



ORION-BCM

STAND-ALONE BATTERY CHARGER MODULE WITH INTEGRATED SOUNDER CIRCUIT

MANUAL 251010



MADE IN PORTUGAL - EU

GLOBAL FIRE EQUIPMENT S.A.

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INSTALLATION MANUAL

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OVERVIEW

The ORION-BCM is a self contained EN54-4 certified Battery Charger Module with a Conventional Sounder circuit. It also incorporates internal Alarm and Fault relays.

An internal monitoring system continuously checks all circuits, ensuring fault detection and notification, listed below:

- Sounder Circuit Integrity Fault
- Battery Charger Fault (voltage level and charging behaviour)
- Mains Fault (voltage level) and Earth Fault
- Output Supply voltage level
- General System Fault (by the means of independent watchdog system)

KEY FEATURES

- Voltage-free inputs to activate built-in Relay for controlling Door Holders and Sounder Circuit
- One supervised Conventional Sounder Circuit
- Dedicated battery charger (Secondary Supply) for Sounder Circuit and Auxiliary Power
- Two relays output for Fault (NC) and Fire (SPDT) signal - unmonitored
- Supervised 24V Supply Output with 900mA
- EN54-4 Compliant

ORION-BCM LSC has the following local controls:

- Internal Buzzer Silence
- System Reset
- Lamp Test
- Sounders circuit ON/OFF operation
- Disable Auxiliary Outputs
- Disable Sounders

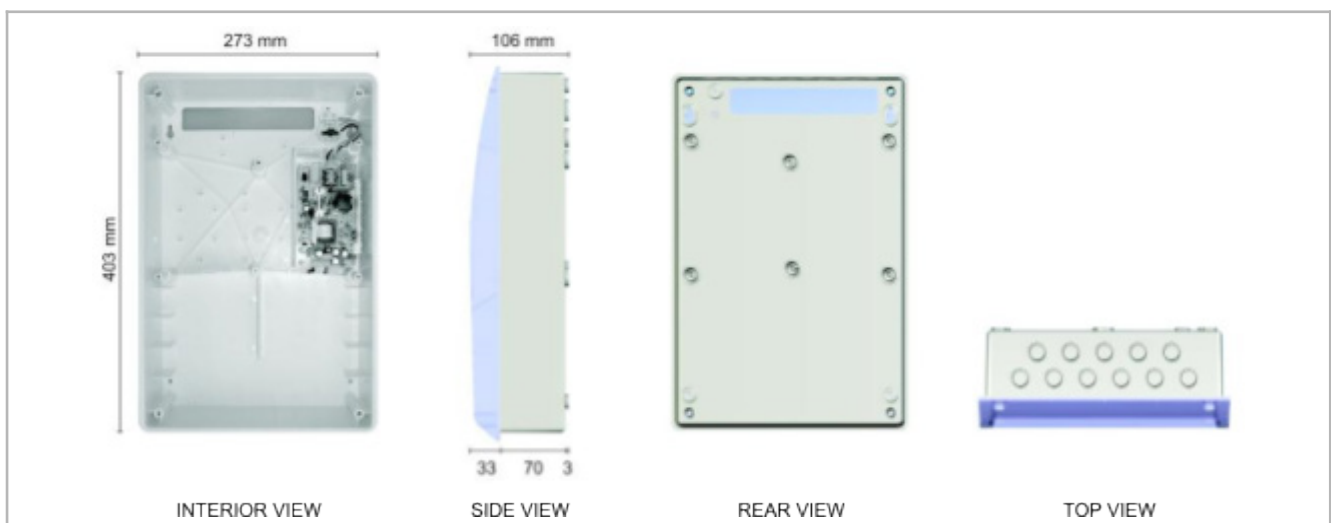
IMPORTANT SAFETY NOTES

- This equipment must only be installed and maintained by a suitably qualified and technically competent person.
- This equipment must have an Earth Connection.
- A basic knowledge and training in the installation of Fire Detection systems is assumed.
- The Fire Detection system should be designed by a suitably qualified person with reference to the Local Regulations and Guidance from the fire Officer where applicable.

MOUNTING PANEL

The ORION-BCM housing is designed for either surface or semi-recessed mounting. Cable entry points are provided at the top and back of the housing. Do not drill additional holes as cables could then interfere with the PCB or standby battery position. Maintain separation between the incoming AC mains cable and the low voltage detector and sounder cabling.

