

BALDWIN BOX▲LL

BVRD2M4

Installation Instructions



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This equipment has been designed and manufactured to conform to the following EC Standards:

EMC: EN55103-1 Environment Classification: E1,

EMC: EN55103-2 Environment Classification: E5,

Safety: EN60065

Failure to use the equipment in the manner described in the product literature will invalidate the conformity.

A "Declaration of Conformity" statement to the above standards and a list of auxiliary equipment used for compliance verification is available on request.

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AMENDMENT RECORD

| Page Number(s) Affected | Change Note Number | Nature of Amendment | Date of Amendment |
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| All | DPI53 | Issue 1 | Dec 2009 |
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SAFETY INFORMATION

Personnel who install, maintain or repair this equipment must read the safety information below before starting work.

Voltages in excess of 30 Volts RMS or 50 Volts DC are considered Hazardous and in certain circumstances can be lethal.

If Functional Testing, Maintenance, or Repair is to be completed with the Mains Power (and/or battery backup) connected then this should only be undertaken by personnel who are fully aware of the danger involved and who have taken adequate precautions and training.

This Manual contains Warnings, Cautions and Notes.

Warnings describe potential threats to health or life, e.g.



WARNING

Before attempting to remove this component, ensure the Mains Power Supply and Battery Backup have been disconnected.

Cautions describe potential threats to the equipment, e.g.



CAUTION

Notice must be taken of all cautions.
If a Caution is ignored the equipment may be damaged.



CAUTION: ELECTRO-STATIC SENSITIVE DEVICES

Observe the relevant precautions for the protection of Electro-static Sensitive Devices when handling this equipment.

Notes are statements that are useful to the user in the context of a particular section of the manual, e.g.



NOTE: Do not speak into the microphone until the "Speak Now" LED is illuminated.

COMMENTS

Comments regarding the content of this manual are welcome and should be addressed to mail@baldwinboxall.co.uk.

I Introduction

The BVRD2M4 is a DSP controlled Voice Alarm Routing Matrix that is fully compliant with BS5839 part 8 and EN60849.

The unit provides four electronically balanced inputs, each with 3 band parametric (plus bass and treble) equalisation, an optional limiter / compressor, and independent priority settings.

Input 1 is normally used for a fire microphone and is configurable with an “All Call” processor bypass.

There are four electronically balanced outputs, each with 10 band parametric EQ and selectable audio delay of up to 1 second.

Up to six CD quality messages, each of a maximum of 57 seconds, can be stored in DSP memory. Each message has independent level, surveillance and timing settings.

There is also an “All Call” fail safe embedded Evacuate message that can be broadcast in the unlikely event of DSP failure.

The BVRD2M4 is fully monitored and includes a real time clock that is used for date stamping the stored fault / event log.

The unit has been designed to minimise rack space usage and only occupies one position of a BVMF mainframe. A DIN rail mounting termination PCB provides simple access for site wiring and connections.

