

SV SISTEMI DI SICUREZZA

ITALIA



EXFIRE360

EX6SO – TECHNICAL SPECIFICATION

DATASHEET

REVISION 4 DTD. 28/12/2011

TS-0012-EN-REV04

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REVISION INDEX

Revision index	Description	Date
Revision 01	Preliminary	17/01/2010
Revision 02	Revised for certification scope	08/03/2010
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Revision 04	Revised for certification scope	28/12/2011

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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.

Standard Eurocard (160x100) with rack mounting kit.

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 OF EX6SO MODULE

2.1 OPERATING DESCRIPTION OF EX6SO MODULE

EX6SO module control six supervised outputs with a maximum power output of 2 A at 24 Vdc.
Line supervision is performed under normal conditions by means of two different mechanisms:

2.2 REVERSE POLARITY

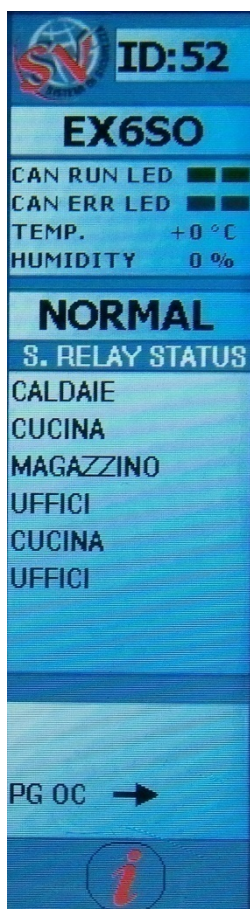
When used, a voltage with reverse polarity is applied to the load. This mechanism permits to monitor both short-circuit and open-line events by means of a diode in series with the load (see picture 1), but does not detect the efficiency of the same. Polarity reversal detection is configured with resistive or capacity loads (i.e. bells, sounders, strobes, etc.).

2.3 CURRENT DRAW

In case of inductive loads (solenoid valves, coils, etc.), a low-power current flow (2 mA) is generated on the circuit and applied to the load in order to monitor its efficiency and open and short circuit events.

Two programmable SPDT relay outputs are available in the module. These outputs may be programmed as energised or de-energised. In the former case, a trouble signal is given when the module is de-energised.

2.4 MAIN CHARACTERISTICS



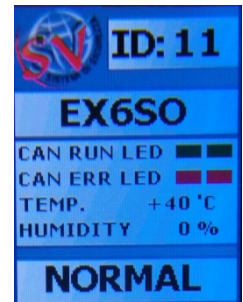
- Self diagnostics of 13 hardware blocks
- Hot plug and hot swap capability (with the panel in operation)
- Automatic addressing of the modules
- Installation on 19" subrack (8 TE) with fixing screws
- Control of six supervised outputs (maximum current output: 2 A). Short and open circuits are monitored
- Seven programmable Open Collector outputs
- Monitoring of supervised outputs when operated
- Monitoring of current draw of each supervised output
- 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
- 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
- Maximum current output per supervised circuit: 2 A
- 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:

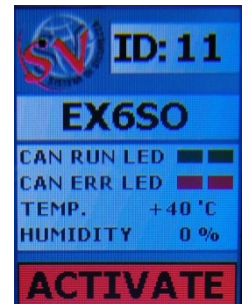
- Card address and identification
- CAN Bus communication status
- Card temperature and humidity
- Status of supervised outputs
- Access to Info menu



3.2 ALARM CONDITION

In fire alarm condition, the module display shows:

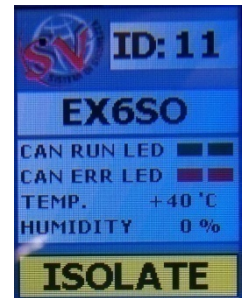
- Card temperature and humidity
- Identification of activated outputs
- Indication of activated open collector outputs



3.3 DISABLEMENT CONDITION

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

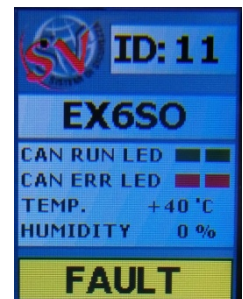
- Card temperature and humidity
- Identification of the disabled output(s)



3.4 FAULT WARNING CONDITION

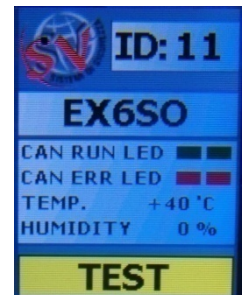
In case of fault, the card display shows:

