

**ISO-485-PI9**

Opto-Isolated RS-232 To RS-485 Converter  
Datasheet Revision 2.4

**GENERAL FEATURES:**

- Plug-and-Play (hot-pluggable)
- 2500V Isolation between RS232 and RS485
- Both rugged or terminal block with option built-in 120 Ohm termination
- Data direction auto-turnaround - no flow control necessary
- Port powered - no external power needed
- 5 year manufacturer's warranty
- RoHS, CE, and FCC certified



**DESCRIPTION:**

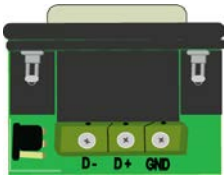
The SerialComm ISO-485-PI9 is an industrial grade bi-directional port powered 2.5KV optically isolated RS-232 to RS-485 converter which converts a full-duplex RS-232C port to a half-duplex two-wire RS-485 port. A built-in data direction auto-turnaround feature automatically enables the RS-485 driver when data is present from the RS-232 port, eliminating the need for software drivers, and making the device fully plug-and-play. The ISO-485-PI9 effectively protects connected devices from voltage surges such as lightning strikes, ground loop conditions and noise problems. The ISO-485-PI9 has a db-9 female connector on the RS-232 serial port, and db-9 male connector on the RS-485 port. Two separate terminal blocks, a rugged terminal block and a terminal block with built-in 120 Ohm termination are included with the product for maximum flexibility. The terminal blocks plug into the RS-485 port, providing screw-lug wire terminations for the port. The unit is enclosed in a rugged ABS housing, and is powered from the RS-232 data lines; no external power is required.

**CERTIFICATIONS:**



**TERMINAL BLOCK SELECTION GUIDE:**

The ISO-485-PI9 comes with two terminal blocks for maximum performance and flexibility. One terminal block is a rugged terminal block which is sealed to provide protection from the elements and vibration. The other terminal block has a built-in 120 Ohm termination selectable by a jumper on the terminal block. Both terminal blocks include fastening hardware.



**TERMINAL BLOCK WITH 120 OHM TERMINATION**

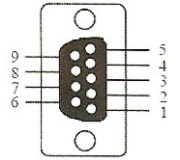


**RUGGED SEALED TERMINAL BLOCK**

**PINOUT CONFIGURATION:  
RS-232 SIDE – DB9 FEMALE**

SIGNAL	DCD	DTR	DSR	RTS	CTS	TX	RX	GND
PIN #	1	4	6	7	8	2	3	5
FUNCT.	TIED			TIED		TX	RX	GND

**FEM. DB9**



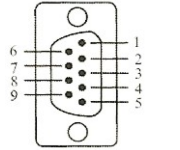
**RS-485 SIDE – DB9 MALE OR TERMINAL BLOCK**

SIGNAL	D-	D+	GND
PIN #	1	2	5
FUNCTION	D-	D+	GND

**TERMINAL BLOCKS**

Includes two terminal blocks - one for rugged applications and the other with selectable 120 ohm termination.

