

Product Update Memo

DESIGN TOOLS

Bourns Releases New Evaluation Board and Design Note

RS-485 Port Protection - Evaluation Board 4

Riverside, California – January 4, 2019 – Bourns is pleased to announce the release of the [RS-485 Port Protection Evaluation Board 4](#) and accompanying [Design Note](#). The RS-485 Port Protection Evaluation Board 4 serves as an aid in evaluating circuit protection on RS-485 serial device port solutions using Bourns® TBU® High-Speed Protectors (HSPs), Gas Discharge Tube surge arrestors (GDTs), and Transient Voltage Suppressor (TVS) products designed to meet the required industry standards on RS-485 port interfaces.

RS-485 Port Protection Evaluation Board 4 is also laid out for alternative Overvoltage Protectors (OVPs) using TISP® Thyristor Overvoltage Protectors.

The recommended Bourns® TBU® HSP solution offers enhanced performance features over competing technologies, which can help the design engineer to increase the surge and transient protection level on RS-485 ports, placing the entire circuit protection solution into a smaller PCB area.

RS-485 Port Protection Evaluation Board 4 may be ordered online or through your local Bourns sales office or authorized Bourns distributor.

For more information on implementing advanced circuit protection technologies for RS-485 ports, please review Bourns' RS-485 Protection Solution: <https://www.bourns.com/rs485>.

Should you have any further questions or need additional information, please feel free to contact [Bourns Customer Service/Inside Sales](#).

DESIGN NOTE

RS-485 Port Protection Evaluation Board 4

INTRODUCTION

This evaluation board serves as an aid in evaluating circuit protection solutions for RS-485 serial ports. It uses a Bourns® TBU® High-Speed Protector (HSP), a Gas Discharge Tube (GDT) Surge Arrestor and a Transient Voltage Suppressor (TVS) that are designed to meet the required industry standards on RS-485 port interfaces. The recommended Bourns® TBU® HSP solution offers enhanced performance features over competing technologies. These performance features can help engineers improve the surge and transient protection level on RS-485 ports, while allowing them to place the entire circuit protection solution into a smaller PCB area as compared to alternative solutions. The Bourns® RS-485 Evaluation Board 4 measures 35 mm x 25 mm x 0.85 mm, and is manufactured using an FR-4 PCB with nickel-gold pad plating on the top and bottom sides.

Bourns' three previous versions of the RS-485 Evaluation Boards (EVB1, 2 and 3) used the Bourns® Model TBU-CA, which is a single-channel device. Because the RS-485 interface has two lines, this new evaluation board provides further PCB area reduction by utilizing the new Bourns® Model TBU-DF HSP, which is a dual-channel device. This latest evaluation board is the smallest RS-485 evaluation board offering a more compact solution helping designers save valuable PCB real estate.

HOW TO CONNECT THE EVALUATION BOARD FOR TEST SET-UP

- Connect J1A and J1B to the exposed lines.
- Connect J2A and J2B to the RS-485 IC device.

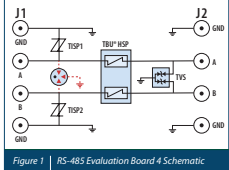


Figure 1 | RS-485 Evaluation Board 4 Schematic

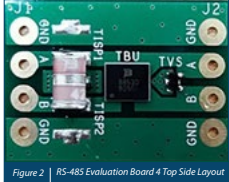


Figure 2 | RS-485 Evaluation Board 4 Top Side Layout

Table 1 RS-485 Evaluation Board 4 Bill of Materials				
No.	Part Number	Qty.	Description	Product
1	TBU-DF02-300-100	1	850V 300 mA Dual Channel Bidirectional TBU® HSP	TBU® HSP
2	2030-42T-SM-RPLF	1	Fast Acting, 3-Element 420V Gas Discharge Tube	GDT
3	DS0723-SM712	1	SOT23 12V Dual Bidirectional TVS Diode	TVS Diode

The default configuration of this board uses a TBU® HSP, a GDT and a TVS diode. The board allows different configurations:

- One Model 2030-42T-SM-RPLF could be replaced by two Model TISP435013BJR-5
- One Model 2030-42T-SM-RPLF could be replaced by two Model TISP4500H3BJR-5
- One Model 2030-42T-SM-RPLF could be replaced by one Model 2036-07-SM-RPLF

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Please note:

- 1) This evaluation board may not be directly compatible with all types of available simulation software; please verify all designs in circuit.
- 2) This Evaluation board is provided as-is and with no warranty of any kind, either express or implied.

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