

SV SISTEMI DI SICUREZZA

ITALIA



EXFIRE360

EX8SI – TECHNICAL SPECIFICATION

DATASHEET

REVISION 04 DTD. 21/12/2011
TS-0006-EN-REV04

PROPERTY RIGHTS

This document and the information contained herein are the exclusive property of the SV Sistemi di Sicurezza S.r.l. Italy. The rights of duplication or copy of this document, the rights of disclosure of the information contained in it, and the right use of the information contained in this document may be obtained only through a written permit signed by an authorized representative of Sistemi di Sicurezza S.r.l..

* * * * *

REVISION INDEX

Revision index	Description	Date
Revision 01	Preliminary	11/01/2010
Revision 02	Revised for certification scope	08/03/2010
Revision 03	Revised for certification scope	21/09/2010
Revision 04	Revised for certification scope	20/12/2011

* * * * *

INDEX

1	GENERAL INFORMATION	4
1.1	CODES AND STANDARDS	4
1.2	DESIGN REQUIREMENTS.....	4
2	TECHNICAL SPECIFICATION	5
2.1	OPERATING DESCRIPTION EX8SI.....	5
2.2	MAIN CHARACTERISTICS	5
3	VIEW MENU	6
3.1	QUIESCENT CONDITION	6
3.2	ALARM CONDITION	6
3.3	DISABLEMENT CONDITION.....	6
3.4	FAULT WARNING CONDITION	6
3.5	TEST CONDITION	6
4	CARD MENU 	7
4.1	CARD DIAGNOSTICS OF EX8SI MODULE.....	8
5	TECHNICAL FEATURES OF I/O SIGNALS.....	9
5.1	SUPERVISED INPUTS	9
5.2	OPEN COLLECTOR OUTPUTS.....	9
5.3	APPLICATIONS	9
5.4	PROGRAMMABLE PARAMETERS	9
6	WIRING EX8SI MODULE	10
6.1	CANBUS TERMINAL BOARD	10
6.2	WIRING SPECIFICATIONS	11
6.3	WIRING DETAILS	12
7	MAINTENANCE	12

1 GENERAL INFORMATION

1.1 CODES AND STANDARDS

Design of hardware and software has been developed according to the following reference standards.

Construction Products Directive (CPD) – Directive 89/106/EEC

“Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products.”

EN 54-2:1997 + A1:2006

“Fire detection and fire alarm systems - Part 2: Control and indicating equipment”

EN 54-4:1997 + A1:2002 + A2_2006

“Fire detection and fire alarm systems - Part 4: Power supply equipment”

EN 12094-1:2003

“Fixed firefighting systems - Components for gas extinguishing systems - Part 1: Requirements and test methods for electrical automatic control and delay devices (only for EX6EV-C card)”

1.2 DESIGN REQUIREMENTS

Mechanical requirements

Environmental classification

Class A -5° +40° C.

Enclosure type

19" rack-mounted units, 40U cabinet with IP30 protection degree.

Components of the extinguishing modules were selected on the basis of the performance required and are suitable to operate when the ambient conditions on the external surface of the cabinet are of 3K5 class as per EN 60721-3-3.

Manual controls

Manual controls are identified for their specific purpose. Master display is equipped with a graphical symbol to provide access to the menu. By pressing “menu” key, the operator will read the electrical parameters of each channel as well as the diagnostics of the modules.

Visible indications

Alarm, fault and other supervisory or monitoring indications are visible on the Master display, light emitting indicators adjacent to the display and on ModLcd displays installed on each module.

Touch-screen operations on Master display give access to the panel functions (at access levels 1/2/3).

Visible indications are clearly identified at access level 1 for their specific function.

Distinct light indications

Mandatory visible indications could be fully tested through “Test LED” function available at level 1 or 2.

Visible indications are clearly identified at access level 1 for their specific function.

Indications shown on alphanumeric displays

EXFIRE360 panel is designed with an alphanumeric display, which shows system information, and a set of light emitting indicators that provide the following conditions: “Power”, “Alarm”, “Fault”, “Isolate”, “Test”, “Supervisory”, “Output activated”, etc.

The same conditions are repeated on the module’s Lcd displays.

2 TECHNICAL SPECIFICATION

2.1 OPERATING DESCRIPTION EX8SI

EX8SI card operation is monitored by a humidity and temperature sensor; these values are shown on the touch-screen operator interface (ModLcd) of the module.

The card provides eight 4-20 mA supervised inputs and seven open collector outputs, which can be associated to pre-alarm, alarm and fault warning conditions of the supervised inputs.

