

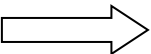
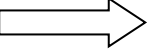


OPERATIONS & TECHNICAL MANUAL

For

BC630T


BC630R

Digital Audio  **Optical**
Optical  **Digital Audio**

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.



EN60950
EN55103-1: 1996
EN55103-2: 1996

Safety
Emission
Immunity

Bluebell Opticom Ltd



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

© 2010-2015 Bluebell Opticom Ltd

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
BC630-Iss-5

Contents	3
Description	4
Specifications	5
Block Diagrams	6
Panel Layouts	7
Connections	8
Settings	9
Remote Monitoring	11
Circuit Description	Error! Bookmark not defined.
Component Layout BC620 base-board	Error! Bookmark not defined.
Component Layout BC460T sub-board	Error! Bookmark not defined.
Component Layout BC630R sub-board	Error! Bookmark not defined.
Parts List BC620 base-board	Error! Bookmark not defined.
Parts List BC460T sub-board	Error! Bookmark not defined.
Parts List BC630R sub-board	Error! Bookmark not defined.



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.

Please note that all documentation herein is of a confidential nature and may not be reproduced without written confirmation from Bluebell Opticom Ltd. The technical descriptions and schematics are to aid service and repair only. Dissemination to a third party or parties will constitute breach of copyright.
Information in this document is subject to change without notice and does not represent a commitment on the part of Bluebell Opticom Ltd.

© 2010- 2015 Bluebell Opticom Ltd
Unit 2, The Quadrant
Howarth Road
Maidenhead
Berkshire
SL6 1AP
United Kingdom

Tel: +44 (0)1628 510055
Fax: +44 (0)1628 510057
Email: support@bluebell.tv
Website: www.bluebell.tv

E&OE January 2015

The BC630T is a transmitter for the transport of digital audio over fibre optic cable with the ability to carry 4 channels of AES/EBU audio. The incoming AES/EBU signals are equalised and re-clocked prior to multiplexing and transmission down a single optical fibre.

The BC630R is a receiver for the conversion of an optical signal into 4 channels of AES/EBU digital audio. The incoming optical signal is fed to a trans-impedance and limiting amplifier before being electrically reclocked onto the 4 AES outputs. Dual AES outputs are available for each channel to provide local monitoring as well as a main transmission feed.

The BC630T module comprises a BC620 base-board and a BC460T audio sub-board. The BC630R module comprises a BC620 base-board and a BC630R audio sub-board.

The BC620 base-board is a digital audio to fibre data transceiver. It is configured as a BC630T or a BC630R by the addition of the appropriate sub-board.

The audio inputs/outputs are via a 26-way HD D type connector on the sub-boards.

Optical input and output are on SFP modules with LC format sockets. Multimode, singlemode, WDM, and CWDM modules can be used. The optical output power (BC630T) and optical input sensitivity (BC630R) are dependent on the chosen module.

The module operates from an input Voltage of +6V at 400mA. (2.4W)

The optical signals are compatible with some other members of the BC6nn family of cards, so that for example:

A BC630T card can be used with a BC620R unit allowing 4 AES inputs to feed line level analogue outputs.

A BC630R card can be used with a BC620T unit allowing 4 line level analogue inputs to feed digital audio AES outputs.

The BC630T,R cards occupy a single slot in the BC100 or BC160 19" rack-mounting frames. Signal and card monitoring is achieved with a BM102 network card, which provides webpage access to the card information and SNMP monitoring.

Smaller enclosures, BC101, BC102, BC120 are available to house 1, 2, or 3 cards but without remote monitoring.

This manual is based on the issue 3 version of the BC620 base-board, which introduced extra remote monitoring features when used with a BM102 card in the same frame.

