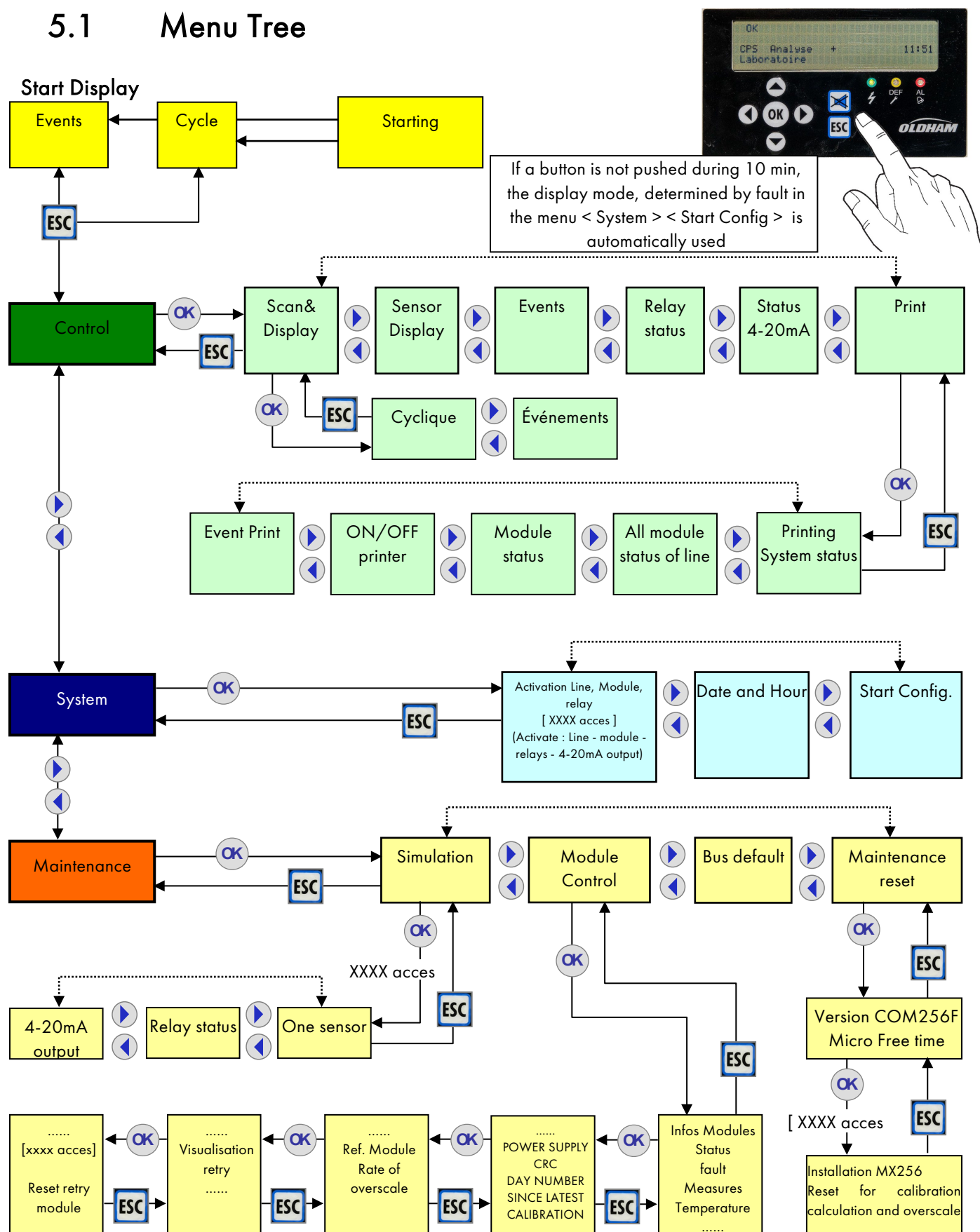


Figure 22 : Analog output module

5 Detailed Menus

5.1 Menu Tree



5.2 Start-up Phase

No faults or alarms are processed during the first minute after start-up. During this phase, the controller runs a Checksum test (1), a RAM test (2), a line start-up (3) and a module mapping test

with a program stored in its memory

Voltage builds progressively in the lines. Progress bars show the overall progress for line power-up.

Only the power-up of activated lines is shown (identified by a diamond "◇" during the initial power-up phase, and by a black square "■" at the end.)

An exclamation point "!" indicates a short-circuit line fault. The line can be reactivated through the menu system

Next, a sensor stabilization phase occurs (4) during which time, the alarms are deactivated

An inspection phase immediately follows in order to verify that the configuration program set with the **COM256** software correctly maps to the modules installed and activated.

If no errors are found, the program runs normally. If errors are detected, the modules in question will be flagged as faulting

After the start-up phase, the screen will display information pertaining to the selected mode: events (a) or cyclic (b). The controller begins to process data coming in from the various modules

In cyclic display mode, when no alarms are triggered the levels from each sensor are displayed on the first line of the display screen.

(1)

```
OK Moy AL1 AL2 AL3 AL4 PV GV
S:→ S:A S:V BUZ DEF WARN BAT
Checksum Prog: 91D8 ROM: 1A93
          91D8          1A93
```

(2)

```
OK Moy AL1 AL2 AL3 AL4 PV GV
S:→ S:A S:V BUZ DEF WARN BAT
CNTRL VER: 2.03.00
Demarrage: TEST RAM
```

(3)

```
Supply Bus
1=0 2=0 3=0 4=0 5=0 6=0 7=0 8=0
```

```
Supply Bus
1=■ 2=■ 3=■ 4=/ 5=/ 6=/ 7=/ 8=
```

(4)

```
OK
S:→
L:1, MOD: 1 = Stab CO
```

(a)

```
OK
CNTRL Processing + 16:20
Chemical Laboratory
```

(b)

```
S:→
L:1, Mod: 1 = 0 ppm CO
OIL T10N CO zone 45
```


In case of a power outage, the program configuration will be saved. When the controller is turned on, the last program installed by *COM256* will be loaded.

If a sensor faults, the message "Def" will replace the reading value. If the power supply is interrupted within a line, the two points in front of that line will blink. Identify the problem by touching the [ESC] key to display the error message.

If the gas level exceeds a high or low threshold, "Ovs" will appear on the display screen where the value for that sensor would normally appear. This message will display simultaneously with a blinking arrow (pointing up or down, depending on the situation).

```

DEF
L:1, Mod: 1 = Def CO
OLCT10N CO zone 45

```



```

DEF
OLCT10N CO zone 45
ERR 11 : COM. 1 0 1

```

5.3 Control Menu

5.3.1 Normal Display

Alarm pictograms will appear and disappear in along with the alarm conditions detected by a given sensor. The display shows gas level readings, which may not always be identical to the status of a relay. Under normal conditions, alarm pictograms reflect relay status.

Example: LS and HS relays are configured to run on a delayed trigger. Pictograms do not take this delay interval into consideration. So it is possible that the LS or HS relay is on, while the alarm pictogram does not display on screen, due to the alarm delay.

```

OK
Control <>
11:52:26

```

```

OK
Control
Scan & Display <>

```

Cyclical display

This menu allows you to view all of the activated sensors on screen, at a display rate of one sensor every two seconds.

```

Scan & Display
Cyclic Display <>

```

Event display

This menu allows you to view the status of all sensors in alarm mode, faulting, or in calibration, at a rate of one sensor every two seconds.

```

Scan & Display
Display On Events <>

```

5.3.2 Sensor Display

This menu allows you to freeze the display on a specific sensor by selecting the line and the module number (The program automatically selects active sensor modules).

Touching the [OK] key once will bring up the sensor name, the abbreviated gas name, the gas level and unit of measure (ppm, % LEL, \$v/v).

If the sensor is faulting, "Def" will display in place of the level reading.

Select the line or the sensor (if applicable) using the [◀] [▶] (horizontal) keys.

Select the line number or the sensor number (if applicable) using the [▲] [▼] (vertical) keys.

Press [OK] to select the sensor.

Press [OK] a second time to display both the gas reading level and the 4 averaged readings if average readings were activated. If averaging was not activated, < *** > will display on screen.

If a communication fault occurs, the value will be replaced by < *** > and the averages will stop on the last calculated value.

For all other faults, the gas level will be displayed in order to help the user identify the problem.

```
OK
Control
Sensor Display      <>
```

```
OK
LINE : 1  SENSOR : 1
OLCT10n CO ZONE 45
```

```
OK
S:→
L:1, Mod: 1 = 0 ppm CO
OLCT10n CO ZONE 45
```

```
OK
S:→
L1 S 1 Avg 1: *** 2: ***
0 ppm 3: *** 4: ***
```

```
OK
DEF
L1 S 1 Avg 1: *** 2: ***
*** ppm 3: *** 4: ***
```

```
OK
S:v
L1 C 1 Avg 1: *** 2: ***
-14 ppm 3: *** 4: ***
```

5.3.3 Events

This menu can be used to search through a history of the most recent 1,200 events. State changes are recorded in the history.

If Alarm 1 ends and Alarm 2 is triggered, AL2 ON will be recorded

Examples:

- (a) The shut-down of a line causes the shut-down of alarms and relays for that line.
- (b) The "fault" alarm is triggered for module 3, line 1.