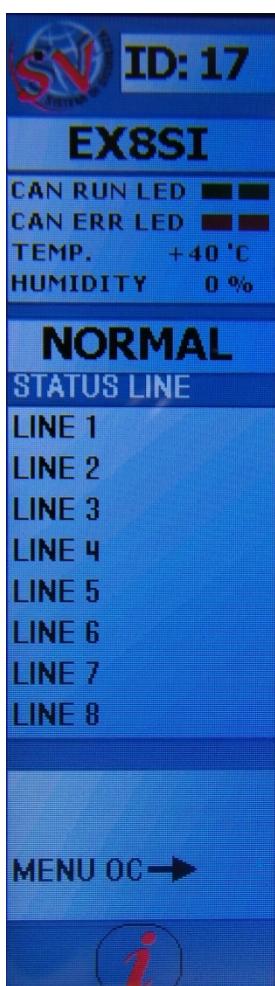
Pre-alarm and alarm thresholds, line disablement and operating modes of each input (single or cross zoning, dual steps) are programmable with Protection software.

EX8SI is dedicated to conventional fire detection circuits; it may be used for connecting existing non-addressable fire detection systems and is also suitable for monitoring intrinsically safe fire detection circuits.

Typical applications are pressure switches, manual release stations, tamper switches of valves, dry contacts (normally open), etc.

Default settings of the module comprise a one-to-one association of the fire alarm condition of each input to the open collector outputs.

2.2 MAIN CHARACTERISTICS



- Self diagnostics of 13 hardware blocks
- Hot plug and hot swap capability (with the panel in operation)
- Automatic addressing of the modules
- Installation on 19" subrack (8 TE) with fixing screws
- Monitoring of eight inputs (short and open circuit) with earth fault detection for each input line. Input status is displayed on ModLcd panels.
- Seven programmable Open Collector outputs
- Monitoring of current draw of each input
- Monitoring of card temperature during operation
- Monitoring of card humidity during operation
- Real time supervision of CAN Bus communication
- Monitoring of 24 Vdc/5 Vdc/3.3 Vdc voltages
- Monitoring of activation of the open collector outputs
- Automatic switching of faulty channels
- Redundancy with two EX8SI modules
- Programmable pre-alarm and alarm thresholds of each channel
- Operating modes programmable by software
- Power supply voltage: 21-30 Vdc
- Quiescent current draw at 24 Vdc: 100 mA
- Maximum current draw per input channel: 70 mA
- Maximum load of O.C. outputs: 500 mA
- Operating temperature: from -5 to +40°C
- Storage temperature: from -10 to +50°C
- Relative humidity: <= 95% (non condensing)
- Eurocard size: 160mmx100mm

3 VIEW MENU

3.1 QUIESCENT CONDITION

In quiescent condition, the module display shows:

- Card address and identification
- CAN Bus communication status
- Card temperature and humidity
- Input status of 4-20 mA inputs
- Access to Open Collector menu
- Access to card menu



3.2 ALARM CONDITION

In fire alarm condition, the module display shows:

- Card address and identification
- CAN Bus communication status
- Card temperature and humidity
- Identification of inputs in alarm and relevant status
- Identification of inputs in pre-alarm and relevant status
- Access to Open Collector menu (in red colour in case of activation of an O.C. output)
- Access to card menu



3.3 DISABLEMENT CONDITION

If a circuit or device is disabled, the card display shows:

- Card address and identification
- CAN Bus communication status
- Card temperature and humidity
- Identification of the disabled input
- Access to Open Collector menu
- Access to card menu



3.4 FAULT WARNING CONDITION

In case of fault, the card display will show:

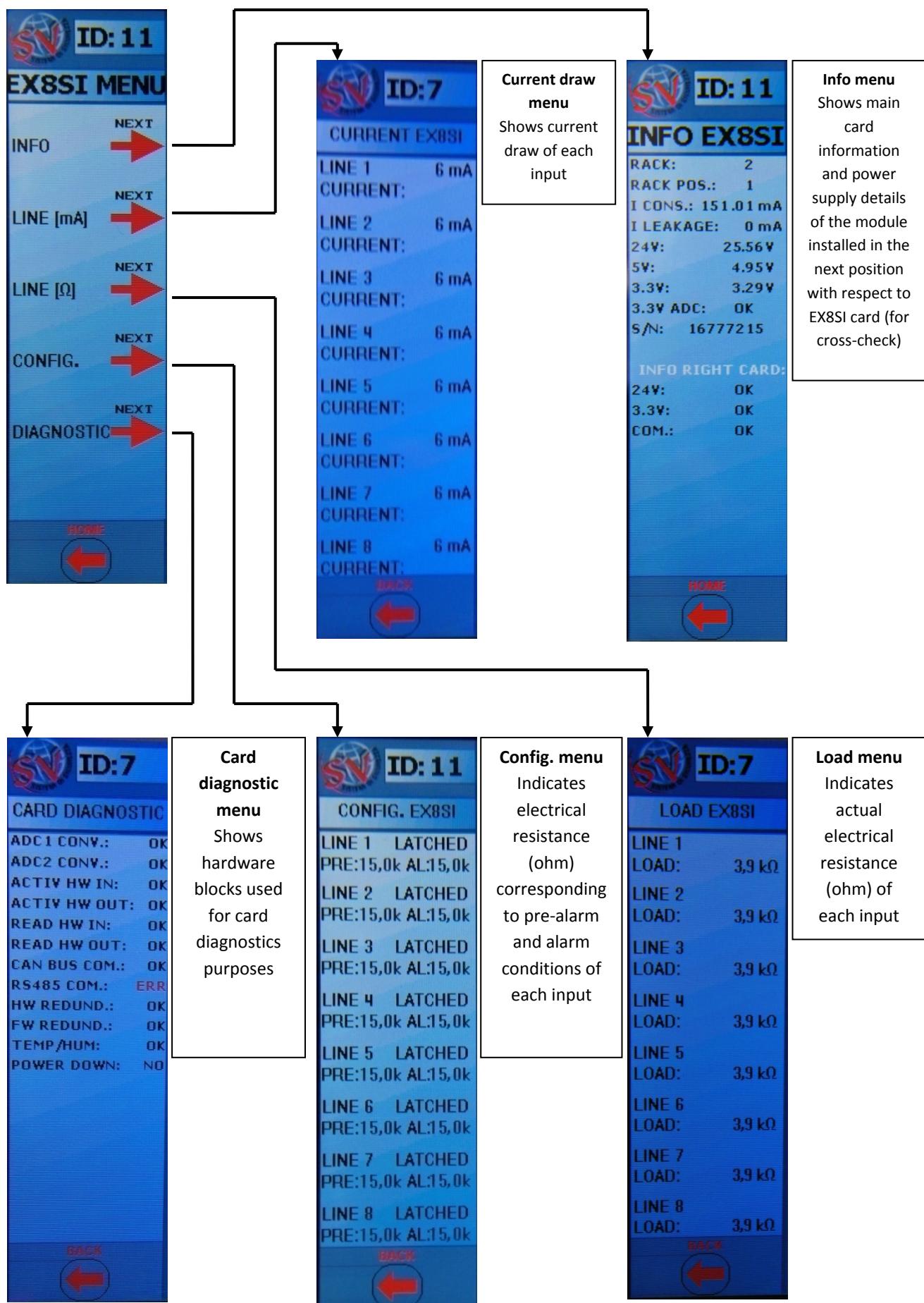
- Card address and identification
- CAN Bus communication status
- Card temperature and humidity
- Fault warning indication, which may correspond to:
 - device fault
 - Can Bus error
 - Fault of a supervised circuit
 - Abnormal card temperature/humidity
 - Abnormal power supply voltage (24vdc, 5vdc, 3.3vdc)
 - Fault of hardware blocks.



3.5 TEST CONDITION

Test condition is superimposed on other conditions of the module, inhibiting output circuits. Signal priority in the visualisation of messages is: alarm, disabled, fault and test.

4 CARD MENU



4.1 CARD DIAGNOSTICS OF EX8SI MODULE

Card diagnostics menu of EX8SI's front display indicates the following messages:

HARDWARE FAULT OF THE MODULE

ADC 1 CONVERSION	"Analogue to digital conversion (normal status)"
ADC 2 CONVERSION	"Analogue to digital conversion (normal status)"
HW IN STATUS	"Abnormal input status"
HW OUT STATUS	"Abnormal output status"
CAN BUS COM	"Communication status of CAN Bus Rx messages"
RS 485 COM	"Communication status of RS485 link"
CHANNEL HW REDUNDANT	"Status of redundant channel"
BLOCCO HW TEMP/HUM	"Abnormal operation of temperature/humidity sensor"
POWER	"Power supply of the module combined with EX8SI card"

5 TECHNICAL FEATURES OF I/O SIGNALS

5.1 SUPERVISED INPUTS

Supervised input 01 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc
Supervised input 02 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc
Supervised input 03 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc
Supervised input 04 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc
Supervised input 05 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc
Supervised input 06 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc
Supervised input 07 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc
Supervised input 08 with end of line resistor from 1KΩ to 10 KΩ	power supply voltage from 22 to 30 Vdc

N.B. maximum number of detectors or manual call points which can be connected to a conventional line is 32.