I.1 FRONT PANEL INDICATORS & CONTROLS

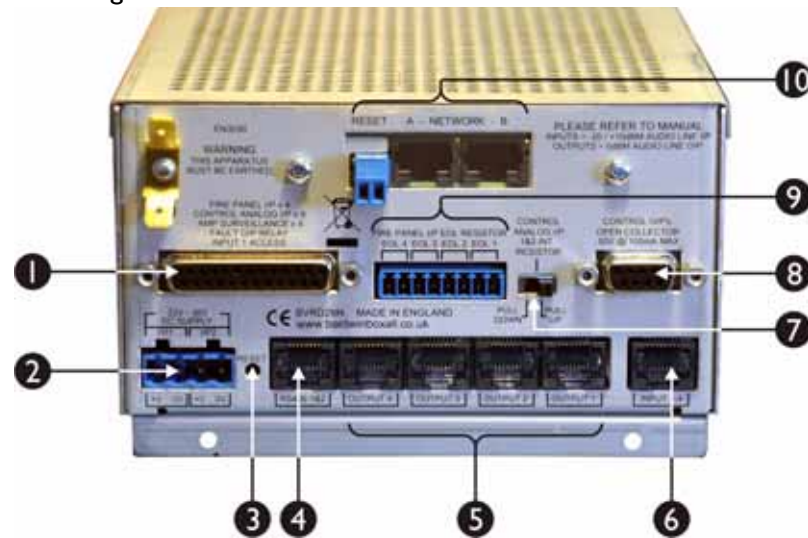
Figure I.1 — BVRD2M4 Front Panel



| | Ident | Description | |
|---|------------|--|---|
| I | FAULT Leds | LINE / AMP 1 - 4 :will illuminate if a Line or Amp fault is detected PSU 1&2: will illuminate if either PSU is disconnected PROC: will illuminate if the main processor stops responding DATA: will illuminate if an RS485 Data error is detected RESTART: will illuminate if the unit detects it has re-started FM1: will illuminate if a fault is detected on Fire Mic 1 FM2: will illuminate if a fault is detected on Fire Mic 2 COMMON: will illuminate if any fault is detected | |
| | 2 | O/K Led | Will illuminate when no faults are detected |
| | 3 | LAMP TEST | Press to check all front panel indicators and sounder |
| | 4 | Fault Reset | Press to reset latched faults (e.g. RESTART fault) |
| | 5 | DSP O/K Led | Will flash when the internal DSP is operating correctly |
| | 6 | FAULT ACCEPT | Press to Accept detected faults and silence the sounder |
| | 7 | USB | USB Connection for Configuration Software |

I.2 REAR PANEL CONNECTIONS

Figure I.2 — BVRD2M4 Rear Panel



| | | |
|----|------------------------------------|---|
| 1 | 25 Way D Connector * | a) Fire Panel Inputs (4x Optocoupled sounder circuit inputs) b) Analog Control Inputs (8x Voltage sensing inputs for monitored access, Ambient Noise Sensing etc) c) AMP Surveillance (4x Surveillance inputs for Amplifier / 100V Line monitoring) d) Common Fault Output (1 x volt free relay changeover contact for Common Fault) e) Input 1 Hardwire Access |
| 2 | 24V DC Supply | The BVRD2M4 requires two separate 24V DC supplies. A fault will be announced if either of the supplies is not connected. |
| 3 | RESET Switch | Initiates a Processor / Firmware restart |
| 4 | RS485 I&2 * | 2 x RS485 half duplex ports for communicating to control microphones, fire detection systems, network control, fault reporting etc. |
| 5 | Audio Outputs 1- 4 | Electronically balanced line 0dB audio outputs |
| 6 | Audio Inputs 1 - 4 * | Electronically balanced line -20dB audio inputs. |
| 7 | Analog Inputs 1&2 Pull Down Switch | Pull Down switch for Analog Inputs 1&2 (normally set to Pull Up for Access or Fault Input, Pull Down for ANS) |
| 8 | 9 Way D Connector * | 8 x NPN open collector outputs (max 40V @ 100mA) for busy etc |
| 9 | Fire Panel EOL Resistors | EOL Resistors fitted here to ensure Fire Panel cables are monitored within the rack / enclosure to the End of Line. |
| 10 | BVRDNET Network ** | BVRDNET Network Connections. |

* Connections are made on the DIN Rail Termination PCB.

** BVRDNET is a Factory-Fit option (not fitted as standard)

1.3 BVRD2M4 SPECIFICATIONS

1.3.1 Audio Input Specifications

| | |
|---------------------------------------|---|
| Input Sensitivity | 80mV (-20dB) to 3V (+12dB) |
| Frequency Response | -3dB @ 30Hz and 20KHz |
| Signal to Noise Ratio | Better than 70dB |
| Phantom Power | 12V |
| 3 Band Parametric Equalisation | |
| Frequency | 50Hz, 63Hz, 80Hz, 100Hz, 125Hz, 160Hz, 200Hz, 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1KHz, 1.25KHz, 1.6KHz, 2KHz, 2.5KHz, 3.15KHz, 4KHz, 5KHz, 6.3KHz, 8KHz, 10KHz, 12.5KHz, 16KHz |
| Band width | 0.05 oct, 0.1 oct, 0.2 oct, 0.33 oct, 0.5 oct, 0.66 oct, 1 oct, 2 oct |
| Lift and Cut | ±12dB in 1dB steps |
| Low Filter | |
| Frequency | 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1KHz, 1.2KHz, 1.6KHz, 2KHz, 2.5KHz |
| Slope | 3dB/oct and 6dB/oct |
| Lift and Cut | ±12dB in 1dB steps |
| High Filter | |
| Frequency | 500Hz, 630Hz, 800Hz, 1KHz, 1.25KHz, 1.6KHz, 2KHz, 2.5KHz, 3.15KHz, 4KHz, 5KHz |
| Lift and Cut | ±12dB in 1dB steps |
| High Pass Filter | |
| Frequency | 100Hz, 150Hz, 200Hz, 250Hz, 300Hz |
| Slope | 18dB/oct, 12dB/oct, 6dB/oct |
| Compressor | |
| Ratio | 1.4:1, 2:1, 4:1, 8:1 and limiter |
| Attack | 0 to 99mS |
| Release | 0 to 999mS |
| Messages Flash PROM | |
| Storage Medium | Flash PROM (non volatile) |
| Maximum Message Length | 57 Seconds |
| Frequency Response | -3dB @ 50Hz and 18KHz |
| Signal to Noise Ratio | Better than 65dB |
| Power Requirement | 22V to 35V @ 500mA max |

