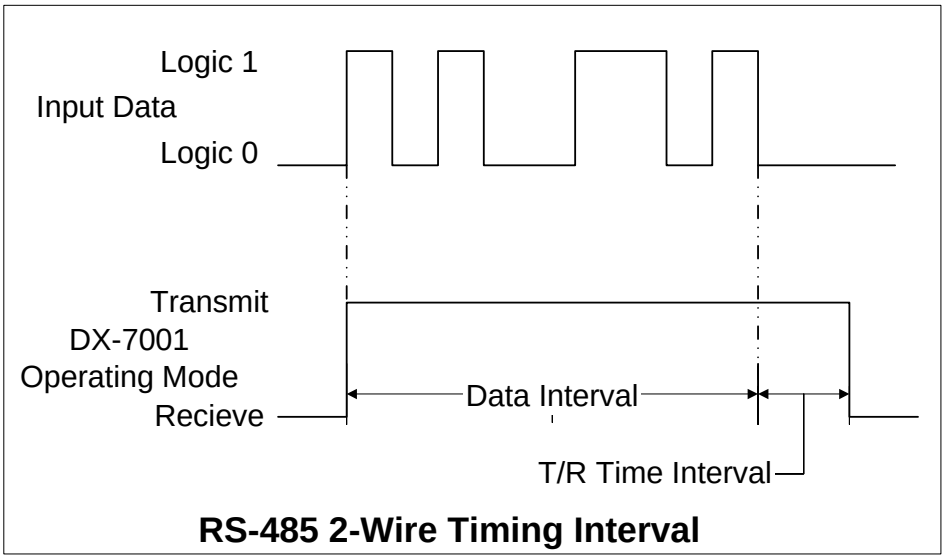
RS-485 2-Wire Transmit /Rx Turnaround Time

Settings for the DX-7001

The 2-wire RS-485 mode is a half-duplex method of communication. This means only one side can transmit at a time, whereas full duplex system is like a telephone when both parties can talk and listen simultaneously. RS-485 2-wire mode of communications requires that the same two connector pins be used to transmit or receive data.

The DX-7001 handles two way communications in half-duplex mode by either receiving or transmitting, but not both at the same instance of time. Internal circuitry of the DX-7001 is utilized to sense data and automatically switch these pins between transmit mode and receive mode as required. The DX-7001 in 2-wire mode will "listen"/receive, until ready to "talk"/transmit. When done transmitting a data packet, it will wait a fixed time interval before starting to receive again. This fixed time interval is called the "Transmit / Receive turnaround Time Interval". An example follows.



RS-485 2-Wire Timing Interval

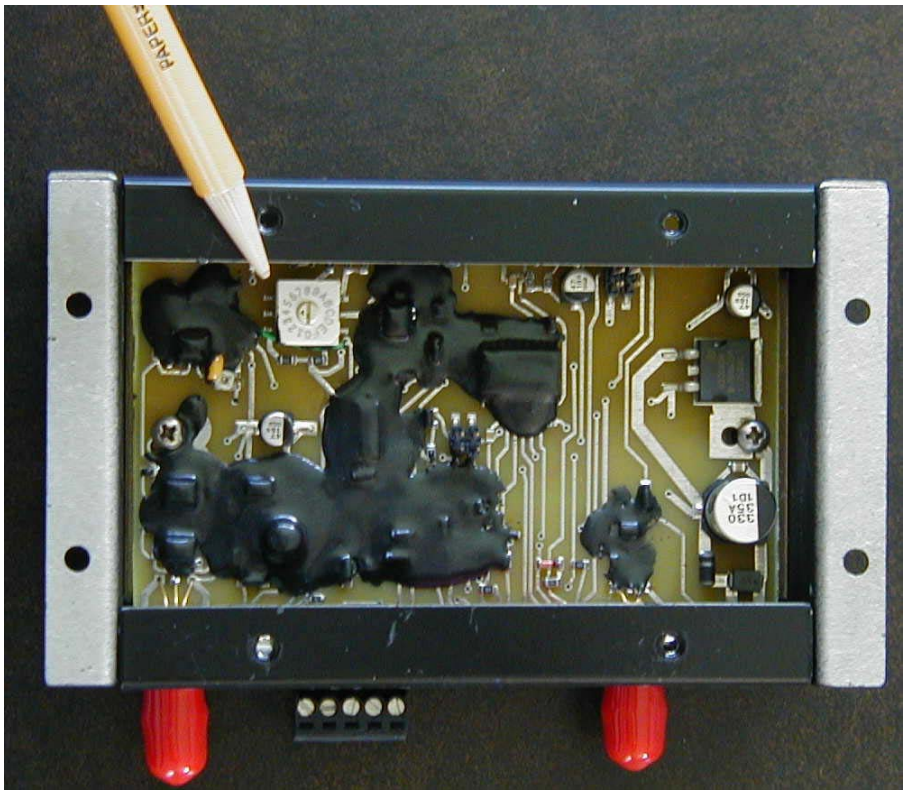
The drawing above shows the timing interval for the DX-7001 in the RS-485 2-wire mode. The unit is initially in the receive-mode until the input receives a data signal to transmit. Within the rise-time interval of the first bit of the data signal, the unit immediately switches to the transmit mode and transmits the data signal as an optical output. When the data signal "packet" is finished, the DX-7001 waits for a fixed, pre-determined time interval (the T/R Interval) and then switches back to the receive mode.

Transmit / Receive turnaround Time Interval is user-adjustable. The normal default setting for the RS-485 data signal T/R time is 1.1 milliseconds, which corresponds to a data rate of approximately 9600-baud. This setting is adequate for 95% of all applications. However, there are times when this must be adjusted. For those special

applications, there is an internal rotary switch which can be set to various different T/R interval times.

Changing the turnaround time

To access the 485 turnaround switch, remove the 4 screws and cover on the bottom of the transceiver. This switch is adjusted with a small flat blade screwdriver.



The setting for this switch is as follows:

Position	Baud Rate	T/R Time (approximately)	-A models T/R Time (approximately)
1	2400	4.1 milliseconds	0.41 milliseconds
2	4800	2.2 milliseconds	0.22 milliseconds
4	9600	1.1 milliseconds	0.11 milliseconds
7	19200 (19.2K)	0.5 milliseconds	0.05 milliseconds
8	38400 (38.4K)	0.3 milliseconds	0.03 milliseconds
C	57600 (57.6K)	0.2 milliseconds	0.02 milliseconds
F	115200 (115.2K)	0.1 milliseconds	0.01 milliseconds

Note that intermediate positions of this switch may be used to make small changes in timing at the higher baud rates. The higher the switch position, the shorter the T/R time will be. This switch only affects RS-485 two-wire operation.