Other examples:

Module 2, line 8 turned on

30/06/06 (day/month/year) 14:40:36 L:8,
Mod:02

Module ON

```
Control
Events      <>
```

Alarm 2 triggered

30/06/06 14:49:37 L:8, Mod:02

Alarm 2, OFF $\Rightarrow$ ON

State change for Relay 2 (command relay)

30/06/06 14:49:37 L:8, Mod:29

Relay 2 Normal ON

Conditions for Alarm 2 end

30/06/06 14:51:03 L:8, Mod:02

Alarm 2, ON $\Rightarrow$ OFF

Acknowledgement action

30/06/06 14:55:21

ACKNOWL

State change for Relay 2 (relay shut-down)

30/06/06 14:55:21 L:8, Mod:29

Relay 2 Normal OFF

(a)

```
OK
30/06/07 14:06:02
LINE 2 OFF
```

(b)

```
BUZ
26/06/07 17:07:01 (1) Hydrogen
A1D H2
```

5.3.4 Relay Status

This menu displays the status of a relay in a given module. Increments for the preceding and following modules in the line are automatically calculated.

Display the status for the selected relay by pressing the [OK] button. This screen will show the module, its mode of operation (Normal, Buzzer, LS, HS,...) and its status (ON, OFF).

(a) : (LS / HS) - Delays

(a) : (Buzzer Relay) - Acknowledgement time

(b) : (Buzzer Relay) - Min. activation

```
OK
Control
Relays status <>
```

```
Line : 2 Module: 1
Relay module level-1
```

```
Relay Nb 1 OFF (a)0
2-1-1 P V (b)0
```

5.3.5 4-20 mA Output Status

This menu displays the outputs for the selected module. The value is displayed in mA.

Multiple inputs can be linked to one output. In this case, the largest analog value will be recopied onto the analog output.

Activated analog output: the 4-20 mA output signal varies according to the input.

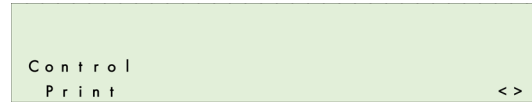
Deactivated analog output: the 4-20 mA output signal will be frozen at 0mA, regardless of the input signal. The output current for each channel will vary between 0 and 24.5 mA.

```
Control
4-20mA status <>
```

5.3.6 Printing

“System status” Report

This menu is used to initiate the printing of system status reports. The second part indicates the fault status for all of the modules in each line. Each hexadecimal number corresponds to a module, with Module 1 being on the left, and Module 32 on the right.



```
Control
Print      < >
```

0 = OK

1 = Communication error

2 = Module recognition error

4 = Fault triggered by a module fault word

x = (no programmed module)

If the system detects an abnormality in either the name or the range of a gas, the letter N will blink on the screen

“Status for all line modules” Report

Sensor module: the printed reports will contain both the reading and the averages if averages are activated.

Relay module: the printed reports will contain the status of each relay and of each relay's logic inputs.

Logic inputs module: the printed reports will contain the status of all logic inputs.

“Module status” Report

Prints the status of every module in the selected line. See previous paragraph.

“Printer On/Off” Report

Use the [▲] and [▼] keys to activate or deactivate the printer.

When the printer is activated, the **COM256** cannot be used to for reading or configuration. The configuration mini-switch (A) must be placed in the open padlock position to enable communication between the serial port and the **COM256** software (cf “Programming mini-switches”).

“Event” Report

This feature allows you to print all of the most recent events stored in memory (up to 1,200).

Calibration Report: The calibration data for a sensor is only printed at the end of the calibration process. The record will consist of a title, the line number and module number and 6 readings if a complete calibration has take place:

Calibration 1

Capteur 4 01 CO

Xo1 = 00004 Zero value before starting procedure

Xo2 = 00000 Zero value

Xo3 = 00000 Zero value after procedure

Xf1 = 00095 Value of the concentration of calibration gas

Xf2 = 00100 Value of the response to the gas

Xf3 = 00100 Value of the reading at the end of the procedure

5.4 Acces code

An access code is required to access certain menus. The access code is made up of 4 hexadecimal numbers. If the wrong code is entered three consecutive times, the code will be deactivated until all menus have been exited or until after 10 minutes of inactivity. The *COM256* software can be used to modify the access code.

The default access code is : 1 0 0 0

5.5 System Menu

5.5.1 Line, Module, Relay Action

Enter the access code by using the [▲] [▼] and [◀] [▶] keys.

Line activation

The selected line is displayed along with its number and name.

To go to a different line, use the

[▲] [▼]. Change the status by pressing the [OK] key, and then pressing the [◀] [▶] keys, followed by [OK].

If the line is shut-down, the line number will flash intermittently with a cross sign. If the module does not correspond with the *MX 256* controller *COM256*-created program, its status is reported as faulting.

Notes : If the line is shut down by the *COM256* software, it is impossible to turn it on.

A line is fully activated approximately 5 seconds after start-up.

```
System                                     <>
                                           12:13:27
```

```
OK
System
Activation line, Module, rela<>
```

```
OK
0000 acces
```

```
Activate Line                             <>
```

```
Line : 1 OFF
Zone 1
```

A thermal fuse protects the line's power supply from short-circuits. Should a short-circuit occur, a fault word will appear in the menu and an error message will be recorded in the event log. After the short-circuit, the line must be reactivated via the menu.

Activate Module <>

Line : 1 Module: 1 OFF
OLCT10N CO zone21

5.5.2 Relay activation

Use the same "Relay Status" menu to select a relay. After pressing [OK] to select the relay, you have three options :

- < Normal > = Relay functions normally (triggered by alarms)
- < ON > = Relay in forced operation (can only be shut-down by a logic input)
- < OFF > = Relay in forced shut-down (can only be turned on by a logic input)

Special case: LS and HS relays

For safety reasons, deactivating a LS or HS relay via the *MX 256* controller shuts down of the two relays and restarts their timing devices.

If a logic input or a command from the *MX 256* controller activates a LS or HS relay, the relay will be activated. The relay's activation time is set to the maximum value. In other words, the forced relay shut down ends when logic inputs no longer command the relay or after the end of an alarm condition which could control the relay.

Similarly, if an alarm triggers a HS relay, a LS relay cannot be activated.

The forced activation of a HS relay takes priority over scheduled HS freezes.

Activate Relay <>

Line : 2 Module: 1
Relay module level+1

Relay	Nb	1	OFF		0
2-1-1				PV	0

5.5.3 Activating analog outputs

Choose the 4-20 mA output for the selected module. Pressing [OK] will force a start-up or shut-down for the 4-20 mA output.

- The shut-down freezes the output at 4 mA
- The start-up freezes the output at 20 mA

4 - 20mA Output <>

5.5.4 Date and Time

△ Changing the time settings will reinitialize LS and HS delays !

Example : If the HS relay is activated and the time is changed, the HS relay will stop so that the LS relay can operate according to the predetermined delays.

System
Date and Hour
<>

Date ?
<>

Date (DD:MM:YY)
03 / 07 / 22

Hour ?
<>

Hour :
09 H 36
<>

5.5.5 Start-up Configuration

This menu is used to select which menu will display by default upon start-up and after 10 minutes of keyboard inactivity.

The two menu options are:

Cyclical Display and Event Display.

System
Start config
<>

Start config
Cyclic Display ?
<>

Start config
Display On Events ?
<>

5.6 Maintenance Menu

5.6.1 Simulation

This menu is used to simulate the alarms for a particular sensor module or to temporarily activate one or more relays (or outputs). After exiting the simulation menu, the sensors and relays (excluding LS and HS relays) revert to their prior state.

Enter the access code by using the [▲] [▼] and [◀] [▶] keys.

Sensor simulation

Select the sensor module you wish to test. Next, select the delay between each of the alarms to be activated (1-59 sec.). Validate your selections by pressing [OK],

The controller will increase reading levels until they exceed the thresholds for all activated alarms in ascending order +/- hysteresis. During the simulation, the theoretical values are displayed on screen.

During this phase, the other sensors are shut down. However, forced-state lines, modules and relays remain active.

Relay Status Simulation

Select the relay module for the relay you wish to test, then the relay you wish to activate.

Use the same "Relay Status" menu to select a relay. After pressing [OK] to select the relay, you have three options :

< Normal > = Relay functions normally (triggered by alarms)

< ON > = Relay in forced operation (can only be shut down by a logic input)

< OFF > = Relay in forced shut-down

```
Maintenance                                     <>
                                                    09:54:16
```

```
Maintenance
Simulation                                     <>
```

```
0000 acces
```

```
Simulation
One sensor                                     <>
```

```
Simulation
! Stop All Sensors !
```

```
Affichage capteur
Line : 1 Sensor : 1
```

```
S:→
Step alarm during 05 Sec.
0
```

```
OK
Simulation
Relay status                                     <>
```

```
OK
Line : 2 MODULE: 2
Relay module level+1
```

```
Relay Nb 1 : OFF      0
2-1-1          PV      0
```


(can only be shut down by a logic input)

After exiting this menu, the relay will revert to its original state.

