BMB01

Remote I/O Unit

Installation Guide

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Issue: 02 Complete, Approved - Date: 14/12/09
Part Number: M0450_11

This equipment is designed and manufactured to conform to the following EC standards:

EMC: EN55103-1/E1:1996, EN55103-2/E5:1996, EN50121-4:2006, ENV 50204:1995

Safety: EN60065:2002

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

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

This product must be disposed of in accordance with the WEEE directive.

Contents

Additional User Documentation:

Additional reference information is available from the ASL website: www.asl-control.co.uk

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QUALITY ASSURED FIRM
CERTIFICATE NUMBER 96-LON-AQ-041

Link-up

1 Installation

Technical Specification Summary

Supply Voltage Range ..... 18 – 40 V DC
Current Consumption (max, all LED's on)..... 70 mA @ 24 V DC supply
Digital Outputs ..... 12 x active-low open-collector outputs
Open-collector Maximum Rated Current ..... 350 mA
Open-collector Maximum Voltage ..... 60 V
Analogue Inputs ..... 12 x non-isolated analogue interfaces internally pulled up to 5 V by 4.7 kΩ
Digital Inputs ..... 12 x opto-isolated interfaces with built-in resistor to suit voltages of +12 to +40 V
Data Connection ..... EIA RS485 9600 baud
Temperature Range (Storage and Operating) ..... -5 °C to +50 °C
Humidity Range ..... 0 % to 93 % non-condensing
Dimensions (H x W x D) ..... 105 mm x 156 mm x 58 mm
Weight ..... 300 g

Equipment and Tool Requirements

- This BMB01.
- A small flat bladed screwdriver.
- A pair of wire cutters/strippers.
- Suitable DIN rail for mounting (35 mm symmetrical "top-hat" type).

External Cabling Requirements

Signals	Cable Description	Suggested Type
Data	1 x 2-core twisted, screened	Suitably rated foil screened cable
Power	1 x 2-core	Suitably rated cable
Analogue inputs	Multicore, screened	Suitably rated foil screened cable
Digital inputs	Multicore	Suitably rated cable
Digital outputs	Multicore	Suitably rated cable

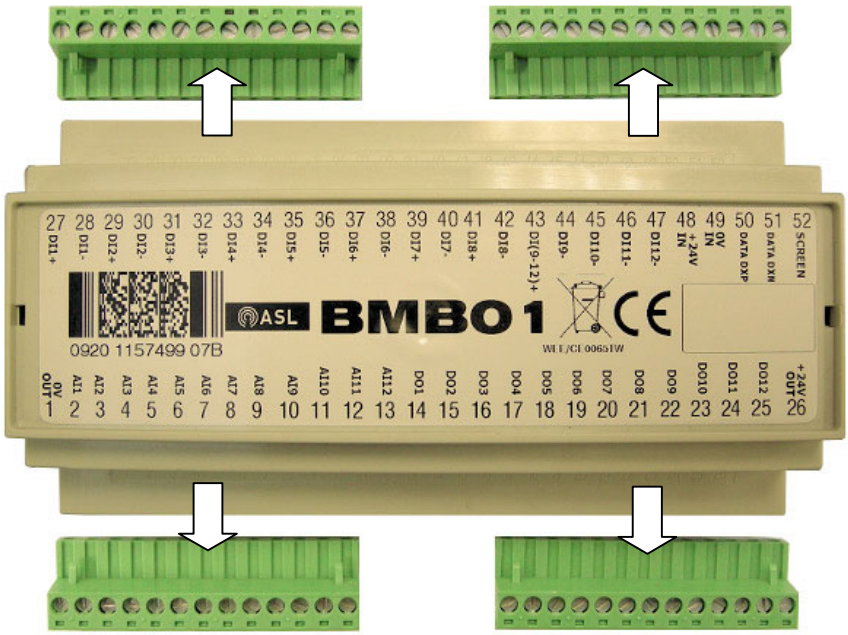
1) Screened cable must be used for the RS485 data connections and analogue input connections.
2) The maximum recommended distance for the RS485 data link is 1 km.
3) Refer to BS7671:2008 (Requirements for Electrical Installations) or other appropriate local standards for guidelines on maximum potential cable lengths given the actual installation parameters.

