Specifications and Design – Protocol Serial Desktop PC

A. Specifications:

1. The user shall ensure that both devices connected on the serial port use the same protocol.
    a. Agreement on the character length (5-9 bits)
    b. Agreement on the baud rate.
    c. Agreement on how data is sent (most significant bit to least or least significant bit to first)
2. Both the PC and the Bluetooth dongle shall operate at the same Baud rate (number of bits-per-second).
3. An adequate Baud rate shall be chosen, so that the data is transmitted sufficiently fast to the USB dongle.
4. The Baud rate shall be less than 115200 bps, in order to minimize the risk of error intrusion.
5. A definition of varying data and constant data shall be stated in the design phase. (Ex: the command to turn on/off the control device could be considered constant data, and sent whenever the user changes it; however data resulting from any control algorithm shall be updated constantly.)
6. The protocol shall always return a response, even if the command or value entered is invalid.
7. The message sent to the device shall be wrapped with a starting and closing character for debugging purposes.
8. If a risk of data corruption is identified, a checksum shall be used to validate the data.
9. If data is sent in packets, then the number of messages in the packet shall also be sent to the device. (This will allow the device to request the entire packets (last “n” messages) when it detects that some data is corrupted.)
10. A length byte shall be used to indicate the length of the message, and checked by the device.
11. The serial settings for the connections shall be well documented, so that future users can easily connect the PC to the device.