Analog Output Simulation

5.6.2 Module Verification

Inspection of all of the parameters relating to a module with a *communication fault*.

E = Status word

D = Fault word

C = Start-up config. word.

M = Level for sensor modules or State for logic inputs

T = Temperature

Cal (Value) = Concentration of gas used for calibration

ID = Module fault

```
Maintenance
Module control <>
```

```
S:→
Line : 2 Module: 1 ON
OLCT10N CO level +1
```

```
S:→
1 E 8000 D 0000 C 0003 iD 0000
01 M 0 T 33 C Cal 300
```

Displays useful variables and operating time according to the module type :

(Value) = line voltage

R = Relay status (en hexadecimal)

(Valeur) J = Number of days since last calibration.

0 = X0 for sensor modules.

f = Xf for sensor modules.

U = Wear rate for sensor modules.

CRC = (Cyclic Redundancy Check)

Software version for the module program.

```
S:→
1 01 23.37V CRC=EAA5 9280J
0= 0.00% f=100.00% U= 0.00%
```

Dep. (valeur) H = Time (in hours) during which the sensor exceeded the scale.

Ref : (Valeur) = Sensor reference.

```
S:→
1 01 Dep. 0.0 H Ty 0
Ref=6514000 2290 021 1.0
```

Retry: (plural form, *retries*) – attempt(s) at retransmission. Used to control the quality of communication with the modules.

(a) : represents successful transmission attempts. This number increases continually and should be as large as possible.

(b), (c), (d) : represents next 3 successive retransmission attempts, if necessary, following a failed attempt. In the event that the 1st attempt (1) fails, a 2nd attempt (b) will occur, then a 3rd (c), and 4th (d). The number and the level of saved attempts is indicative of the transmission quality. A large number, on level 3 or 4 is due to poor transmission.

Reinitialize "retries" by selecting the "Reset retry" menu».

```
S : →
1      5 8 1 3 9 3 9 (a)      2 (b)
0 1      3 (c)      0 (d)
```

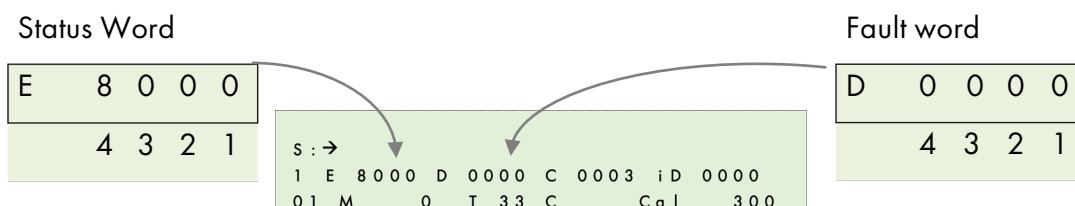
```
S : →
R e t r y   r e s e t
0 0 0 0   a c c e s
```

```
S : →
R e s e t   r e t r y
M o d u l e 1 - 0 1   L i n e 1   C P S
```

```
S : →
1      0      0
0 1      0      0
```

Any module fault generates an event, which is identified by a number (hexadecimal coding) corresponding to the fault type. The number at the end of the second line displays the module error.

The [◀] [▶] keys can be used to change the scroll mode: in **normal** mode, all events saved to memory are displayed; in **default** mode, only the faults saved to memory are displayed.



Fault word

4	3	2	1
1 = Def Flash	1 = Def Temp. Min	1 = Def Zero calibration	1 = Def ROM main memory
2 = Def sensor	2 = Def Temp. Max	2 = Def Sens. calibration	2 = Def RAM
4 = Low line power	4 = Def Meas. Min	4 = Def Zero Sensor replacement	4 = Def Battery
8 = high line power	8 = Def Meas. Max	8 = Def Sensitivity. Sensor replacement	8 = module parameter does not correspond to the module card

Sample fault word: 00A0 = Def Sens. calibration + Def Sensitivity. Sensor replacement (A = 10 in hexadecimal = 8 + 2)

Status word

4	3	2 *	1
1 = BitEtatLiss	1 = BitEtatChg	1 = BitEtat0	1 = BitMod0
2 = BitJbFill	2 = BitEtatPar	2 = BitEtat1	2 = BitMod1
4 = BitJbDelay	4 = BitJbWait	4 = BitEtat2	4 = BitMod2
8 = BitEtatCell **	8 = BitJbCar	8 = BitEtat3	8 = BitMod3

** : only for sensor module (indicates presence of a sensor)

2 *	status
0 (EtatMes)	Normal measure
BitEtat0 (EtatStab)	Stabilization
BitEtat1 (EtatZInit)	Zero init
BitEtat0 + BitEtat1 (EtatStab)	Zero Stabilization
BitEtat2 (EtatZVal)	Zero validation
BitEtat0 + BitEtat2 (EtatSWait)	Sensitivity waiting
BitEtat1 + BitEtat2 (EtatSInit)	Sensitivity init
BitEtat0 + BitEtat1 + BitEtat3 (EtatSStab)	Sensitivity stabilization
BitEtat3 (EtatSVal)	Sensitivity validation
BitEtat0 + BitEtat3 (EtatChg)	Button replace pushed

Module Designation		Type
1	Sensor CO	0
2	sensorNO	1
3	Sensor NO ₂	2
4	Sensor EXPLO	3
5	Sensor O ₂	4
6	Free	5
7	Free	6
8	Other	7
9	4 relay mod	8
10	8 relay module	9
11	Free	A
12	Free	B
13	4ana output mod	C
14	16 log input mod	D
15	Analog input mod	E
16	Free	F

5.6.3 Bus Faults

This menu displays the faults from all modules in a line. Each hexadecimal number corresponds to a module, with Module 1 being on the left, and Module 32 on the right.

0 = OK

1 = Communication error

2 = Module recognition error

4 = Fault triggered by a module fault word.

x = module missing or unrecognized due to a conflict with another module

```
OK
Maintenance
Bus Default <>
```

```
OK
Line : 1
0 2 1 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Module 1                               Module 32
```

Line : 1 Module : 1 = OK

Line : 1 Module : 2 = module recognition error

Line : 1 Module : 3 = communication error

5.6.4 Reset maintenance



Reserved for TELEDYNE OLDHAM SIMTRONICS - maintenance personnel only.

```
OK
Maintenance
Reset Maintenance <>
```

MX 256 / COM256 Version – Available memory level

Displays the MX 256 controller version as well as the COM256 programming software version.

Displays the microcontroller availability (time) rate (in %). This value will vary somewhat in relation to the program but can detect if a microprocessor is being overtaxed.

Enter the access code by using the [▲] [▼] and [◀] [▶] keys.

```
OK
COM256 2.01 JBUS = 1
CNTRL 2.03.00 87.3% Free
```

```
OK
0000 Acces
```

Next, press the [OK] key to reinitialize all counters to zero and to refresh the date.

MX 256 Installation

This menu is used to zero the following two settings across all modules: Last zero date

Operating Time

Each module logs its operation time in days. For the sensors, this time is equal to the time since the last calibration or the last zero.

Exceeding the scale

Each sensor logs the amount of time that levels exceed the scale in seconds. Go to the "Module Verification" menu to see this time.

6 Maintenance

6.1 Program transfer

This chapter describes the transfer of data from the *COM256* application to the *MX 256*, and vice versa (see the *COM256* user's guide). After launching the software, you will see a welcome window.

6.1.1 PC → *MX 256* transfer

Once the program has been created, the central controller should receive new settings.

Step 1: establish a physical connection

- 1) Use either the USB or RS-232 adapter to connect the PC to the *MX 256* controller.
- 2) Ensure that the *MX 256* controller is connected to a power source.
- 3) **On the controller:** flip the programming switch to the "MEM" position. The message "Switch open – Program..." will appear on the display screen. Communication with the central controller is authorized during this phase.

Step 2: link configuration

- 1) In the menu bar, select [Communication > Port].
- 2) Select the port [COM x] to use on the PC.



communication speed is selected automatically.

Step 3: data transfer

- 1) In the menu bar, select [Transfer > from PC to *MX 256*]. The message "Flip switch to MEM position in order to reprogram the central controller" refers to the <MEM> position on the *MX 256* controller commutator before starting the transfer procedure. Click [OK] once verification has ended.
- 2) During the transfer, a progress bar will indicate transfer progress.
- 3) Once the transfer is complete, the message "Operation complete" will appear on screen. Click [OK]. The configuration program has been transferred from the PC to the *MX 256* controller.
- 4) **On the controller:** The message "Switch open – Complete" will appear on the display screen. Flip the programming switch to the "Prog" position.
- 5) The central controller will perform a "Start-up" procedure.

6.1.2 *MX 256* → PC transfer

Step 1: establish a connection

- 1) Use either the USB or RS-232 adapter to connect the PC to the *MX 256* controller.
- 2) Ensure that the *MX 256* controller is connected to a power source.
- 3) **On the central controller:** flip the programming switch to the "MEM" position. The message "Switch open – Program..." will appear on the display screen. Communication with the central controller is authorized during this phase. Or, use the "Control" menu to set the printer to "OFF."

Step 2: link configuration

- 1) In the menu bar, select [Communication > Port].
- 2) Select the port [COM x] to use on the PC.



communication speed is selected automatically.

