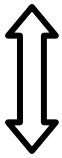
Bluebell OPTICOM LIMITED

OPERATIONS MANUAL

FOR

BC862

2 x Ethernet



Fibre

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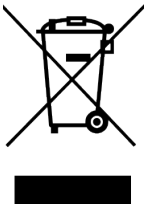
Conformances BC862

EMI/RFI	Complies with 89/336/EEC, EN55032, EN61000-4-2, EN61000-4-4-(Level 2), EN61000-4-4FTB, EN61000-4-5, EN61000-4-11
Electrical	Complies with EN61000-6-1, EN61000-6-2 , EN61000-6-3, EN61000-6-4
Laser Safety	Complies with Class 1 laser product. See specs for SFP fitted.
RoHS	Complies with Directive 2002/95/EC



WEEE Directive & Product Disposal
At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

Safety Warning – Important Precautions

To reduce the risk of fire or electric shock, do not expose this equipment to rain, moisture, or wet conditions.

General Safety Guidelines

- Always **disconnect the entire system from the AC mains** before cleaning or servicing.
- The following product frames – **BC100, BC100i, BC101, BC102, BC120, BC160i** – must be connected using a **three-conductor AC mains power cord with an earth ground**. All three conductors must be used at all times to prevent electric shock.
- Do **not** bypass or disable any fuse.
- Only replace fuses with those of the **specified type and rating**.
- Do **not** use flammable or combustible chemicals for cleaning.
- Do **not** pour or spill liquids directly onto the unit.
- Do **not** allow any liquid to enter the unit or wet the internal components.
- Do **not** operate the unit with any cover or panel removed.
- Do **not** obstruct the ventilation slots—**adequate airflow must be maintained**.
- Do **not** operate the unit in environments with **extreme temperatures**.
- Do **not** use or store the unit in **explosive atmospheres**.
- Do **not** attempt to repair the unit yourself. If servicing is required, please contact your local **Bluebell Opticom** distributor.
- **Product Warranty**
- **Bluebell Opticom Ltd** provides warranty coverage as detailed in our general terms and conditions.
  Please note that warranty support is only valid **if product serial numbers remain intact and legible**. Tampering with or removing serial numbers may void your warranty.

CE	EN60950	Safety
	EN55103-1: 1996	Emission
	EN55103-2: 1996	Immunity

Bluebell Opticom Ltd FC Tested To Comply With FCC Standards FOR HOME OR OFFICE USE	This device complies with part 15 of the FCC Rules Operation is subject to the following two condition: (1) This device may cause harmful interference, and (2) This device must accept any interference received, including, Interference that may cause undesired operation

Description BC862

The BC862 is a dual port copper twisted pair to fibre optic media converter for conversion between two ports of copper twisted pair 10Base-T, 100Base-T or 1000Base-T data to fibre optic 100Base-FX or 1000Base-X format.

Each RJ45 connector provides two channels (full duplex) of data transmission with 10/100/1000Base-T duplex auto-negotiation. Data isolation transformers are provided for the twisted pair input and output. All Bluebell cards are designed to retain maximum integrity of the signal path offering excellent jitter free optical transport.

The BC862 is available in multimode and singlemode variants to suit any fibre application. Versions can be selected which provide full duplex operation over two fibres or a single fibre. CWDM versions are available to support the ITU G.694.2 grid specifications.