1.3.2 Audio Output Specifications

| | |
|--|--|
| Nominal Output Level | 0.775V (0dB) |
| Maximum Output Level | 1.5V (+6dB) |
| Frequency Response | -3dB @ 30Hz and 20KHz |
| Output noise ref to 0dB | Better then -85dB |
| 10 Band Parametric Equalisation | |
| Frequency | 50Hz, 63Hz, 80Hz, 100Hz, 125Hz, 160Hz, 200Hz, 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1KHz, 1.25KHz, 1.6KHz, 2KHz, 2.5KHz, 3.15KHz, 4KHz, 5KHz, 6.3KHz, 8KHz, 10KHz, 12.5KHz, 16KHz, |
| Band width | 0.05 oct, 0.1 oct, 0.2 oct, 0.33 oct, 0.5 oct, 0.66 oct, 1 oct, 2 oct |
| Lift and Cut | ±12dB in 1dB steps |
| Low Filter | |
| Frequency | 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1KHz, 1.2KHz, 1.6KHz, 2KHz, 2.5KHz |
| Slope | 3dB/oct and 6dB/oct |
| Lift and Cut | ±12dB in 1dB steps |
| High Filter | |
| Frequency | 500Hz, 630Hz, 800Hz, 1KHz, 1.25KHz, 1.6KHz, 2KHz, 2.5KHz, 3.15KHz, 4KHz, 5KHz |
| Lift and Cut | ±12dB in 1dB steps |
| Audio Delay | Selectable from 0 to 1 second |

1.3.3 Control Inputs / Outputs

| | |
|--------------------------|---|
| Control Inputs | |
| Fire Panel Inputs | 4 x opto coupled sounder circuit inputs from fire detection system. |
| Analogue Voltage Sensing | 8 x analogue voltage sensing inputs for monitored input access, ambient noise sensors, remote volume controls, etc. |
| AMP Surveillance | 4 x Amplifier / 100V Line surveillance inputs for monitoring return signal from BEL I End of Line modules |
| Control Outputs | |
| NPN Collector outputs | 8 x NPN collector outputs (max 40V @ 100mA) for busy etc |
| Relay Contacts | 1 x volt free relay changeover contact for Common Fault |
| Serial Ports | |
| RS485 | 2 x RS485 half duplex ports for communicating to control microphones, fire detection systems, network control, fault reporting etc. |
| USB | 1 x front panel mounted USB port to configure the system, obtain fault and activity logs, upload messages etc. |

2 Installation Examples

2.1 OVERVIEW

The BVRD2M4 has been designed to enable simple and easy configuration for small systems of 4 zones or less.

The outputs can be configured as follows:

- a. Up to 4 single zone monitored outputs,
- b. Up to 4 dual circuit monitored outputs.
- c. Up to 3 single zone monitored outputs with a reserve amplifier
- d. With the addition of a BVRDNET network card, multiple BVRD2M4 units can be networked together.

