

# SIA-5319 FIRE CONTROL PANEL

SIA



Royal Oman Police (R.O.P.)  
Cert. PACDA/C/0117/2020

#### **APPROVALS:**

EN 54-2:1997 + A1:2006  
EN 54-4:1997 + A1:2002 + A2:2006  
(CPR No. 0068/CPR/043-2016)  
EN 12094-1:2003  
(CPR No. 0068/CPR/042-2016)



U.A.E. Civil Defense  
Cert. 0068/CPR/042-2016  
Cert. 0068/CPR/042-2016

+60°C Climatic Tested by Notified  
Body : EN 60068-2-78:2001

**S.I.A. S.r.l**

Safety Industrial Applications

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## GENERAL

SIA-5319 Control panel is a modular system composed by several cards that can be added to satisfy the specific customer requirements, can be totally set up and programmed for Fire, Gas detection and Extinguishing Systems. These particular features make the system versatile and adaptable to different employs, from Industrial to Oil & Gas applications, from Refineries to Building protection.

From Single to Redundant CPU (master-slave) up to a Full Redundant Architecture are available as option to guarantees the supervision of the system in any critical condition without status change or system shut-down.

The Control Panel is manufactured and certified as per EN-54-2, EN54-4 and EN12094-1 Standards.

Hardware and software are designed according to the methods and rules provided by IEC61508 standard regarding the Safety Integrity Level (SIL).

Panel Programming, carried out with WinSia configuration software (sold separately), is based on the Control By Event (CBE) logic type, that means the output activation is performed upon specific input events, simple or complex associations can be created.

### KEY FEATURES

- Microprocessor based technology.
- CPU Redundancy (as option).
- Self CPU Firmware updating & synchronization, when a new card is installed.
- Feeder and Battery Charger redundancy.
- Full System Redundancy (upon request).
- Networkable System, up to 32 Slave panels with different architectures: Ring Connection, Multidrop Connection.
- Redundant Network available as option with the possibility of N.2 Master panels.
- 5,7" Back-lighted Touch Screen LCD display.
- Hardware integrity self-check.
- USB/RS-232 Serial port for programming software interface.
- Up to 4 opto-isolated RS-485 Serial ports for Modbus (RTU or TCP/IP) or external system connections on several physical media.
- Signaling management as per EN54-2 Standards.
- Power Supply Unit conform to EN54-4.
- Suitable for Gas Releasing Applications as per EN12094-1 standard.
- Modular modules housed in a 19" racks, with locking screws.
- Redundant Communication Bus.
- Several type of carpentry available: Wall mounting Panel (dimensions up to 1200x800x400 mm.), Self standing panel (standard 2100x800x800 mm., other on request), Exposion proof panel (Exd).
- Input and Output cards are Line monitored for open and short circuit, as per international standard requirements.
- Extended Operating Temperature Range, up to 60 °C, tested by third party laboratory.

# SYSTEM COMPOSITION

## OPERATOR DISPLAY



SIA-5319 Control Panel is provided with a 5,7” back-lighted touch screen graphic display. Controls and menu can be accessed by simply pushing on the icons shown on the screen.

Signalling messaging is extremely intuitive and in compliance with the EN54-2 code. Several windows collect by typology and chronology all the events present in the system.

A banner showing the user controls is present on the display, these controls can be accessed after the glass door has been opened by a mechanical key. Commands can also be furthermore protected by enabling a password in order to avoid unauthorized management.

## RACKS

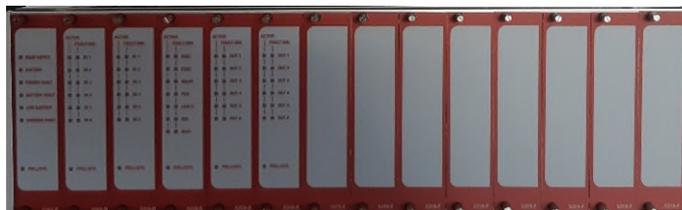
### RACK SIA-R

This is the control & command rack of the system, where the CPUs and Operator panel reside. Four additional slots are provided to host input/output cards as many, suitable for small systems.