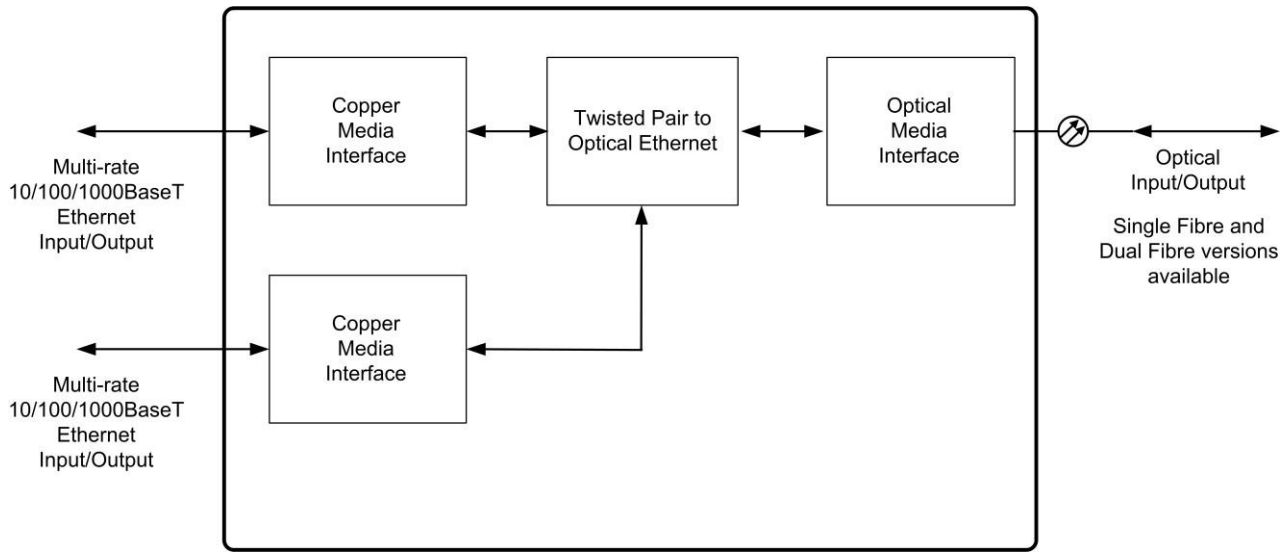
The BC862 occupies a single slot in either a BC100-3RU (15-slot) or a BC160 1RU (6-slot) 19" rack-mounting frame. Signal and card monitoring is achieved through SNMP monitoring in the BM102 network card.
For stand alone applications the BC862 can be housed in an individual rugged enclosure.

The BC862 may form one end of a fibre link using other cards of the BC800 Series at the other end as follows:

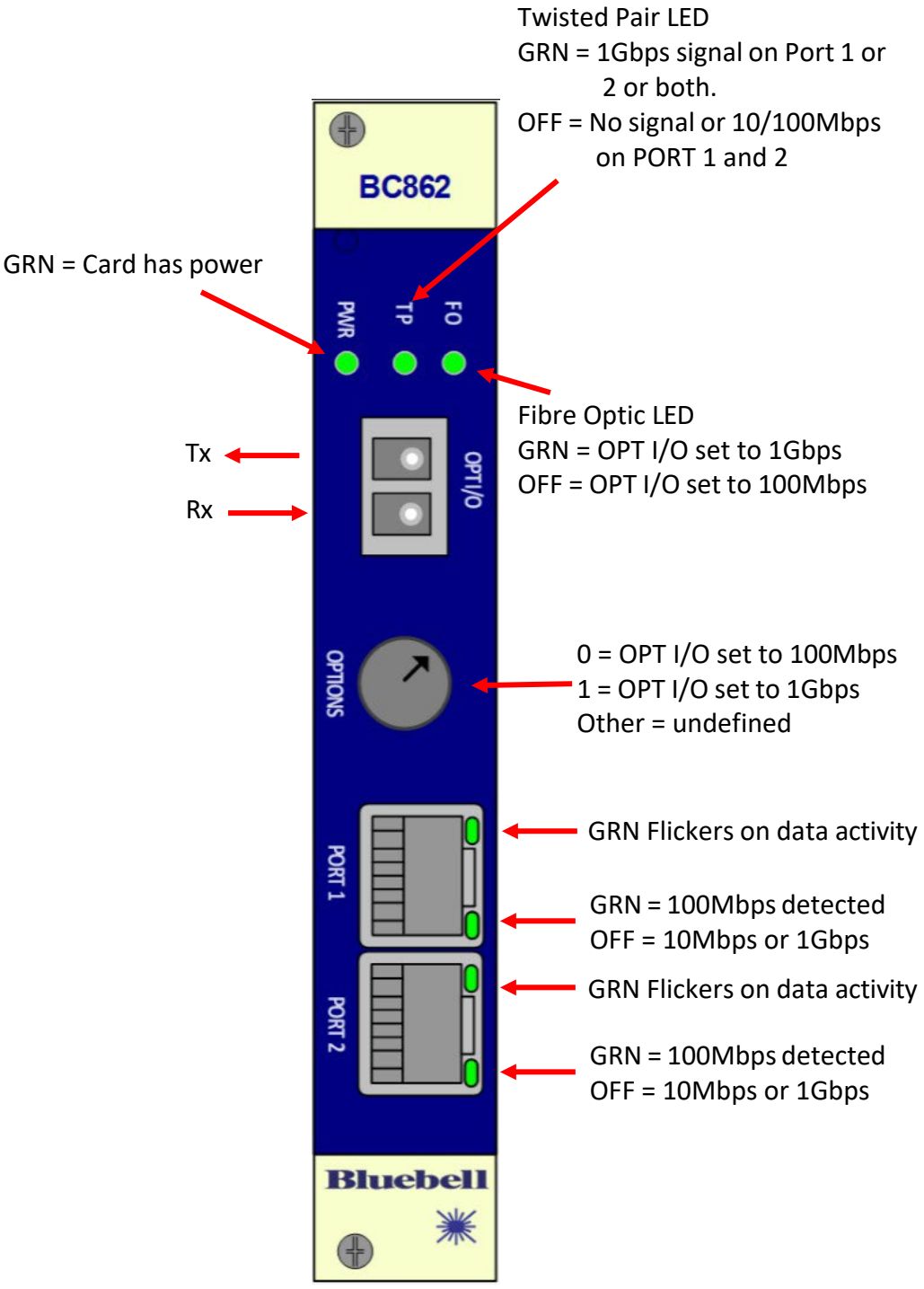
BC800 – set hex switch on BC862 to '0' (100base-FX)
BC850 – set hex switch on BC862 to '1' (1000base-X)
BC860 – set hex switch on BC862 to same position as on BC860 (0 or 1)