The panel should be fixed to the wall using the 4 mounting holes provided and No 8-10 countersunk screws. Any dust created during the fixing process must be kept out of the control panel and care must be taken not to damage any wiring or components.



CABLE TYPES

System wiring should be installed in accordance with National Standards and wiring regulations.

To protect against electrical interference we recommend the use of screened cables throughout the system. Separate cables should be used for sounder circuits, the use of multi-core cables to carry sounder circuits is not recommended. The cable screens should be terminated and connected to Earth at the panel only.

Maximum cross section of cables to use is 2.5mm² to avoid damaging the terminals in the control panel.

Mains wiring should be 3 core 1mm² to 2.5mm² fed from an isolating circuit breaker of 6A. This should be secure from unauthorized operation and be marked "Fire Alarm Do Not Switch Off". The mains supply must be exclusive to the fire panel.

SOUNDER CIRCUIT WIRING

There is one conventional sounder circuit available on the ORION-BCM (S1). The maximum current available for the sounder circuit is 900mA. All sounders must be polarized; non-polarized sounders will indicate a fault on the sounder circuit.

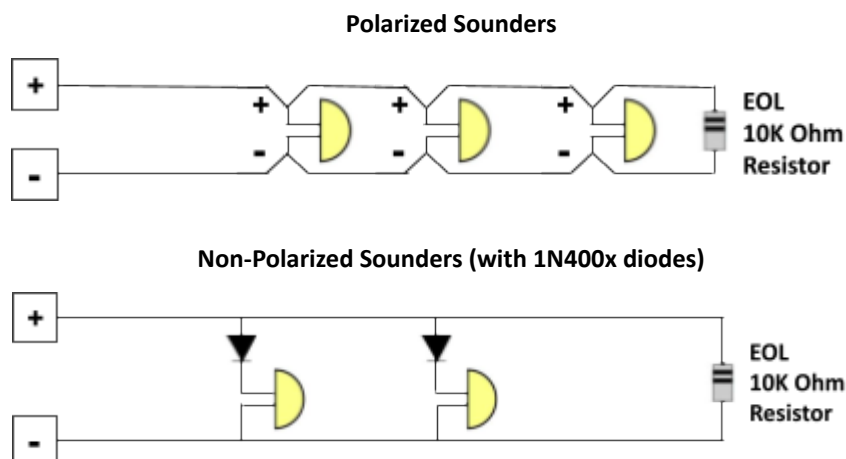
The sounder circuit can be activated from the Addressable Panel, by direct activation from ORION-BCM Panel button (Access Level 2) or by remote input (EV).

NOTE: The Fire output Relay will also be activated with Sounder Circuit ON.

An end of line resistor (10k Ohm) supplied with the panel, must be inserted in the last sounder for cable monitoring. If a sounder circuit is not used, the EOL resistor should be fitted in the control panel sounder output.

The sounder circuits are protected against short circuits, the electronic fuse will reset when the short circuit is removed and the control panel is reset. The wiring for each sounder circuit should be terminated in their respective terminals and the cable screens connected to earth.

Typical sounder circuit wiring diagram:



OUTPUTS

Auxiliary Power

28V DC max 900mA, short circuit protected, supervised. The output is protected against short circuit by an electronic fuse which resets when the Fault is cleared and the panel is reset.

Auxiliary Relay Contact Fire

Provides "Fire/Sounder Active" signal to external devices. This is activated through direct panel sounder button activation. Relay contact changeover 2A @ 30V DC resistive / 0.25A @ 230V AC resistive. Active until Reset or Sounder OFF.

Auxiliary Relay Contact Fault

Provides Fault signals to external devices. Relay NC contact 2A @ 30V DC resistive / 0.25A @ 230V AC resistive. Also Active for microprocessor Fault. Active until Reset and all faults are cleared. Relay contact will open when any Fault is present on the system. The wiring for each output should be terminated in their respective terminals and the cable screens connected to earth.

OPERATION AND OVERVIEW



STATUS LEDs

FAULT - LED used to indicate any FAULT condition present on panel.

DISABLED - Used to indicate that the panel has features that have been disabled in Access Level 2.

SUPPLY - Used to indicate the presence of supply. In Access Level 2 this LED will flash also at a rate of once per second.

SYSTEM FAULT - This LED will be lit when there is a processor failure or other System Fault.

