



High Isolation Repeater

HIR-Digital
HIR-Fiber



Symmetricom's High Isolation Repeater (HIR) is a compact, DIN rail mount device that distributes time synchronization signals from a Global Positioning System (GPS) time source to devices within a power utility substation. The HIR is a cost effective solution that supports a wide variety of substation protection, control, and supervisory equipment.

The HIR is available in two versions: HIR-Digital and HIR-Fiber. The devices provide the same functionality with the HIR-Fiber supporting a fiber optic input.

The HIR receives a metallic (TTL, RS232, RS422) or fiber optic (HIR-Fiber only) time synchronization signal on the input side and reproduces the signal on the output side. Three separate signals (TTL, RS232, RS422) are simultaneously available on the output side to supply the required time synchronization signal (e.g. unmodulated time code or synchronization pulses) to the Intelligent Electronic Device (IED) or data concentrator. A separate port is also available that supports distribution of modulated IRIG B time code.

To insure reliable operation in the harsh substation environment, the HIR provides high electrical or galvanic isolation (2.5kV) between its inputs and outputs. The fiber optic input of the HIR-Fiber provides the ultimate in isolation as well as signal integrity over longer distances which is ideal for synchronizing IEDs in the switchyard.

The HIR is DC powered supporting 12-300 VDC operation with three supply ranges. To maintain isolation and safety, the HIR is typically powered from the supply used to power the protection equipment in the bay or rack that the HIR is mounted.

Deployment of a GPS time source within a substation is fundamental to modern substation automation. Symmetricom's High Isolation Repeaters provide a flexible, high reliability, cost effective means to distribute time synchronization signals to modern and legacy devices. The HIR supports all the timing signals generated by Symmetricom's XL 750 GPS Time Source.

Electrical Specifications

HIR-Digital

Metallic Input Terminals

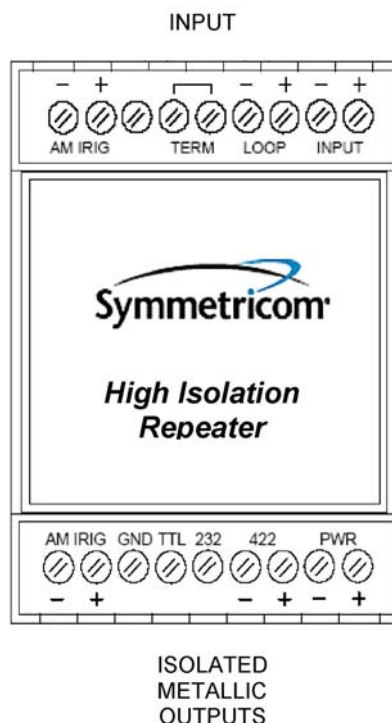
AM IRIG ±	IRIG B Modulated
TERM	RS422 Terminating Resistor (120 W)
LOOP	Repeat of Input ± for multidrop bus
INPUT ±	Universal digital signal input (TTL, RS232, or RS422)

Isolated Metallic Output Terminals

AM IRIG ±	IRIG-B AM (Modulated)
GND	Signal Ground
TTL	TTL signal output (0-5V, 150mA)
232	RS232 signal output (±10V, 15mA)
422 ±	RS422 signal output (±6V, 50 W load)
PWR	12-36VDC, 20-60VDC, or 90-300VDC

Isolation Properties

Input to output = 2.5kV
 Power supply to output = 1kV
 Power supply to input = 3.5kV



Electrical Specifications

HIR-FIBER

Fiber Input Terminals

TX	62.5/125um ST fiber transmitter
RX	62.5/125um ST fiber receiver

Metallic Input Terminals

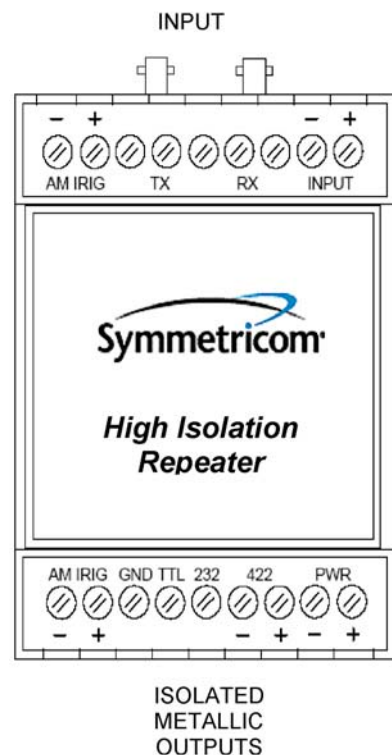
AM IRIG ±	IRIG B Modulated
INPUT ±	Universal digital signal input (TTL, RS232, or RS422)

