Quick Start Guide
SER-485-IR
Triple Isolated RS-422/485 Repeater

CE   c(UL)us

1. Check for Required Hardware

- ☐ SER-485-IR Isolated Repeater
- ☐ This Quick Start Guide
- ☐ Additional Items Required but not included
  - o A 10 to 48 VDC Power Supply.
  - o RS-422/485 Cables.

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°C
3. **WARNING – EXPLOSION HAZARD:** SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABLITY 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
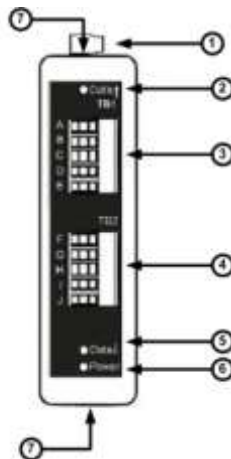
Front Panel

| 1	Power TB	2 Position, Removable
2	DATA LED	Red, Flashes when RS-422/485
		Data Received on TB1
3	TB 1	5 Position, Removable
4	TB 2	5 Position, Removable
5	DATA LED	Red Flashes when RS-422/485
		Data Transmitted on TB2
6	Power LED	Red, ON When Power Applied
7	Dip Switch	12 Position, One on the top of the
		Unit, on the bottom of the unit

RS-422/485 Terminal Blocks

TB1	RS-485 2-Wire	RS-422/485 4-Wire
A	GND	GND
B	Data B(+)	RDB(+)
C	Data A(-)	RDA(-)
D	---	TDB(+)
E	---	TDA(-)
TB2	RS-485 2-Wire	RS-422/485 4-Wire
F	GND	GND
G	Data B(+)	RDB(+)
H	Data A(-)	RDA(-)
I	---	TDB(+)
J	---	TDA(-)

4. Information - DIP Switch
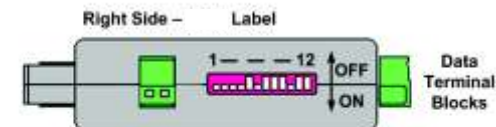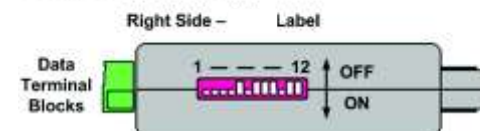
Communications Mode

	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

Switch Selectable

Baud (Kbps)	8	9	10	11	12	Timeout (ms)
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

Resistor Selectable

Baud (Kbps)	8 through 12	R-7 / 28 Value	Timeout (ms)
1.2	OFF	820 KΩ	8.32
57.6	OFF	16 KΩ	0.16
115.2	OFF	8.2 KΩ	0.08
230.4	OFF	4.3 KΩ	0.04
460.8	OFF	2.2 KΩ	0.02

Pre-defined timeouts are set using switches 8 through 12. Resistor selectable baud rates are set by inserting a through hole resistors (R-7 and R-28) 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.**
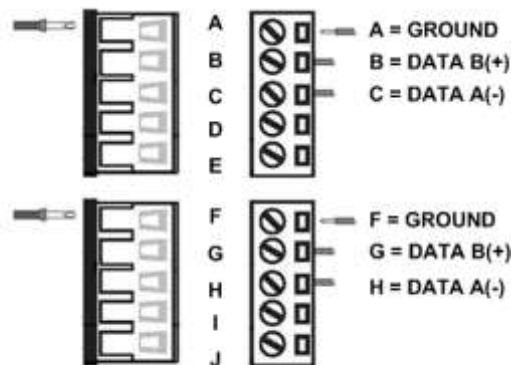
6. Power Connection

Power Requirements:
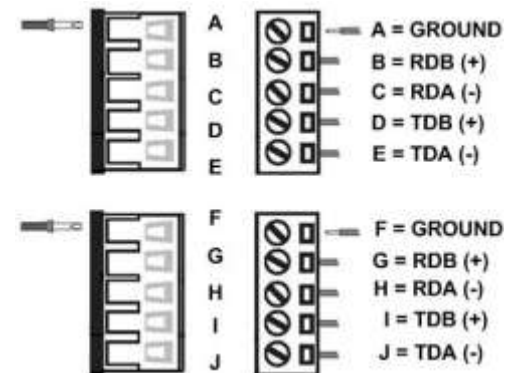10 – 48 VDC @ 0.2A
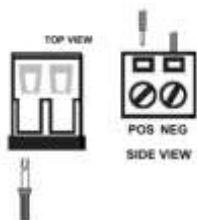
7. Wiring Examples

Two Wire RS-485

A = GROUND
B = DATA B(+)
C = DATA A(-)

F = GROUND
G = DATA B(+)
H = DATA A(-)

DIP Switch SW-1 / SW-2

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

A = GROUND
B = RDB (+)
C = RDA (-)
D = TDB (+)
E = TDA (-)

F = GROUND
G = RDB (+)
H = RDA (-)
I = TDB (+)
J = TDA (-)

DIP Switch SW-1 / SW-2

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

8. Operation

1. During normal operation, the Power LED should be illuminated.
2. When data is sent or received on either port, the corresponding Data LED should flash.