FAULTS

SUPPLY FAULT - This LED will be ON whenever the Main Supply has been removed or has dropped below 20 Volts.

BATTERY FAULT - Indicates that there is low voltage level on the batteries or the battery charger circuit has failed.

AUX SUPPLY FAULT - Indicates that the Auxiliary Supply has a fault.

EARTH FAULT - When this indicator is ON there is leakage current flowing from the earth connection/ wiring and any conductor incoming into the panel.

CONTROLS

(1) BUZZER SILENCE - At Access Level 1 this button is used to silence the panel's internal buzzer.
To Access Level 2 the Buzzer must be silenced.

(2) RESET - Press this button to reset the panel at Access Level 2.

(3) LAMP TEST - Press this button at Access Level 1 or 2 to test all LED indicators and the panel's internal buzzer.
Release when test is finished.

(4) SOUNDERS - Only on Access Level 2, press once to activate/silence sounders. If sounders are active (previously pressed), by pressing this button again will stop the sounders. Auxiliary Fault Relays are not affected by this action.

NOTE: When reset, all LEDs will flash and relays will pulse.

DISABLEMENTS

These buttons are only active at Level 2 Access.

These buttons have a toggle action. One press will disable the particular action and another press will re-enable it. When a particular function is disabled, its associated LED will be activated.

OUTPUTS AUXILIARY - Use this button to disable or re-enable auxiliary relays (Fire and Fault).

DISABLE SOUNDERS - Use this button to disable or re-enable Conventional sounder circuit (S1).

ACCESS LEVEL

There are two Levels of Access in the ORION-BCM.

Level 1: General user controls

This lower level allows the user to:

- Perform a lamp test
- Silence Internal buzzer
- Put the panel into Access Level 2 if in possession of the required access code.

Level 2: Authorized user controls (AUTH MODE CODE: 2244)

This higher level allows the user to:

- Silence and activate sounder circuit
- Reset after Fault
- Silence internal Buzzer
- Test status LEDs
- Disable/ Enable the following:
 - o Sounders Conventional Output
 - o Auxiliary Outputs - Fire/Sounder Relay and Fault Relay.

Level 2 Access is gained by entering the code **2244** using the numbered buttons.

NOTE: *If any Fault event have occurred these must be acknowledged by pressing the Buzzer Silence button before code entry will be accepted.*

If the code is not completed within 20 seconds of the last key press, the system reverts to Level 1.

Once this mode is entered the Green LED (SUPPLY) will flash once every 0.5 seconds.

To exit this mode at any time, press the RESET button. The panel will revert to Access Level 1.

COMMISSIONING

Preparation

1. Check sounder cables and ensure all field connections are made.
Ensure that all EOL Resistors are fitted to the last sounder of each circuit.
2. Connect sounder lines to the panel.
3. Remove the mains fuse.
4. Connect mains supply according to local mains voltage ensures good earth connection.
5. Fit batteries (do not connect).
6. Insert mains fuse.
7. Connect batteries - Observe correct polarity.



DANGER
EXTERNAL VOLTAGE

Commissioning

1. If all is normal only the Green "supply" LED should be illuminated.
2. If any Faults are indicated they should be corrected before proceeding.
3. Initiate lamp test and confirm LEDs and internal buzzer operation.
4. Test each key for correct functioning.
5. Test all sounders, relays etc. for proper operation.

TESTING FIELD EQUIPMENT

Testing Sounders

1. Introduce the Level 2 Access code **2244** with the Buzzer OFF.
2. Initiate sounder pressing SOUNDERS ACTIVATE/ SILENCE.
3. Press again to Stop.

Testing Relay Outputs

With the Addressable system in normal operating mode, activate a Fire Alarm and confirm operation of Fire relays.

Test if manual button Sounder activation, also activates the Fire relay.

On the Fault Relay test, generate a fault (example: remove the sounder circuit EOL or remove Mains Power) and verify the Fault relay operation.

STANDBY BATTERY CALCULATION

Battery capacity should be between 2 x 2.4Ah 12V DC and 2 x 7Ah 12V DC.

The battery Ah required for a given installation is calculated from the following formula:

$$\left(38\text{mA} \times \frac{\text{Standby time required in hours}}{\text{divided by 1000}} \right) + \left(\frac{\text{Alarm \& Aux. Supply Outputs in Amps}}{\text{(sounder \& aux. supply load)}} \times \frac{\text{Alarm time in hours}}{\text{in hours}} \right) + 20\%$$

Round the result to the next available battery size. Quiescent current of the panel with everything is found by adding the standby current of all connected devices to the standby current of the panel (38mA).

