

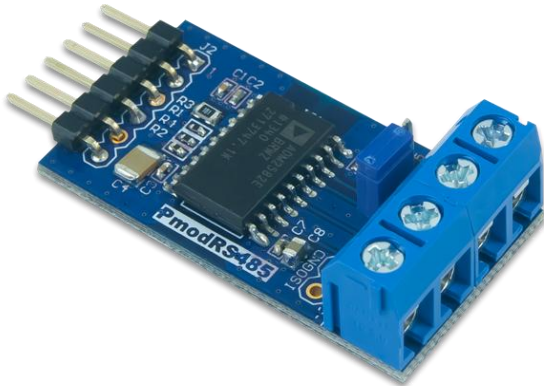
PmodRS485™ Reference Manual

Revised November 10, 2014

This manual applies to the PmodRS485 rev. B

Overview

The Digilent PmodRS485 uses the ADM2582E from Analog Devices to provide signal and power isolation for high speed communication lines utilizing RS-485 communication protocol. The PmodRS485 electronically isolates devices up to +/- 15kV allowing for peace of mind while combining high voltage hardware with Digilent microcontroller and FPGA system boards.



The PmodRS485.

Features include:

- Isolated RS-485 / RS-422 interfaces
- 16Mbps maximum data rate
- Connect up to 256 nodes on one bus
- Differential Half or full-duplex communication
- Operates with 5V or 3.3V input voltage and digital signal levels
- +/- 15kV ESD protection
- Thermal shutdown protection

1 Functional Description

Basic usage of the PmodRS485 is to facilitate RS-485 and RS-422 serial communication protocols between devices in environments with high electrical noise. The PmodRS485 can operate at half or full duplex modes with differential paired signals while providing electrical isolation from other devices.

The PmodRS485 easily interfaces with Digilent Pmod headers and will operate at 3.3V and 5.0V, allowing for connections to a wide variety of hardware. The controlling hardware can then communicate with devices using standard serial communication protocols, such as UART.

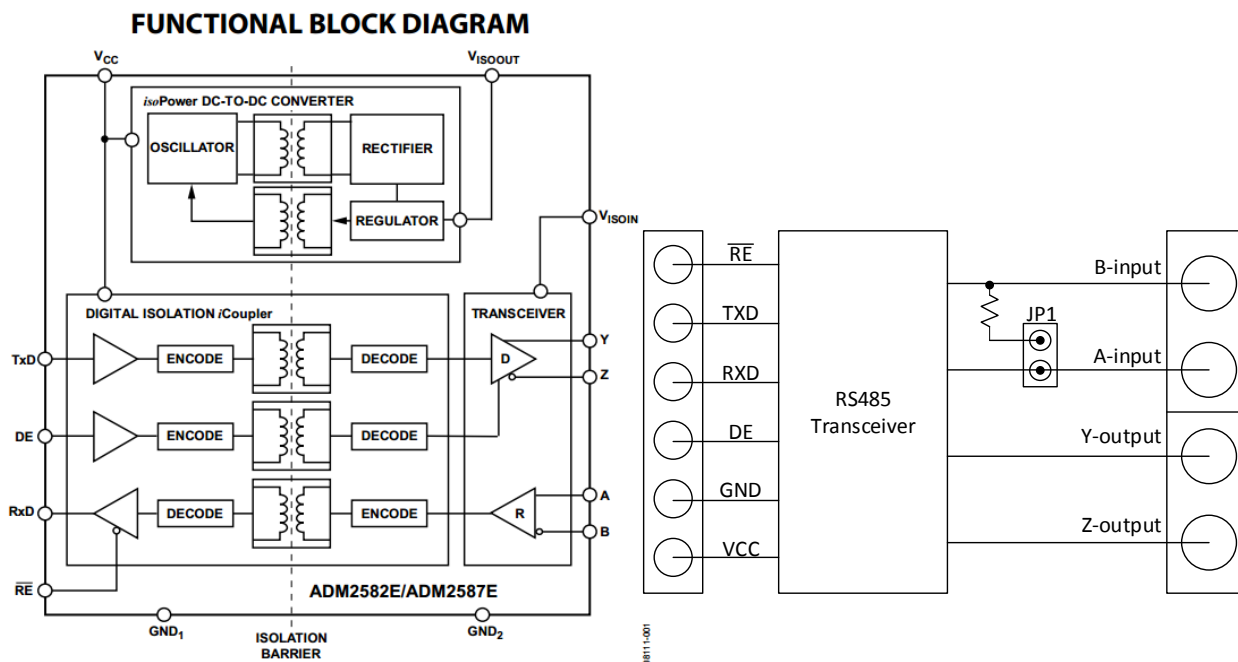


Figure 1. Functional block diagrams of PmodRS485.

