PES PROJECT - 5

UART Communications with PC

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Sr.no	Potential Failure Mode	Potential Failure Effect	Severity (1-10)	Potential Cause	Occurrence (1-10)	Controls-How to prevent?	Detection (1-10)	Risk Priority Number (Severity * Occurrence * Detection)
1	Hardware error	No output received	9	Loose USB /static	4	Debugging using error detection and testing methods	1	36
2	Loss of data or code issue	Data loss or program wiped out	10	Security issue/erased data	3	Careful use of memory/allocating memory	4	120
3	Abnormal shutdown	No output received	7	PC error/System error	3	Check the system on which work is done	2	42
4	Overestimation of capacity	Segmentation fault	10	Wrong Memory estimation	3	Refer to the datasheet for memory specifications of the board	7	210
5	Delayed output	Slower responses to inputs	6	Print statements take time	7	Check the system on which one is working	2	84
6	Communication error	Microcontroller waits while PC keeps on giving instructions	5	Difference in baud rates	8	Set accurate baud rate according to the calculations	1	40

Highest RPN=Overestimation of capacity=210

References:- "The highest RPNs should get highest priority for corrective measures."
https://polarion.plm.automation.siemens.com/hubfs/Docs/Guides_and_Manuals/Siemens-PLM-Polarion-How-to-conduct-a-failure-modes-and-effects-analysis-FMEA-wp-60071-A3.pdf

Goals of corrective measures include:
- Eliminate failure modes (some are more preventable than others)
- Minimize the severity of failure modes
- Reduce the occurrence of failure modes
- Improve detection of failure modes