

Quick Start Guide

SER-485-IC
Triple Isolated RS-232 to
RS-422/485 Converter



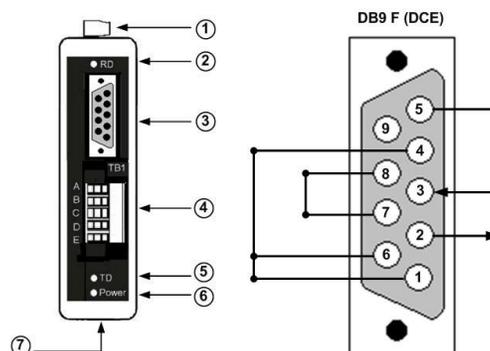
1. Check for Required Hardware

- SER-485-IC Serial Converter
- This Quick Start Guide
- Additional Items Required but not included
 - o A 10 to 48 VDC Power Supply, 0.2A.
 - o RS-232 cable. The converter is a DCE device.
 - o RS-422/485 Cable.

2. Information – UL Class 1 Div 2

1. Power, input /output (I/O) wiring must be in accordance with Class 1 Division 2 wiring methods [Article 501.10(B) of the National Electric code, NFPA70] and in accordance with the local authority having jurisdiction.
2. Maximum ambient air temperature 80°
3. **WARNING – EXPLOSION HAZARD:** SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 1, DIVISION 2.
4. **WARNING – EXPLOSION HAZARD:** WHEN IN HAZARDOUS LOCATIONS, TURNING OFF POWER BEFORE REPLACING OR WIRING MODULES
5. **WARNING – EXPLOSION HAZARD:** DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.
6. **WARNING – THIS APPARATUS IS SUITABLE FOR USE IN CLASS 1 DIVISION 2, GROUPS A, B, C, AND D, OR UNCLASSIFIED AREAS.**

3. Information – Front Panel



Front Panel

1	Power TB	2 Position, Removable
2	RD LED	Red, Flashes when RS-422/485 Data Received
3	DB9 Female	RS-232 (Wired DCE)
4	422/485 TB	5 Position, Removable
5	TD LED	Red Flashes when RS-422/485 Data Transmitted
6	Power LED	Red, ON When Power Applied
7	Dip Switch	12 Position

DB9 Female Pin out (DCE)

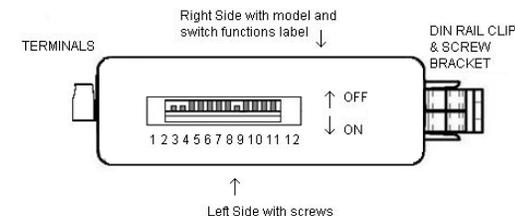
Pin	Signal	Direction
1	Receive Line Signal Detector (DCD)	---
2	Receive Data (RD)	OUTPUT
3	Transmit Data (TD)	INPUT
4	DTE Ready (DTR)	---
5	Signal Ground (SG)	---
6	DCE Ready (DSR)	---
7	Request to Send (RTS)	---
8	Clear to Send (CTS)	---
9	Ring Indicator (RI)	---

Note: Pin 1, Pin 4, and Pin 6 are tied together internally. Pin 7 and Pin 8 are tied together internally.

RS-422/485 Terminal Block

Terminal	RS-485 2-Wire	RS-422/485 4-Wire
A	GND	GND
B	Data B(+)	RDB(+)
C	Data A(-)	RDA(-)
D	---	TDB(+)
E	---	TDA(-)

4. Information - DIP Switch



Communications Mode

	1	2	3	4
RS-485 2-Wire Half Duplex	ON	ON	ON	ON
RS-485 4-Wire Full Duplex	ON	OFF	OFF	OFF
RS-422 Full Duplex	OFF	OFF	OFF	OFF

Termination Resistor

	5
Use the 120Ω Built in Termination	ON
Use External or no termination	OFF

Transmit Bias

	6
Use the 1.2KΩ Transmit Bias Resistor	OFF
Use External or no Transmit Bias Resistor	ON

Receive Bias

	7
Use the 1.2KΩ Receive Bias Resistor	OFF
Use External or no Transmit Bias Resistor	ON

5. RS-422/485 Time Out

Baud (Kbps)	Switch Selectable					Timeout (ms)
	8	9	10	11	12	
2.4	ON	OFF	OFF	OFF	OFF	4.37
4.8	OFF	ON	OFF	OFF	OFF	2.03
9.6	OFF	OFF	ON	OFF	OFF	1.02
19.2	OFF	OFF	OFF	ON	OFF	0.57
38.4	OFF	OFF	OFF	OFF	ON	0.27

