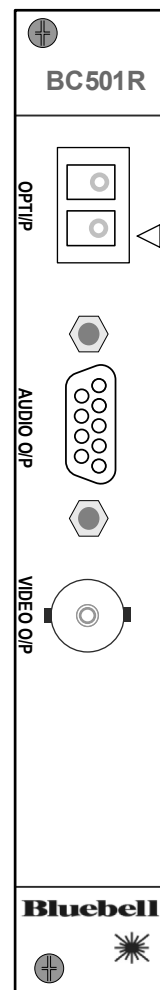
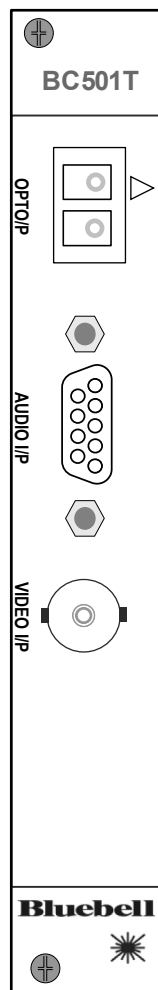


BC501 Series Fibre video interfaces



Operation Guide

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Declaration of Conformities

The components of the Bluebell Opticom BC501 Fibre-optic Transmission System comply with the essential requirements of the following EU directives, where appropriate:

89/336/EEC, EN61000-6-3, EN61000-6-4, EN55022B, EN61000-6-1, EN61000-6-2, EN61000-4-11, EN61000-4-4 (Level 2), EN61000-4-4FTB, EN61000-4-2 and EN61000-4-5.

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Bluebell Opticom Ltd. complies with EU RoSH Directive 2002/95/EC, which restricts the use of substances hazardous to humans and their environment in the manufacture of electrical and electronic equipment.

The “crossed out wheellie bin” symbol on the enclosures and represented above is there to remind users of the obligation of selective collection of waste. This label is applied to various products to indicate that the product is not to be thrown away as unsorted municipal waste. At the end of life, dispose of this product by returning it to the point of sale or to your local municipal collection point for recycling of electric and electronic devices.

Customer participation is important to minimize the potential effects on the environment and human health that can result from hazardous substances that may be contained in this product. Please dispose of this product and its packaging in accordance with local and national disposal regulations, including those governing the recovery and recycling of waste electrical and electronic equipment. Contact your local waste administration, waste collection company or dealer.

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Overview

Thank you for purchasing this Bluebell Opticom professional broadcast video product. If you are new to Bluebell products, or to the subject of transmitting video and/or other types of signal over fibre links, please take the time to read through this document before putting the BC501 to use.

Introduction

The BC501T and BC501R plug-in cards belong to the range of the Bluebell Opticom BC Series modular fibre interfaces, designed primarily for Outside Broadcast (OB) and studio applications. They allow the unidirectional transport of a composite video signal and two analogue audio signals between two locations remote from each other over a single fibre-optic fibre link. BC501 links are also ideal for transporting a genlock signal, and/or timecode (as an audio signal) within a facility.

The cards are used in pairs; the BC501T has audio/video inputs and multiplexes the signals onto a single optical carrier wavelength for transmission; the BC501R receives the optical signal and provides the audio and video signals as outputs.

Physical formats

The BC501 cards fit the Bluebell BC100 or BC160 19" modular rack enclosures. The racks can house six (BC160) or fifteen (BC100) interface cards, and are fitted with dual internal AC power supplies.

Alternatively, cards may be fitted into smaller aluminium chassis; the BC101 and BC102 hold one and two cards respectively and require an external DC power source, while the BC120 holds three cards and has an integral mains PSU.

All plug-in cards are fitted with cartridge-style SFP dual fibre modules. Single-mode operation will normally be at 1310 nm or 1550 nm; alternative CWDM grid wavelengths are also possible. The optical option must be specified at the time of order.

