

X23— Bi-directional TTL to Fiber Converter with Cable Detect



Features

- Fiber disconnect detection on the receiver side, with safety status relay out for safety-critical applications.
- Converts TTL levels to fiber-optic signals for long-distance transmission.
- Receives fiber-optic signals and converts to TTL levels.
- ST bayonet fiber optic connectors using 850 nm light. Compatible with 200 μm core step index HCS and conventional 62.5 μm fiber.
- 2 μsec latency.
- Square wave transmission up to 500 kHz

Applications

- Trigger and logic level signal delivery in safety-critical systems
- High voltage isolation
- General-purpose digital signal conversion

Specifications

Transmission Mode	50 MHz optical carrier signal with PWM encoding of logic levels. Carrier is filtered to 500 kHz, then converted to create the DC logic level.
TTL input	TTL levels, input impedance high ($> 1 \text{ Mohm}$) . Terminate externally with 50 ohm if needed. (Compatible with 3.3V logic)
Fiber optic output	Broadcom HFBR -1414TZ transmitter, ST style, 850 nm light. PWM carrier at 50 MHz.
Fiber-optic input	Broadcom AFBR-2418TZ receiver, ST style.
TTL output	TTL level. Series terminated at 50 Ohms, standard. Internal jumper bypass for high impedance operation.
Propagation delay	2 μsec optical to TTL. 2 μsec TTL to optical
Power input	+24 VDC, 100 mA max. Fused 1.1 A.
Relay out	Solid-state relay out, normally open, open on power fail. Closed when receiver detects carrier (link active).
Transmission distance	200 μm HCS fiber: up to 100 Meters for 2 μs latency 62.5 μm HCS fiber: up to 1000 Meters for 2 μs latency Either fiber: up to 2000 meters for non-critical timing applications

Specifications (continued)

Case	Stainless steel sheet with mounting flange, IP43.
Weight	0.20 kg (0.44 lb)
Operating environment	10 to 55C, < 80% humidity, non-condensing, vibration < 0.2 g all axes, 1 to 100Hz
Storage environment	0 to 65C, < 80% humidity, non-condensing, vibration < 2g all axes, 1 to 100Hz

Connectors

Fiber optics	Two ST bayonet, dark gray (receiver), light gray (transmitter)
TTL	Two 50 ohm BNC jacks. Signals on core.
Relay Out	Weidmüller LSF-SMT 3.50/02/90 3.5SN BK TU Omnimate to suit wire gauge AWG 28 (0.13 mm ²) to AWG 14 (1.5 mm ²).
24 VDC input	2.1 mm threaded jack. Mate with Switchcraft S761K or equivalent. Pin: +24 VDC; Shell: 0V
Ground	Case grounded via mounting flange

Indicators

LEDs	Green LED lit when 24 V power present. Yellow LED lit when receiver detects carrier (link active).
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Typical Configurations

Bidirectional Optical Link: Fiber receive failure detect on each side



The bidirectional configuration transmits independent level information between two systems. At each location, the link detect relay indicates that the receiving optical link is intact.

Unidirectional Optical Link: Fiber receive failure detect on the receiver side



In many applications, only a single link is required. The link detect relay indicates that the receiving optical link is intact.