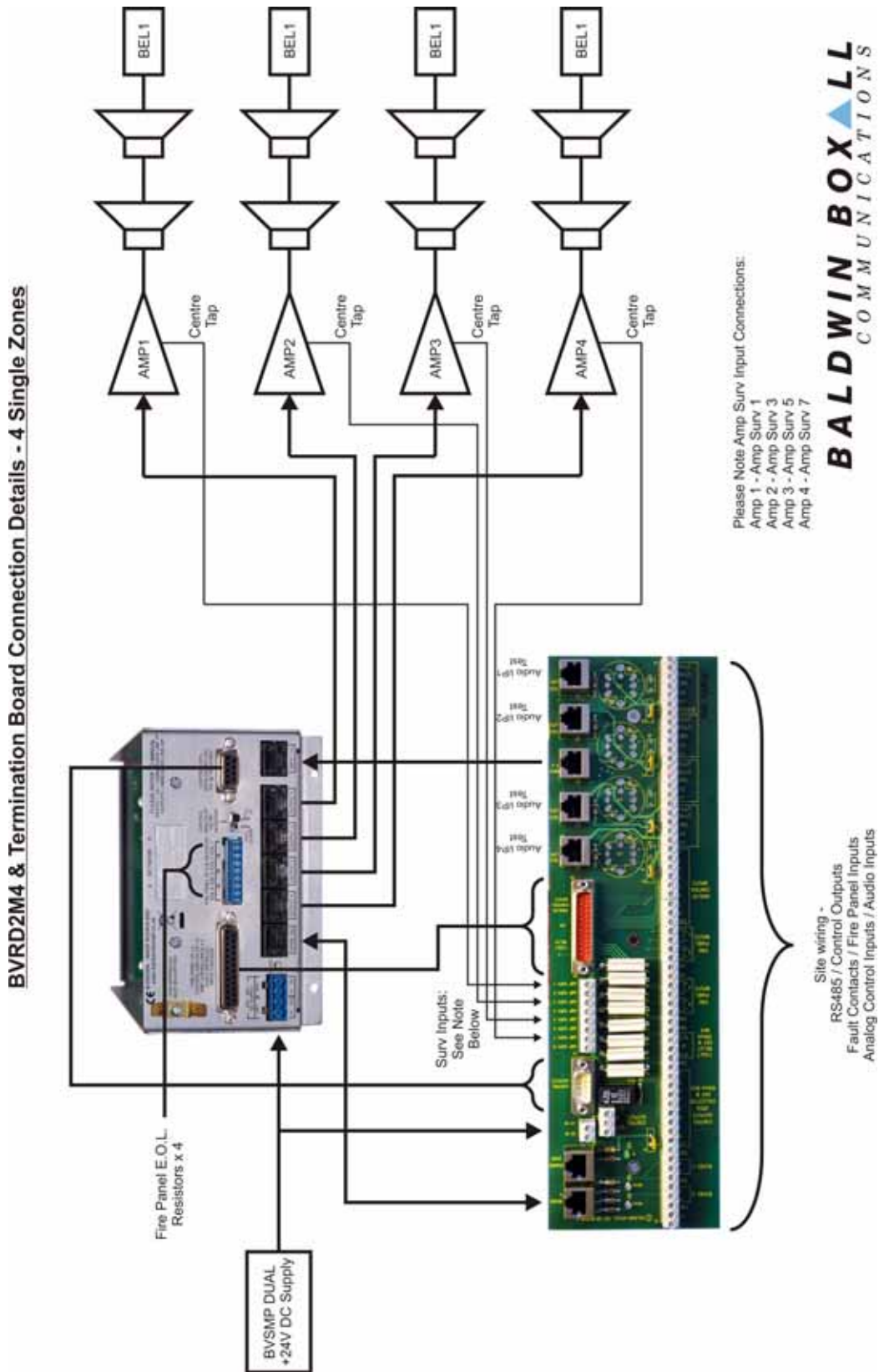


NOTE: The BVRDNET is a Factory-Fit option only.

Wiring and installation examples are shown in the following sections for each type of output.

