OPERATIONS MANUAL

For

BC100

3U Card Frame

Unit 2, The Quadrant, Howarth Road, Maidenhead, Berkshire, SL6 1AP United Kingdom
Tel: +44 (0)1628 510055 Fax: +44 (0)1628 510057 Email: sales@bluebell.tv Website: www.bluebell.tv

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions
2. Keep these instructions
3. Heed all warnings
4. Follow all instructions
5. Do not use this apparatus near water
6. Clean only with a dry cloth
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12.  Only use with the cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

It is important that the apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases shall be placed on the apparatus.

- To avoid overheating, do not install this apparatus in direct sunlight.
- Do not expose this apparatus to drips or splashes.
- Do not place any objects filled with liquids on the apparatus.
- Do not install this apparatus in a confined space such as a bookcase or similar unit.
- Please ensure adequate space around the apparatus for sufficient ventilation. Ventilation should not be impeded by covering the ventilation openings with any items.
- The apparatus should be located close enough to an AC outlet so that you can easily grasp the power cord plug at any time.
- An apparatus with Class 1 construction shall be connected to an AC outlet with a protective grounding connection.
- No naked flames, such as lighted candles, should be placed on the apparatus.

IMPORTANT SAFETY PRECAUTIONS

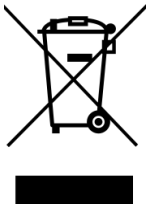
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER- SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within equilateral triangle, is intended to alert the user to the presence of an uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating instructions and maintenance (servicing) instructions in the literature accompanying the appliance.

ENVIRONMENTAL RATING: IP50
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Contents	BC100



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.

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Maidenhead
Berkshire
SL6 1AP
United Kingdom

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Fax: +44 (0)1628 510057
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Website: www.bluebell.tv

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Description	BC100

The BC100 is a 19” 3RU frame for Bluebell BC series cards; it can hold up to 15 single-slot cards. Any of the standard cards can be fitted and mixed within a frame. Some BC Series cards have dual channels allowing up to 30 video signals to be transmitted or received from a single 3RU frame.

Frame Versions
Note that this guide is for the later frames with the internal 2-row, 64-pin SKT16 that can take the BM102 monitoring card.

For information on the earlier frame, with the internal 3-row, 48-pin SKT16 that can take the BM100 or BM101 monitoring cards, please see the manual: BC100-OpsTechMan-Issue1.pdf

Monitor Panel
The front panel’s “LINK STATUS” area displays information derived from each card position. There are two LEDs for each card slot, one each for channels A and B.

LED OFF	No card / channel present
LED GREEN	Signal O.K.
LED RED	Signal missing or error

Remote Monitoring
Signal and card monitoring is achieved via an optional monitoring card fitted to slot 16 of the BC100 frame. The BM102 network card monitors the status of the power supplies and the channel A and B status and other diagnostic data from each card. It can then report this data over Ethernet via its internal webpages and to a third party SNMP management system. Note that if a BM102 card is fitted, the PSU relay signals on the ALARM connector on the rear panel should not be used.

Power Supplies
The frame can be powered from a single plug-in Power Supply Unit (PSU) or two PSUs that power share to provide dual redundancy and the ability to 'hot swap' on air. PSUs are available in 65W or 100W versions. Separate IEC power inlets are provided for each PSU.

Each PSU has an alarm output, in the form of a relay contact which is normally closed and opens on failure, available on a 9-pin 'ALARM' connector at the rear of the frame. However, these contact signals are also sent to slot 16 and so if a BM102 monitoring card is in place, the ‘ALARM’ connector should not be used.
If a BM102 is not being used, the outputs from each PSU relay can be wired in series and then 'daisy-chained' with outputs from other frames.

Ventilation
As the frame is not normally force cooled it is recommended that there is some vertical spacing between frames to allow for natural convection. The frame temperature can rise to approx. 20ºC above ambient, i.e. about 45ºC. With a low speed fan fitted this would drop to about 10ºC above ambient i.e. about 35ºC.