Isolated Metallic Output Terminals

AM IRIG ±	IRIG-B AM (Modulated)
GND	Signal Ground
TTL	TTL signal output (0-5V, 150mA)
232	RS232 signal output (±10V, 15mA)
422 ±	RS422 signal output (±6V, 50 W load)
PWR	12-36VDC, 20-60VDC, or 90-300VDC

Isolation Properties

Input to output = 2.5kV
 Power supply to output = 1kV
 Power supply to input = 3.5kV



Note:

Fiber RX input and metallic Input ± are mutually exclusive (i.e. only one input signal can be present at a time)



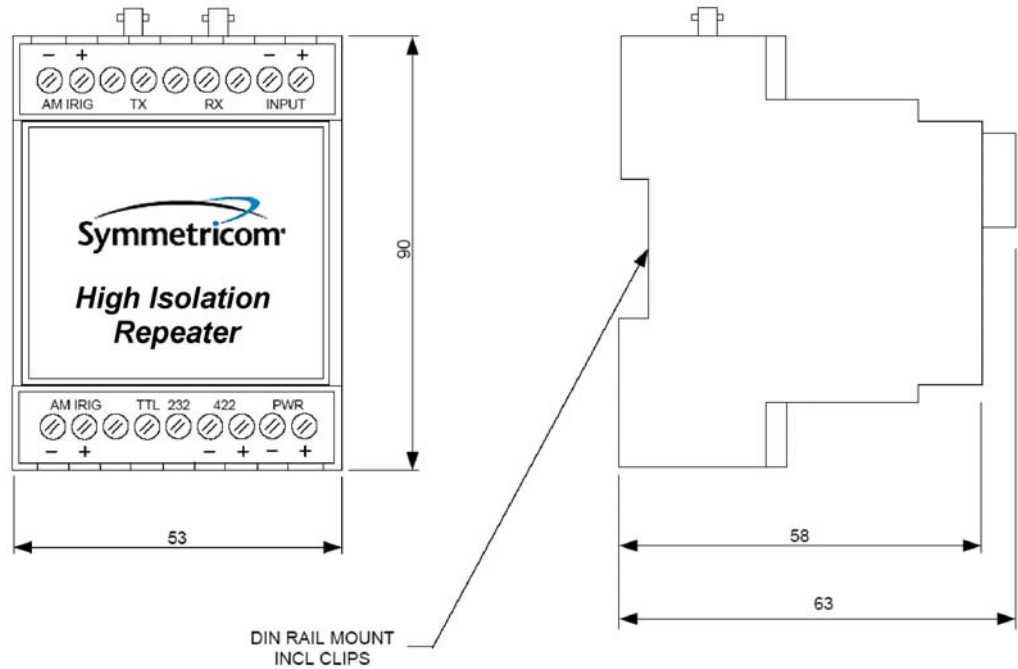
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Physical Dimensions