Step 3: data transfer

- 1) In the menu bar, select [Transfer > from *MX 256* to PC].
- 2) The message, "Do you want to read the *MX 256* controller configuration?" will appear onscreen. Click [OK]. If the message, "Check port configuration and ensure printer set to OFF position and try again" appears, verify that the *MX 256* printer is in the OFF position.
- 3) Select the folder where you want to download the file, and create a file name (a default name is suggested).
- 4) During the transfer, a progress bar will indicate transfer progress.
- 5) Once the transfer is complete, the message "Operation complete" will appear on screen. Click [OK]. The data has been transferred from the *MX 256* controller to the PC.
- 6) **On the central controller:** The message "Switch open – Complete" will appear on the display screen. Flip the programming switch to the "Prog" position.
- 7) The central controller will perform a "Start-up" procedure.

6.2 Error messages

Error messages will appear in the following scenarios:

ERR 01: Module fault relating to the program.

The test runs systematically on start-up and periodically when a module is activated by the menu if the module does not correspond to the loaded program. The error remains until the problem is corrected or until the module is shut down.

ERR 02: Fault word reading for a module. Name displayed on the 1st line of the screen.

ERR 04: Power line error.

ERR 08: I2C (real-time clock) or EEPROM error.

ERR 10: Module communication error.

ERR 20: Problem originating at printer. Printer shut-down or lack of paper.

6.3 Checksum error

When the central controller starts up, checksum values appear briefly on screen after the display test. The value calculated by the central controller is displayed on the first line, and the checksum calculated by the PC with the *COM256* software is displayed on the 2nd line.

If these two values are different, this screen will remain on the display screen, indicating that there is a problem (example: depleted battery.) The user program protection switch must be flipped, and a new *COM256* program must be transferred.

Flip the switch back into the "closed padlock" position before restarting the central controller.

Example of an error

Operation before event

Technical alarm triggered (fault).
buzzer engaged (if activated),
Front panel yellow LED illuminated.
Two pictograms appear: the blinking "maintenance key" and the "siren."

OK		
CNTRL Processing +		13:20
Chemical Laboratory		
BUZ DEF		
CNTRL Processing +		13:22
Chemical Laboratory		



Action on the front panel "acknowl" button.
Audible alarm (buzzer) is off.

"Siren" pictogram disappears.

"Maintenance key" pictogram remains on screen.

Front panel yellow LED illuminated.

DEF		
CNTRL Processing +		13:25
Chemical Laboratory		



Action on the "acknowl" button.
Direct access to the "ERRORS" data page.

ERR 11 = ERR 10 + ERR 1

DEF		
Relay module level +1		
ERR 11 : COM.	2 01	

Communication fault for Module 1, Line 2. Check the line and/or the module. The fault will disappear when the problem is resolved.

If multiple errors occur, all of the error codes will be displayed one after another. The faulting modules for each error will be displayed one at a time by their line number and module number.

For all faults except for communication faults, the gas level will be displayed in order to help the user identify the problem

BUZ DEF		
SENSOR CO 1, LEVEL +1		
ERR 01 : Type	2 01	Mes = X.X

6.4 Testing and calibration of fixed installations



The setting of this section are reserved for authorized persons formed because they might call into question the reliability of detection.

The site responsible is required to establish security procedures on its site. TELEDYNE OLDHAM SIMTRONICS may be not responsible for their implementation.

Gas detectors are above all safety instruments. In consideration of this, **TELEDYNE OLDHAM SIMTRONICS** recommends regular planned testing of fixed gas detection installations.

A functional test involves injecting a sufficient concentration of gas at the sensor level to trigger pre-set alarms. This test does not replace a full sensor calibration under any circumstances.

The frequency of gas tests depends on the industrial application in which the detector is in use. Frequent inspections should be made in the months following the commissioning of the installation, and then become more widely spaced provided that no significant deviation is observed.

If a detector should fail to react when in contact with the gas, calibration is essential. The frequency of calibrations is a function of the results of the tests (humidity, temperature, dust, etc.). However, it must not exceed one year. It is also advisable to calibrate the sensor after exposure to high concentrations of gas.

Gas concentration which must be used during manual or semi automatic calibration: see OLCT10N user manual

6.4.1 Sensor replacement

See OLCT10N user manual

On the central controller, the "WARN" pictogram indicates that the sensor has been replaced. The key will remain on screen until the sensor has been calibrated or until the sensor's power supply fails.

```

OK
S: →          WARN
M: 1, MOD: 1 = 41 ppm Calib
OLCT10N CO ZONE 45
  
```

The wear settings for the sensor are initialized upon calibration

6.4.2 Semi-automatic calibration

See OLCT10N user manual.

6.4.3 Manual calibration

See OLCT10N user manual.

6.5 Central controller maintenance

Do not use alcohol- or ammonia-based liquids to clean the central controller. If necessary, clean the exterior of the central controller with a damp cloth.

6.5.1 Lithium battery

If the central controller configuration settings are lost, the lithium battery soldered to the display card must be replaced (rep 3, Figure 23). This operation should be performed by a qualified professional.

Lithium battery characteristics: VARTA CR1/3N or equivalent.

6.5.2 Back-up battery pack

When the back-up battery power drops, the battery should be replaced. This operation should only be performed by a qualified professional.

The battery pack is located underneath the display screen. Take off the display screen to access the battery pack. Unplug the connector (rep 2, Figure 23) linking the battery pack to the motherboard. Remove the 4 mounting screws (rep 1, Figure 23). Attach the new battery pack. Plug in the connectors before reassembling the display.

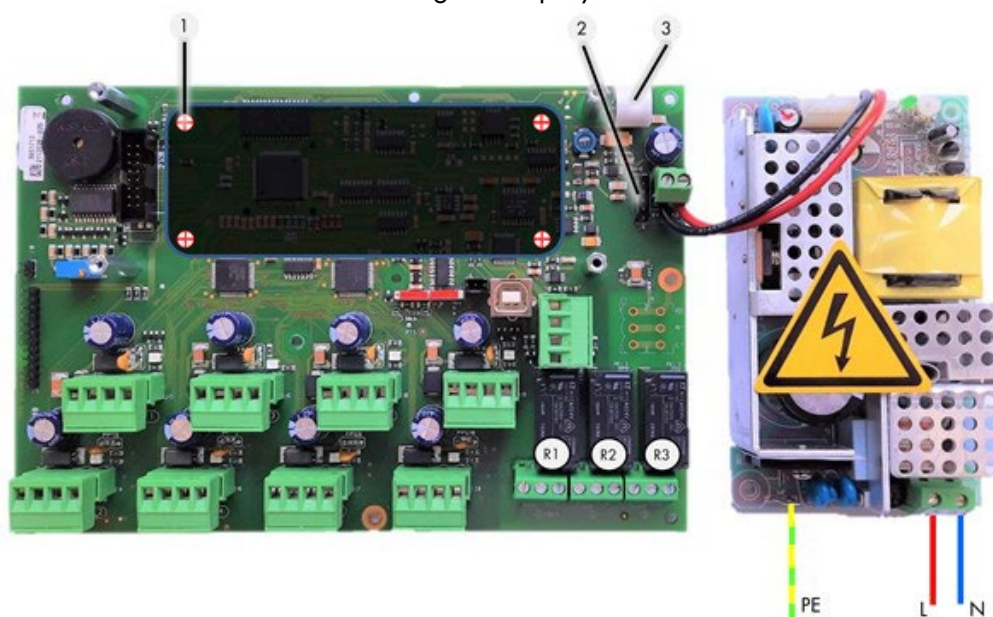


Figure 23

7 Technical Specifications

7.1 MX 256 Controller

MX 256 w/ metal wall-mounted casing	Dimensions (mm) : 320 * 180 * 95 Degree of protection: IP 54
Cable entries	5 M20 cable glands Diameter 5-12 mm power / local relays 9 PG9 Diameter 5-7 mm 1 D-SUB 9 Pin RS-232 cable
Operating conditions	
Ambient temperature:	-10°C to 40°C
Storage temperature:	-20°C to 50°C
Humidity:	5 to 95% noncondensing
Power supply	
Mains power supply:	Voltage: 110-240VCA
Battery back-up:	Optional – Capacity: 600 mAh
24 V Consumption:	140 mA + 12 mA per measurement line (240 mA max.)
Measuring lines	
Number:	8 RS-485 digital measuring lines
Line capacity:	32 digital MX 256 modules (OLCT 10N, 4 relay module, 8 relay module, 16 logic input module, 4 analog output module) ModBus Protocol
Cable type:	2 twisted pairs shielded RS-485 4Xawg22 (diameter 0.67mm) cable, 100 Ω
Transmission speed:	9600 Bauds (trial with 0.35 mm ²)
Module power supply:	12 to 30 VCC via the MX 256 controller and if necessary via a 24VCC external additional power supply
Maximum current available per line:	200mA@20°C and 140mA@50°C
Digital module network:	RS-485 ModBus, addresses 1 to 32, set with mini switches
Isolation:	Power supply / Digital network: 1500 V