Consult the manual for the individual devices to confirm the standby current.

Troubleshooting - Fault Indications

Troubleshooting work of any fault on the panel should only be carried out by qualified technicians.

General Fault

The General fault LED is illuminated whenever there is a fault on the system. It is always lit along with at least one other fault indicator which gives more detail relating to the fault.

Power Supply Faults - Supply Fault

Associated with a low voltage (below 20V) present at the input of the power supply or the removal of the main power supply. Measure voltage levels and verify electrical mains fuse.

Battery Fault

This fault is present when there is a voltage below 20V DC at the battery terminals or if there is a battery charger problem. Charger problems can be caused by panel's hardware failure or batteries that have not been connected in the specified manner as indicated in this manual, in the installation section. Verify if batteries are properly connected. Measure the voltage at the battery terminals and replace if it is below 21V DC. Remember to verify also the main electrical fuse.

DON'T SHORT CIRCUIT BATTERY TERMINALS IN ORDER TO VERIFY BATTERY CHARGE ONLY USE BATTERIES THAT ARE LEAD ACID VRLA TYPE 12V DC.

Aux Supply Fault

This fault will show when the voltage at the auxiliary supply output is below 20V DC. This can be caused by the current limit for this output being exceeded. This output is limited to 900mA. Other causes for faults at this point are short circuits in the wiring or faulty hardware attached to this supply output. Verify voltage, if below the required acceptable level remove wiring connected to this output. If voltage now returns to normal this confirms that connected equipment or cable is damaged.

Earth Fault

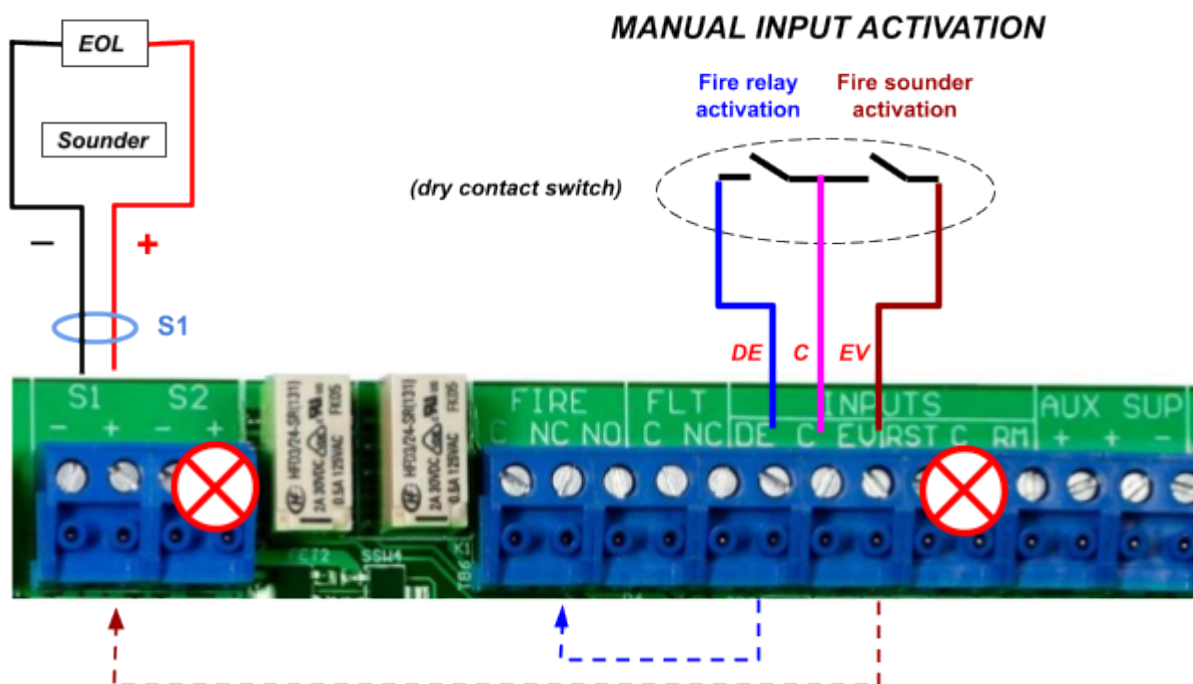
This FAULT will indicate that there is some level of current leakage between any of the wire conductors and the EARTH connections. VERIFY WIRING.