Recommended Installation Procedure

> ⚠ Please read and observe the instructions and guidelines in Section "4 Safety and Precautions" (page 10) prior to installation. Failure to follow these instructions and guidelines may cause personal injury and/or damage to the equipment.

1. If fitted, remove the connectors from both sides of the BMB01; see Figure 1.

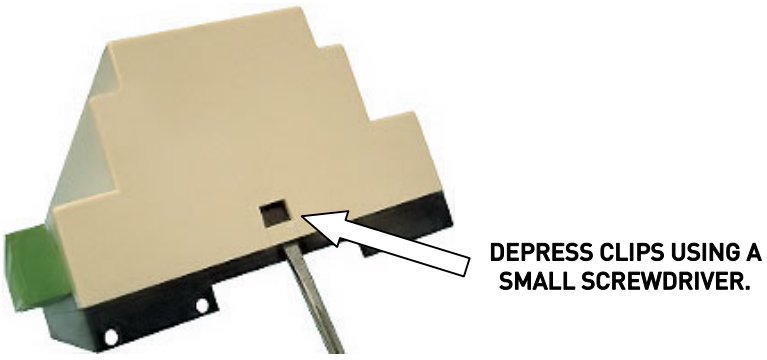
Figure 1 Removing the connectors



> ⚠ Care must be taken not to bend any pins in the BMB01 unit when removing and inserting connector blocks. Male and female parts of the blocks must be square to each other at all times.

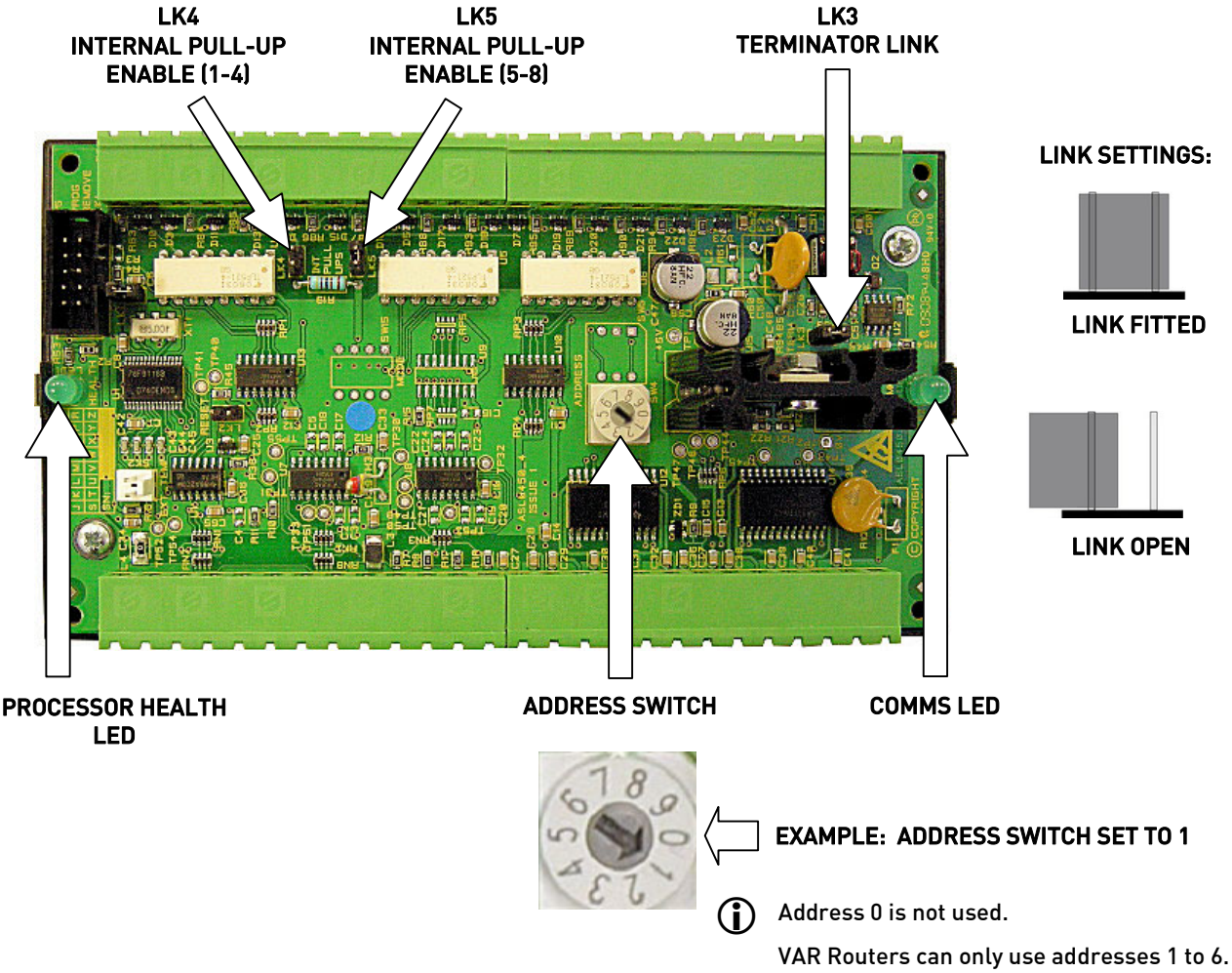
2. Remove the lid from the BMB01 by using a small screwdriver to depress the black clips at either side of the unit and lifting the lid off; see Figure 2.

