Polarity Conventions for RS-485 Transceivers

The excerpt below is from the latest version of the RS-485 standard\(^1\). The differential signals on the bus are described. There is no discussion of the single-ended logic signals to the driver or from the receiver.

In the diagram, A is shown as non-inverting output; B is shown as inverting output.

The standard states that when \( V_A > V_B \), that is a “0” on the bus and is called the “ON” state.

The standard states that when \( V_A < V_B \), that is a “1” on the bus and is called the “OFF” state.

The signaling sense of the voltage appearing across the interconnecting cable are defined as follows and is shown in Figure 2:

1. The A terminal of the generator shall be negative with respect to the B terminal for a binary 1 (OFF) state.
2. The A terminal of the generator shall be positive with respect to the B terminal for a binary 1 (ON) state.

The logic of the generator and the receiver is beyond the scope of this standard, and therefore is not defined.

Texas Instruments datasheets for RS-485 transceivers follow the convention that A is the non-inverting pin and B is the inverting pin.

Most, if not ALL manufacturers of RS-485 transceivers use the same convention for polarity and pin naming as Texas Instruments.

Using any typical RS-485 device, logic HIGH on the driver input “D” will create an “ON” state, also called a “0” on the bus, which will cause logic HIGH on the receiver output “R”.

Using any typical RS-485 device, logic LOW on the driver input “D” will create an “OFF” state, also called a “1” on the bus, which will cause logic LOW on the receiver output “R”.


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