System Fault

This FAULT indicates that there is a fault at the main processor level. In this particular fault, the panel's main board needs to be replaced or repaired.

Example of application (External switch Sounder Activation)

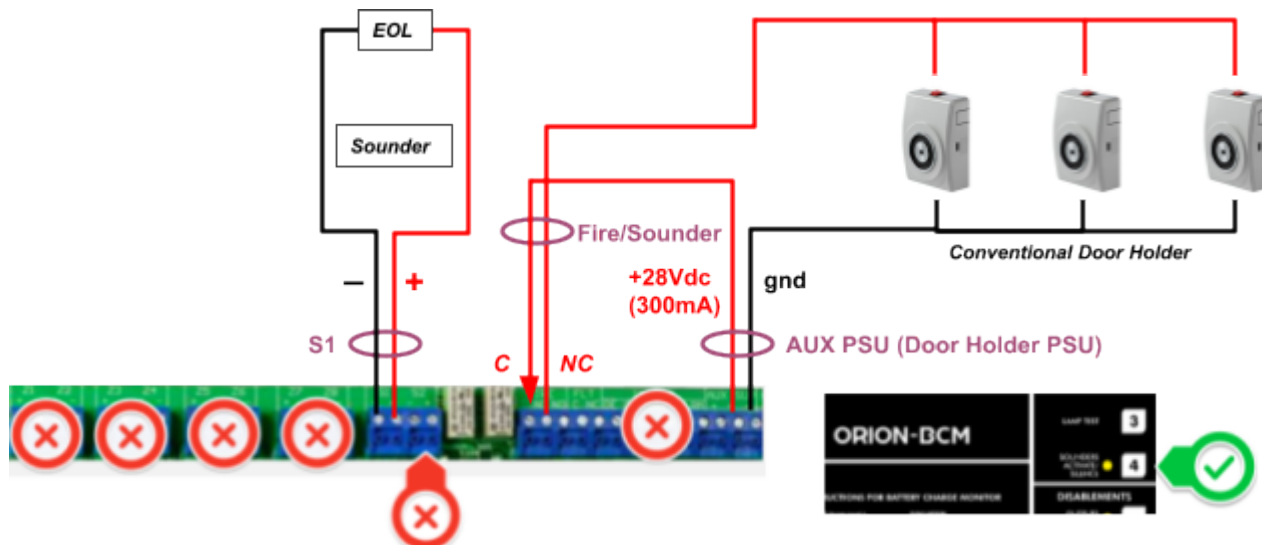
This implementation has the ability to, by using two external independent switches on the inputs, overlap (the addressable order) the Sounder Output or the Fire Alarm Relay state.



NOTE: Alternatively both “DE” and “EV” could be connected in parallel, so that the Fire Relay and S1 actuate simultaneously using only one “dry contact switch”.

Example of application (Door Holder)

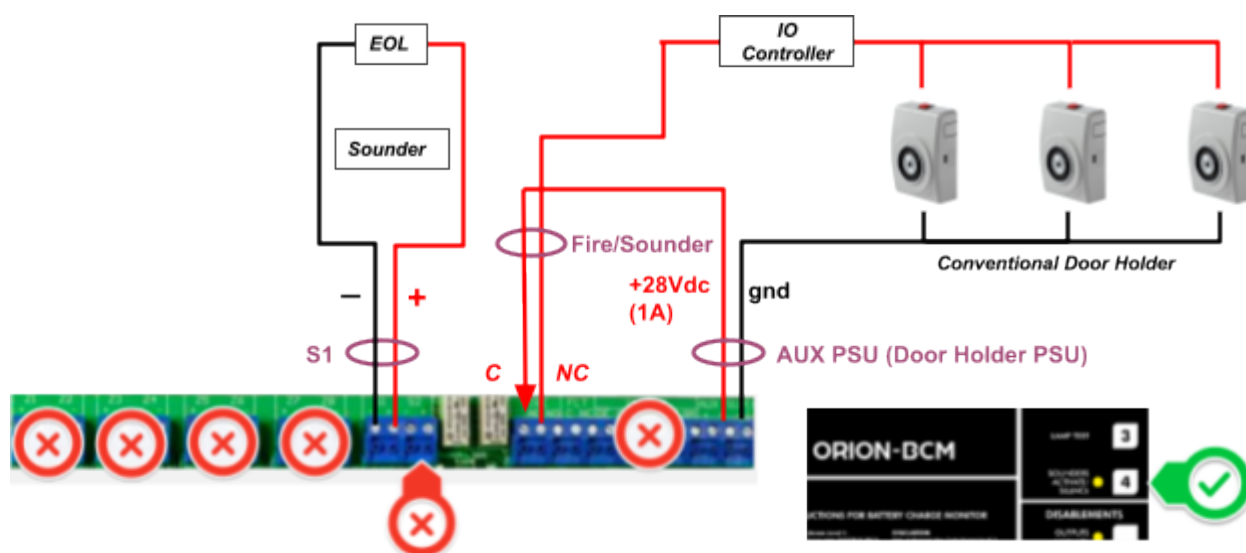
This implementation has the ability to, by pressing the ORION-BCM sounder activation key, manually release all door holders connected to the AUX PSU in addition to the Programmed Sounder activation.