### RACK SIA

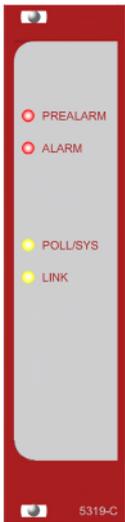
The RACK SIA hosts the I/O cards of the SIA-5319 panel. No.13 slots are available, whereof the first left slot is reserved for the 5319-P card (Power Management Card). A Terminal Board is embedded on the rack for the connection of the inputs and outputs.



## CARDS

Below a description of the cards installable into SIA-5319 control panel.

### CARD 5319-C



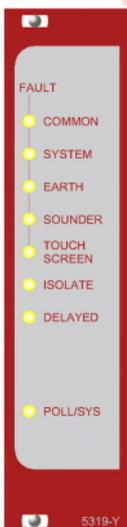
This is the heart of the SIA-5319 control panel. It is housed into slot S-A and/or S-B of the SIA-R RACK. CPU manages the user display (touch screen LCD), modbus communication cards and I/O cards. CPUs configured in Redundant mode work on 1oo2 logic type, since they operate in parallel and in a completely independent way, elaborating the access to the communication bus. A high speed synchronous serial bus keeps aligned and constantly monitors the integrity of the data between the two CPUs.

In this way the system operation is guaranteed in any critical conditions, even in case of fault of one of the two CPUs. Backup is "hot-swappable" type. In a redundant system, in case of a CPU A failure, the CPU B takes the control of the system, putting in safe condition the faulty one, performing the supervision activities in type A mode.

For systems configured with single CPU, in case of critical fault, the CPU is anyway brought in safe condition shutting-down the system.

If more than 512 fire alarm sensors are connected to the panel, a redundant CPU is required, according to paragraph 13.7 of standard EN54-2.

### CARD 5319-Y



This card supervises the system and manage the common signalizations, both visual and activation type. The cards must always be present in the system, installed into slot S-Y of RACK SIA-R.

### CARD 5319-P



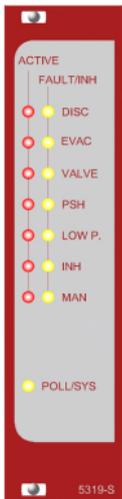
This card monitors the power supplies according to EN 54-4 standard requisitions.

It supervises the voltage levels of the power supply unit and the battery charger. In case of Main Power Supply loss or voltage drops below the threshold, the batteries are automatically inserted by an electronic switch in order to avoid unexpected drops of the regulated voltage.

Module 5319-P checks the presence of the batteries and test periodically their charge level (by measuring the series resistance of the batteries).

It has to be installed into RACK SIA-R and in every expansion RACK SIA into the slot named S-0. Where multiple modules are installed, the function is redundant type with "hot back-up" features.

### CARD 5319-S



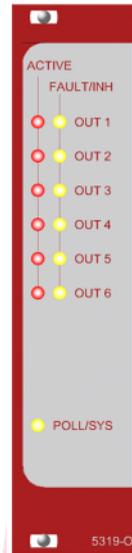
Is the card dedicated to the Gaseous Extinguishing Systems, certified as per European standard EN12094-1 and includes all the input and output lines to manage the discharge operation.

By a dedicated monitored input is possible to manage the discharge in automatic or manual mode. Automatically the discharge is actuated when the module detects the relevant command; Manually only when the remote or local manual releases are actuated. The access to the discharge sequence is protected by a level 2 password according to EN12094-1 standard.

On the module is also available an inhibit input to temporarily stop the discharge, before time delay elapsing.

All the input lines or discharge controls are supervised for opening and short circuit. In particular, the monitoring of the solenoid valve line and alarm output devices is performed by the combined technique DMOS+LVL (low voltage monitor) which supervises the actuators without using field termination resistors. The module can also be used in redundant configuration with "hot back-up" features.

### CARD 5319-O

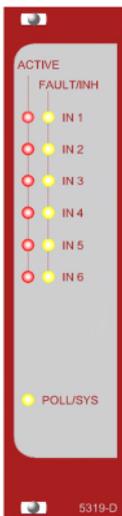


The module is dedicated to manage No.6 supervised output lines working at 24 Vdc. It may be used for various operations, Signalling, Non-Gaseous extinguishing and other applications where the line monitoring is required. Lines can be independently configured from the operator panel and WinSIA software configuration.

Line Monitoring is performed by the combined technique DMOS+LVL (low control voltage), which allows the supervision of non polarized devices (for example solenoid valves) without the needs to add of End of Line Resistors and Diodes.

The module can also be used in redundant configuration with "hot back-up" features.