HIR-DIGITAL
HIR-FIBER

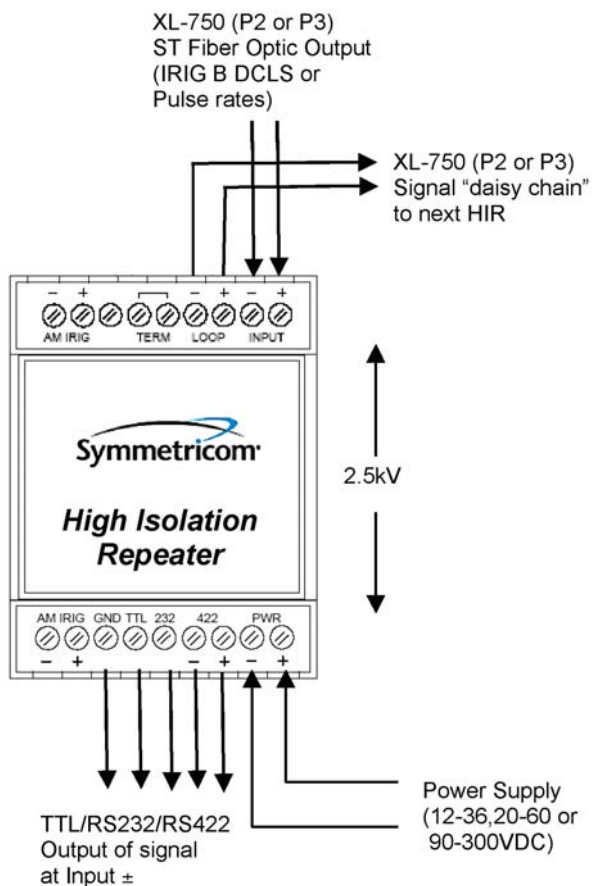
Notes:
All terminals at 5mm centers, max wire size 1.5mm diameter Fiber optic RX/TX are 62.5/125um ST fiber

All dimensions in millimeters



Metallic Signal Distribution

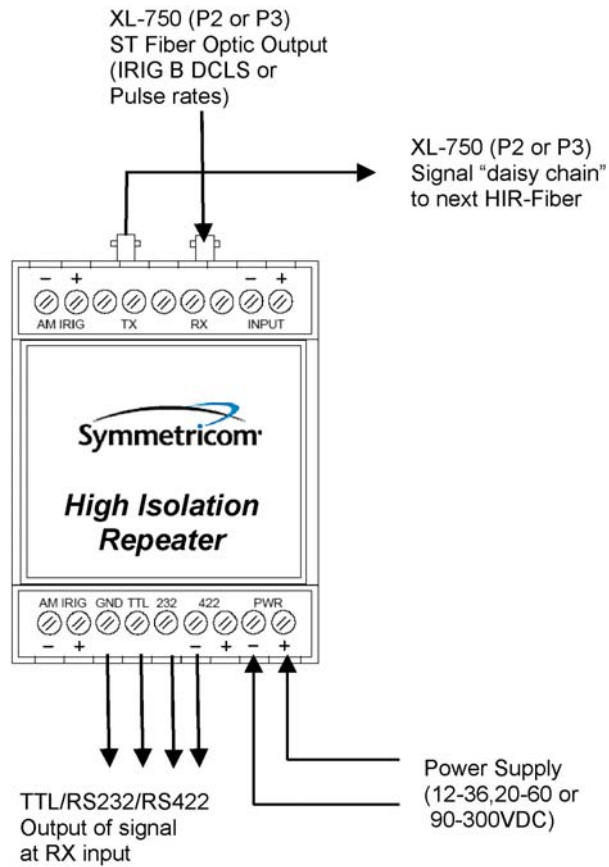
HIR-DIGITAL



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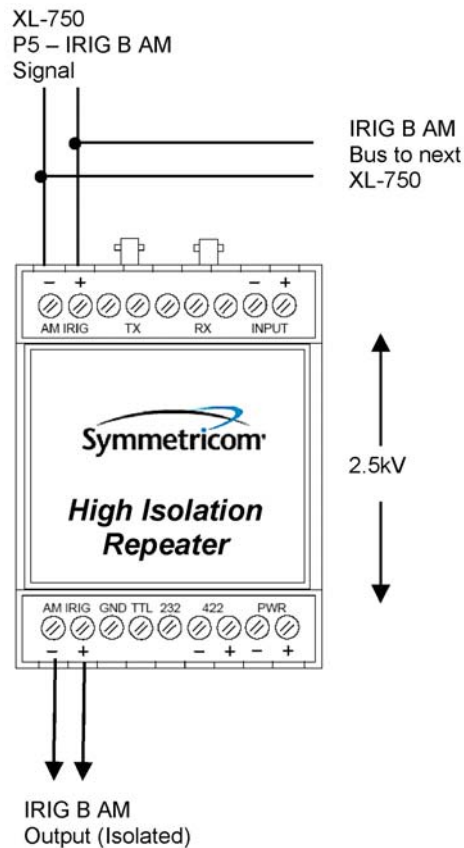
Fiber Optic Distribution

HIR-Digital



IRIG B AM Distribution

HIR-DIGITAL
HIR-FIBER



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