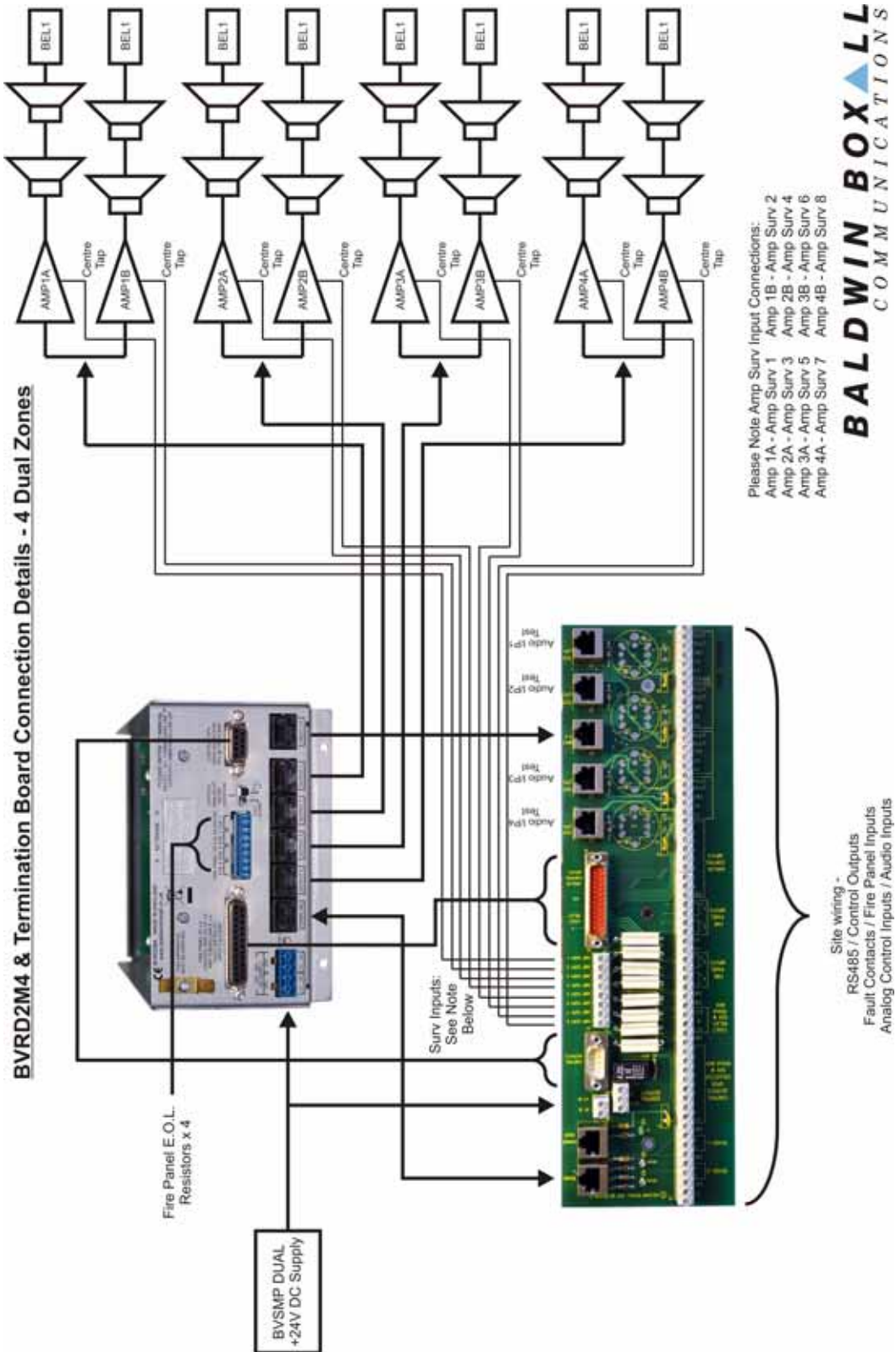
2.2 FOUR SINGLE MONITORED ZONES

Figure 2.1 — Connection Details for Four Single Zones



