## Revision Control

### Revision History

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## Approvals

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1.0 **Purpose**

Define the structure of the revision and version level control system. Specify rules to track changes of parts and documents. Specify methods of assignment and control.

2.0 **Scope**

This document applies to all documents, components, assemblies, and materials required in the production, testing, shipment, and support of all documentation controlled products.

3.0 **Owner**

3.1 This document is owned and maintained by Components Engineering who will be responsible for assuring that this document is adhered to. Documentation Control Services will be responsible for permanent archives.

3.0 **Definitions**

3.1 CCB - Configuration Control Board.

3.2 Change Owner - Engineering or Project manager responsible for originating and assuring the technical integrity of the change.

3.3 F/F/F - Form/Fit/Function.

3.4 Revision Level - Used to identify current level of and track changes to documentation.

3.5 Version Level - Used to identify current level of and track changes to components and assemblies.

3.6 Active - Current revision.

3.7 Inactive - Previous revisions.

4.0 **Responsibility**

4.1 Components and Engineering and Engineering Services with responsibilities for Documentation Control will assign and track revision and version levels of released documents and parts.

4.2 Components Engineering and Engineering Services will maintain this document. CE will be responsible for part level revisions and Documentation Engineering Services for assembly level changes.

4.3 Change Owner, supported by other functional members of the product team, shall make decisions on interchangeability and renumbering involving legal, safety, and obsolete part control requirements.

4.4 Change Owner shall make recommendations to CCB for renumbering efforts involving business requirements.
4.5 CCB is responsible for assuring conformance to this document.

5.0 Procedure

5.1 Revision Level Structure-Engineering Control Status

See Product Development Process for revision level control guidelines during the development process. In general, some understandable form of revision control (date code, revision # or letter, etc.) shall be used to communicate and track changes to documentation, parts, and assemblies.

5.2 Revision Level Structure-Product Released Status

Documentation and product being released to Manufacturing for the first time shall have its controlling document released with a revision level of “Rev. A”. This will signify initial formal transfer from Engineering to CCB control status.

To obtain a “Rev. A” revision level, formal approval by the CCB is required. The exception will be “off-the-shelf” components and assemblies which will be assigned a Rev. A revision level after completion and approval of the Part Number Request Form. Any changes to the above (Rev. A) CCB controlled documentation will require CCB approval. This approval will advance the revision from a Rev. “A” to a “B” revision. The next revision will go to a “C”, “D”, and so on. Previous revisions will be referred to as “INACTIVE”. Current revision will be referred to as “ACTIVE”. Depending on the severity of the change, the version number and or base number may change as well. When changing the version number, an “A” revision shall be used.

5.3 Revision Level Guidelines

5.3.1 Letters “I”, “O”, “Q”, “S”, “X”, and “Z” shall not be used to identify revision levels.

5.3.2 Revision levels shall NOT be used as part of the part number.

5.3.3 Parts shall NOT be stocked by revision level.

5.3.4 All sheets of a multi-sheet document shall maintain the same revision level.

5.3.5 Upon exhaustion of the alphabet, revisions are identified by letters “AA”, “AB”, etc. Then “BA”, “BB”, and so on.

5.4 Interchangeability Rules

Two or more items are considered to be interchangeable if changes between the old and new configurations do not impact F/F/F such as appearance, the physical mating/assembly of parts, or performance and operation. Furthermore, the following should be considered:

1. Software-Change to operating or application software.

2. Design Interface- Affecting compatibility of hardware options, features and accessories during interface operations.

3. Test Equipment- Modification of test equipment or test methods.
If there is F/F/F impact or some other reason for distinguishing the existing version from the new, a new part number must be assigned. A new part number, at minimum, will include advancement of the version number and may require as much as the assignment of a new base number as required to maintain configuration management.

### 5.5 Renumbering Rules

5.5.1 Part number changes are not required for vendor changes to standard commercially available component parts or to revise documentation to reflect the “as-built” part. Revision levels shall be used to track the above conditions.

5.5.2 When renumbering, a component or assemblies next higher assembly shall be considered for renumbering based on F/F/F or interchangeability guidelines. The next assemblies shall continue to be considered for possible renumbering until a document revision level only revision decision is made.

5.5.3 All modifications to a PCB FAB (changes to artwork, layout, etc.), shall be identified as such by the assignment of a new version number and the revision level shall revert back to Rev. A.

5.5.4 On PCB assembly parts, if an assembly is modified by additions of jumpers, cutting of traces, removal or addition of components, component value changes, etc., the version and revision shall advance while the base number of the board shall remain unchanged.

If the PCB board changes (FAB), a new board part number shall be used designated by the last three digits advancing by “1”. Hence 021-00022-001 REV A moves to 021-00022-002 Rev. A.

5.5.5 Changes to custom parts and assemblies shall be tracked by advancement of version number and revision level. When revising parts and assemblies to an extent that a new product is created, a new base number must be used along with a Rev. A assignment. See section 5.5.4.

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*Note to fellow Components Engineers*

Each company has their own revision control philosophy. Yours is no different. Some companies use a two digit revision control. If the Bill of Materials or Schematic changes but the PCB board does not, there is no need to bump a revision level on the PCB. One way to control this is to say that the BOM/Schematic is designated with an Alpha character, while the PCB is a numerical character. So A1 would be the first version of the BOM and the first version of the PCB. B1 would designate a BOM change without a PCB change etc. It is important to remember that the top level or subassembly has to bump a revision level in order to track lower level changes. Also, some company’s use a technique for revision level control by which an unreleased product can be distinguished from a released product. So instead of A1 being a released product indicating BOM 1 and PCB 1, the digits are transposed to show the numerical in front of the Alpha. Hence, a document with 1A indicates the product is unreleased and the PCB is at REV 1 while the BOM is at its first revision as well. If a factory person sees 1A, or 2A etc. on a document, they will know immediately that the product has not been released to manufacturing.

Douglas