Ordering Information BC100

Main parts and options:

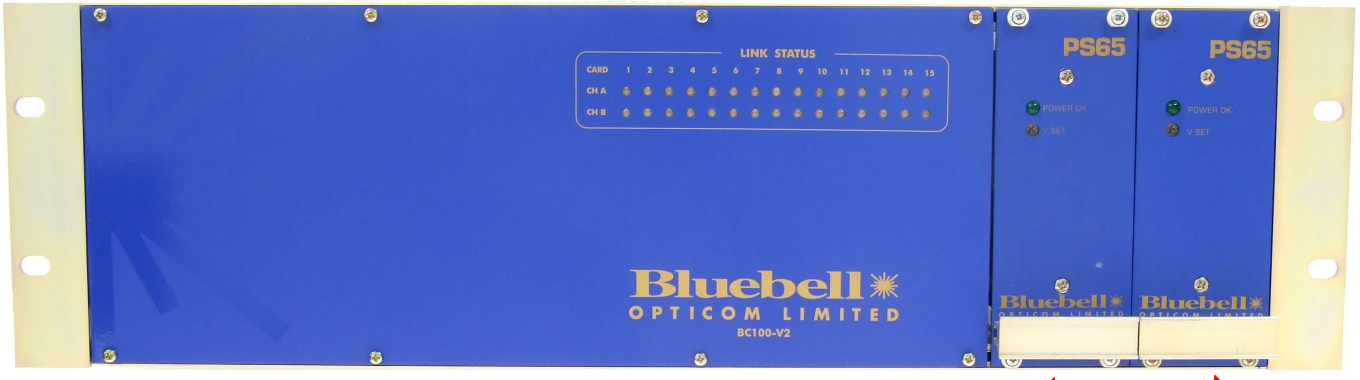
Part Num	Description
BC100	19" 3RU frame for up to 15 BCxxx Cards, with facility for Dual Redundant Power Supplies. (Order PS65 or PS100 power supplies separately) Monitoring card is optional and accessible via dedicated rear slot.
PS65	90-250VAC 65Watt Power Supply for BC100 frame. Two required per frame for redundancy.
PS100	90-250VAC 100Watt Power Supply for BC100 frame. Two required per frame for redundancy.
BC140	Extender Card for BC100 3RU frame
Optical Flight case	Ruggedized aluminium flight case housing a BC100 3RU frame. Any combination of cards, including WDM & CWDM, can be fitted for complete flexibility. Dual mains inputs with forced air cooling and a rugged rear panel is fitted with BNC, XLR and optical connectors as necessary. Contact the UK Sales Office for a written quotation.
BM102	Network Monitoring Card with Ethernet connection. Optional: 1 per frame.

Related products:

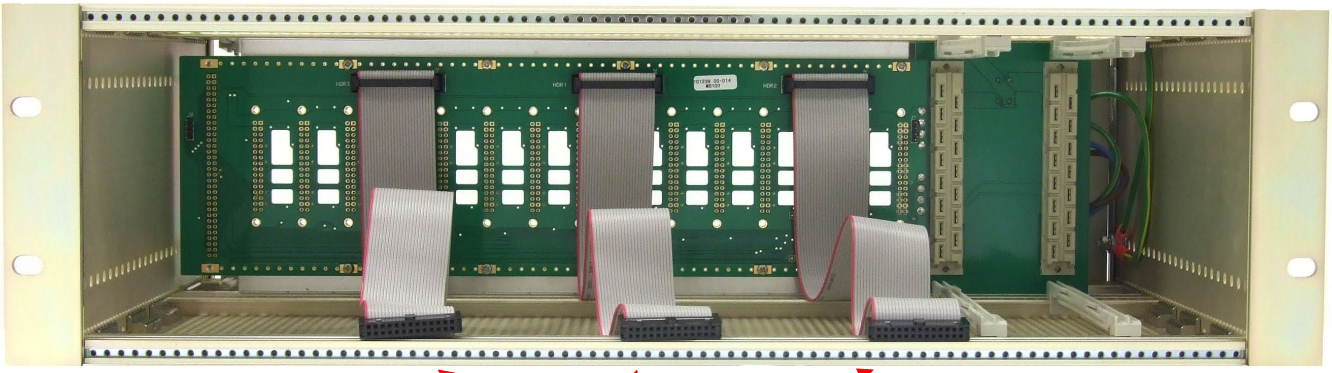
Part Num	Description
BC101	Single Slot Frame for a BCxxx card. Needs external DC Power Supply.
BC102	Double Slot Frame for BCxxx cards. Needs external DC Power Supply.
PS12	10W Plugtop PSU for the BC101/102 Enclosures. Fitted with 4 pin XLR. IEC Mains Leads not supplied
BC120	Triple Slot Frame for BCxxx cards with Universal Mains Power Supply.
BC160	19" 1RU Frame for up to 6 BCxxx cards with optional Network Monitoring. Supplied with Dual Redundant Power Supplies.
BC160P	19" 1RU Frame for up to 6 Passive BCxxx Cards.