Figure 2 Removing the BMB01 lid



3. Set the Address Switch to the correct number between 1 and 9; see Figure 3.

Figure 3 Address Switch and link locations and settings



Address 0 is not used.

VAR Routers can only use addresses 1 to 6.

4. If the unit is the last (or only) Remote I/O Unit on the RS485 bus, then fit the Terminator Link (LK3) over both pins; see Figure 3.

5. Set the pull-up links (LK4, LK5) as required; see Figure 3.

   LK4: fit link to enable internal pull-ups on the anodes of the opto-isolators for Digital Inputs 1 to 4.

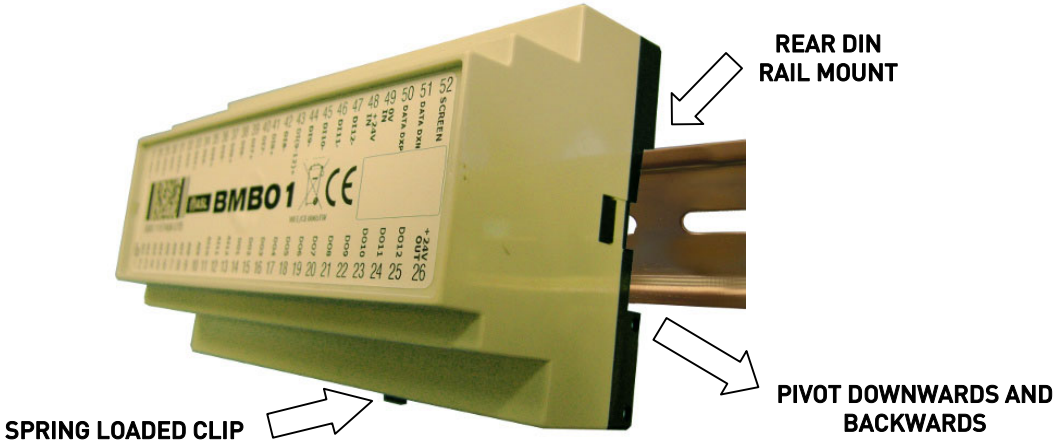
   LK5: fit link to enable internal pull-ups on the anodes of the opto-isolators for Digital Inputs 5 to 8.

6. Replace the BMB01 lid, ensuring that it is the correct way round.

> The lid on the BMB01 is designed to attach one way only. For this reason the clips on either side are of different sizes. When re-attaching the lid, ensure that both clips fit their corresponding hole either side of the lid.