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

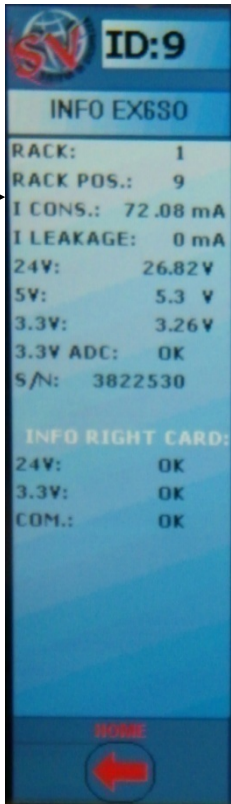


3.5 TEST CONDITION

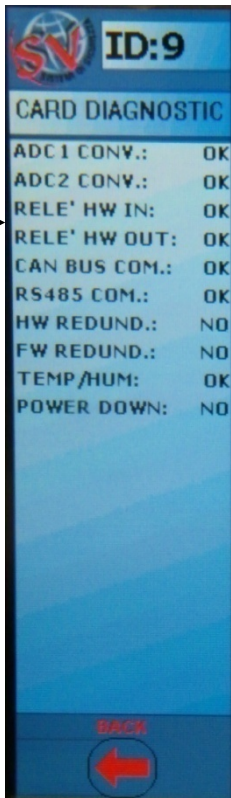
Test condition is superimposed on other conditions of the module, inhibiting output circuits. Signal priority in the visualisation of messages is: alarm, disabled, fault and test.



4 CARD MENU



Info menu
Shows main card information and power supply details of the module installed in the next position with respect to EX850 card (for cross-check)



Card diagnostics menu
Shows hardware blocks used for card diagnostics purposes

4.1 CARD DIAGNOSTICS OF EX6SO MODULE

Card diagnostics menu of EX8SO'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 status of inputs"
HW OUT STATUS	"Abnormal status of outputs"
CAN BUS COM	"Communication status of CAN Bus Rx messages"
RS 485 COM	"Communication status of RS485 link"
HW REDUNDANT	"Status of redundant hardware"
BLOCCO HW TEMP/HUM	"Abnormal operation of temperature/humidity sensor"
POWER	"Power supply of the module combined with EX8SO card"

5 TECHNICAL FEATURES OF I/O SIGNALS

5.1 SUPERVISED OUTPUTS

If supervised outputs are used for the activation of solenoid valves, EX6SO shall be combined with EX6EV-C module. In this scenario, solenoid valves controlled by EX6SO shall be part of the same flooding zone of the EX6EV-C actuators. Disabling of any output of EX6EV-C module shall also disable EX6SO's outputs.

Fault of any extinguishant control module shall affect the operation of the EX6EV-C+EX6SO system referred to the same flooding zone.

Supervised outputs shall not be used as type "E" and type "J" outputs (EN 54-2), since they are not certified for this purpose.

01 EV 01	24 Vdc supervised output
02 EV 02	24 Vdc supervised output
03 EV 03	24 Vdc supervised output
04 EV 04	24 Vdc supervised output
05 EV 05	24 Vdc supervised output
06 EV 06	24 Vdc supervised output

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 condition	Line 01 with max. 500 mA output current
Pre-alarm condition	Line 02 with max. 500 mA output current
Fault	Line 03 with max. 500 mA output current
Freely programmable	Line 04 with max. 500 mA output current
Normal status	Line 05 with max. 500 mA output current
Freely programmable	Line 06 with max. 500 mA output current
Freely programmable	Line 07 with max. 500 mA output current
Common	

