

Asynchronous Serial Interfaces

Exercise 1: Is the "Transmit Data" (TxD) signal an input or an output? How about "Receive Data" (RxD)? Would it make more sense for a computer's serial interface to be wired as a 'terminal' (DTE) or as a 'modem' (DCE)?

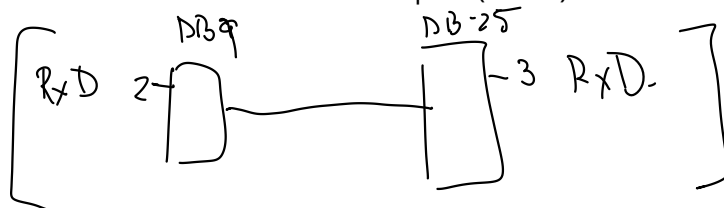
TxD is o/p on a DTE (terminal/PC)
 i/p on a DCE (modem)

RxD is i/p on a DTE
 o/p on a DCE

Typically a PC's serial port is DTE.



Exercise 2: A "serial" cable has a DB-9 connector on one end and a DB-25 on the other. You measure continuity between pin 2 on the DB-9 and pin 3 on the DB-25. Is this a null-modem cable? Is this the appropriate cable to connect a PC's serial port (a DTE) to a modem (a DCE)?



No. straight-through (RxD ↔ RxD).

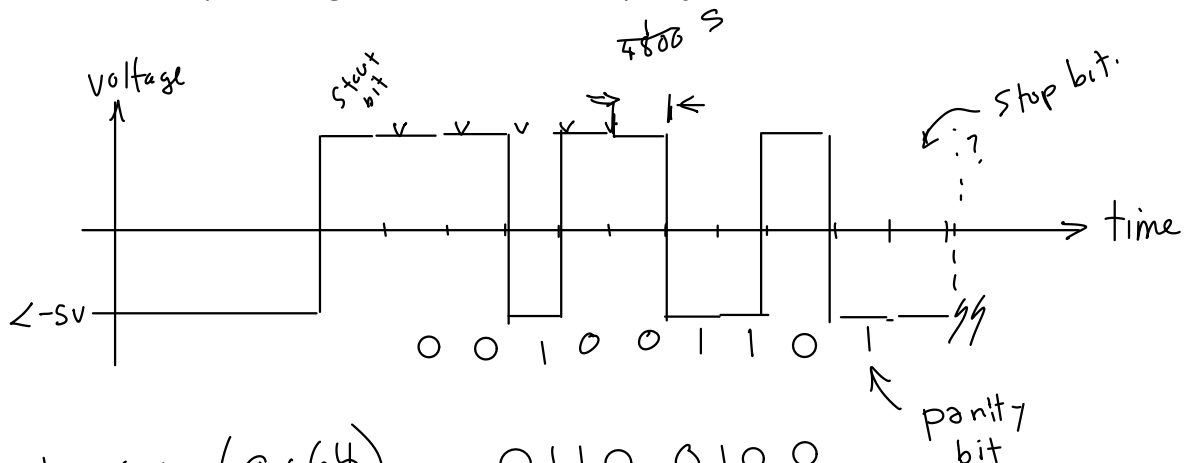
Yes, connects a DTE to a DCE.

Exercise 3: Will the parity bit allow the receiver to detect all single-bit errors? All double-bit errors?

Yes - would change even to add parity or vice-versa.

No - double bit errors would leave parity unchanged

Exercise 4: Draw the waveform used to send the ASCII character 'd' (hex 64) at 4800 bps with eight data bits and even parity.



$$\text{hex } 64 \text{ (0x64)} = 0110 \underline{0100}$$

$$\text{sum} = 1+1+1 = 3 \text{ (odd)}$$

so add 1 to make it even (4)

Exercise 5: What happens if the receiver's clock is running faster than the transmitter clock?

Rx will sample each bit earlier.

May result in errors if difference is large enough.