### CARD 5319-D



It manages up to No.6 monitored input channels (for short and open circuit). It can be used for several applications, from Conventional Fire Detection (such as Smoke, Heat, Combined detectors), thru Normally Open contacts (such as push buttons, switches, etc.).

Normally Closed contact can also be used, this function is not EN54 compliant.

Lines can be independently configured on different current levels to cover a wide range of devices (useful function for revamping systems to avoid the change of the resistors on the field devices). Card can be configured also to manage technologic or 4-20mA analogic inputs.

The module can also be used in redundant configuration with "hot back-up" features.

### CARD 5319-A



The module accepts up to No.2 4-20mA Analog Input lines, for connecting Gas Detector or any device working with 4-20 mA current. A three digit display for each line is available on the front of the panel that shows the real time analogic value.

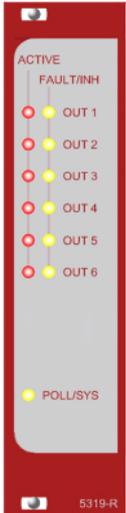
Detection line and readings can be set by the operator panel or configuration software, especially the user can select: measure range (ppm, %LEL, oxygen, mA), Prealarm and Alarm level, Fault Threshold, Upward or Downward trend, Real time value indication and Max detected Value.

An automatic procedure for the Zero calibration of the module is available from the display, in this way is possible to regulate small sensor drifts without mechanical adjustments on the module itself.

The module is equipped with no.2 outputs that repeat the 4-20mA input in order to connect remote devices.

The module can also be used in redundant configuration with "hot back-up" features.

## CARD 5319-R



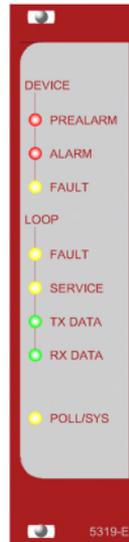
The card manages the actuation of No.6 programmable relay lines, SPST contact.

NO or NC contacts can be selected for each channel by a dedicated jumper on the card, Normally Energized or De-energized relay can be set independently, useful function for “Fail safe” operation.

Leds showing the line Activation and Fault status (with time delay in progress indication function) are visible on the front of the module.

The module can also be used in redundant configuration with “hot back-up” features.

## CARD 5319-E



The card is developed to connect the Addressable intelligent analog devices working with a proprietary ESP protocol from Hochiki Europe.

The ESP Series has a complete range of addressable devices such as push buttons, horns, smoke, temperature and combined detectors, Input & Output programmable modules.

Card 5319-E supervises a closed ring connection on which all the addressable devices can be installed up to 127 addresses per loop. The leds installed on the front of the module show the pre-alarm, alarm, fault status of the device and fault and transmission information related to the Loop integrity.

Moreover, the faults and indication are reported on the display to give detailed information about the device involved by alarm or fault.

The module can also be used in redundant configuration with “hot back-up” features.

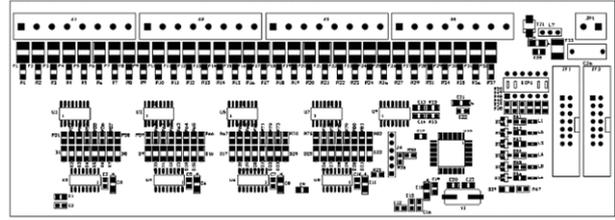
SIA

### CARD 5319-I

The module controls up to 32 open collector output lines typically used for actuation of leds in synoptic panels, with ISA sequences or also used to drive relay coils (typically when a large number of relay are used) up to max. 500 mA each channel. The actuations follow the sequences ISA 1B for fault signals and ISA 2C for alarm.

Each line can be programmed with a dedicated logic equation.

The module can also be used in redundant configuration with “hot back-up” features.



### CARD 5319-232/USB

The module is dedicated to the RS-232 serial port or, as option, an USB port to configure and set up the control panel by means of WinSia software configuration. The card shall be connected to RACK SIA-R (COM1) thru the RJ-45 connector on COM port.



### CARD 5319-485

The card manages an opto-isolated serial port RS-485 to connect devices that uses Modbus RTU or TCP/IP protocol (using a media converter). On the control panel it is possible to install up to 4 cards using a RJ-45 on COM port of the card and on RACK SIA-R (connectors COM1, COM2, COM3, COM4/SD).



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