Product photos	BC100

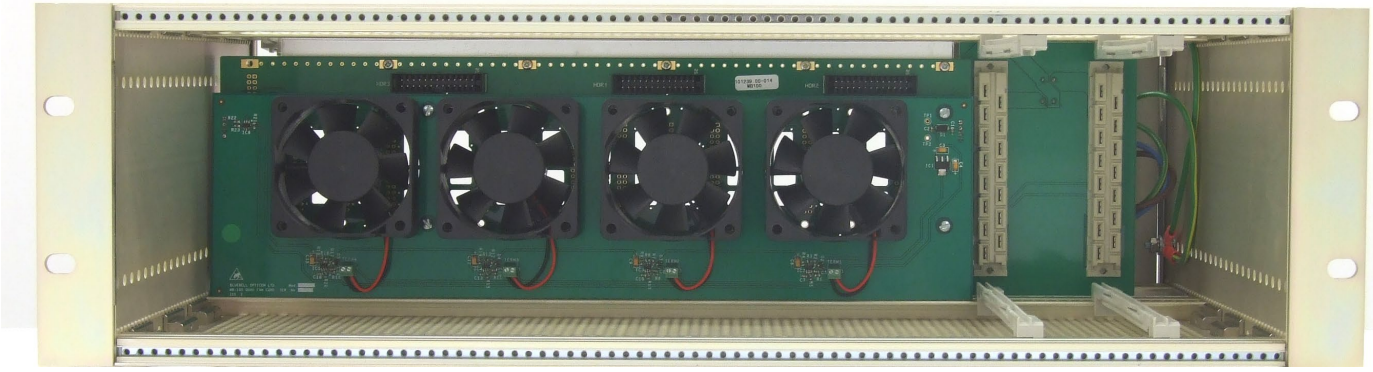
Front view - full

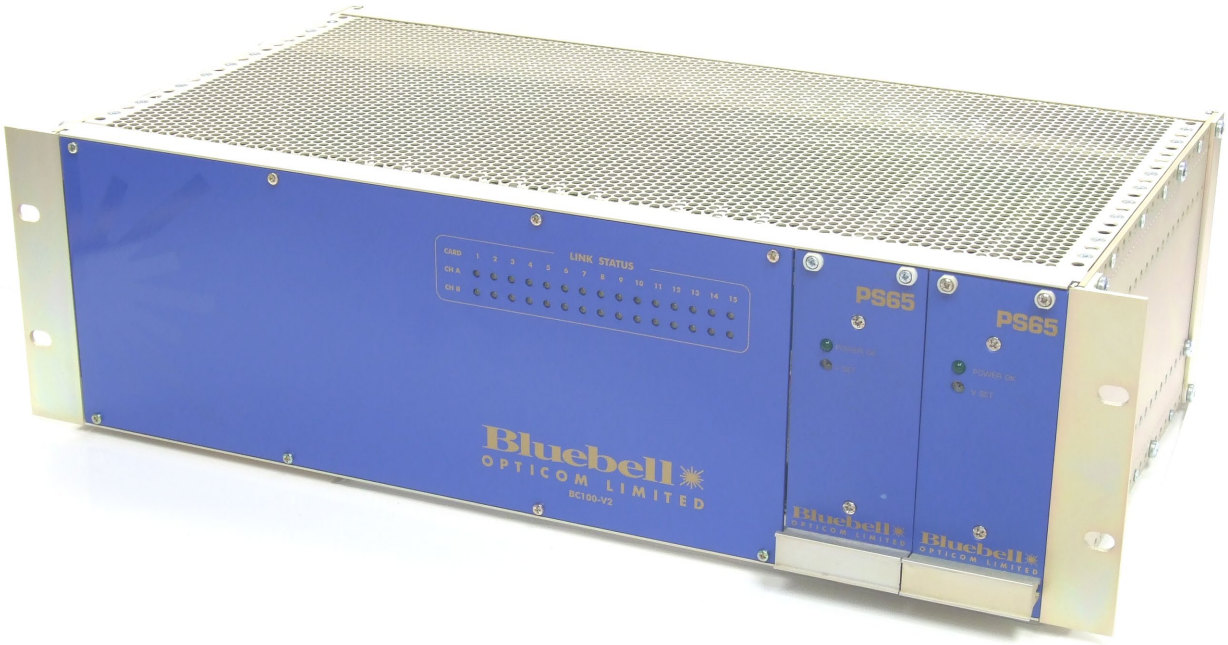


Front view - with front panel and Power Supplies removed

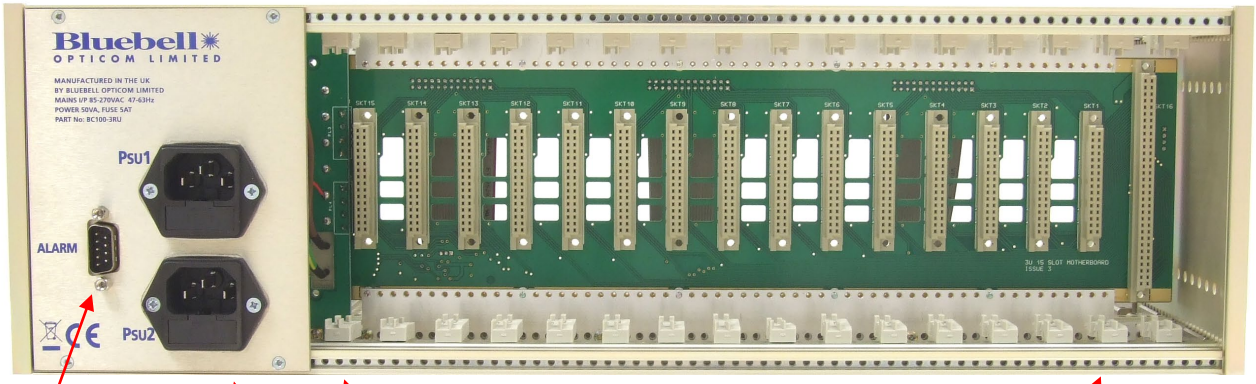


Front view - with fan card option fitted and cables to Display PCB removed





Rear view - no cards fitted



PSU Alarms
(See Connections
Section below)

Slot 15

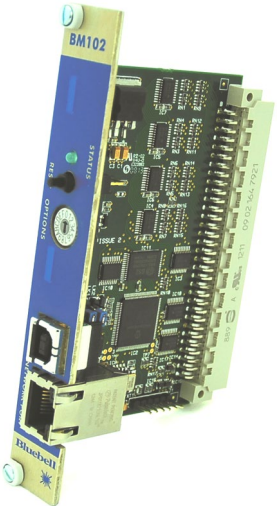
Mains inputs incorporating fuse holders
(Active fuse on left; Spare fuse on right)
See Specifications section for fuse ratings.