5.2 OPEN COLLECTOR OUTPUTS

Open collector outputs cannot be used as type "C", "E", "J", "G" (EN 54-1 and EN 54-2), therefore notification appliances, fire alarm and fault warning routing equipment and fire protection systems cannot be connected to these outputs (no line supervision is provided).

Basic configuration of O.C. outputs is as follows:

Alarm	Line 01 with max. 500 mA output current
Pre-alarm	Line 02 with max. 500 mA output current
Fault	Line 03 with max. 500 mA output current
Card Hw. Fault	Line 04 with max. 500 mA output current
CanBus Run	Line 06 with max. 500 mA output current
Normal status	Line 07 with max. 500 mA output current
Fw Redundant	Line 08 with max. 500 mA output current
Common negative	Line 05

5.3 APPLICATIONS

EX8SI module may be used in the following applications:

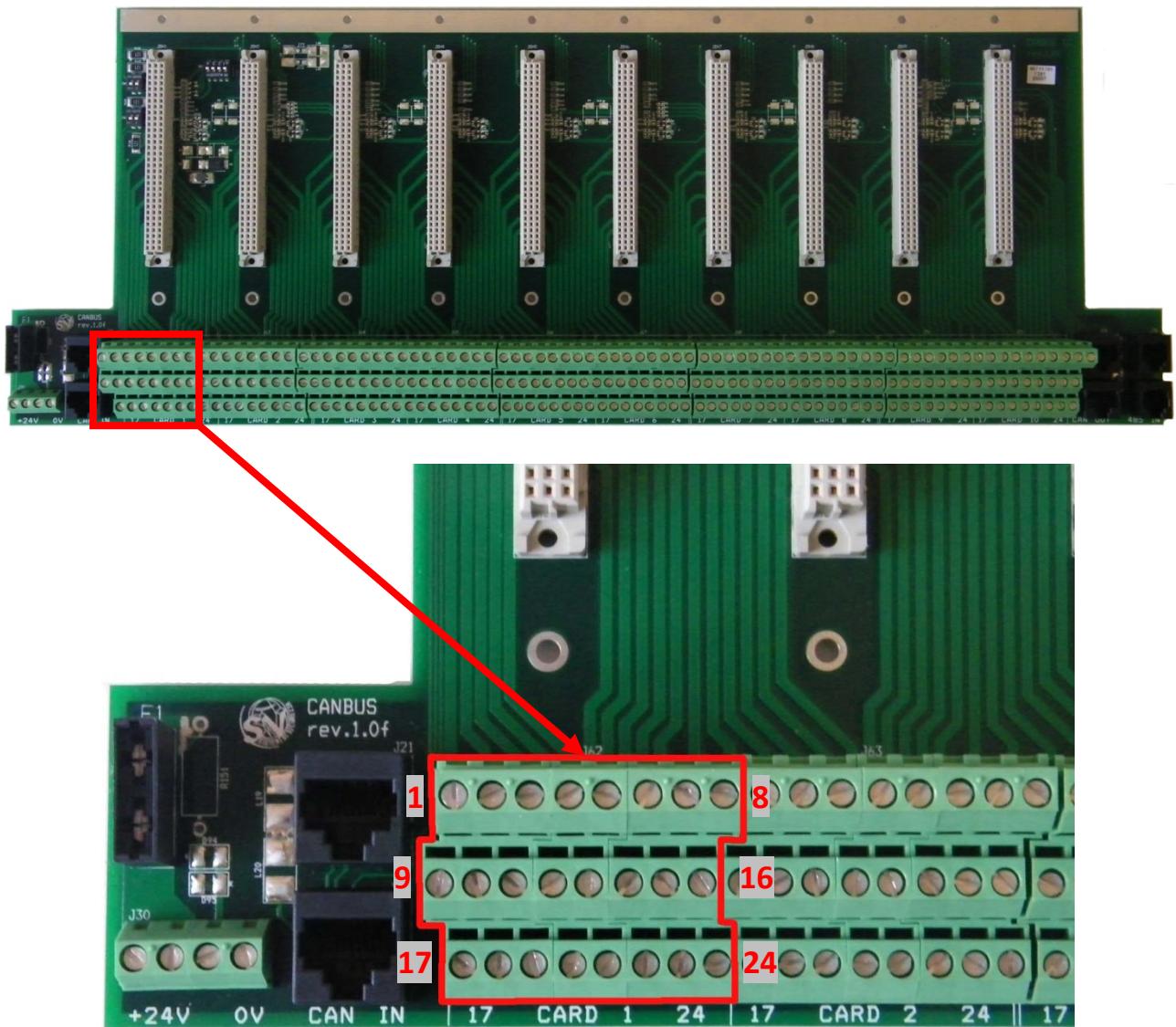
- Conventional detectors, e.g. heat or smoke detectors (max. 32 per input line)
- Gas detectors, e.g. combustible and gas detectors (with relay outputs).
- Dry contacts (N.O.), e.g. pressure and tamper switches.
- Linear heat detectors and linear smoke detectors.

