

09.03.2023 - Peripheral Interfacing

Bonus Task 2

Question: Elaborate on the topic of embedded system dependability. How would an engineer know if an embedded system is dependable?

Answer: To depend means *to place reliance or trust*. For a system to be called dependable, it should rarely remind its existence. That means, the system must:

- handle exceptional occurrences. For example, an unexpected physical or electrical shock during its operation should not cause a halt; e.g. the embedded system should be mounted on a shock-absorbing housing, or high voltage protection circuit on its power input terminals.
- handle natural elements. That is, its components should be corrosion proof or waterproof.
- handle component failures. That is, the components under heavy use, like a sensor or a driver, should be redundant.
- handle every situation that it was marketed to handle. This means that its firmware should be sophisticated, well- and thoroughly-tested, and if possible maintained after sale.
- alert its user or operator when an exception that is beyond its handling capabilities occurs. The number of such alerts must also be low.