Slot 1

Slot 16 for
monitoring card
BM102.

PS65 Power Supply

BM102 Card option



Specification	BC100

General frame specifications

Depth:	250 mm (excluding connectors)
Width:	445 mm
Height:	132.5 mm (3RU)
Weight:	approx 11kg when fully loaded
Operating Temperature:	-30°C to +70°C
Number of slots:	15, plus 1 for monitoring card option
Input Voltage Range:	90 to 250 V ac, 47-63 Hz
Power:	65W and 100W supplies available.
Fuses:	T 5A H 250V cartridge: 20mm long by 5mm dia. (incorporated in mains input connectors)

Alarm connector

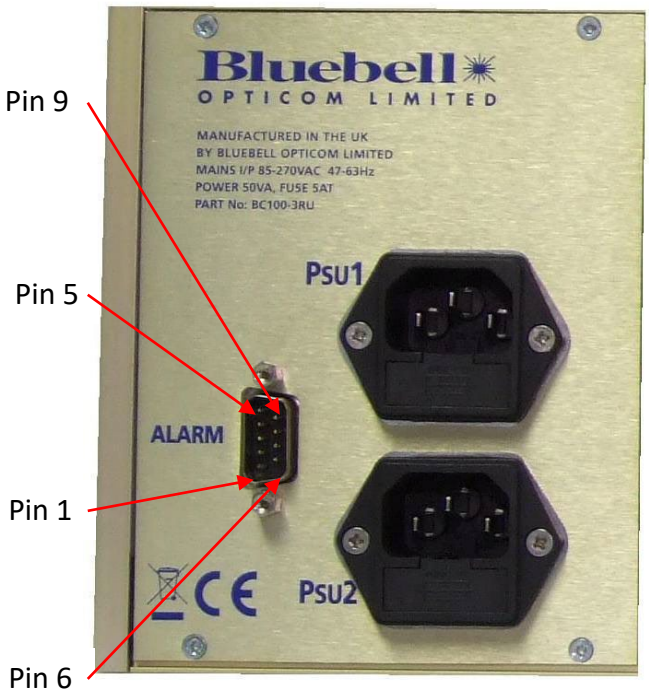
Type of connector:	9-pin 'D' connector (male pins) at the rear of frame
PSU 1 pins:	Pins 1 & 2
PSU 2 pins:	Pins 3 & 4
Error indication:	Closed relay contacts open on PSU failure (Not to be used if a BM102 option card is fitted)
Contact resistance:	0.2ohm max.
Current rating:	0.5A @ 100V

Conformance

EMI/RFI:	Complies with 89/336/EEC, EN55022B, 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
RoHS:	Complies with Directive 2002/95/EC
Warranty:	5 years

”ALARM” 9-pin D-plug (male pins) on rear of frame

Pin 1	PSU1 Relay	closed = power good
Pin 2	Contacts:	open = power fail
Pin 3	PSU2 Relay	closed = power good
Pin 4	Contacts:	open = power fail
Pin 5	No connection	
Pin 6	No connection	
Pin 7	No connection	
Pin 8	No connection	
Pin 9	No connection	



Note:
These contact signals are also sent to slot 16 and so if a BM102 card in slot 16 is being used to monitor the power supplies, the "ALARM" connector should not be used.

If BM102 cards are not being used, these outputs can be wired in series and then 'daisy-chained' with outputs from other frames.

Signal LEDs on front panel:
Green = Good
Red = Fault
Off = No card/signal

"POWER OK" LED on front of PSUs:
Green = Good
Off = No voltage

"V SET"
Output voltage adjust
(Factory use only)