Ordering information

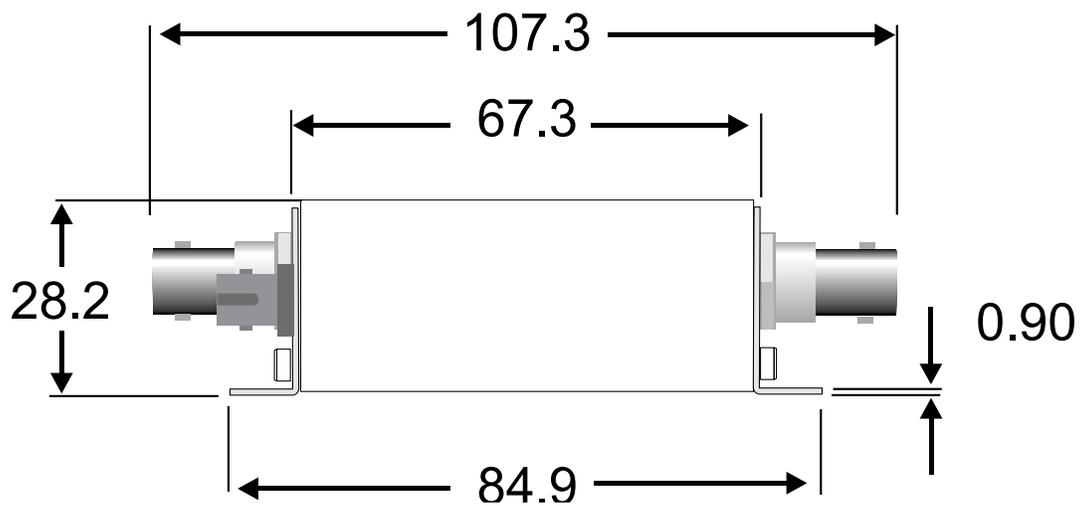
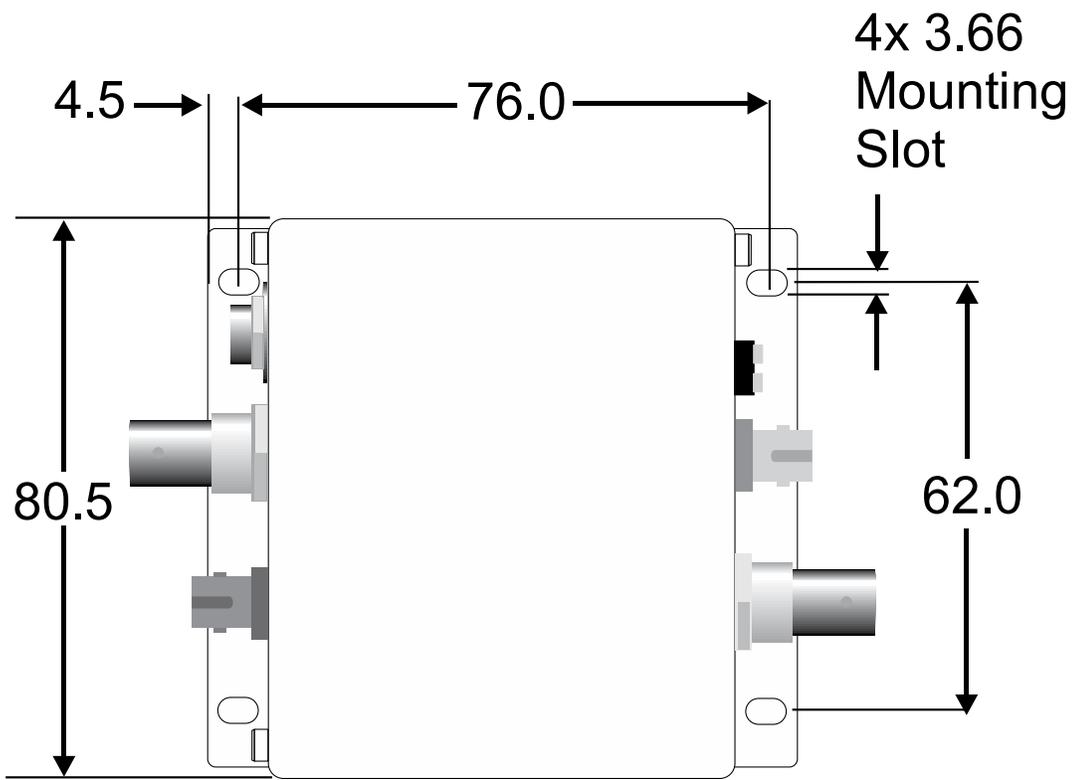
X23-ST	Bi-directional Optical to TTL converter, ST bayonet fiber optic connectors
MTG-DIN35-7662	DIN rail mounting adaptor
PSU24-25-1	Universal 24 VDC power supply, medical rated, 25 W, IEC C8 line inlet, Switchcraft S761 threaded jack outlet.

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Dims mm