NOTE: It will “release” the Door Holders in case of FIRE or Direct Button Activation (by activation of Fire Relay).

Example of application (Door Holder Supply/External Control)

This implementation, working as a standalone PSU, has the ability to, by pressing the ORION-BCM sounder activation key, activate Sounder circuit and manually release all Door Holder connected to the AUX PSU (in addition to the Addressable System activation using an IO module).



NOTE: It will “release” connected Door Holders in case of local ORION-BCM Sounder Activation (by activation of Fire Relay).

TECHNICAL SPECIFICATIONS

POWER SUPPLY	
MAINS SUPPLY VOLTAGE	90V to 253V AC @ 50 Hz
INTERNAL POWER SUPPLY	Min. 21V DC - Max. 30V DC (28.5V DC nominal) Max. Ripple 1 Vpp
TOTAL OUTPUT CURRENT	2.4A @ 28.5V AC
SUPPLY AND BATTERY CHARGER MONITORED	Yes
BATTERIES MONITORED	Yes
BATTERIES MAX. INTERNAL RESISTANCE	1 Ohm
MAX BATTERY SIZE	2 x 12V 7AH VRLA - Sealed Lead Acid Batteries Min. Voltage 21,0V DC (Vb min) - Max. Voltage 27,2V DC
MAINS FUSE	4A - 250V Slow Blow - 20 mm
BATTERY FUSE	1.6 Amp Resettable - Electronic Fuse
MAX CURRENT DRAW FROM BATTERY (MAINS FAILURE)	1.85 Amp Max. @ Max. Operating Temperature
SOUNDER CIRCUIT	
NUMBER OF CIRCUITS	1
END OF LINE RESISTOR VALUE	10K Ohms
MONITORING	Open and Short Circuit
ALARM VOLTAGE	27.5V DC
SOUNDER CIRCUIT FUSE	1.1 Amp resettable (Electronic Fuse)
MAX. CURRENT AVAILABLE	900mA @ 27.5V DC Nominal
AUXILIARY OUTPUTS	
DC POWER OUTPUT	27.5V DC Nominal - Max. Current Drawn 900mA
FIRE RELAY	Active in Fire condition, 2A @ 30V DC resistive / 0.25A @ 230V AC resistive, SPDT
FAULT RELAY	Active in Fault condition, 2A @ 30V DC resistive / 0.25A @ 230V AC resistive, NC
MECHANICAL AND ENVIRONMENTAL	
SIZE	273 (L) x 107 (W) x 404 (H) mm
WEIGHT	1,7 Kg / 7 kg (inc. 2 x 7 AH 12 V batteries)
OPERATING TEMPERATURE	-10°C to +50°C
MAX RELATIVE HUMIDITY	95% non condensing
ENCLOSURE COLOUR	White (RAL 9003)
For EN54-13 compliance, please check the manual specifications	