Note that the BC862 card may also form one end of a fibre link using certain other manufacturers' products, provided the SFPs are fully compatible.

Block Diagram BC862



Card Panel	BC862



Specifications	BC862

Electrical Input/Output

Connectors	2 x RJ45
Format	10/100/1000Base-T half/full duplex auto-negotiation
Standard	IEEE 802.3 802.3 10 Base-T 802.3u 100 Base-T 802.3ab 1000 Base-T

Optical Input/Output Specs determined by SFP fitted. Some typical values are given here

Connectors	1 x female LC/PC Single Fibre Version 2 x female LC/PC Dual Fibre Version
Wavelength	dependent upon model type - See Ordering Information
Standard	100base-FX and 1000base-X
Optical Power (Typical)	- 9 dBm @ 850 nm -15 dBm @ 1310 nm multimode -6 dBm @ 1310 nm and 1550 nm singlemode -6 dBm @ CWDM wavelengths
Sensitivity	- 3 dBm to – 28 dBm
Max I/P power	> -1 dBm

See Ordering Information for the different multimode and single mode variants

Physical specifications

Depth	76 mm (including connectors, excluding SFP)
Width	20 mm (4HP)
Height	129 mm (3RU)
Weight	100 g
Operating Temp	-30 to +70 dgC
Power	2.4 W

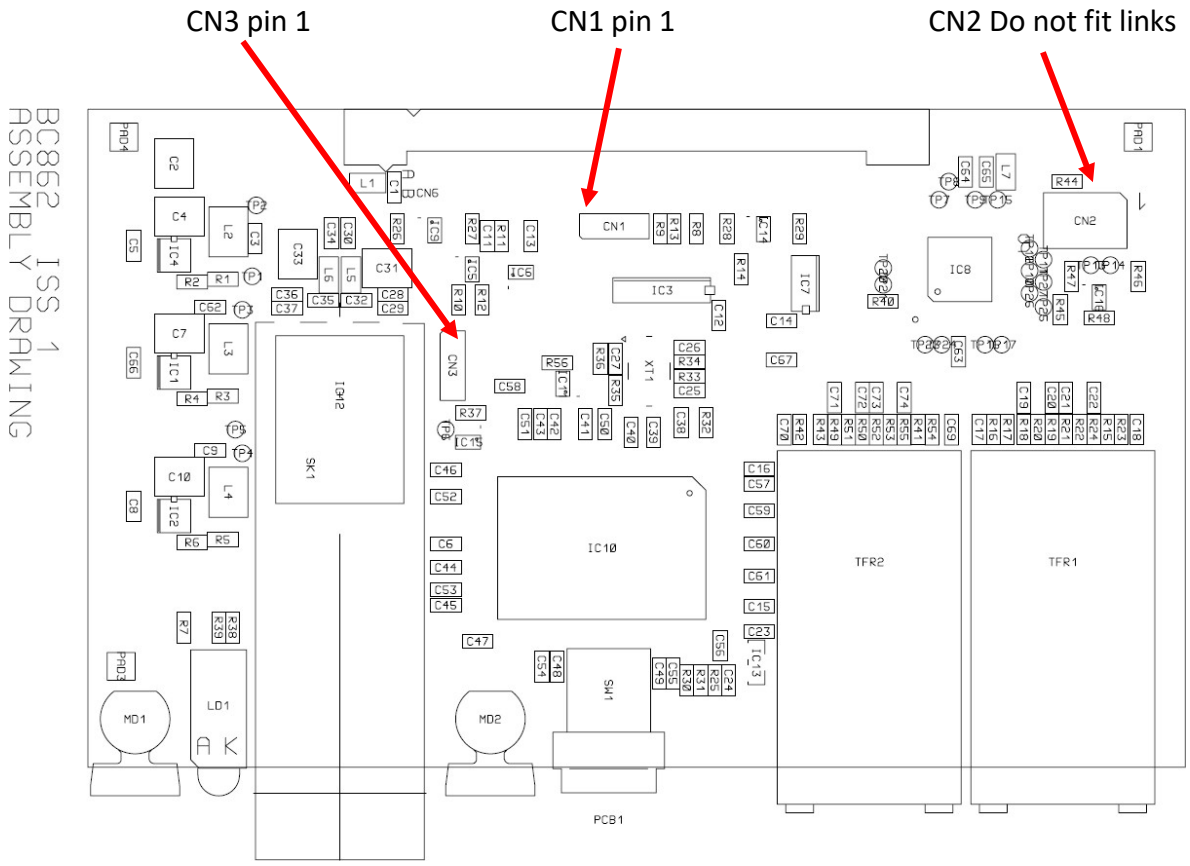
These unit configurations can be set by using jumper links to link 2 adjacent pins.