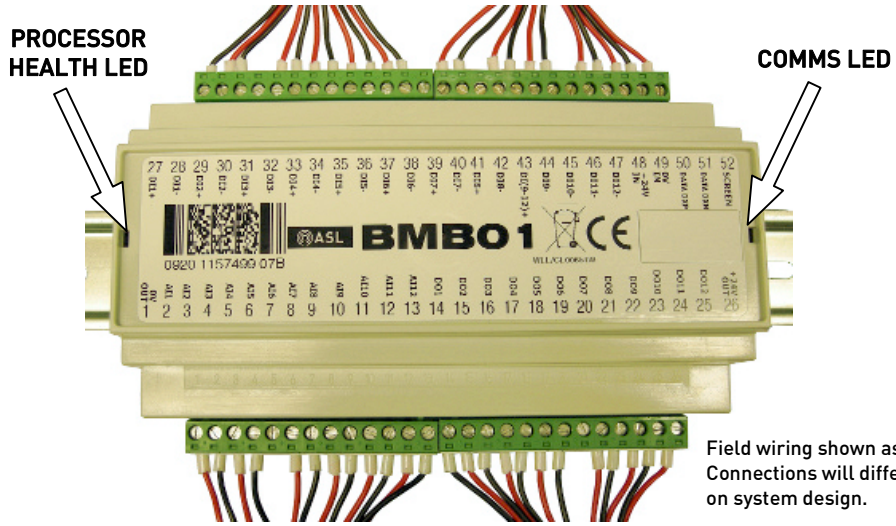
7. Clip the BMB01 onto the DIN rail by positioning the top of the BMB01's rear DIN rail mount on the DIN rail and then pivoting the unit downwards and backwards until the spring loaded clip has fastened; see Figure 4.

Figure 4 Attaching the BMB01 to the DIN rail



8. Connect the field wiring to the connectors, as required by system design. Reconnect each connector; see Figure 5.

Figure 5 Connecting the field wiring



Field wiring shown as an example. Connections will differ depending on system design.

> The connectors are pluggable so the BMB01 can be replaced without having to disconnect individual wires.

9. Secure the BMB01 unit on the DIN rail using end-stop or wiring terminals on both sides of the unit.

10. Ensure that the unit is powered on.

    The PROCESSOR HEALTH LED flashes to indicate that the unit is powered on and the processor is fault free; see Figure 5.

11. The installation is now complete and ready for system commissioning.

    When the BMB01 is correctly configured and commissioned the LEDs (see Figure 5) flash as follows:

    - PROCESSOR HEALTH LED: flashes approx once per second
    - COMMS LED: flashes very fast

    See Section “3 Controls and Indicators” (page 9) for further details.