Display	LCD display (4 lines, 32 characters per line) 3 electroluminescence diodes to indicate operating status (OK, Fault, Alarms]
Keyboard	Membrane keyboard, 7 intuitive keys
Local buzzer	Alarm and fault signaling
Alarms	
Number of alarms:	6 alarms per sensor (AL1, AL2, AL3, AL4, Out of Range, Fault + Validation for Explo gas)
Programmable thresholds:	For instantaneous or averaged values, increasing or decreasing values, or for manual or automatic rearming.
3 Internal local relays	- Relay: R1 (alarm/fault) – R2 (alarm) – R3 (alarm). - Nominal charge for RCT contacts: 2A / 250 VAC – 2A / 30 VDC (resistive charge) - Relays settings are configured with the <i>COM256</i> configuration software. - Tightening torque: 0.5-0.6 Nm
Centralized supervision system digital output connections.	
RS-485	ModBus Protocol (connection with a centralized supervision device)
RS-232 or USB	USB protocol priority (permanent connection to system configuration)

7.2 4 or 8 Relay Module

Function	
Function	Management of 4 or 8 relays from the digital signals issued by the MX 43.
Number of relays:	4 or 8 relays. CRT outputs
Relay type:	Bistable. Energized or de-energized configuration by mini-switches. Setting of relay parameters by COM 43 application.
Nominal load of contacts:	250 V AC – 2 A or 30 V DC – 2A, resistive load
Consumption:	3.5 mA in normal operation.
Connections:	Screwed terminals. Detachable connector without cutting the line. Tightening torque: 0.5-0.6 Nm. Cable: 2.5 mm ² maximum.
Logic inputs:	2 additional logic inputs (dry contacts).
Assembly:	Snap-on on DIN rail.
Dimensions:	125 x 165 x 60 mm.

7.3 16 Logic Inputs Module

Function	
Function	Logic input monitoring.
Capacity:	1 to 16 logic inputs (dry contacts).
Connections:	Screwed terminals. Detachable connector without cutting the line Tightening torque: 0.5-0.6 Nm. Cable: 2.5 mm ² maximum.
Consumption:	2 mA in normal operation.
Assembly:	Snap-on on DIN rail.
Dimensions:	125 x 165 x 60 mm.

7.4 Module 4 sorties analogiques

Function	
Function:	Generation of 1 to 4 analog values.
Capacity:	4 independent opto-isolated outputs 4-20mA (recopy detector, minimum, maximum, or average of a detector group). Resistance of maximum load 500 Ω .
Logic inputs:	2 additional logic inputs (dry contacts).
Connections:	Screwed terminals. Connector detachable without cutting the line Tightening torque: 0.5-0.6 Nm. Cable: 2.5 mm ² maximum.
Consumption:	< 5 mA with the 4 lines at stop. < 36 mA for an activated line. < 130 mA for the 4 activated lines.
Assembly:	Snap-on on DIN rail.
Dimensions:	125 x 165 x 60 mm.

8 Annexes



Warning, for use by authorized personnel

JBUS/MODBUS Protocol (MX256 version 2.03 and upper)

Table de transfert JBUS pour la CPS

Note : Les relais et les entrées sont numérotés de 1 à 256 et de 1 à 224 afin d'optimiser l'occupation mémoire dans la CPS

La numérotation se fait automatiquement par le COMCPS dans l'ordre croissant des relais puis des modules puis des lignes.

De même pour les entrées logiques

ADRESSE CURSUS	ADRESSE EN HEXA
1	1

ACCES LECTURE SEUL PAR BIT FONCTION (1 ; 2)

ACCES LECTURE SEUL PAR BIT FONCTION (1 ; 2)		OCIEF 1																OCIEF 2															
		Etat d'alarme de tout les modules capteurs																															
		0001	Ligne, Module																														
1		0001	1/2 LONG																														
1		0001	Etat d'alarme 1 de chaque modules capteurs																														
2		0002	1/2 LONG																														
3		0003	1/2 LONG																														
4		0004	1/2 LONG																														
		...	1/2 LONG																														
15		000F	1/2 LONG																														
16		0010	1/2 LONG																														
17		0011	1/2 LONG																														
		...																															
33		0021	idem																														
49		0031	idem																														
35		0041	idem																														
81		0051	idem																														
80		0060																															

Chaque bit représente 1 alarme pour 1 capteur d'une ligne

Les alarmes sont regroupées par niveau (catégories: 1,2,3,4,Sup,Inf ou défaut)

Puls par ligne : noté L14L8

Puis par capteur : noté M1 à M32

Note : La gestion interne de la CPS pour les alarme se fait sur 32bits. Donc le 1er bit indiquant l'alarme 1 du capteur 1 de la ligne 1 se trouve dans le 2eme mot Modbus

Chaque bit représente 1 relais ou
sortie 4-20mA

Les relais sont regroupées dans l'ordre des modules en partant de la ligne1 module1 relais1 jusqu'a la ligne8 module 32. Cette liste est continue comptant N relais. N étant le nombre de relais de l'installation.

Un 1 indique que le relais est commandé, sinon il est relâché.

Note : La gestion interne de la CPS pour les alarme se fait sur 8bits. Donc le 1er bit indiquant l'état du 1er relais se trouve dans le 1er mot Modbus(poid fort)

[illegible]

113	007/1	Défaut de tous les modules				Type de défaut pour les 2 modules																	
113	0071	Défaut ligne1	module 1	Défaut ligne1	module 2																		
114	0072	Défaut ligne1	module 3	Défaut ligne1	module 4	idom	2 octets																
115	0073	Défaut ligne1	module 5	Défaut ligne1	module 6	idom	2 octets																
116	0074	Défaut ligne1	module 7	Défaut ligne1	module 8	idom	2 octets																
117	0075	Défaut ligne1	module 9	Défaut ligne1	module 10	idom	2 octets																
128	0080	Défaut ligne1	module 31	Défaut ligne1	module 32	idom	2 octets																
129	0081	Défaut ligne2	module 1	Défaut ligne2	module 2	idom	2 octets																
145	0091	Défaut ligne3	module 1	Défaut ligne3	module 2	idom	2 octets																
161	00A1	Défaut ligne4	module 1	Défaut ligne4	module 2	idom	2 octets																
177	00B1	Défaut ligne5	module 1	Défaut ligne5	module 2	idom	2 octets																
193	00C1	Défaut ligne6	module 1	Défaut ligne6	module 2	idom	2 octets																
209	00D1	Défaut ligne7	module 1	Défaut ligne7	module 2	idom	2 octets																
225	00E1	Défaut ligne8	module 1	Défaut ligne8	module 2	idom	2 octets																
240	00F0	Défaut ligne8	module 31	Défaut ligne8	module 32	idom	2 octets																
241	00F1	Si Bit = 0 alors pas de défaut, si Bit = 1 alors défaut				idom	2 octets																

Chaque octet représente les défauts d'un module

Ces octets sont rangés suivant le numéro de ligne puis de module

Si l'octet est différent de 0, il y a présence de défaut

[illegible]

287	011F	Alimentation ligne	Erreur d'alimentation ligne	2 octets	Si bit = 1 alors problème ligne, sinon ligne en marche	Ligne 1 Ligne 2 Ligne 3 Ligne 4 Ligne 5 Ligne 6 Ligne 7 Ligne 8 Ligne 1 Ligne 2 Ligne 3 Ligne 4 Ligne 5 Ligne 6 Ligne 7 Ligne 8
	011F	Alimentation ligne				
288	0120	icône fixe (1 = icône allumer fixe)	icône clignotante (1 = icône allumer clignotante)	Word	IDEM	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
	0121	icône clignotante				
30001	7531	Compteur de temps de dépassement d'échelle				
30001	7531	Tps de d'overscale	Ligne 1	Module 1	Valeur long (32 bits non signés)	16 bits de poids fort du long
30002	7532					16 bits de poids faible du long
30003	7533	Tps de d'overscale	Ligne 1	Module 2		
30005	7535	Tps de d'overscale	Ligne 1	Module 3		
30007	7537	Tps de d'overscale	Ligne 1	Module 4		
30009	7539	Tps de d'overscale	Ligne 1	Module 5		
	...					
30005	7571	Tps de d'overscale	Ligne 2	Module 1		
	...					
30129	75B1	Tps de d'overscale	Ligne 3	Module 1		
	...					
30193	75F1	Tps de d'overscale	Ligne 4	Module 1		
	...					
30257	7631	Tps de d'overscale	Ligne 5	Module 1		
	...					
30321	7671	Tps de d'overscale	Ligne 6	Module 1		
	...					
30385	76B1	Tps de d'overscale	Ligne 7	Module 1		
	...					
30449	76F1	Tps de d'overscale	Ligne 8	Module 1		
	...					
30511	772F	Tps de d'overscale	Ligne 8	Module 32		
	...					

