SP331: FAQ

Sipex Part: SP331
Date: June 2, 2006

Question:

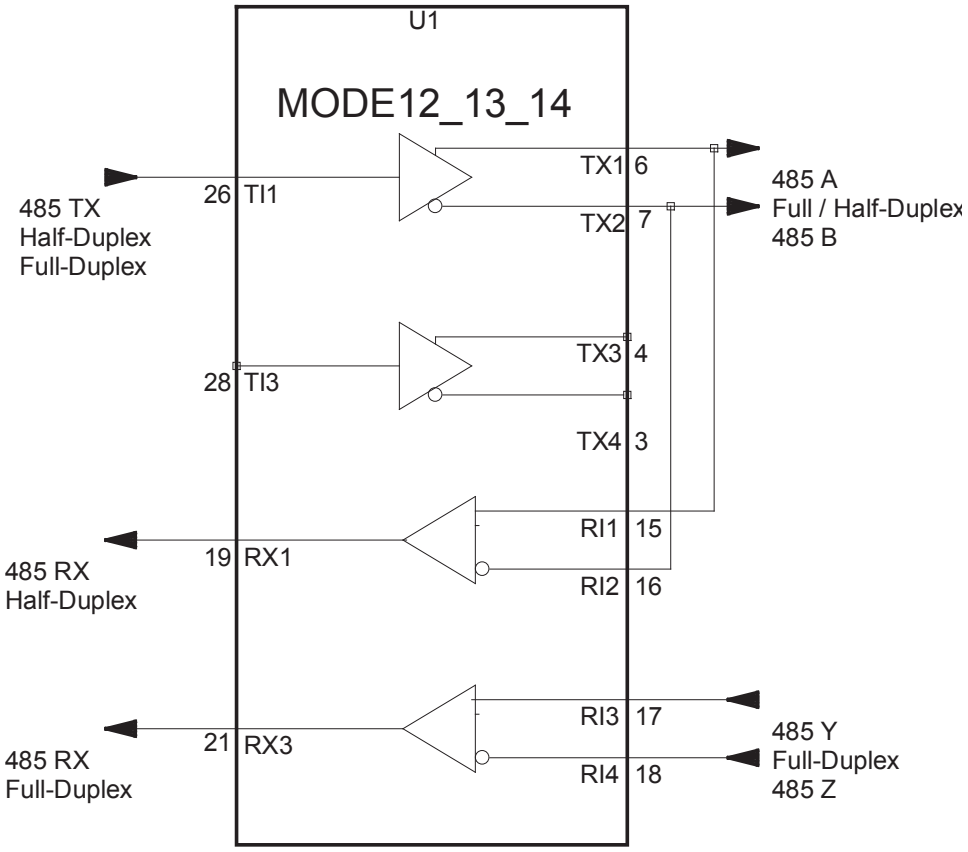
Does the SP331 support both a 2-wire and a 4-wire RS-485 topology?

Answer:

The Modes are described on page 8 and Page 11 of the datasheet. Using decimal equivalent; modes 12, 13, 14, can be used for RS485 in either full or half duplex.

Refering to the function table on page 8, modes 12 and 13 are used for half duplex. T1 turns on and off for transmit and receive modes. These same bus lines can be used for the full duplex mode as the transmitter but the receiver is hard wired in a loop back configuration so R3 has to be used as the full-duplex receiver.

If preferred, T3 and R3 can be used as a separate full duplex channel but this requires two more bus lines.



Question:

What is the number of slaves that can be multidropped on the RS 485 side? For instance, what is the driving capacity of the SP331 with what pull up resistances if any?

Answer:

The SP331 configured for RS485 mode operate as standard RS485 drivers and 1-Unit Load receivers. The drivers can therefore support up to 32 unit loads coexisting on a shared multi-drop RS485 bus. If the other nodes on the bus are less than 1-UL apiece then more nodes can be supported. If a biasing supply or other loads are added to the bus then total number of nodes would be decreased.

Question:

(Regarding Crosstalk) We are seeing garbage input data on various SP331 Receive Channels. The setup is as follows: We have the SP331 on a module with a 6 foot cable going to a PC w/ a 422 PCI card. We can transmit & receive data with no problems on both channels. However, if we disconnect the cable at the PC side (so we have this 6 foot cable stub hanging on the module with the SP331 transceiver) we receive garbage data on the receive channel when we attempt to transmit on the same channel. It appears we may have introduced a crosstalk problem on a high-impedance set of signals (RIx lines). We use these channels in either a single-ended RS232 or in differential RS422/RS485 applications. Don't the inputs on the SP331 have sufficient termination to swamp out any crosstalk? Do you recommend terminating the RIx inputs? If so, what do you recommend?

Answer:

The 331 does have a failsafe circuit to allow the differential RX inputs to float without chatter, but any signals above +/-200mV will change the RX state. The datasheet states the following: To ensure a desired state of the receiver output, a pull–up resistor of 100kΩ to +5V should be connected to the inverting input for a logic low, or the non–inverting input for a logic high (this implies RS485 mode). For single-ended receivers, a pull–down resistor to ground of 5kΩ is internally connected, which will ensure a logic high output.

The RX inputs are high impedance so if there are signals present anywhere on the stub they will show up on the RX inputs. If the cable is to be floated it makes send to terminate the inputs if the cable is meant to be disconnected.