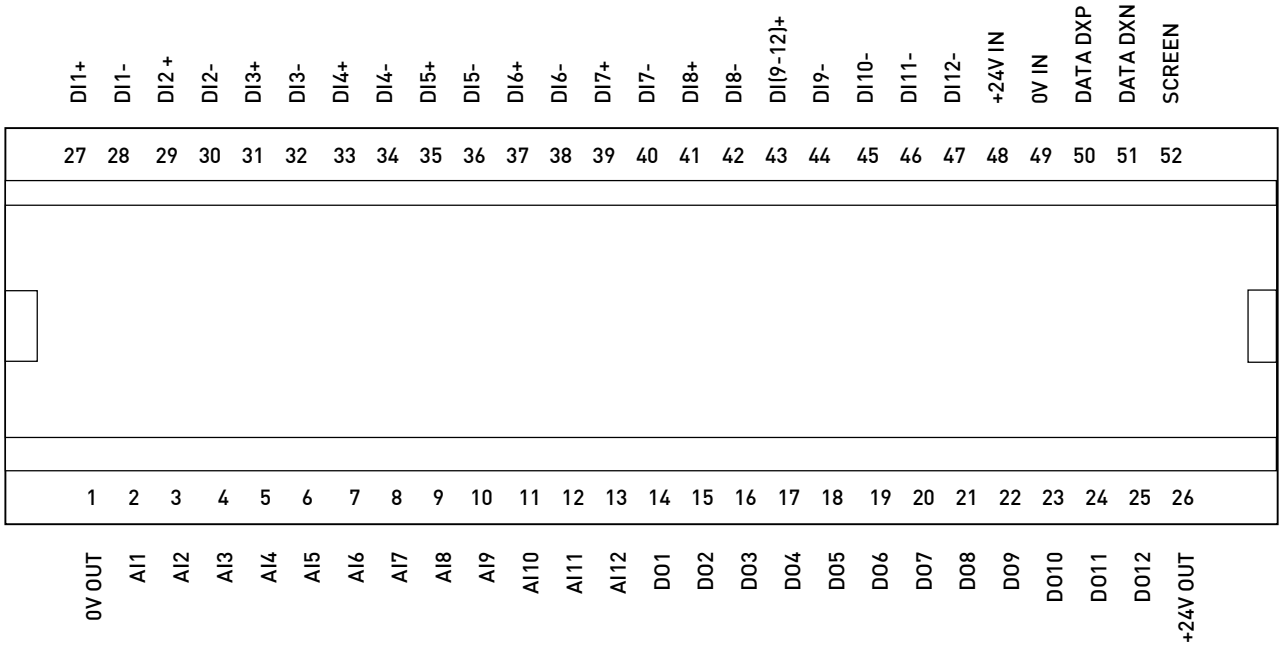
2 Connection

BMB01 I/O Functions

Type	Quantity	Functions	Applicability [1]			
			VAR4/12/20	Intellevac DAU and VAR8	Intellevac ACU and VAR8-ACU	VIPA Devices [2]
Analogue Input	12	Routing	No	Yes [3] or [4]	No	No
		Routing Reset	No	Yes [3] or [4]	No	No
		ANS Input [3], [5]	Yes	Yes	Yes	Yes
		Volume Control [3], [5]	Yes	Yes	No	No
		Program Selector [3], [5]	Yes	Yes	No	No
		External Fault Input	Yes[3]	Yes [3] or [4]	Yes [3] or [4]	Yes [3]
Digital Input	12	Routing [4]	Yes	Yes	Yes	Yes
		Routing Reset [4]	Yes	Yes	Yes	No
		External Fault Input [4]	Yes	Yes	Yes	Yes
		Global Silence [4]	No	No	Yes	No
Digital Output	12	Busy Output [3]	Yes	Yes	No	Yes
		Fault Indication [3]	No	Yes	Yes	No

1) Applicability at the time of the publication of this document for VAR4/12/20 SW V5.3.0523, Intellevac DAU and VAR8 SW V2.1.0143, Intellevac ACU and VAR8-ACU SW V2.1.0135, VIPA SW V2.12.4.
Some of the functions may not be available if your system has an earlier version of software. For further details, and for information on other applications, please refer to ASL.
2) VIPA Devices: VIPET, LINUTOP, iPA400, and iPAM400.
3) Monitored connection (short and open circuit).
4) Non-monitored connection.
5) Refer to Installation Guide for the VC01/PS01/ANS range of products for connection details.