General

Depth	74mm including connectors
Width	20mm (4HP)
Height	129mm (3RU)
Weight	120g
Power Supply	6V DC
Power consumption	2.4W
Current consumption	400 mA
Operating temperature	-30 to +70°C

Audio

Digital audio input/output	4 x AES
Audio connector	26 way female High density "D" type
Impedance	110 Ohm
Format	AES 48KHz AES3-1992

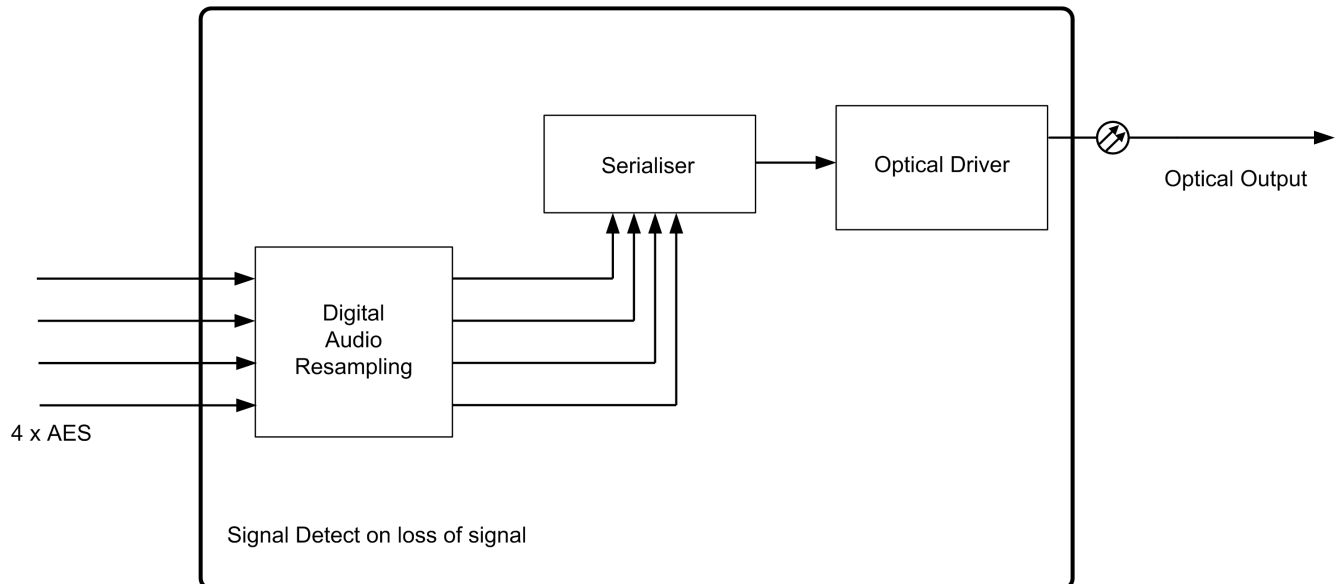
Optical

Connector	Female LC
Receiver sensitivity	-30dBm@100Mb/s (typical)
Transmitter power	-2 dBm @ 1310 nm (typical) -2 dBm @ 1510 nm (typical) 0 dBm @ CWDM (typical)