EN54-13 Specifications

Devices with EN54-13 approval

Family	Product Description	CPR
Sounders	VALKYRIE ASBI, ASB, ASI, AS	1328-CPR-0286
	VALKYRIE CSB, CS	1328-CPR-0287
	VULCAN 2 ASBI, ASB, ASI, AS	1328-CPR-0288
	VULCAN 2 CSB, CS	1328-CPR-0289
	VALKYRIE ASBI IP65, ASI IP65	1328-CPR-0299
	VALKYRIE CSB IP65, CS IP65	1328-CPR-0300
Manual Call Points	GFE-MCPE-C-IP67	1328-CPR-0373
	GFE-MCPE-A	1328-CPR-0374
	GFE-MCPE-AI	1328-CPR-0375
	GFE-MCPE-AI-IP67	1328-CPR-0376
	GFE-MCPE-C	1328-CPR-0377
Detectors	ZEOS-AD-SHI	1328-CPR-0492
	ZEOS-AD-H	1328-CPR-0520
	ZEOS-AD-S	1328-CPR-0521
	ZEOS-AS-SHI	1328-CPR-0524
	ZEOS-AS-SH	1328-CPR-0525
	ZEOS-AS-S	1328-CPR-0526
	ZEOS-AS-H	1328-CPR-0527
	ZEOS-AD-SI	1328-CPR-0607
	ZEOS-AS-HI	1328-CPR-0608
	ZEOS-AS-SI	1328-CPR-0609
	ZEOS-AD-HI	1328-CPR-0610
PSE	ORION-BCM	1328-CPR-0537
Short-Circuit Isolator	GFE-AD-ISO	1328-CPR-0538
Input-Output Devices	3 I/O Plus - 1 Channel	1328-CPR-0542
	3 I/O Plus - 2 Channel	1328-CPR-0543
	3 I/O Plus - 3 Channel	1328-CPR-0544
	Mains I/O	1328-CPR-0545
	QUAD-ZMU 1Z	1328-CPR-0575
	QUAD-ZMU 4Z	1328-CPR-0577
	QUAD-ZMU 3Z	1328-CPR-0578
	QUAD-ZMU 2Z	1328-CPR-0579
Fire Panels	GEKKO 1Loop, 2Loops, 3 Loops 4 Loops	1328-CPR-0737
	OCTO+ 1 Loop, 2Loops, 3 Loops 4 Loops	1328-CPR-0786

Technical and System Information for EN54-13 Compliance

POWER SUPPLY UNIT - ORION-BCM

- A maximum current of 300mA can be drawn on the DC Auxiliary Supply Output.

TRANSMISSION PATH	TYPE	CABLE TYPE	MAX. LENGTH	MAX. SECTION	NOMINAL ELECTRICAL SPECIFICATION
AC Mains Power port	Wired, AC Mains Power Input	Mandatory the use of unshielded cable	-	2,5mm ²	90V to 253V @50Hz
DC Auxiliary Supply Output	Wired, DC Output		500m	1,5mm ²	27,5V DC / 300mA

Table 1 - ORION-BCM, IOs and TPs specifications.

Please check the other devices' system requirements.

EN54 and CE/UKCA SPECIFICATIONS

	
Global Fire Equipment SA, 8150-017 São Brás de Alportel 0370-CPR-7714	Global Fire Equipment SA, 8150-017 São Brás de Alportel 0370-CPR-7714
ORION-BCM Control and indicating equipment for fire detection and fire alarm systems for buildings. EN 54-2: 1997 + AC: 1999 + A1:2006	ORION-BCM Power supply equipment for fire detection and fire alarm systems for buildings EN 54-4: 1997 + AC: 1999 + A1: 2002 + A2: 2006
Options Provided	
7.8 - Output to fire alarm devices 7.11- Delays to outputs 8.3 - Fault signals from points	
Other technical data: DoP 537 CPR Ed.1 - ORION-BCM DoP UKCA 00212 Ed 1 - ORION-BCM	

Standard	Title
EN 54-2:1997 + EN 54-2:1997/A1:2006 + EN 54-2:1997/AC:1999	Fire detection and fire alarm systems - Part 2: Control and indicating equipment
EN 54-4:1997 + EN 54-4:1997/AC:1999 + EN 54-4:1997/A1:2002 + EN 54-4:1997/A2:2006	Fire detection and fire alarm systems - Part 4: Power supply equipment.
EN 54-13:2017 + A1:2019	Fire detection and fire alarm systems - Part 13: Compatibility and connectability assessment of system components
EN 50130-4:1995 + EN 50130-4:1995/A1:1998 + EN 50130-4:1995/A2:2003	Alarm systems Electromagnetic compatibility. Product family standard : Immunity requirements for components of fire intruder, hold up,CCTV, access control and social alarm systems



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