BMB01 Terminal Allocation

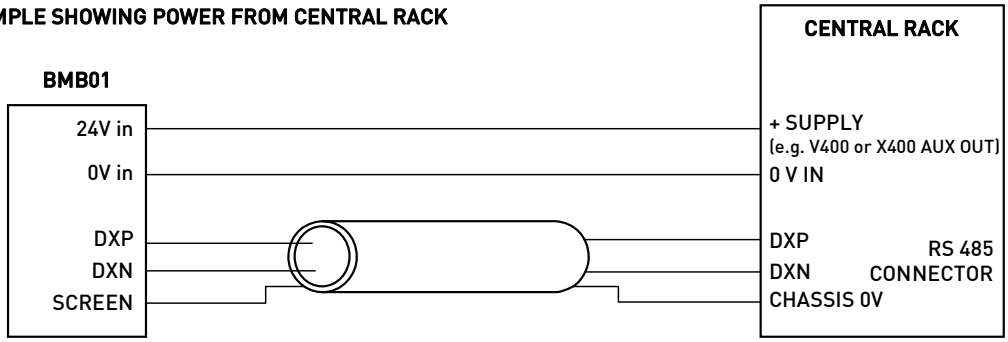


BMB01 Terminal Description

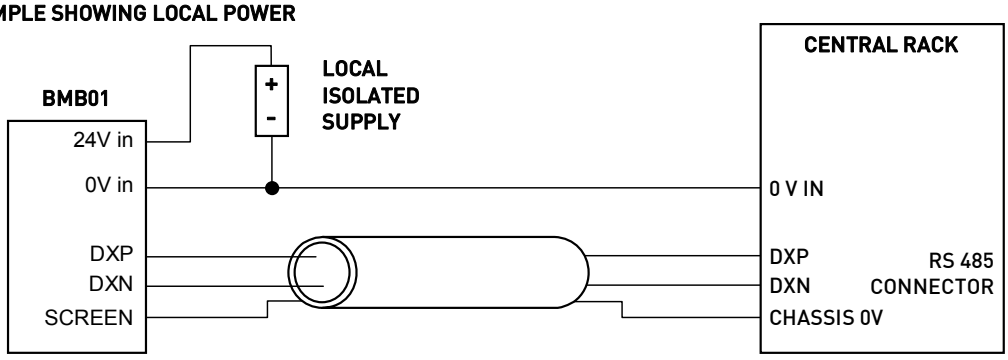
Pin No	Signal	Description / Operation
1	0V OUT	0 V connection for Analogue Inputs
2-13	AI1-AI12	Analogue Inputs (internal 4.7 kΩ pull-up to +5 V)
14-25	DO1-DO12	Digital Outputs (open-collector)
26	+24V OUT	+ve supply (as 24 V in) for open-collector outputs. Resetable internal 1.6 A fused.
27-42	DI1-DI8	Digital Inputs 1 to 8 + = Opto-anode (with internal 4.7 kΩ pull-up to +5 V enabled/disabled via link settings) - = Opto-cathode
43	DI(9-12)+	Common connection to external pull-ups on the anode of the opto-isolators of Digital Inputs 9 to 12
44-47	DI9-DI12-	Digital Inputs 9-12 (opto-cathode)
48	+24V IN	18-40 V Supply In
49	0V IN	0 V Supply In
50	DATA DXP	RS485 DATA +
51	DATA DXN	RS485 DATA -
52	SCREEN	Screen connection for RS485 data

BMB01 Power Connection Options

EXAMPLE SHOWING POWER FROM CENTRAL RACK



EXAMPLE SHOWING LOCAL POWER

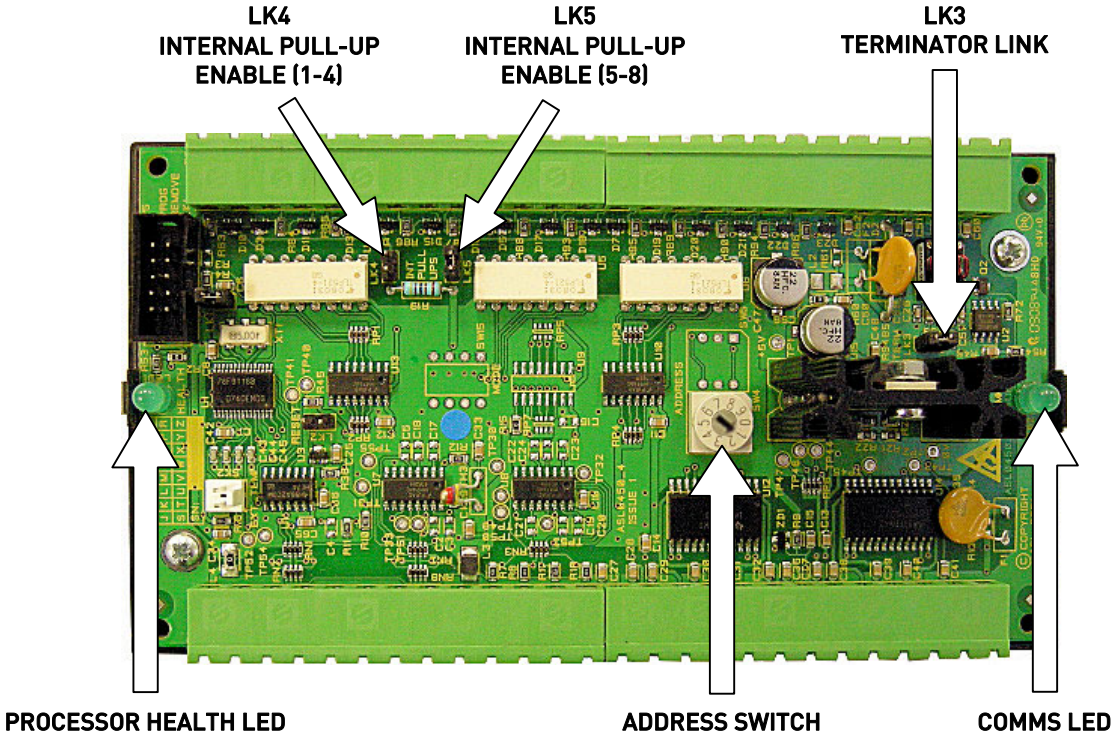


Power to the BMB01 can either be local or from the central rack equipment.