Power requirements

Power supply requirements are dictated by the enclosure type used.

BC-100 modular rack units:

These may be fitted with either one or two AC mains PSU modules (number specified at time of order). Each module has sufficient capacity to power a fully-loaded rack. The AC connection is via standard IEC cables, DC power distribution inside the rack is via the motherboard. See the Operation Guide supplied with the rack units for more details.

BC-160 modular rack units:

These are fitted as standard with dual internal AC mains power supplies, each of sufficient capacity to power a fully-loaded rack. The AC connection is via standard IEC cables, DC power distribution inside the rack is via the motherboard. See the Operation Guide supplied with the rack units for more details.

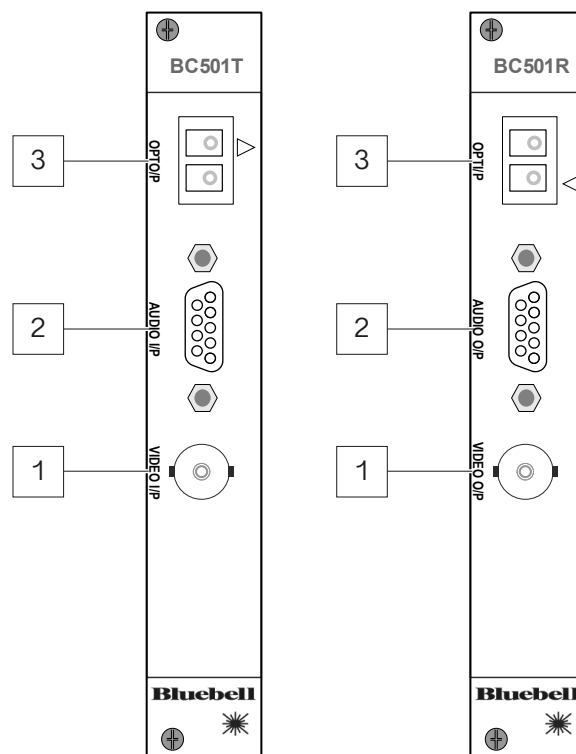
BC101 and BC102 single- and dual-slot chassis:

These are supplied with an external Universal AC adaptor which connects to the chassis via a flying lead terminated in a 4-pin locking XLR connector. Mains is via an IEC connector.

BC120 triple-slot chassis:

This housing for three plug-in cards is fitted with an internal AC mains supply; mains connection is via a rear IEC connector.