**MALE DB9**

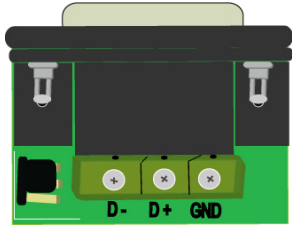


**SPECIFICATIONS:**

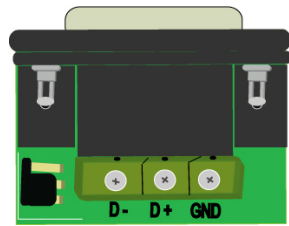
COMMUNICATION	
<b>STANDARDS:</b>	EIA/TIA RS-232C Standard and RS-485 Standard
<b>BAUD RATES:</b>	From 300 bps to 57,600 bps
<b>CONNECTOR TYPES:</b>	RS-232 Side: DB9 Female and RS-485 Side: either DB9 Male or 3-way Terminal Block
<b>DISTANCE:</b>	RS-232 Side: 16 ft (5m) and RS-485 Side: up to 4000 ft (1.2km)
<b>MAX # OF CONNECTIONS:</b>	128 Connection Drops
ELECTRICAL	
<b>POWER SOURCE:</b>	Port Powered From RS-232 Data Lines
<b>OPTICAL ISOLATION</b>	2500V (5000Vrms 1min, AC)
<b>CURRENT CONSUMPTION:</b>	Less Than 10 mA
<b>STATIC PROTECTION:</b>	15KV Static Protection
<b>SURGE PROTECTION:</b>	600W Surge Protection
MECHANICAL	
<b>HOUSING:</b>	Rugged ABS
<b>WEIGHT:</b>	<b>With Terminal Block:</b> 1.2oz (36 grams) <b>Without Terminal Block:</b> 0.8oz (24 grams)
<b>DIMENSIONS:</b>	<b>With Terminal Block:</b> 3.15" X 1.33" X 0.70" (80.0 mm X 33.8 mm X 17.8 mm) <b>Without Terminal Block:</b> 2.47" X 1.33" X 0.70" (62.8 mm X 33.8 mm X 17.8 mm)
ENVIRONMENTAL	
<b>OPERATING TEMP.:</b>	-40° F to 185° F (-40°C to 85° C)
<b>STORAGE TEMP:</b>	-40° F to 185° F (-40°C to 85° C)
<b>OPERATING HUMIDITY:</b>	5% To 95% - No Condensation
QUALITY	
<b>PRODUCT SAFETY:</b>	CE, FCC and RoHS Conformance Certified
<b>QUALITY MANAGEMENT:</b>	Manufactured and Distributed to ISO 9001:2008
<b>RELIABILITY:</b>	Low Failure Rate – 99+% Reliability Since Inception
<b>WARRANTY:</b>	5 Year Replacement Warranty

## TERMINATION GUIDE:

The ISO-485-PI9 terminal block has an optional built-in 120 ohm termination. 120 ohm termination is an advanced feature typically used to reduce noise and signal reflections. It is recommended to use 120 Ohm termination if you are exceeding 600 feet in distance, 19.6K baud or in a noisy environment. The terminal blocks are shipped with 120 Ohm termination off but can be turned on using the convenient jumper setting located on the left bottom of the terminal block.



3 POSITION WITH 120 OHM OFF



3 POSITION WITH 120 OHM ON

## TROUBLESHOOTING INSTRUCTIONS:

Using two ISO-485-PI9 units:

1. Check that all connections comply with the connection diagrams.
2. Perform a loop back test:
  - a) Connect the two RS-485 ports.
  - b) Connect the two RS-232 ports to two PC RS-232 ports.
  - c) Running hyper terminal programs on both PCs, send ASCII characters to the ISO-485-PI9 converter from one PC port, and check that the characters are received at the 2<sup>nd</sup> PC port. Repeat the test in the opposite direction. This tests that the transmit and receive functions of both ISO-485-PI9 units are working properly.

## APPLICATIONS:

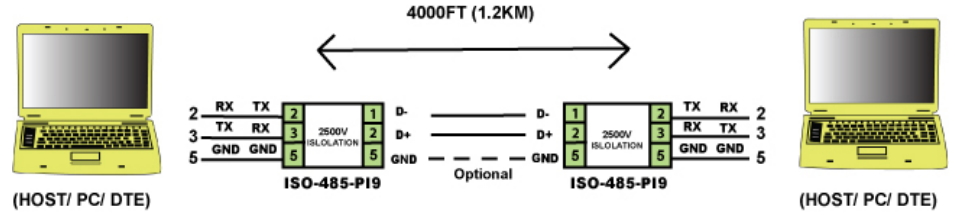


FIGURE 1: EXTENDING RS-232 DATA DISTANCE WITH 2500V ISOLATION

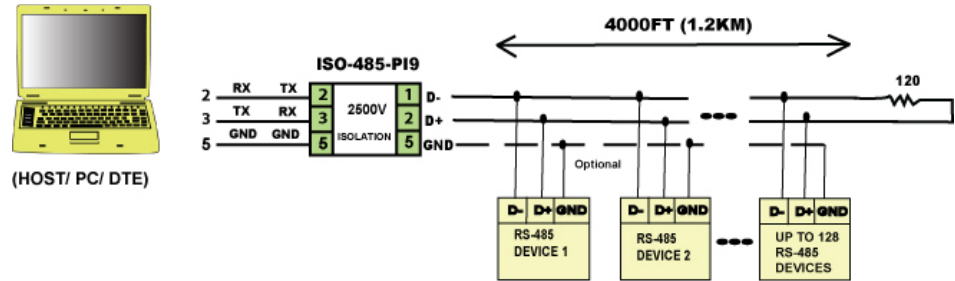


FIGURE 2: MASTER/SLAVE MULTIPLE DROP CONFIG. WITH 2500V ISOLATION