Compteur de jour depuis le dernier calibrage							Compteurs de temps de fonctionnement depuis la dernière calibration						
30513	7731	Dernier calibrage	Ligne 1	Module 1		Word	Valeur int (16 bits signés)	Bt 15					
30513	7731	Dernier calibrage	Ligne 1	Module 2		Word	Valeur int (16 bits signés)	Bt 14					
30514	7732	Dernier calibrage	Ligne 1	Module 3		Word	Valeur int (16 bits signés)	Bt 13					
30515	7733	Dernier calibrage	Ligne 1	Module 4		Word	Valeur int (16 bits signés)	Bt 12					
30516	7734	Dernier calibrage	Ligne 1	Module 5		Word	Valeur int (16 bits signés)	Bt 11					
30517	7735	Dernier calibrage	Ligne 1	Module 1		Word	Valeur int (16 bits signés)	Bt 10					
...	...							Bt 9					
30540	774C	Dernier calibrage	Ligne 1	Module 28		Word	Valeur int (16 bits signés)	Bt 8					
30541	774D	Dernier calibrage	Ligne 1	Module 29		Word	Valeur int (16 bits signés)	Bt 7					
30542	774E	Dernier calibrage	Ligne 1	Module 30		Word	Valeur int (16 bits signés)	Bt 6					
30543	774F	Dernier calibrage	Ligne 1	Module 31		Word	Valeur int (16 bits signés)	Bt 5					
30544	7750	Dernier calibrage	Ligne 1	Module 32		Word	Valeur int (16 bits signés)	Bt 4					
30545	7751	Dernier calibrage	Ligne 2	Module 1		Word	Valeur int (16 bits signés)	Bt 3					
30546	7752	Dernier calibrage	Ligne 2	Module 2		Word	Valeur int (16 bits signés)	Bt 2					
...	...							Bt 1					
30577	7771	Dernier calibrage	Ligne 3	Module 1		Word	Valeur int (16 bits signés)	Bt 0					
...	...												
30609	7791	Dernier calibrage	Ligne 4	Module 1		Word	Valeur int (16 bits signés)						
...	...												
30641	77B1	Dernier calibrage	Ligne 5	Module 1		Word	Valeur int (16 bits signés)						
...	...												
30673	77D1	Dernier calibrage	Ligne 6	Module 1		Word	Valeur int (16 bits signés)						
...	...												
30705	77F-1	Dernier calibrage	Ligne 7	Module 1		Word	Valeur int (16 bits signés)						
...	...												
30737	7811	Dernier calibrage	Ligne 8	Module 1		Word	Valeur int (16 bits signés)						
...	...												
30768	7830	Dernier calibrage	Ligne 8	Module 32		Word	Valeur int (16 bits signés)						
30769	7831												

30769	7831	Pointeur sur prochain événement à enregistrer (Modulo 1200)	Word	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30770	7832	Pointeur sur l'événement le plus ancien (-1 si le système n'a pas encore reçu ses 1200 événements)	Word	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30771	7833	Pointeur sur l'événement à imprimer	Word	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30772	7834	VIDE		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30809	7859	Evenement		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30809	7859	Evenement N		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30810	785A	Evenement N		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30811	785B	Evenement N		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30812	785C	Evenement N		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30813	785D	Evenement N		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30814	785E	Evenement N+1		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30815	785F	Evenement N+1		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30816	7860	Evenement N+1		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30817	7861	Evenement N+1		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
30818	7862	Evenement N+1		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
...				Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36807	8FC7	Evenement N+1199		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36808	8FC8	Evenement N+1199		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36809	8FC9	Pointeur sur le dernier texte imprimé (Modulo 4)	Word	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36810	8FCA	Texte M		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36850	8FF2	Texte M + 1		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36890	901A	Texte M + 2		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36930	9042	Texte M + 3		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

Entregistreur d'événement (1200)
Permet de recomposer la liste des événements affichée dans le menu Contrôle-événements.
Le codage ne sera pas expliqué dans ce fichier

Ici, on stock les 4 derniers événements envoyés à l'imprimante en ASCII avec un pointeur pour connaître le dernier événement (buffer tournant).

OC1ET 1 OC1ET 2

JBUS		Mesure de chaque capteurs																		
40001	9C41	Mesure instantanée	Ligne 1	Module 1	Word	(16 bits signés)														
40001	9C41	Mesure instantanée	Ligne 1	Module 2	Word	(16 bits signés)														
40002	9C42	Mesure instantanée	Ligne 1	Module 3	Word	(16 bits signés)														
40003	9C43	Mesure instantanée	Ligne 1	Module 4	Word	(16 bits signés)														
40004	9C44	Mesure instantanée	Ligne 1	Module 5	Word	(16 bits signés)														
40005	9C45	Mesure instantanée	Ligne 1	Module 5	Word	(16 bits signés)														
40028	9C5C	Mesure instantanée	Ligne 1	Module 28	Word	(16 bits signés)														
40029	9C5D	Mesure instantanée	Ligne 1	Module 29	Word	(16 bits signés)														
40030	9C5E	Mesure instantanée	Ligne 1	Module 30	Word	(16 bits signés)														
40031	9C5F	Mesure instantanée	Ligne 1	Module 31	Word	(16 bits signés)														
40032	9C60	Mesure instantanée	Ligne 1	Module 32	Word	(16 bits signés)														
40033	9C61	Mesure instantanée	Ligne 2	Module 1	Word	(16 bits signés)														
40034	9C62	Mesure instantanée	Ligne 2	Module 2	Word	(16 bits signés)														
40065	9C81	Mesure instantanée	Ligne 3	Module 1	Word	(16 bits signés)														
40087	9CA1	Mesure instantanée	Ligne 4	Module 1	Word	(16 bits signés)														
40129	9CC1	Mesure instantanée	Ligne 5	Module 1	Word	(16 bits signés)														
40181	9CE1	Mesure instantanée	Ligne 6	Module 1	Word	(16 bits signés)														
40193	9D01	Mesure instantanée	Ligne 7	Module 1	Word	(16 bits signés)														
40225	9D21	Mesure instantanée	Ligne 8	Module 1	Word	(16 bits signés)														
40256	9D40	Mesure instantanée	Ligne 8	Module 32	Word	(16 bits signés)														
40257	9D41	Mesure instantanée	Ligne 8	Module 32	Word	(16 bits signés)														

Mesure de chaque capteur.
Valeur rangée par numéro de ligne puis de module
Note : Mot sur 16 bits. Il faut aller relire le coefficient multiplicateur table 60772 (format d'affichage) pour avoir la vraie valeur

JBUS		Mot de commande des Sorties 4-20mA (1000= 1mA)																		
40257	9D41	Valeur Sortie 4-20mA	Sortie1	Word	Valeur int (16 bits non signés)															
40257	9D41	Valeur Sortie 4-20mA	Sortie2	Word	Valeur int (16 bits non signés)															
40259	9D43	Valeur Sortie 4-20mA	Sortie3	Word	Valeur int (16 bits non signés)															
40260	9D44	Valeur Sortie 4-20mA	Sortie4	Word	Valeur int (16 bits non signés)															
40261	9D45	Valeur Sortie 4-20mA	Sortie5	Word	Valeur int (16 bits non signés)															
40262	9D46	Valeur Sortie 4-20mA	Sortie6	Word	Valeur int (16 bits non signés)															
40263	9D47	Valeur Sortie 4-20mA	Sortie7	Word	Valeur int (16 bits non signés)															
40264	9D48	Valeur Sortie 4-20mA	Sortie8	Word	Valeur int (16 bits non signés)															
40265	9D49	Valeur Sortie 4-20mA	Sortie9	Word	Valeur int (16 bits non signés)															
40266	9D4A	Valeur Sortie 4-20mA	Sortie10	Word	Valeur int (16 bits non signés)															
40267	9D4B	Valeur Sortie 4-20mA	Sortie11	Word	Valeur int (16 bits non signés)															
40268	9D4C	Valeur Sortie 4-20mA	Sortie12	Word	Valeur int (16 bits non signés)															
40512	9E40	Valeur Sortie 4-20mA	Sortie256	Word	Valeur int (16 bits non signés)															
40513	9E41	Valeur Sortie 4-20mA	Sortie256	Word	Valeur int (16 bits non signés)															

Valeur envoyée à chaque sortie 4-20mA
Valeur rangée par numéro de ligne puis de module
Note : Mot sur 16 bits.
4000 = 4mA
20000 = 20mA

JBUS				Mesure de chaque capteur															
40513	9E41	Mesure moyennée 1	Module 1	Ligne 1	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40513	9E41	Mesure moyennée 1	Module 1	Ligne 1	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40514	9E42	Mesure moyennée 2	Module 1	Ligne 1	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40515	9E43	Mesure moyennée 3	Module 1	Ligne 1	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40516	9E44	Mesure moyennée 4	Module 1	Ligne 1	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40517	9E45	Mesure moyennée 1	Module 2	Ligne 1	Module 2	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40541	9EC1	Mesure moyennée 1	Module 1	Ligne 2	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40542	9EC2	Mesure moyennée 2	Module 1	Ligne 2	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40769	9F41	Mesure moyennée 1	Module 1	Ligne 3	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
40897	9F-C1	Mesure moyennée 1	Module 1	Ligne 4	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
41025	A041	Mesure moyennée 1	Module 1	Ligne 5	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
41153	A0C1	Mesure moyennée 1	Module 1	Ligne 6	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
41281	A141	Mesure moyennée 1	Module 1	Ligne 7	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
41409	A1C1	Mesure moyennée 1	Module 1	Ligne 8	Module 1	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
41536	A240	Mesure moyennée 1	Module 32	Ligne 8	Module 32	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4
41537	A241	Mesure moyennée 1	Module 32	Ligne 8	Module 32	Word	(16 bits signés)	B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4

Valeur des 4 moyennes de chaque capteur.