2.3 FOUR DUAL CIRCUIT ZONES

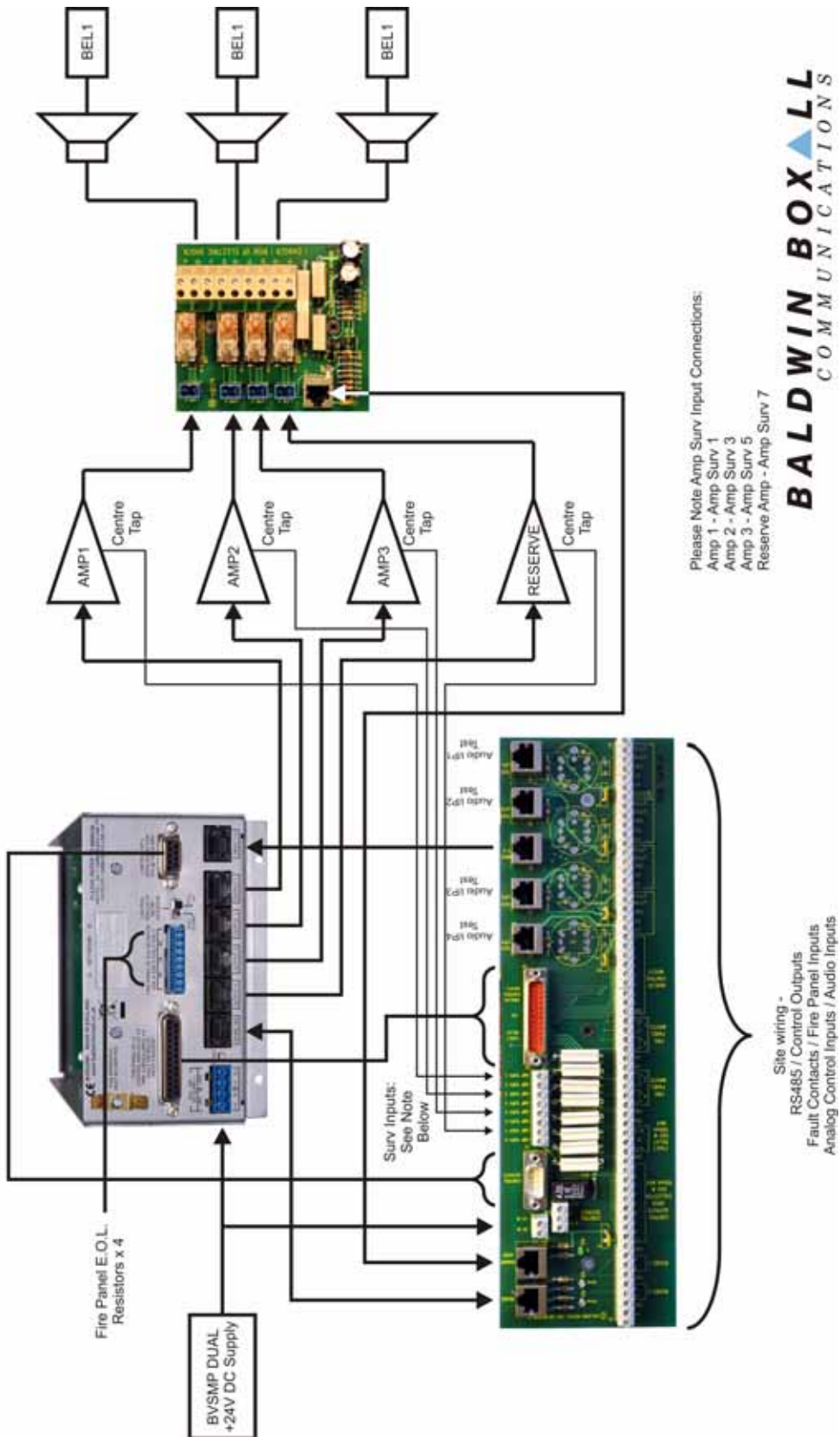
Figure 2.2 — Connection Details for Four Dual Zones