5.4 PROGRAMMABLE PARAMETERS

- End of line resistors from 1 to 10 kΩ, with single or two alarm thresholds (pre-alarm and alarm)
- Latching/non latching
- Earth fault of each input
- Programmable open collector outputs (including delayed/supervisory/pulse/periodic/steady operation)
- Programming of inputs as supervisory signals.

6 WIRING EX8SI MODULE

6.1 CANBUS TERMINAL BOARD



Terminals are power limited to avoid danger in the event of short circuit. Technical specifications of the terminal strip are summarized as follows:

- Wire entry: horizontal
- Maximum operating temperature: 110°C.
- Accepted wire cross sections: AWG 12, 14, 16, 18, 20, 22, 24 – mm² 0.05 - 2.50.
- Maximum current: 17,5A.
- Maximum voltage: 300V.

6.2 WIRING SPECIFICATIONS

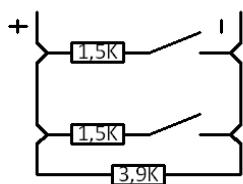
The following table shows the connection of inputs and outputs to EX8Si module.

Module	Terminal	Programmable thresholds (typical values)				Signal description Inputs / Open collector outputs
		Quiescent	Open circuit	Pre-alarm	Alarm	
EX8SI	1	4.0 mA	2.0 mA	14mA	20mA	Input 1 + 24 Vcc
EX8SI	2	4.0 mA	2.0 mA	14mA	20mA	Input 2 + 24 Vcc
EX8SI	3	4.0 mA	2.0 mA	14mA	20mA	Input 3 + 24 Vcc
EX8SI	4	4.0 mA	2.0 mA	14mA	20mA	Input 4 + 24 Vcc
EX8SI	5	4.0 mA	2.0 mA	14mA	20mA	Input 5 + 24 Vcc
EX8SI	6	4.0 mA	2.0 mA	14mA	20mA	Input 6 + 24 Vcc
EX8SI	7	4.0 mA	2.0 mA	14mA	20mA	Input 7 + 24 Vcc
EX8SI	8	4.0 mA	2.0 mA	14mA	20mA	Input 8 + 24 Vcc
EX8SI	9					Input 1 -0 Vcc
EX8SI	10					Input 2 -0 Vcc
EX8SI	11					Input 3 -0 Vcc
EX8SI	12					Input 4 -0 Vcc
EX8SI	13					Input 5 -0 Vcc
EX8SI	14					Input 6 -0 Vcc
EX8SI	15					Input 7 -0 Vcc
EX8SI	16					Input 8 -0 Vcc
EX8SI	17					Alarm o.c. output 1 max 500mA
EX8SI	18					Pre-alarm o.c. output 2 max 500mA
EX8SI	19					Line fault o.c. output 3 max 500mA
EX8SI	20					Card hw ok o.c. output 4 max 500mA
EX8SI	21					Common
EX8SI	22					Can bus ok o.c. output 5 max 500mA
EX8SI	23					Normal status o.c. output 6 max. 500mA
EX8SI	24					Fw redund. o.c. output 7 max. 500mA

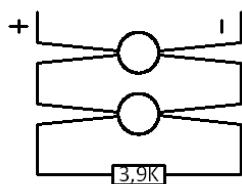
NOTE: all outputs cannot be used to connect type C equipment (sounders), type E and J devices (fire and fault warning routing equipment) and type G systems (fire protection).

6.3 WIRING DETAILS

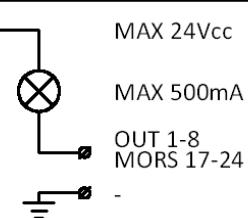
WIRING OF
DRY CONTACTS



WIRING OF
CONVENTIONAL DETECTORS



WIRING OF
OPEN COLLECTOR OUTPUTS



7 MAINTENANCE

EX8SI modules can be removed or replaced while the panel is in operation: the panel will show a card fault message to indicate that the module is missing.

Wait at least 20 seconds before reconnecting the module to the panel, in order to avoid electrical damages to electronic components.

When the module is plugged in the CANBus backplane, the panel should identify the module and the fault condition shall be automatically reset.