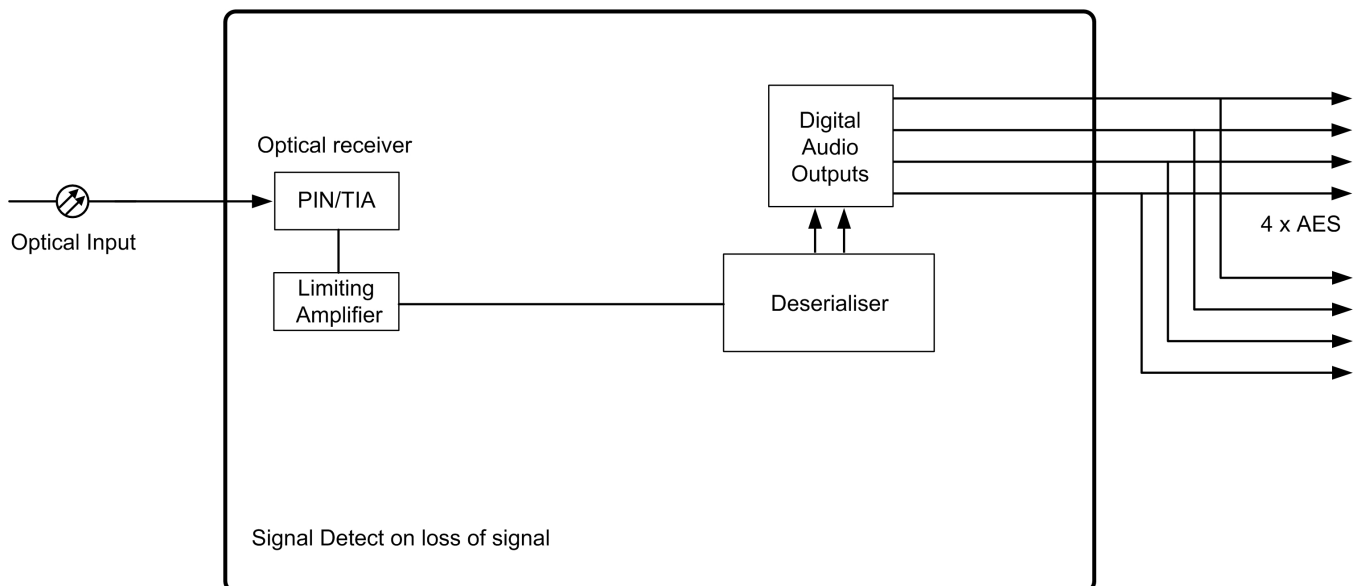
Conformances

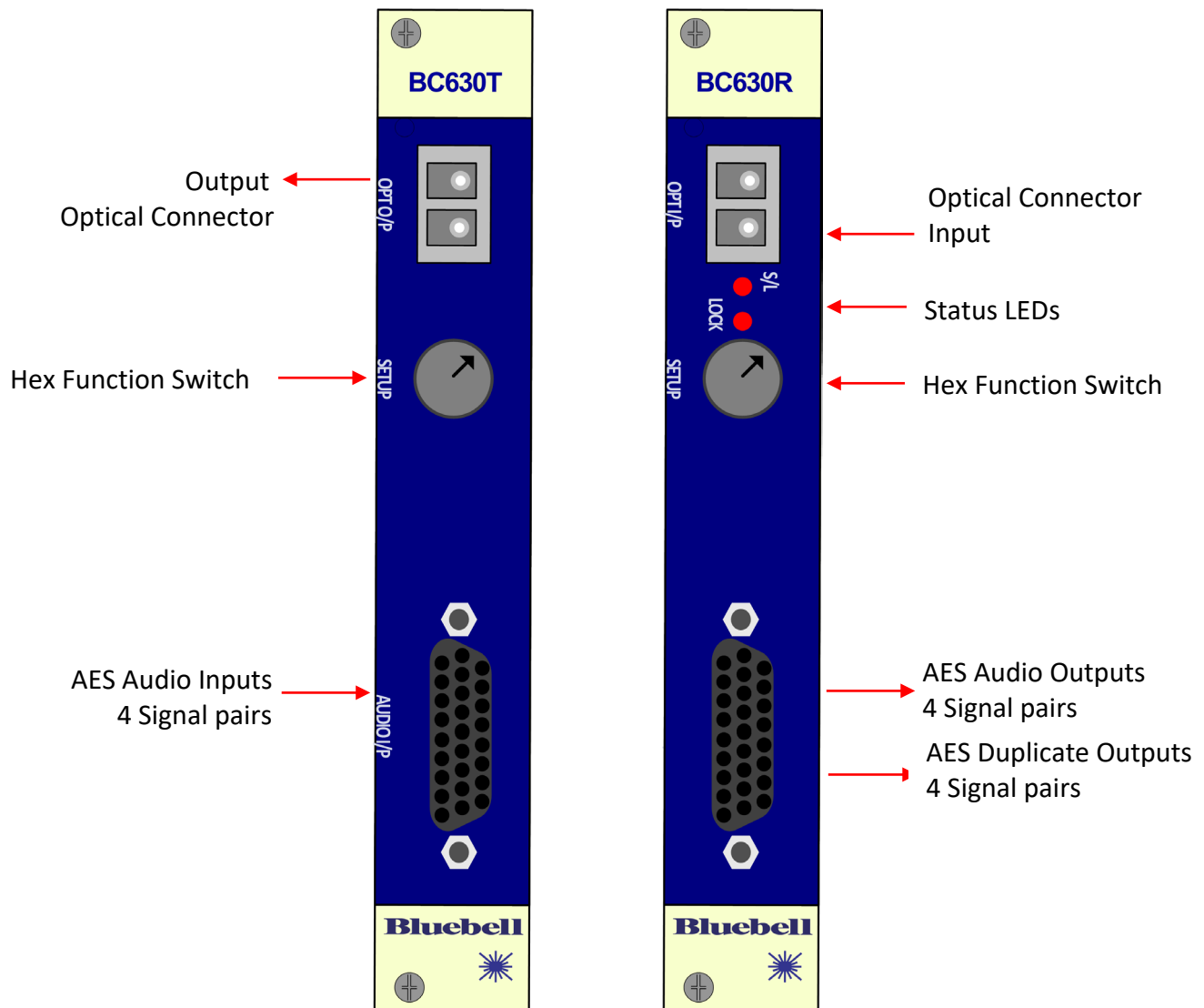
EMI/RFI:	Complies with 89/336/EEC, EN55022B, EN61000-4-2, EN61000-4-4-(Level 2), EN61000-4-4FTB, EN61000-4-5, EN61000-4-11
Electrical:	Complies with EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4
Laser Safety:	Dependent on SFP fitted.
RoHS:	Complies with Directive 2002/95/EC