2.4 THREE ZONES WITH RESERVE AMP

Figure 2.3 — Connection Details for Three Zones with Reserve Amp

BVRD2M4 & Termination Board Connection Details - 3 Zones with Reserve

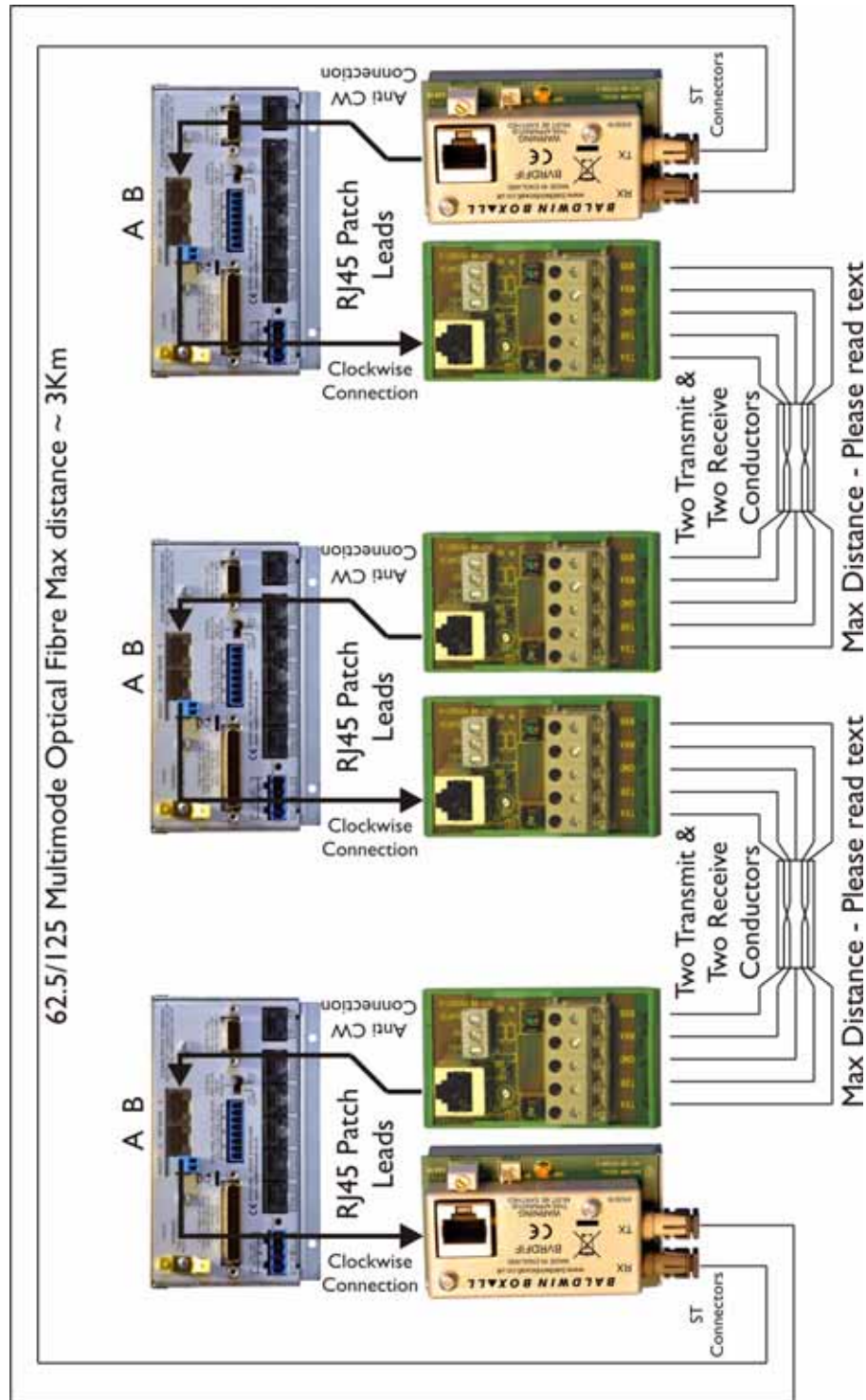


BALDWIN BOXALL
COMMUNICATIONS

2.5 BVRDNET NETWORK

2.5.1 BVRDNET Connection Details

Figure 2.4 — Typical Connection Details for Fibre & Copper cables

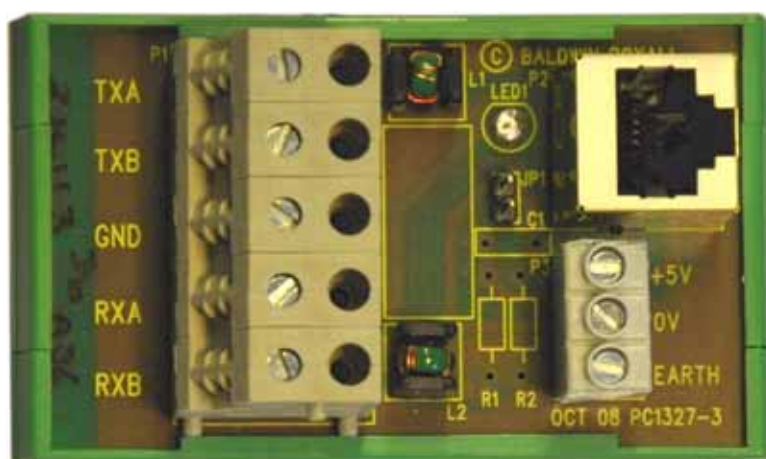


2.5.2 BVRDNET Installation Notes

Figure 2.5 — BVRDFIF Fibre Interface module



Figure 2.6 — BVRDCIF Copper Interface Module



The network can either be copper, fibre or a combination of both. Every BVRD2M4 on the network requires either two BVRDFIF modules, two BVRDCIF modules or one of each depending on the network type.

The BVRDFIF & BVRDCIF are both DIN rail mounting modules.

The copper network is a pair of Tx and a pair of Rx conductors (minimum 4 core screened cable required). The maximum length of cable between units is dependant on the speed selected and the cable type in use - refer to Section 2.5.3.

The fibre network is a pair of 62.5/125 multimode optical fibres using ST connections.

The BVRDNET enables a network of up to 14 concurrent audio channels and two RS485 communication ports.

2.5.3 Copper Cable Selection and Maximum Length of Cable Between Units

The BVRDCIF module enables connection to a copper twin pair network (preferably twisted pair).

Enhanced Fire Rated Cable should be used.

The typical maximum length of cable between units is as follows:

“Slow” speed (six concurrent audio channels) - 300 metres

“Fast” speed (fourteen concurrent audio channels) - 200 metres

Greater distances are possible depending on the cable type in use.

Baldwin Boxall recommend “Fireshield” 1mm² 5 twisted pair with screen Enhanced Fire Resistant cable.

The extra pairs in this cable can be used to supply a “Bypass” input as a fail-safe option and can also enable a system wide reset.

2.5.4 Fibre Cable Selection

Multimode 62.5/125 cable with ST Transmit and Receive connections should be used.

