

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 either
RxD }

PC is a "terminal".

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 RxD is connected to RxD Yes.

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

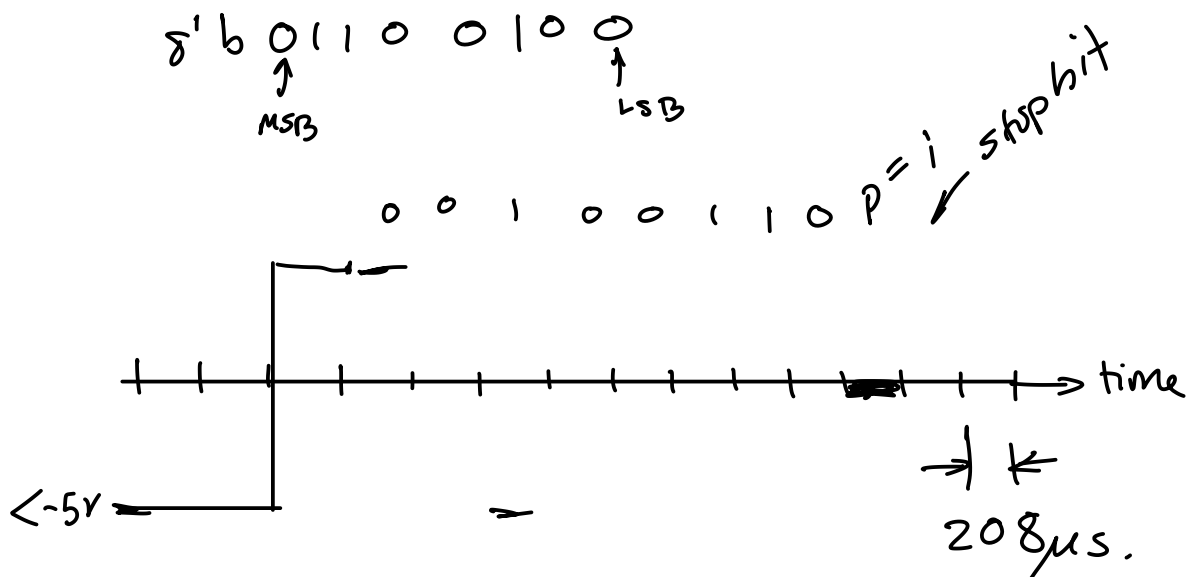
0 → 1 +1
1 → 0 -1

0 → 1 +1
0 → 1 +1

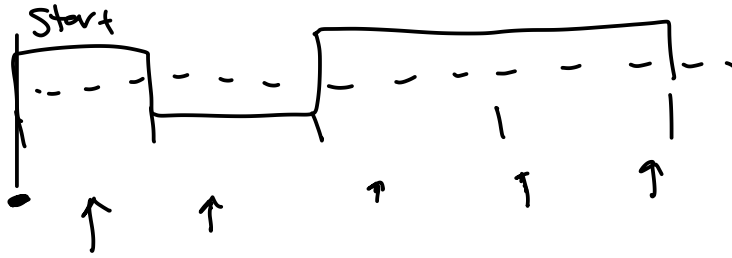
YES → all single-bit

NO. → no double-bit

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

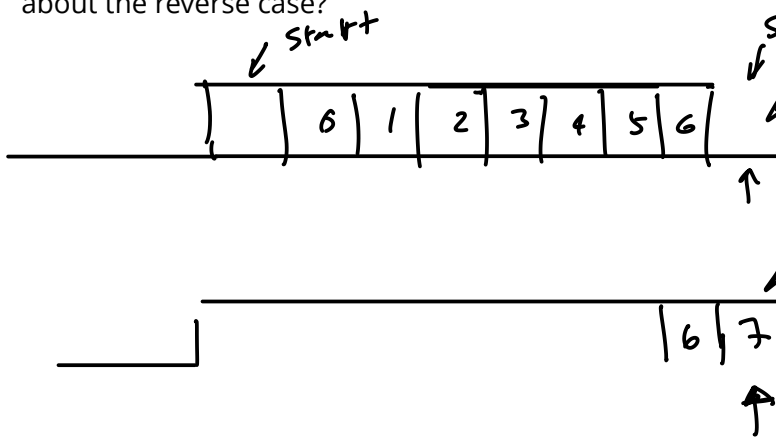


Exercise 5: What happens if the receiver's clock is running faster than the transmitter clock?



receiver will sample earlier & earlier.

Exercise 6: What would happen if the receiver was expecting 8-bit characters and the transmitter was sending 7-bit characters? What about the reverse case?



sees a '1'
as m.s. bit

sees a '0'
instead of
stop bit

("framing error")