Selection of SFP type for monitoring purposes

CN3	Link pins 1 to 2 for MSA type SFP (Data) (Default).
	Link pins 2 to 3 for Non-MSA type SFP (Video)
	No link will disable SFP monitoring.

The I2C EEPROM write enable (Factory use only)

CN1	Link pins 1 to 2 to disable writes to eeprom (Default).
	Link pins 2 to 3 to enable writes to eeprom.
	No link has the same effect as linking pins 1 to 2 (disable writes).



Note: Pin 1 is identified by a chamfered corner on the connector's white rectangle and by a square solder pad on the other side of the card.

External monitoring

When fitted in a BC100 or BC160 frame, the BC862 reports its status as follows.

BC100/BC160 Frame Panel LEDs:

Ch A: green = 1 Gbps data rate detected at either RJ45 port.
off = 10/100 Mbps detected or no connection at both RJ45 ports.
(same as card panel's "TP" LED)

Ch B: green = 1000base-X selected for fibre.
off = 100base-FX selected for fibre.
(same as card panel's "FO" LED)

Monitoring via webpages: (if frame has a BM102 card fitted)

"Overview" webpage:
CH A LED: green = The BC862 always shows green.

CH B LED: green = The BC862 always shows green.

"Frame Information" webpage:
ch A signal: good = The BC862 always reports ch A as good.

ch B signal: good = The BC862 always reports ch B as good.

Monitoring via SNMP: (if frame has a BM102 card fitted)

CH A Sig: good = The BC862 always reports ch A as good.

CH B Sig: good = The BC862 always reports ch B as good.

BC862M/2	Multimode Dual Fibre 10/1001000BaseT Ethernet to 1000Base-LX Fibre Converter Card. Dual Port.
BC862S/2/13/LH	Singlemode Dual Fibre 10/100/1000BaseT Ethernet to 1000Base-EX Fibre Converter Card (1310nm) 40km Long Haul Transceiver. Dual Port.
BC862S/2/CWDM/xx/WB	Singlemode Dual Fibre 10/100/1000BaseT Ethernet to 1000Base-EX Fibre Converter Card (CWDM). CWDM 40km Long Haul Transceiver. Dual Port
BC862S/13/15	Singlemode Single Fibre 10/100/1000BaseT Ethernet to 1000Base-LX10 Fibre Converter Cards (1310nm). Dual Port. Used in conjunction with BC860/S/15/13 as a matched pair.
BC862S/15/13	Singlemode Single Fibre 10/100/1000BaseT Ethernet to 1000Base-LX10 Fibre Converter Cards (1550nm). Dual Port. Used in conjunction with BC860/S/13/15 as a matched pair.

All SFPs supplied by Bluebell will have LC connectors.

SFP Options

SFPs fitted to these modules must have the following characteristics:
• The SFP must be a transceiver.
• SFPs can be either MSA or non-MSA pinout: the card's jumper links must be set accordingly (see 'Configuration' section)

A list of categorized SFPs can be found at: http://bluebellcomms.co.uk/sfps/

Customers choosing their own SFPs do so at their own risk.