

Industrial Serial to Fiber Optic Converters

Models BB-FOSTCDRI, BB-FOSTCDRI-INV

ADVANTECH

www.advantech.com



FEATURES

- Converts serial data signals to multi-mode ST fiber
- 2000V 3-way optical isolation (input/output/power); EMI/RFI protection
- Data rate: up to 115.2 kbps
- Wide operating temperature: -40 to +80 °C
- DIN mount, IP20 plastic case
- UL Class 1 / Division 2
- Modbus ASCII/RTU compatible
- 10–48 VDC power source required (not included, sold separately)
- Inverted fiber state option (Model# BB-FOSTCDRI-INV)

Model BB-FOSTCDRI is a premium industrial serial to multi-mode fiber optic converter. Its rugged design is UL Approved and certified for Class 1/Division 2 industrial environments. It extends data communications up to 4 km (2.5 mi). It provides three-way optical isolation on the input, output and power lines.

In addition to direct point-to-point connectivity, it is capable of operating in a multi-drop mode. This allows one serial device to communicate with up to 31 other devices around a fiber ring. Since it supports mixed standards, you can replace other converters and isolators and add the EMI / RFI protection inherent to fiber optic communications.

In RS-232 mode, the converter supports Transmit and Receive data. Handshaking signals are not passed through. An Automatic Send Data Control circuit controls the RS-422/485 driver chip, eliminating the requirement for external software.

Easy to install and configure, it has a 12-position DIP switch on the bottom to configure RS-422/485 parameters. Serial data and power cables connect to removable terminal blocks. ST connectors are used for the fiber.

A 10-30 VDC external power source is required (power supply not included, sold separately).

Model BB-FOSTCDRI-INV features an “inverted fiber state” and is suitable for applications requiring the fiber optic transmit light to be Off in the idle state.

ORDERING INFORMATION

| MODEL NUMBER | SERIAL CONNECTOR | FIBER CONNECTOR | ISOLATION |
|-------------------|------------------|-----------------|-----------|
| BB-FOSTCDRI | Terminal Block | Multi-mode ST | 2000 V |
| BB-FOSTCDRI-INV * | Terminal Block | Multi-mode ST | 2000 V |

* Inverted fiber state – fiber is Off in the idle state.

ACCESSORIES - sold separately

BB-MDR-40-24 - 24 VDC, 1A, slim-line DIN rail power supply

BB-TBKT1 - Replacement Terminal Block - 2-position, 5.08mm, 8A, 30

BB-TBKT2 - Replacement Terminal Block - 5-position, 5.08mm, 8A, 30

What is the difference between Model BB-FOSTCDRI and Model BB-FOSTCDRI-INV?

Model BB-FOSTCDRI keeps the light in the fiber turned On when no data is transmitted and the input signal is in the MARK state (idle). If light is lost or too low, the electrical signals go to the SPACE state. The input signal turns the light Off/On in step with the data. This model has an indicator for Transmit and Receive, if no light is received, the RD LED will come on, the RD output will be positive relative to GND (normally negative), and in RS-422 or RS-485 mode, no light will set the TD(A)- line high relative to TD(B)+. The usual voltage with light in the fiber and no signal sets the B line high relative to A (about 4.4 Volts DC no termination).

Model BB-FOSTCDRI-INV is the opposite. The fiber is Off in the idle state.

All product specifications are subject to change without notice.
BB-FOSTCDRI, BB-FOSTCDRI-INV_1220ds

ADVANTECH

Advantech B+B SmartWorx, 707 Dayton Road, PO Box 1040 Ottawa, IL 61350 USA 1 (800)346-3119/Toll Free | orders@advantech-bb.com | support@advantech-bb.com

Industrial Serial to Fiber Optic Converters

Models BB-FOSTCDRI, BB-FOSTCDRI-INV



SPECIFICATIONS

| SERIAL TECHNOLOGY | |
|-----------------------------|--|
| Data Rate | 9.6 to 115.2 kbps |
| RS-232 | |
| Connector | Removable terminal block, 5-position |
| Signals | TD, RD, GND |
| RS-422/485 | |
| Connector | 5-position, removable terminal block |
| RS-485, 2-wire | Data A(-), Data B(+), GND |
| RS-422/485, 4-wire | TDA(-), TDB(+), RDA(-), RDB(+), GND |
| Bias | Built-in, switchable, 1.2K Ω |
| Termination | Built-in, switchable, 120 Ω |
| ISOLATION | |
| Rating | 2kV RMS, 1 minute |
| Surge Protection | 600 W peak power dissipation |
| Clamping Time | < 1 pico-second |
| Lines Protected | 3 (input, output, power) |
| Method | Optical |
| FIBER OPTIC TECHNOLOGY | |
| Type / Wavelength | Multi-mode / 820 nm |
| Output Power | -16dBm minimum, -12dBm typical, -9dBm maximum |
| Receive Sensitivity | -24dBm minimum, -25.4dBm maximum |
| Cable | 62.5/125 micro-meter |
| Connector | ST |
| Data Rate | 9.6 to 115.2 kbps |
| Maximum Distance | 4 km (2.5 mi) |
| Idle State, BB-FOSTCDRI | Transmitter light ON |
| Idle State, BB-FOSTCDRI-INV | Transmitter light OFF |
| INDUSTRIAL BUS | |
| Modbus | ASCII/RTU |
| POWER | |
| Source | External, required (not included, sold separately) |
| Input Voltage | 10 to 48 VDC (56 VDC maximum) |
| Consumption | 0.5 W (typical), 1.3W (with termination) |
| Connector | 2-position, removable terminal block, 24 to 14 AWG |

| TERMINAL BLOCKS | |
|---|--|
| Wire Size Accepted | 28 to 12 AWG |
| Pitch | 5.08 mm |
| Insulation Resistance | \geq 500 M Ω @ 500 VDC |
| Maximum Torque | 5 kg / cm |
| LED INDICATORS | |
| Power | Red LED |
| FO Receive | Red LED |
| FO Transmit | Red LED |
| MECHANICAL | |
| Dimensions | 12.3 x 11.3 x 3.2 cm |
| Enclosure | IP 20 plastic, 35 mm DIN mount |
| Weight | 199.6 gm |
| ENVIRONMENTAL | |
| Operating Temperature | -40 to +80 $^{\circ}$ C |
| Storage Temperature | -40 to +85 $^{\circ}$ C |
| Operating Humidity | 0 to 95% non-condensing |
| MEANTIME BEFORE FAILURE (MTBF) | |
| MTBF | 138904 hours |
| MTBF Calculation Method | MIL 217F Parts Count Reliability Prediction |
| APPROVALS, DIRECTIVES, STANDARDS | |
| FCC Part 15, CE UL Class1/Division2, Groups A, B, C, D | |
| Directives | 2014/30/EU - Electromagnetic Compatibility Directive 2011/65/EU amended by (EU) 2015/863 Reduction of Hazardous Substances Directive (RoHS) 2012/19/EU - Waste Electrical and Electronic Equipment (WEEE) |
| Standards | EN 55032 Class B - Electromagnetic compatibility of multimedia equipment - Emission requirements EN 55024 - Information technology equipment - Immunity characteristics - Limits and methods of measurement EN 61000-6-3 A1 - Generic emission standard for residential, commercial and light-industrial environments (Class B) EN 61000-6-1 - Generic immunity standards for residential, commercial and light-industrial environments |

MECHANICAL DIAGRAM

