

**CON-485/422-PI9**  
**RS-232 To RS-485/RS-422 Converter**  
Datasheet Revision 2.3

**GENERAL FEATURES:**

- Plug-and-Play (hot-pluggable)
- Optional built-in 120 Ohm terminal block for maximum flexibility
- Data direction auto-turnaround - no flow control necessary
- Port powered - no external power needed
- Built-in surge and static protection
- 5 year manufacturer's warranty
- RoHS, CE, and FCC certified



**DESCRIPTION:**

The SerialComm CON-485/422-PI9 is an industrial grade bi-directional port powered RS-232 to RS-485 or RS-422 converter which converts a full-duplex RS-232C port to a half-duplex two-wire RS-485 port or full-duplex four-wire RS-422 port. A built-in data direction auto-turnaround feature automatically enables the RS-485/RS-422 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 CON-485/422-PI9 has a db-9 female connector on the RS-232 serial port, and db-9 male connector on the RS-485/RS-422 port. A separate terminal block with built-in 120 Ohm termination is included with the product for maximum flexibility. The terminal block plugs into the RS-485/RS-422 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.

**PINOUT CONFIGURATION:**

**RS-232 SIDE – DB9 FEMALE**

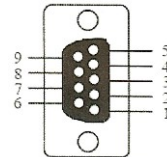
SIGNAL	DCD	DTR	DSR	RTS	CTS	TX	RX	GND
PIN #	1	4	6	7	8	2	3	5
FUNCT.	TIED		TIED		TX	RX	GND	

**RS-485 / RS-422 SIDE – DB9 MALE OR TERMINAL BLOCK**

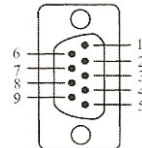
SIGNAL	T+	T-	R-	R+	GND
PIN #	1	2	3	4	5
RS-485			485-	485+	GND
RS-422	T+	T-	R-	R+	GND

**INDUSTRIAL CONVERTER**  
High Sensitivity, 128 Drops, High Temp

**FEM. DB9**



**MALE DB9**



**CERTIFICATIONS:**



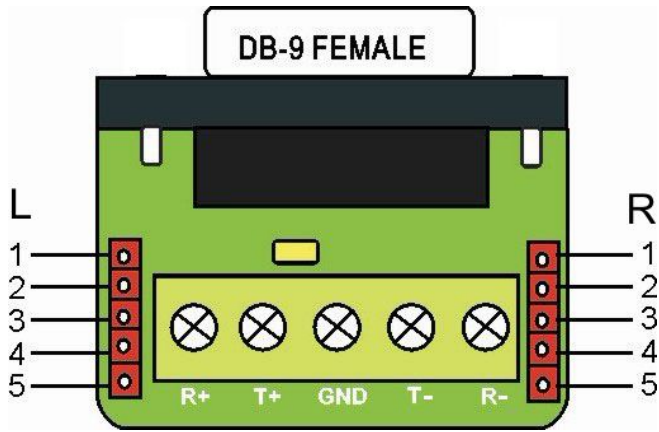
**TERMINATION GUIDE:**

The CON-485/422-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 of the terminal block.

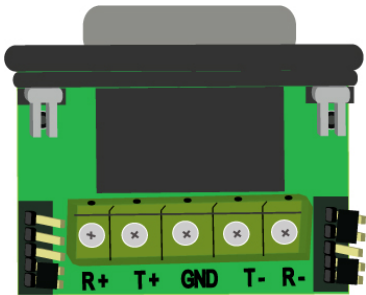
**SPECIFICATIONS:**

COMMUNICATION	
<b>STANDARDS:</b>	EIA/TIA RS-232C Standard RS-485 and RS-422 Standards
<b>BAUD RATES:</b>	From 300 bps to 115,200 bps
<b>CONNECTOR TYPES:</b>	RS-232 Side: DB9 Female and RS-485/RS-422 Side: either DB9 Male or 5-way Terminal Block
<b>DISTANCE:</b>	RS-232 Side: 16 ft (5m) and RS-485/RS-422 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>CURRENT CONSUMPTION:</b>	Less Than 10 mA
<b>STATIC PROTECTION:</b>	15KV Electric Static Discharge (ESD) Protection
<b>SURGE PROTECTION:</b>	600W/Sec 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> 3.80" X 1.33" X 0.70" (96.5 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

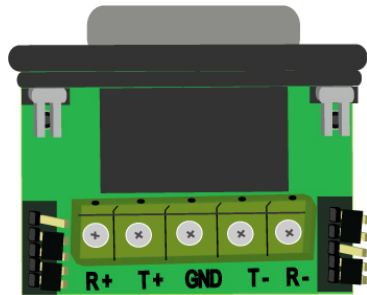
**JUMPER CONFIGURATION:**



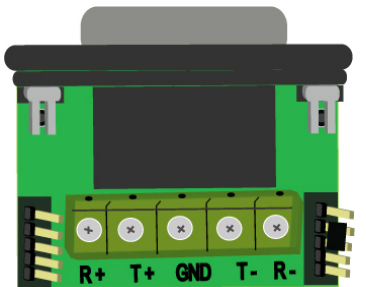
<b>RS-485 MODE</b>	Jumper (L4 to L5), (R1 to R2) and (R4 to R5)
<b>RS-422 MODE</b>	Jumper (R2 to R3)
<b>120 OHM ACTIVE</b>	Jumper (L2 to L3)