5.3 APPLICATIONS

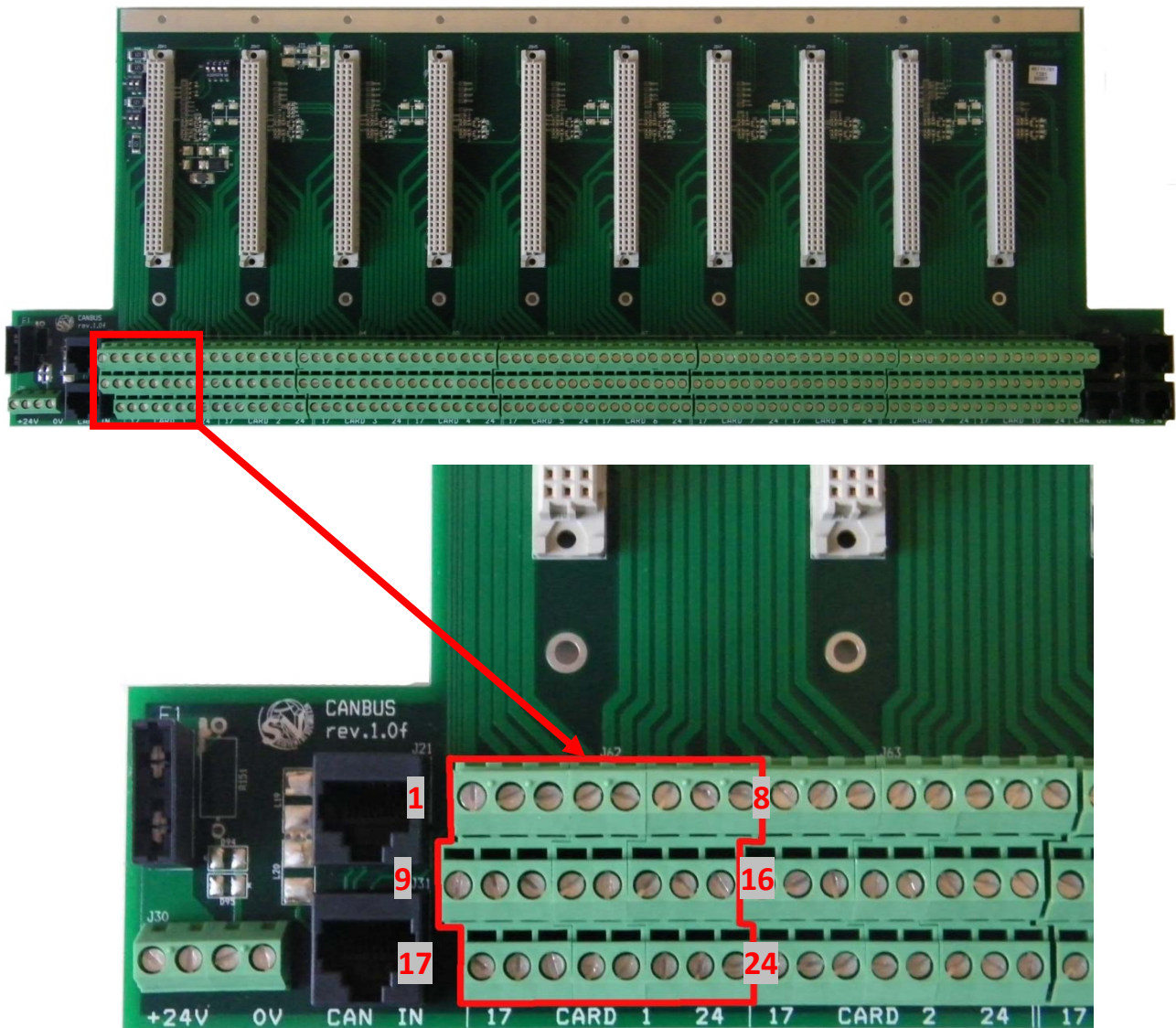
The following devices may be connected to EX6SO module:

- 24 Vdc solenoid valves (refer to paragraph 5.1)
- 24 Vdc notification appliances (visible, audible, combined, etc.)
- 24 Vdc light indicators
- 24 Vdc magnetic switches (e.g. door holders)

N.B. Power output shall not exceed 2 A.

6 WIRING EX6SO 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:

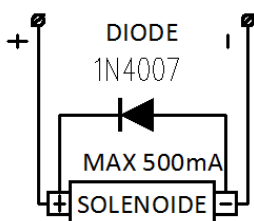
- Wire entry: horizontal
- Maximum operating temperature: 110°C.
- Accepted wire cross sections: AWG 12, 14, 16, 18, 20, 22, 24 – mm² 0.05 - 2.50.
- Maximum current: 17,5A.
- Maximum voltage: 300V.

6.2 WIRING SPECIFICATION OF EX6SO MODULE

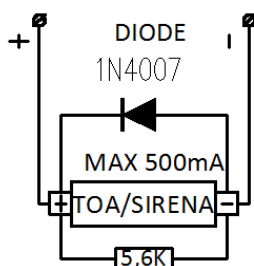
The following table shows the connection of inputs and outputs (including open collector outputs) to EX6SO module.

Module	Terminal	Programmable thresholds (typical values)				Signal description Inputs / Open collector outputs
		Quiescent	Open circuit	Pre-alarm	Alarm	
EX6SO	1					L1+ (+24V)
EX6SO	2					L2+ (+24V)
EX6SO	3					L3+ (+24V)
EX6SO	4					L4+ (+24V)
EX6SO	5					L5+ (+24V)
EX6SO	6					L6+ (+24V)
EX6SO	7					Spare
EX6SO	8					Spare
EX6SO	9					L1- (0V)
EX6SO	10					L2- (0V)
EX6SO	11					L3- (0V)
EX6SO	12					L4- (0V)
EX6SO	13					L5- (0V)
EX6SO	14					L6- (0V)
EX6SO	15					Spare
EX6SO	16					Spare
EX6SO	17					Open collector output 1
EX6SO	18					Open collector output2
EX6SO	19					Open collector output3
EX6SO	20					Open collector output4
EX6SO	21					Open collector output5
EX6SO	22					Open collector output6
EX6SO	23					Open collector output7
EX6SO	24					Common

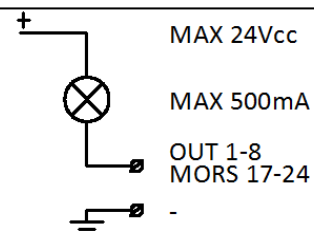
WIRING OF SOLENOID VALVES



WIRING OF NOTIFICATION APPLIANCES



WIRING OF OPEN COLLECTOR OUTPUTS (MAX. 500 mA)



7 MAINTENANCE

EX8SO 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 30 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.