If a local power supply is used, a 0 V connection must be made between the central rack and the BMB01 for correct operation of the data-link. The local power supply must be isolated from ground to avoid potentially large ground currents flowing in the 0 V interconnection if the BMB and central rack are an appreciable distance apart.

If powered from the central rack, the cabling should be selected so that the total load does not cause excessive voltage drop (>4 V) in the 0 V connection otherwise incorrect operation of the data-link may occur

3 Controls and Indicators



BMB01 Controls and Indicators	
Control / Indicator	**Description**
ADDRESS SWITCH	Enables addresses in the range 1 to 9 to be set.
LK3 RS485 TERMINATOR LINK	Link MUST be fitted to the last (or only) BMB01on the RS485 bus in order to correctly terminate the bus.
LK4 INTERNAL PULL-UP ENABLE (1-4)	Fit link to enable internal pull-ups on the anodes of the opto-isolators for Digital inputs 1 to 4.
LK5 INTERNAL PULL-UP ENABLE (5-8)	Fit link to enable internal pull-ups on the anodes of the opto-isolators for Digital inputs 5 to 8.
COMMS LED	Flashes very fast when the unit is transmitting RS485 data.
PROCESSOR HEALTH LED	Flashes slowly (approx once per second) when comms is detected ok. Flashes fast (approx twice per second) when no comms is detected. No LED activity indicates processor fault or loss of power.

4 Safety and Precautions

Environmental

The temperature and humidity ranges shown in the specifications for this product must not be exceeded.

This equipment must not be installed in an area that is subject to a corrosive atmosphere, excessive moisture or may allow water or other liquids to come into contact with the unit or its external connections.

Electrical Safety

Always replace blown fuses with the correct type and rating. Ensure power supply cabling is adequately rated.

ESD Precautions

This product contains static-sensitive devices. Observe ESD precautions when handling this product.

EMC

In the close proximity of some radio frequency transmitters, the signal to noise ratio of this product may be reduced. If this occurs, re-location of the equipment or the signal cables is recommended.

Unpacking and Handling

The equipment should be unpacked and inspected immediately on receipt. If damage has occurred please advise your carrier or supplier.

This equipment contains electronic devices that are sensitive to electrostatic discharge. Please take precautions to avoid damage to the electronics by static electricity.

It is advisable to retain the original equipment packing in the event that the equipment ever needs returning for service.

Ensure that the name and address of the Authorised Distributor from whom you purchased the unit is recorded on the "Service and Warranty" page of this manual for future reference.

Packing for Return for Repair

All electronics assemblies must be properly packed in ESD protective packing for transport, to prevent physical and ESD damage.

The filler material used for packing for return for repair must be antistatic or static dissipative, as this may come into contact with exposed connectors, wiring, or PCB assemblies. The use of non-conductive filler material may cause damage to the electronic assemblies reducing their operational life, or even destroying them.

Advice on packing the product for return can be provided by ASL.

Notes

Service and Warranty

Name and Address of Authorised Distributor:

This product carries a full warranty. For full details of warranty and service agreements, please contact the Authorised Distributor who supplied the product to you.

Exclusions

The warranty does NOT cover:

1. Customer misuse, including incorrect installation.
2. Damage other than manufacturing defects.
3. Transit / Courier damage.
4. Incorrect voltage or power supply used.
5. Incorrect input signal.
6. Abnormal environmental operating conditions.
7. Damage incurred by accident, fire, lightning or other hazard.
8. Modification to the unit or inexpert / attempted repair.
9. No fault found – where no fault can be found after extensive testing, indicating user error or failure in ancillary equipment.
10. Electronic assemblies which are improperly packed when returned for repair or service.

Should any of the above apply, Application Solutions (Safety and Security) Limited reserves the right to raise any relevant charges to the customer.

Application Solutions (Safety and Security) Limited shall not be liable for any indirect, special or consequential loss or damage (including without limitation any loss of profits) arising from the use of this product or for any breach of this warranty.

In the interest of continual product development, Application Solutions (Safety and Security) Limited reserves the right to make changes to product specification without notice or liability.

ASL
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