Multiple PmodRS485 devices can be chained together up to 256 nodes in total. When two PmodRS485s are connected, JP1 should be loaded on both devices. When more than two PmodRS485s are connected, JP1 should only be loaded on the two devices at the terminating ends of the wire, and stubs off of the main line should be kept as short as possible (see Figs. 2 & 3 below).

The PmodRS485 has two control signals: receiver enable (RE) and driver enable (DE). RE enables the receiver module when driven low, and disables it when driven high. DE has the opposite polarity and enables the driver module when driven high, and disables it when driven low.

For comprehensive electrical characteristics of this device, refer to the ADM2582E datasheet available from Analog Devices.

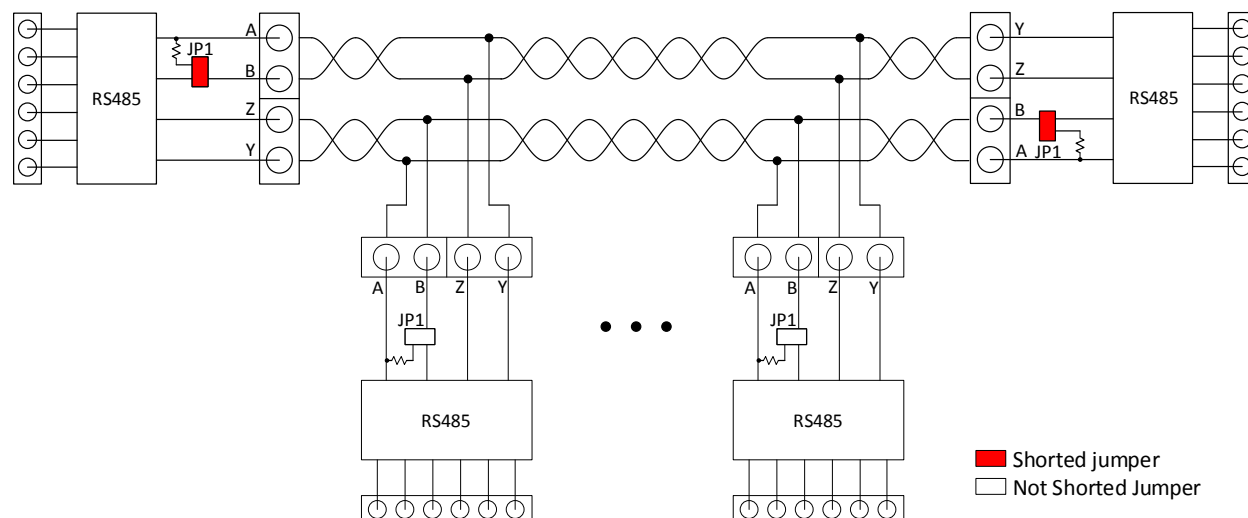


Figure 2. Full-duplex communication.

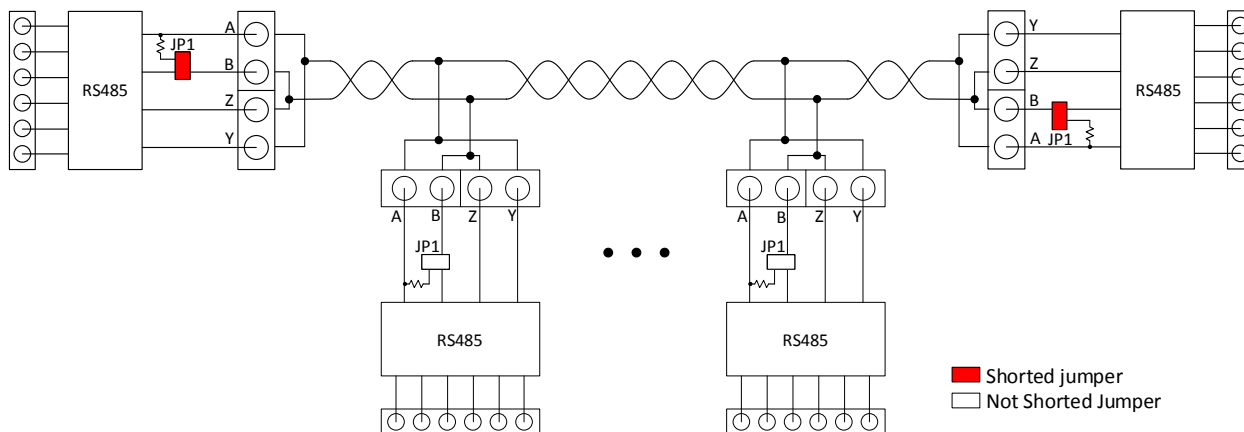


Figure 3. Half-duplex communication.

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