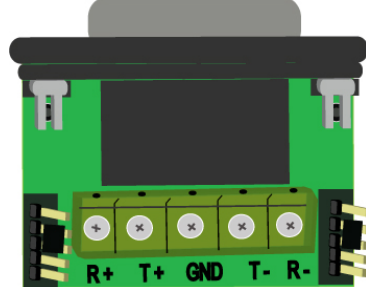
RS-485 - No 120 Ohm



RS-485 - With 120 Ohm



RS-422 - No 120 Ohm



RS-422 - With 120 Ohm

**APPLICATIONS:**

**RS-232 TO RS-485 MODE OPTION:**

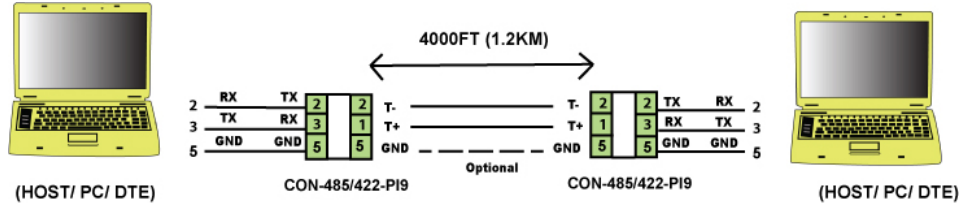


FIGURE 1: EXTENDING RS-232 DATA DISTANCE IN RS-485 MODE

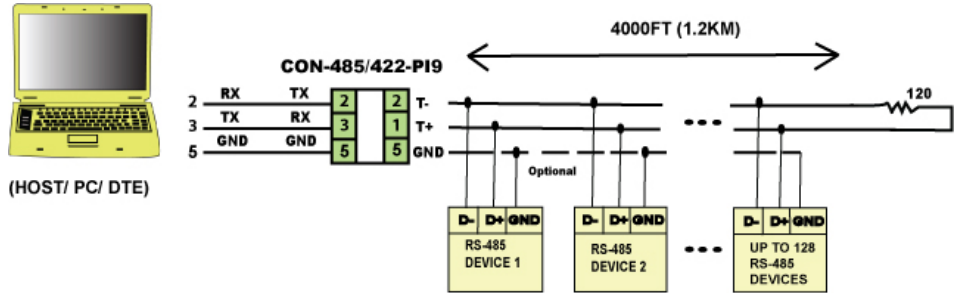


FIGURE 2: MASTER/SLAVE MULTIPLE DROP CONFIG. IN RS-485 MODE

**RS-232 TO RS-422 MODE OPTION:**

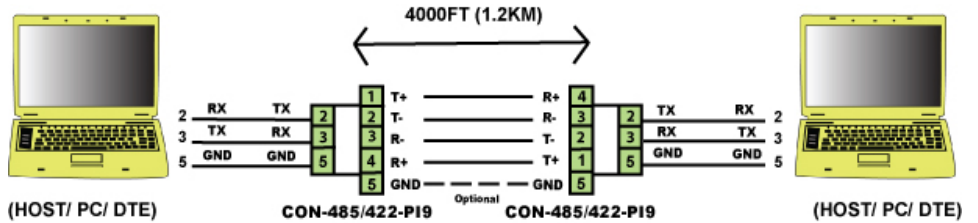


FIGURE 3: EXTENDING RS-232 DATA DISTANCE IN RS-422 MODE

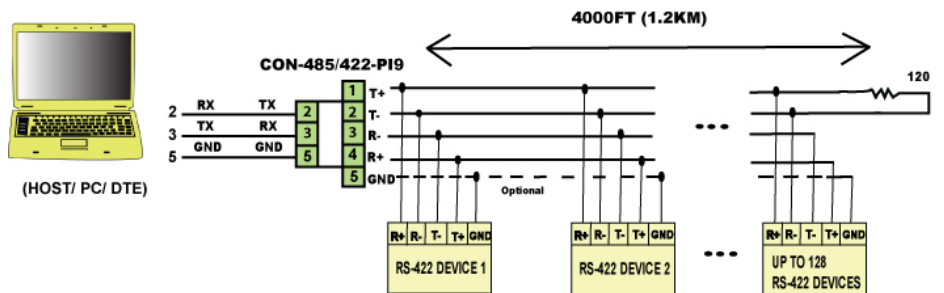


FIGURE 4: MASTER/SLAVE MULTIPLE DROP CONFIG. IN RS-422 MODE

## TROUBLESHOOTING INSTRUCTIONS:

Using one CON-485/422-PI9 unit:

1. Configure the jumpers on the terminal block for RS-422 mode
2. Check that all connections comply with the connection diagrams.
3. Perform a loop back test on one unit:
  - a) Connect the TX+ to RX+ and TX- to RX- on the RS-422 port.
  - b) Connect the RS-232 port to the PC RS-232 port.
  - c) Running a hyper terminal program on the PC, send ASCII characters to the CON-485/422-PI9 converter from one PC port, and check that the characters are received at the same PC port. This tests that the transmit and receive functions of the CON-485/422-PE9 unit is working properly in RS-422 mode.

Using two CON-485/422-PI9 units:

1. Configure the jumpers on the terminal block for RS-485 or RS-422 mode depending on which function you want to test.
2. Check that all connections comply with the connection diagrams
3. Perform a loop back test on two units:
  - a) Connect the two RS-485 or RS-422 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 CON-485/422-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 CON-445/422-PE9 units are working properly.