BC630T block diagram



BC630R block diagram





Status LEDs:

"S/L" (Signal Loss)

off = SFP is detecting light at its input
red = SFP reports low light level at its input.

"LOCK"

off = card has locked to fibre input signal
red = card has NOT locked to fibre input signal



BC630 Audio input / output connector

BC630T

Audio input connections:

1	AES channel A +	10	AES channel A Ground	19	AES channel A -
2	AES channel B +	11	AES channel B Ground	20	AES channel B -
3	AES channel C +	12	AES channel C Ground	21	AES channel C -
4	AES channel D +	13	AES channel D Ground	22	AES channel D -
5	No connection	14	No connection	23	Ground
6	No connection	15	No connection	24	Ground
7	No connection	16	No connection	25	Ground
8	No connection	17	No connection	26	Ground
9	Ground	18	Ground		

BC630R

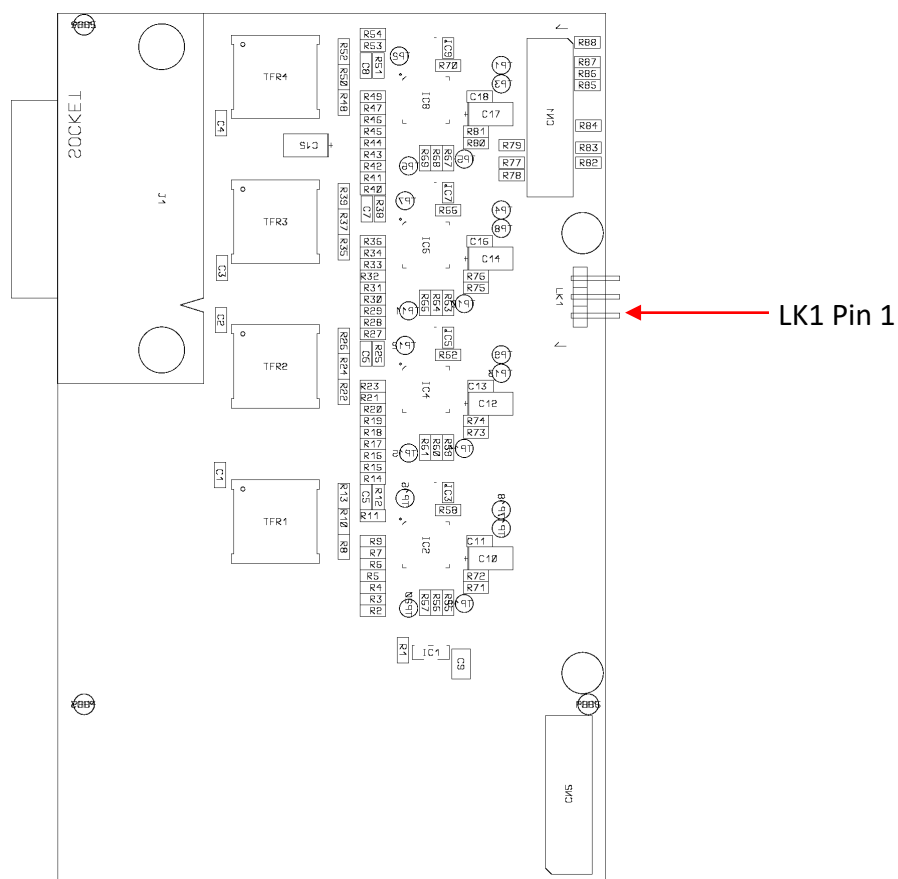
Audio output connections:

Note that pins 5-8 and 23-26 carry re-buffered versions of the top 4 AES channels.

1	AES channel A +	10	AES channel A Ground	19	AES channel A -
2	AES channel B +	11	AES channel B Ground	20	AES channel B -
3	AES channel C +	12	AES channel C Ground	21	AES channel C -
4	AES channel D +	13	AES channel D Ground	22	AES channel D -
5	AES channel A +	14	AES channel A Ground	23	AES channel A -
6	AES channel B +	15	AES channel B Ground	24	AES channel B -
7	AES channel C +	16	AES channel C Ground	25	AES channel C -
8	AES channel D +	17	AES channel D Ground	26	AES channel D -
9	Ground	18	Ground		

BC460T Sub-board (BC630T)

	Link	to Link	
LK1	Pin 1	Pin 2	Reclocking mode (Default setting)
	Pin 2	Pin 3	Bypass re-clocking - Not used



Note that on the PCB itself, Pin 1 of LK1 is indicated by having a square solder pad.

BC630R Sub-board (BC630R)

There are no links or adjustments on the BC630R sub-board

Card Front Panel LEDs:

	BC630T	BC630R
	No LEDs	"S/L" LED: off = SFP is detecting light at its input red = SFP reports low light level at its input
	No LEDs	"LOCK" LED: off = card has locked to fibre input signal red = card has NOT locked to fibre input signal

When fitted in a BC100 or BC160 frame, the Frame Panel LEDs report the following:

	BC630T	BC630R
Ch A:	off = Always (no error reporting on BC630T)	green = SFP is detecting light at its input red = SFP reports low light level at its input (same report as card's "S/L" LED)
Ch B:	off = Always (no error reporting on BC630T)	green = card has locked to fibre input signal red = card has NOT locked to fibre input signal (same report as card's "LOCK" LED)

When fitted in a frame with a BM102 card, monitoring over ethernet reports as follows:

"Overview" webpage:

	BC630T	BC630R
CH A LED:	off = Always (no error reporting on BC630T)	green = SFP is detecting light at its input red = SFP reports low light level at its input (same report as card's "S/L" LED)
CH B LED:	off = Always (no error reporting on BC630T)	green = card has locked to fibre input signal red = card has NOT locked to fibre input signal (same report as card's "LOCK" LED)

"Frame Information" webpage and SNMP monitoring:

	BC630T	BC630R
ch A signal:	good = Always (no error reporting on BC630T)	good = SFP is detecting light at its input fail = SFP reports low light level at its input (same report as card's "S/L" LED)
ch B signal:	good = Always (no error reporting on BC630T)	good = card has locked to fibre input signal fail = card is NOT locked to fibre input signal (same report as card's "LOCK" LED)

The "Frame Information" webpage and SNMP monitoring also provide additional status information for the card (such as serial number, pcb revision, etc.) and status and diagnostic information from the SFP (such as manufacturer, part number, temperature, optical power etc.).



**Bluebell Opticom Limited,
Unit 2 The Quadrant,
Howarth Rd,
Maidenhead,
Berks,
SL6 1AP, UK
Tel: +44 (0) 1628 510055,
Email: sales@bluebell.tv
Website: www.bluebell.tv**