Valeur rangée par numéro de ligne puis de capteur puis de moyenne pour les alarmes 1,2,3,4

Note : Mot sur 16 bits. Il faut aller relire le coefficient multiplicateur table 60772 (format d'affichage) pour avoir la vraie valeur

JBUS		Mesure de chaque capteur																	
41537	A241	Mesure maximum				Word	(16 bits signés)												
41537	A241	Mesure maximum				Word	(16 bits signés)												
41538	A242	Mesure maximum				Word	(16 bits signés)												
41539	A243	Mesure maximum				Word	(16 bits signés)												
41540	A244	Mesure maximum				Word	(16 bits signés)												
41541	A245	Mesure maximum				Word	(16 bits signés)												
41564	A25C	Mesure maximum				Word	(16 bits signés)												
41565	A25D	Mesure maximum				Word	(16 bits signés)												
41566	A25E	Mesure maximum				Word	(16 bits signés)												
41567	A25F	Mesure maximum				Word	(16 bits signés)												
41568	A260	Mesure maximum				Word	(16 bits signés)												
41569	A261	Mesure maximum				Word	(16 bits signés)												
41570	A262	Mesure maximum				Word	(16 bits signés)												
41601	A281	Mesure maximum				Word	(16 bits signés)												
41633	A2A1	Mesure maximum				Word	(16 bits signés)												
41665	A2C1	Mesure maximum				Word	(16 bits signés)												
41687	A2E1	Mesure maximum				Word	(16 bits signés)												
41729	A301	Mesure maximum				Word	(16 bits signés)												
41761	A321	Mesure maximum				Word	(16 bits signés)												
41792	A340	Mesure maximum				Word	(16 bits signés)												
41793	A341	Mesure maximum				Word	(16 bits signés)												

Valeur du maximum de mesure de chaque capteur.

Valeur rangée par numéro de ligne puis de capteur

Note : Mot sur 16 bits. Il faut aller relier le coefficient multiplicateur table 60772 (format d'affichage) pour avoir la vraie valeur.
La valeur est RAZ à chaque impression programmée

JBUS		Mesure de chaque capteur																	
41793	A341	Phrase1				Octet 1													
41793	A341	Phrase1				Octet 2													
41794	A342	Phrase1				Octet 3													
41795	A343	Phrase1				Octet 4													
41796	A344	Phrase1				Octet 5													
41797	A345	Phrase1				Octet 6													
41797	A345	Phrase1				Octet 7													
41797	A345	Phrase1				Octet 8													
41797	A345	Phrase1				Octet 9													
41797	A345	Phrase1				Octet 10													
41798	A346	Phrase1				Octet 11													
41798	A346	Phrase1				Octet 12													
41799	A347	Phrase1				Octet 13													
41800	A348	Phrase1				Octet 14													
41801	A349	Phrase1				Octet 15													
41801	A349	Phrase1				Octet 16													
41801	A349	Phrase1				Octet 17													
41801	A349	Phrase1				Octet 18													
41802	A34A	Phrase1				Octet 19													
41803	A34B	Phrase1				Octet 20													
41804	A34C	Phrase1				Octet 21													
41805	A34D	Phrase1				Octet 22													
41806	A34E	Phrase1				Octet 23													
41807	A34F	Phrase1				Octet 24													
41808	A350	Phrase1				Octet 25													
41808	A350	Phrase1				Octet 26													
41808	A350	Phrase1				Octet 27													
41808	A350	Phrase1				Octet 28													
41808	A350	Phrase1				Octet 29													
41808	A350	Phrase1				Octet 30													
41808	A350	Phrase1				Octet 31													
41808	A350	Phrase1				Octet 32													
41808	A350	Phrase1				Octet 33 / caractère fin de phrase													
41808	A350	Phrase1				Octet 34 / vide													

Phrase de la première ligne de texte de l'afficheur

Phrase de la deuxième ligne de texte
de l'afficheur

		Une écriture d'un bit = une action clavier Note: Le traitement peut prendre 1s															ACCES EN ECRITURE														
		Action Pompier: (priorité maximum) Pour activer la commande pompier à distance et pouvoir forcer les relais en marche, il faut écrire 0xABCD à l'adresse indiquée. Dans ce cas, par défaut, toutes commandes de relais sont coupées, Ensuite on active la marche forcée à l'aide de la table 41861															Commande CPS/déporté Ne fonctionne pas comme la fonction pompier ci-dessus, on envoie pour chaque relais l'état souhaité en forçant le mise en marche ou à l'arrêt des relais. Les entrées logiques sont prioritaires sur cette commande.														
		Une écriture d'un bit = une action clavier Note: Le traitement peut prendre 1s															ACCES EN ECRITURE														
		Une écriture d'un bit = une action clavier Note: Le traitement peut prendre 1s															ACCES EN ECRITURE														
		Une écriture d'un bit = une action clavier Note: Le traitement peut prendre 1s															ACCES EN ECRITURE														
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Action Pompier: (priorité maximum)
Pour activer la commande pompier à distance et pouvoir forcer les relais en marche, il faut écrire 0xABCD à l'adresse indiquée.
Dans ce cas, par défaut, toutes commandes de relais sont coupées, Ensuite on active la marche forcée à l'aide de la table 41861

Commande CPS/déporté
Ne fonctionne pas comme la fonction pompier ci-dessus, on envoie pour chaque relais l'état souhaité en forçant le mise en marche ou à l'arrêt des relais.
Les entrées logiques sont prioritaires sur cette commande.

Attention ! Ne jamais commander des relais existant dans le programme!																
Forçage des relais, par la centrale ou supervision, à l'arrêt forcé																
A3B5		Relais 1-8				Relais 9-16				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41909		A3B5				Relais 17-24				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41910		A3B6				Relais 25-32				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41911		A3B7				Relais 33-40				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41912		A3B8				Relais 41-48				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41913		A3B9				Relais 49-56				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41914		A3B9				Relais 57-64				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41924		A3C4				Relais "				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
41924		A3C4				Relais 240-248				2 octets				Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0		
Si bit = 0 alors relais en fonctionnement normal, si Bit = 1 relais en arrêt forcé																
A3C5		Ligne, Module				1/2 LONG				L1, L1						

Chaque bit représente 1 module d'une ligne

Par défaut tous les bits sont à 1.

Mettre à 0 les bits des modules relais fictifs pour inhiber les défauts liés à la communication

Note : La gestion interne de la CPS pour les alarme se fait sur 32bits.

CONFIG VIA COMCPS

OCTET 1

OCTET 2

V d r D o c C O M P S .

JBUS		Liste des modules														
50001	C351	Nom du module 1 (32octet)	Nom octet 1													
50001	C351	...	Nom octet 2													
50017	C361	Type de module (1 octet)	Type de module (1 octet)													
50018	C362	Indice entrée (1 octet)	Indice relais (1 octet)													
50019	C363	Nom du module 2 (32octet)	Config par défaut (1 octet)													
50035	C373	Type de module (1 octet)	Nom octet 1													
50036	C374	Indice entrée (1 octet)	Indice relais (1 octet)													
54591	D53F	Nom du module 256 (32octet)	Config par défaut (1 octet)													
54607	D54F	Type de module (1 octet)	Nom octet 2													
54608	D550	Indice entrée (1 octet)	Indice relais (1 octet)													
54609	D551	Config par défaut (1 octet)	Config par défaut (1 octet)													

JBUS		Liste de relais														
54609	D551											No de module (0-255)		No de fonction du relais		No du relais sur le module
54609	D551	Numero de module (1octet) et Numero de fonction et de position du relais (1o)										2 Octets				
54610	D552	Nom relais /sortie 1 (20octet)										2 Octets		Nom octet 1		
		...														
54620	D55C	Indice GV / fonction sortie 4-20mA (1octet)										2 Octets		Indice GV		
54621	D55D	Numero de module (1octet) et Numero de fonction et de position du relais (1o)										2 Octets		No de module (0-255)		No du relais sur le
54622	D55E	Nom relais /sortie 2 (20octet)										2 Octets		Nom octet 1		
		...														
54632	D588	Indice GV / fonction sortie 4-20mA (1octet)										2 Octets		Indice GV		
		...														
57669	E145	Numero de module (1octet) et Numero de fonction et de position du relais (1o)										2 Octets		No de module (0-255)		No du relais sur le
		Nom relais /sortie 256 (20octet)										2 Octets		Nom octet 1		
		...														
		Indice GV / fonction sortie 4-20mA (1octet)										2 Octets		Indice GV		
57681	E151															

DETAILS ET PARAMETRES DES 10 TYPES DE CAPTEURS POSSIBLES (RESERVE COMCPS)

