

Translate Voltages for UART

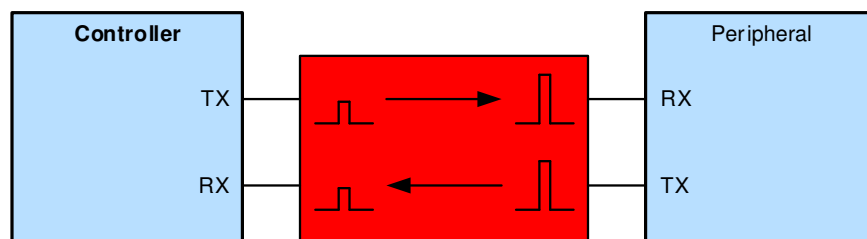


Figure 1-1. Example 2-wire UART Voltage Translation Block Diagram

See more about this use case in the *Logic Minute* video [Voltage Level Translation for UART Interface](#)

Design Considerations

- Some devices support up to 5 Mbps UART communication; most are limited to 115 kbps or less
- Translators enable communication when devices have mismatched logic voltage levels
- Prevent damage to devices that cannot support higher voltage inputs
- Improve data rates over discrete translation solutions
- Protect controller while peripheral is not connected
- [\[FAQ\] How does a slow or floating input affect a CMOS device?](#)
- Need additional assistance? Ask our engineers a question on the [TI E2E™ Logic Support Forum](#)

Table 1-1. Recommended Parts

Part Number	Automotive Qualified	Voltage Translation Range	Features
SN74AXC2T245-Q1	✓	0.65 V — 3.6 V	Glitch-free power supply sequencing Outputs are disabled when either supply is 0 V Active translation architecture
SN74AXC2T245			
TXB0102		1.2 V — 3.6 V to 1.65 V — 5.5 V	Auto-bidirectional Active translation architecture
TXS0102-Q1	✓	1.2 V — 3.6 V to 1.65 V — 5.5 V	Auto-bidirectional Internal pull-up resistors Passive translation architecture

For more devices, browse through the [online parametric tool](#) where you can sort by desired voltage, channel numbers, and other features.

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