BC501 connections

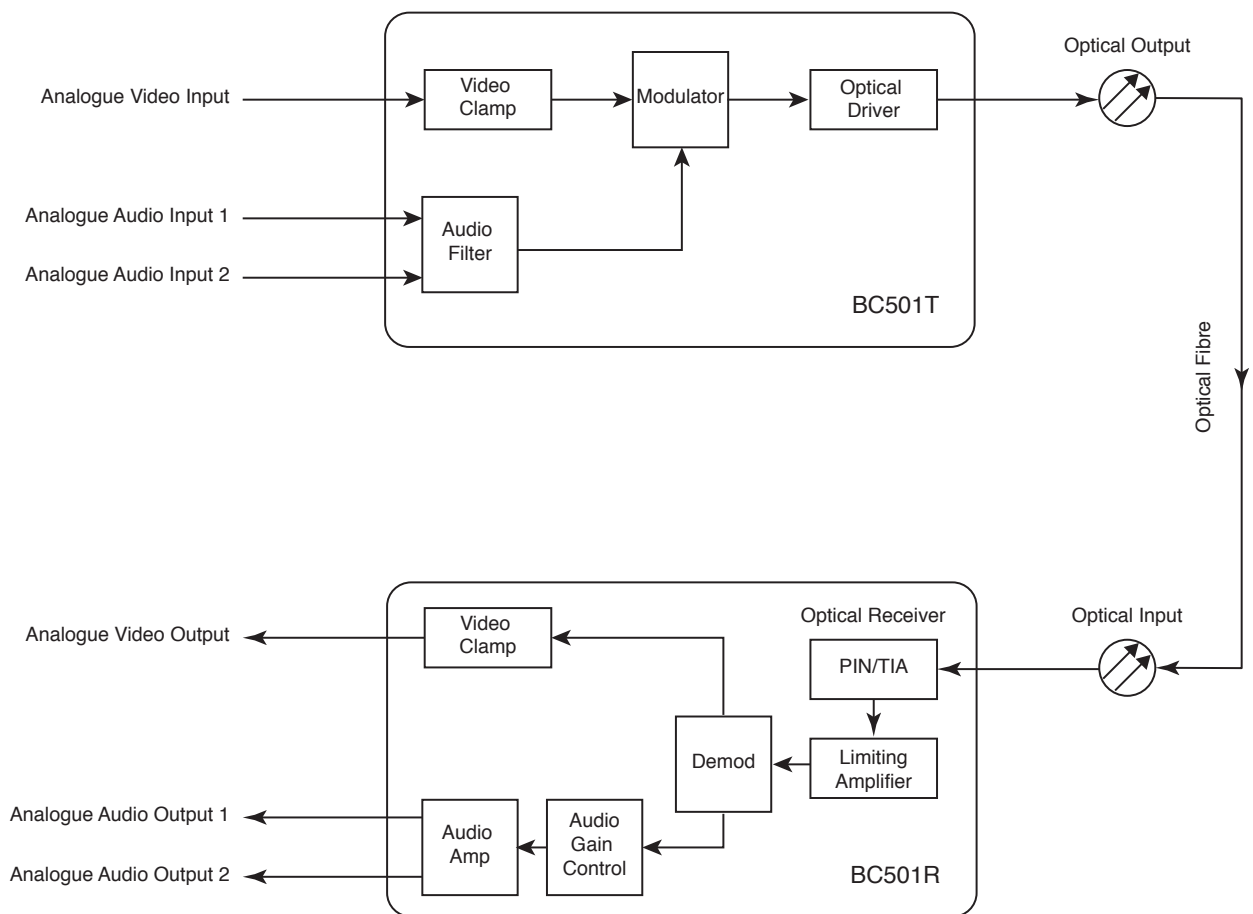


- VIDEO IN/OUT** - standard 75 ohm BNC connector for 1V pk-pk composite video, PAL/SECAM/NTSC compatible.
- AUDIO IN/OUT** - D9F Connector for two balanced audio channels. Wire the mating connector to the pinout below:

PIN	BC501T	BC501R
1	Left input +	Left output +
2	Left input -	Left output -
3	Gnd	Gnd
4	Right input +	Right output +
5	Right input -	Right output -
6	Left input Gnd	Left output Gnd
7	n/c	n/c
8	n/c	n/c
9	Right input Gnd	Right output Gnd

- OPTICAL I/O** - SFP dual fibre connector. The connector is mounted on a removable cartridge. The BC501T uses single-mode fibre as standard, at a wavelength of 1310 nm; alternative CWDM wavelengths or multi-mode operation are available if specified at the time of order. The BC501R optical receiver element is wideband; both single-mode and multi-mode versions are available. As the cards are unidirectional, only one of the fibre ports on each SFP is active. Where a dual fibre SFP transceiver is fitted, only the upper port is active on the BC501T, and only the lower port is active on the BC501R. This is indicated by a triangular arrow on each panel. Where a single fibre SFP transceiver is fitted, use the available port and ignore the triangular arrows.

System block diagram



A BC501 system uses a single-wavelength optical signal over fibre to provide a robust long-distance interconnection between two widely-separated locations. The interconnection carries a multiplex of composite video and two channels of analogue audio.