3 Firmware Configuration

3.1 INTRODUCTION

It is necessary to configure the BVRD2M4 prior to use.

This configuration includes setting system specific options such as setting routes and levels, communication protocols, fault monitoring, network configuration where applicable, DVA message selection and setting up button allocation.

Configuration is achieved using the front panel USB connection and a PC / Laptop running “Vigil EVAS BVRD2M Configuration Software”.



NOTE: It is possible to make configuration changes to any BVRD2M4 units on a network via the front panel of any unit on the network.

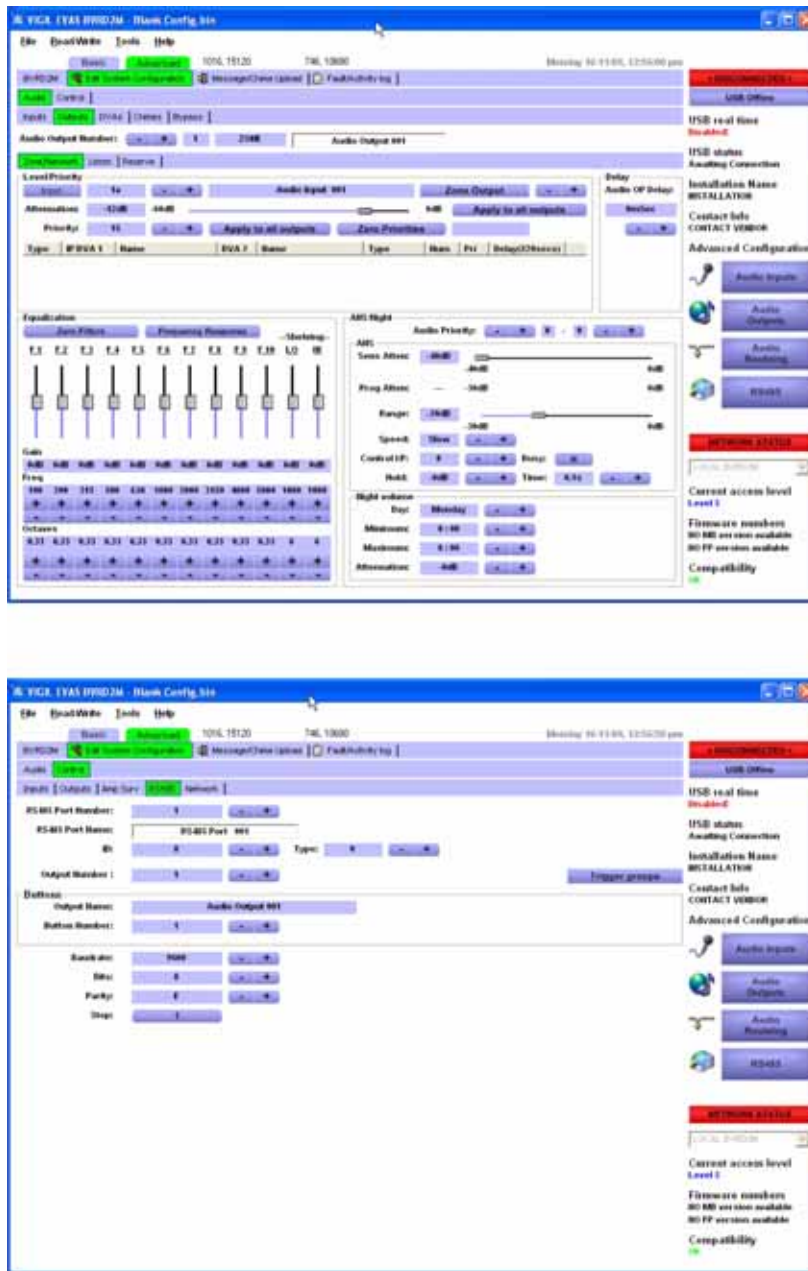
3.2 BVRD USB CONFIG SOFTWARE

Install the “Vigil EVAS BVRD2M Configuration Software”.

Connect the BVRD2M4 and run the Configuration Software.

The software includes comprehensive on-line help that explains how to correctly configure the unit to suit the installation.

Figure 3.1 — Typical Pages from BVRD2M USB Configuration Software



3.3 MUTE FAULT SOUNDER OPTION

The Fault Sounder can be muted as follows:

- Disconnect Power (24V) from the unit,
- Press and hold the “Lamp Test” and “Fault Reset” buttons,
- Reconnect power and hold the buttons for 3 seconds.

To enable the Sounder remove power, hold the Reset button and reconnect power.