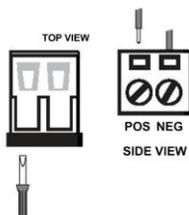
Baud (Kbps)	Resistor Selectable		Timeout (ms)
	8 through 12	R-11 Value	
1.2	OFF	820 KΩ	8.32
57.6	OFF	16 KΩ	0.16
115.2	OFF	8.2 KΩ	0.08

Pre-defined timeouts are set using switches 8 through 12. Resistor selectable baud rates are set by inserting a through hole resistor (R-11) on the circuit board.

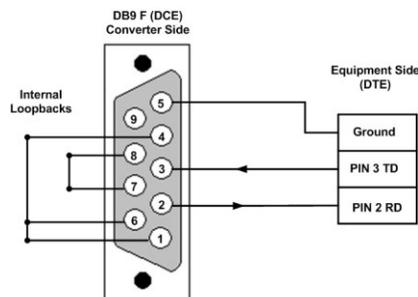
Timeout selections are equal to one character time at the indicated baud rate. Setting the converter to 9600 will generally work at 9600 and higher baud rates. **In RS-422 mode, timeouts are not required.**

6. Power Connection

Power Requirements:
10 – 48 VDC @ 0.2A



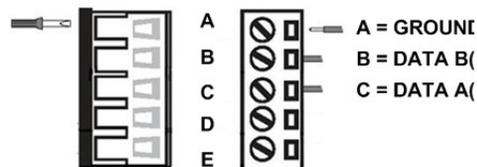
7. RS-232 Connection



1. DB9 F is DCE, Pin 2(RD) is the converter's RS-232 Data output. Pin 3 (TD) is the converter's RS-232 Data input.
2. Pins 1, 4, and 6 (DCD, DTR, and DSR) are tied together inside the converter.
3. Pins 7 and 8 (RTS and CTS) are tied together inside the converter.

8. Wiring Examples

Two Wire RS-485



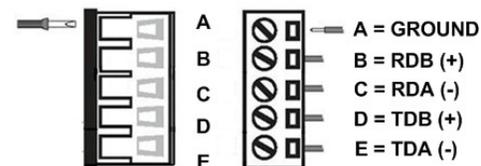
DIP Switch SW-1

1	2	3	4	5	6	7
ON	ON	ON	ON	X	Y	Z

POSITIONS 5 THROUGH 7 ARE USED FOR TERMINATION AND BIASING. SEE SECTION 4.

POSITIONS 8 THROUGH 12 ARE USED TO SET THE BAUD RATE. SEE SECTION 5.

RS-422/ Four Wire RS-485



DIP Switch SW-1

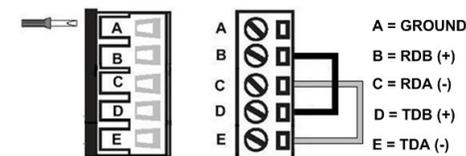
1	2	3	4	5	6	7
W	ON	ON	ON	X	Y	Z

POSITION 1 SELECTS RS-422 OR RS-485. SEE SECTION 4.

POSITIONS 5 THROUGH 7 ARE USED FOR TERMINATION AND BIASING. SEE SECTION 4.

POSITIONS 8 THROUGH 12 ARE USED TO SET THE BAUD RATE. SEE SECTION 5.

9. Loop Back Test / Troubleshooting



DIP Switch SW-1

1	2	3	4	5	6	7
ON	OFF	OFF	OFF	OFF	OFF	ON

POSITIONS 8 THROUGH 12 ARE USED TO SET THE BAUD RATE.

- ❑ Configure for RS-485 Four wire, 9600 baud
- ❑ Jumper terminals B to D and C to E
- ❑ Connect a PC to the RS-232 port (see Step 7).
- ❑ Using hyper terminal or similar program, connect to the appropriate COM port (remember to set the baud rate to 9600). Turn off hyper terminal local echo
- ❑ Transmit data. The same data should be returned. LED Indicators: Power is ON when power is applied. TD flashes when RS-422/485 data is sent. RD flashes when RS-422/485 Data is received.