Appendix

Specifications - BC501

	BC501T	BC501R
Video Input & Output		
Connector	75 ohm BNC	
Standards supported	PAL, PAL/M, PAL/N, SECAM, NTSC	
Differential phase	< 0.6°	
Differential gain	< 0.6%	
Audio Input & Output		
Format	2 x balanced line level analogue audio	
Connector	D9F	
Max. level	+18 dBu input	+18 dBu output
Frequency response	20 Hz to 20 kHz ±0.25 dB	
Optical Output & Input		
Physical	SFP Module	
Connector	Dual LC	
Wavelength	1310 nm single-mode or 850 nm multi-mode. User-specified CWDM wavelengths (see table below) are also available	Wideband receiver 1260 nm – 1610 nm
Optical Power	-2 dBm @ 1310/1510 nm (typical)	
Sensitivity		SFP-dependent
Max. input power		SFP-dependent
Conformities		
EMI/RFI	Complies with 89/336/EEC	
Electrical	Complies with EN 61000-6-1, EN61000-6-2	
Laser Safety	Complies with Class 1 laser product 24 CFR 1040.10 & 1040.11	
RoHS	Complies with Directive 2002/95/EC	
Physical		
Depth	87 mm (inc. connectors)	
Width	20 mm (6TE)	
Height	129 mm (3RU)	
Weight	100 g	
Operating Temp	-30°C to +70°C	
Power	2.0 W	2.4 W

Optical wavelengths

BC501 Series plug-in cards are fitted with a removable SFP transceiver cartridge. These have a standard transmission wavelength of 1310 nm, however the wavelength may be specified at the time of ordering to be any of the standard CWDM wavelengths. Cartridges are field-interchangeable. All receivers are wideband.

Part Ref.	Transmitter	Receiver
Standard wavelengths:		
DTR/M/SFP	Multimode dual fibre SFP transceiver, 850nm	Wideband
DTR/S/SFP	Single mode dual fibre 40 km SFP transceiver, 1310 nm	
DTR/S/WDM/13/SFP	Single mode single fibre 10 km SFP transceiver, 1310 nm	
DTR/S/WDM/15/SFP	Single mode single fibre 10 km SFP transceiver, 1550 nm	
CWDM wavelengths:		
DTR/S/SFP/CWDM/27	Single mode, single channel CWDM SFP transmitter, 1270nm	Wideband
DTR/S/SFP/CWDM/29	Single mode, single channel CWDM SFP transmitter, 1290nm	
DTR/S/SFP/CWDM/31	Single mode, single channel CWDM SFP transmitter, 1310nm	
DTR/S/SFP/CWDM/33	Single mode, single channel CWDM SFP transmitter, 1330nm	
DTR/S/SFP/CWDM/35	Single mode, single channel CWDM SFP transmitter, 1350nm	
DTR/S/SFP/CWDM/37	Single mode, single channel CWDM SFP transmitter, 1370nm	
DTR/S/SFP/CWDM/39	Single mode, single channel CWDM SFP transmitter, 1390nm	
DTR/S/SFP/CWDM/41	Single mode, single channel CWDM SFP transmitter, 1410nm	
DTR/S/SFP/CWDM/47	Single mode, single channel CWDM SFP transmitter, 1470nm	
DTR/S/SFP/CWDM/49	Single mode, single channel CWDM SFP transmitter, 1490nm	
DTR/S/SFP/CWDM/51	Single mode, single channel CWDM SFP transmitter, 1510nm	
DTR/S/SFP/CWDM/53	Single mode, single channel CWDM SFP transmitter, 1530nm	
DTR/S/SFP/CWDM/55	Single mode, single channel CWDM SFP transmitter, 1550nm	
DTR/S/SFP/CWDM/57	Single mode, single channel CWDM SFP transmitter, 1570nm	
DTR/S/SFP/CWDM/59	Single mode, single channel CWDM SFP transmitter, 1590nm	
DTR/S/SFP/CWDM/61	Single mode, single channel CWDM SFP transmitter, 1610nm	