	JBUS			Bt 0
60492	EC4C	Coude du type de gaz du capteur		Bt 1
60492	EC4C	Coude du gaz pour le type 1 et 2 (2 octets)	Code Type 1	Bt 2
60493		Coude du gaz pour le type 3 et 4 (2 octets)	Code Type 2	Bt 3
		...	Code Type 3	Bt 4
60496				Bt 5
60497	EC51	Coude du gaz pour le type 9 et 10 (2 octets)	Code Type 9	Bt 6
			Code Type 10	Bt 7
				Bt 8
				Bt 9
				Bt 10
				Bt 11
				Bt 12
				Bt 13
				Bt 14
				Bt 15
				Bt 16
				Bt 17
				Bt 18
				Bt 19
				Bt 20

JBUS														
Seuils des alarmes moyennées														
60537	EC79	Seuil alarme 1 Moyenné	Type 1	Word	Valeur int (16 bits signés)	310								
60537	EC79	Seuil alarme 1 Moyenné	Type 2	Word	Valeur int (16 bits signés)	311								
60538	EC7A	Seuil alarme 1 Moyenné	Type 3	Word	Valeur int (16 bits signés)	312								
60539	EC7B	Seuil alarme 1 Moyenné	...			313								
60546	EC82	Seuil alarme 1 Moyenné	Type 10	Word	Valeur int (16 bits signés)	314								
60547	EC83	Seuil alarme 2 Moyenné	Type 1	Word	Valeur int (16 bits signés)	315								
60548	EC84	Seuil alarme 2 Moyenné	Type 2	Word	Valeur int (16 bits signés)	316								
60549	EC85	Seuil alarme 2 Moyenné	Type 3	Word	Valeur int (16 bits signés)	317								
		...	...			318								
60556	EC8C	Seuil alarme 2 Moyenné	Type 10	Word	Valeur int (16 bits signés)	319								
		...	...			320								
60576	ECA0	Seuil alarme 4 Moyenné	Type 10	Word	Valeur int (16 bits signés)	321								

JBUS		Seuils des alarmes de défauts		E1 5	E1 4	E1 3	E1 2	E1 1	E1 0
60577	ECA1		Type 1	Word	Valeur int (16 bits signés)				
60577	ECA1		Type 2	Word	Valeur int (16 bits signés)				
60578	ECA2		Type 3	Word	Valeur int (16 bits signés)				
60579	ECA3		...						
			Type 10	Word	Valeur int (16 bits signés)				
60586	ECAA								

JBUS		Seuils des alarmes de dépassement d'échelle		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
60587	ECAB			Type 1	Word	Valeur int (16 bits signés)													
60587	ECAB	Seuil alarme		Type 2	Word	Valeur int (16 bits signés)													
60588	ECAC	Seuil alarme		Type 3	Word	Valeur int (16 bits signés)													
60589	ECAD	Seuil alarme		...															
60596	ECB4	Seuil alarme		Type 10	Word	Valeur int (16 bits signés)													

JBUS		Temps de calcul de chaque moyenne																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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JBUS				Bt 0	Bt 1	Bt 2	Bt 3	Bt 4	Bt 5	Bt 6	Bt 7	Bt 8	Bt 9	Bt 10	Bt 11	Bt 12	Bt 13	Bt 14	Bt 15
60637	ECDD	Valeurs des hysteresis																	
60637	ECDD	Hysteresis	Type 1	Word	Valeur int (16 bits signés)														
60638	ECDE	Hysteresis	Type 2	Word	Valeur int (16 bits signés)														
60639	ECDF	Hysteresis	Type 3	Word	Valeur int (16 bits signés)														
		...	...																
60640	ECE6	Hysteresis	Type 10	Word	Valeur int (16 bits signés)														

JBUS					Bt 0	Bt 1	Bt 2	Bt 3	Bt 4	Bt 5	Bt 6	Bt 7	Bt 8	Bt 9	Bt 10	Bt 11	Bt 12	Bt 13	Bt 14	Bt 15
60647	ECE7	RESERVE COMCPS																		
60647	ECE7		Type 1	Word	Valeur int (16 bits signés)															
60648	ECE8		Type 2	Word	Valeur int (16 bits signés)															
60649	ECE9		Type 3	Word	Valeur int (16 bits signés)															
			...																	
60656	ECF0		Type 10	Word	Valeur int (16 bits signés)															

JBUS		Alarmes activées ou non		S/bit à 1 alarme active	
60657	ECF1				
60657	ECF1	Type 1 (1 octet)	Type 2 (1 octet)	2 octets	
60658	ECF2	Type 3 (1 octet)	Type 4 (1 octet)	2 octets	
60661	ECF5	Type 9 (1 octet)	Type 10 (1 octet)	2 octets	

[illegible]

JBUS			B10 B11 B12 B13 B14 B15
60667	ECFB	Nom du gaz abrégé	
60667	ECFB	Nom du gaz pour le type 1 (5 octets)	Nom 1 octet 1
		...	
60669	ECFD	Nom du gaz pour le type 1 et 2 (5 octets)	Nom 1 octet 5
60670	ECFE	Nom du gaz pour le type 2 (5 octets)	Nom 2 octet 2
60671	ECFF	Nom du gaz pour le type 2 (5 octets)	Nom 2 octet 4
		...	
60691	ED13	Nom du gaz pour le type 10 (5 octets)	Nom 10 octet 5

JBUS	Long nom du gaz	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
60692	ED14																
60692	ED14																
60699	ED1B																
60771	ED63																

JBUS	Format d'affichage	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets	2 octets
60772	ED64																
60772	ED64																
60773	ED65																
60776	ED68																

Coef diviseur
0: valeur entière
1: valeur entière / 10
2: valeur entière / 100
3: valeur entière / 1000

Code: 0 = 0 chiffre après la virgule, 1 = 1 chiffre après la virgule, etc...

JBUS	Alarmer activées ou non	Type 1 (1 octet)	Type 2 (1 octet)	Type 3 (1 octet)	Type 4 (1 octet)	Type 9 (1 octet)	Type 10 (1 octet)	Type 11 (1 octet)	Type 12 (1 octet)	Type 13 (1 octet)	Type 14 (1 octet)	Type 15 (1 octet)	Type 16 (1 octet)	Type 17 (1 octet)	Type 18 (1 octet)	Type 19 (1 octet)	Type 20 (1 octet)
60777	ED69																
60777	ED69																
60778	ED6A																
60781	ED6D																

JBUS		Alarme croissante ou décroissante																																											
60782	ED6E	ED6E	Type 1 (1 octet)	Type 2 (1 octet)	2octets	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0								
60782							0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss							
60783	ED6F	ED6F	Type 3 (1 octet)	Type 4 (1 octet)	2octets	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss
60786	ED72			Type 9 (1 octet)	Type 10 (1 octet)	2octets	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss	0=A11 inst croiss	0=A14 moy croiss	0=A13 moy croiss	0=A12 moy croiss	0=A11 moy croiss	0=A14 inst croiss	0=A13 inst croiss	0=A12 inst croiss

JBUS		Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
90787	ED73	Reserve COMCPS														
90787	ED73	Type 1 (1 octet)	2 octets													
90788	ED74	Type 3 (1 octet)	2 octets													
		...														
90791	ED77	Type 9 (1 octet)	2 octets													

[illegible]

JBUS						B10	B11	B12	B13	B14	B15
60832	EDA0	Echelles des dix types de capteurs									
60832	EDA0	Echelle	Type 1			Word	(16 bits signés)				
	EDA1	Echelle	Type 2			Word	(16 bits signés)				
60834	EDA2	Echelle	Type 3			Word	(16 bits signés)				
		...									
60841	EDA9	Echelle	Type 10			Word	(16 bits signés)				

9 Certificate of Compliance



TELEDYNE
OLDHAM SIMTRONICS
Everywhereyoulook™

DECLARATION UE DE CONFORMITÉ
EU CONFORMITY DECLARATION

Réf : UE_MX256_rev B.doc

Nous,
We,
 **Teledyne Oldham Simtronics S.A.S.**, ZI Est, 62000 Arras France

Déclarons, sous notre seule responsabilité, que le matériel suivant :
Declare, under our sole responsibility that the following equipment :

Système de mesure MX256 – Monitoring system MX256

Incluant la centrale de mesure, les détecteurs de gaz, les modules E/S et relais
Including the controller, the gas detectors, the relays and I/O modules

 Est conçu et fabriqué en conformité avec les Directives et normes applicables suivantes :
Is designed and manufactured in compliance with the following applicable Directives and standards:

I) Directive Européenne CEM 2014/30/UE du 26/02/14: Compatibilité Electromagnétique
The European Directive EMC 2014/30/UE dated from 26/02/14: Electromagnetic Compatibility

Normes harmonisées appliquées : **EN 50270 : 2015 for type 1**
Harmonised applied Standards

II) Directive Européenne DBT 2014/35/UE du 26/02/14: Basse Tension
The European Directive LVD 2014/35/UE dated from 26/02/14: Low Voltage

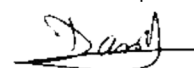
Normes harmonisées appliquées : **EN 61010-1 : 2010 +A1 : 2019**
Harmonised applied Standard

 Ce matériel ne doit être utilisé qu'à ce pour quoi il a été conçu et doit être installé en conformité avec les règles applicables et suivant les recommandations du fabricant.
This equipment shall be used for the purpose for which it has been designed and be installed in accordance with relevant standards and with manufacturer's recommendations.

A Arras, le 12/05/2022 / Arras, May 12th, 2022

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