Product Documentation

Ardy Electronics AB
P.O Box 47
701 40 Orebro
Sweden

Revision history

Date	Name	Description
2010-01-21	DH	Initial draft

Table of Content

1 Introduction

This document specifies the documentation produced by Ardy Electronics during development of new electronic and software products.

2 Overview

This document specifies the amount of documents normally produced by Ardy Electronics when new products are developed. Additional documents required by the customer can also be produced; if additional documentation is required this is specified for each project.

In some cases all the documentation described in this document aren't appropriate for the developed product, in such cases some of the documents may be omitted.

The document is divided into 2 sections; Hardware and Software.

2.1 Glossary

TBD	To be defined
URS	User requirement specification
FS	Functional specification
ACT	In circuit testing
PCB	Printed Circuit board
END	Electrostatic Discharge
EMC	Electromagnetic Compatibility
DS	Design Specification
SODS	Software Design Specification
BOOM	Bill of materials

2.2 References

Products developed by Ardy Electronics shall meet the following standards when it is appropriate for the product developed:

EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements
EN 60529	Specification for degrees of protection provided by enclosures.
IEC 38	Standard Voltages
IEC 73	Specification for colour of indicator lights and push buttons.
IEC 416	Guide for general principles for the creation of graphical symbols for use on equipment.
IEC 417	Symbols and identification.
ISO 7000	Guide to graphical symbols for use on equipment
SS-EN 50082-1/2	
SS-EN 50081-1/2	EMC, Heavy and light industrial locations
ARDY-CS-1010	Coding standard for the C programming language

Other standards to meet may be specified in the User requirement specification.

3 Hardware documentation

3.1 User requirement specification

This document specifies the user requirements for the final product. This document is normally produced by the customer, together with Ardy Electronics, before the development of the product is started. Every requirement in the user requirement specification shall be verifiable.

The user requirement specification (URS) shall normally have the following sections:

- Introduction
- Overview
  - Glossary
  - References
- Operational requirements
  - Functional requirements
  - Interface requirements
  - Environmental requirements
  - Life Time Expectancy
  - Component requirements
  - Communication
  - Other requirements
  - Machine requirements

3.2 Functional Specification

This document describes the functionality and design for the final product. Normally this document is only produced for more complex products. If produced the functional specification (FS) shall normally have the following sections:

- Introduction
- Overview
  - Glossary
  - References
  - Description
- Functions
- Data
- Interfaces
  - Hardware interfaces
  - Communication interfaces
  - User interface

3.3 Design specification

The design specification (DS) contains the following documents when needed, depending on the type of product some documents can be left out if they aren't appropriate for the product.

3.3.1 PCB Documentation

- Simulations and calculations
- Bill of materials (BOM) with manufacturer and supplier for each component.
- Schematics as PDF-file
- PCB layout as PDF file and Gerber files for production
- PCB laminate specification
- Component placement as Centroid file and PDF
- Mechanical drawings as PDF files
- Other considerations

3.3.2 Mechanical Documentation

- Mechanical drawings
- Mechanical mounting instructions

3.4 Hardware acceptance test specification

The Hardware acceptance test specification describes the tests to perform on the final product before it is delivered to the customer. The Hardware acceptance test specification contains the following sections when appropriate:

- Introduction
- Overview
  - Glossary
  - References
  - Required test equipment
- System description
  - Contacts
  - Test points
  - Configuration options
  - Indicators
- In circuit test
- Functional test
- Interface test
- Configuration
- Marking
- Documentation
- Support

3.5 Additional documentation and tests

If required by the customer Ardy Electronics AB can do the following tests and documentation. Some tests are performed by third parties:

- EMC Tests and documentation
- Environmental Tests and documentation
- Long time/Life time tests and documentation
- Users manuals
- Maintenance documentation

4 Software documentation

4.1 User requirement specification

This document describes the user requirement for the final software implementation. This document is normally produced by the customer, together with Ardy Electronics, before the development of the software is started. Every requirement in the user requirement specification (URS) shall be verifiable.

The user requirement specification shall contain the following sections when appropriate:

- Introduction
- Overview
  - Glossary
  - References
- Operational requirements
  - Functional requirements
  - Data requirements
  - Interface requirements
  - User interface requirements
  - Other requirements
- Constraints
  - Compatibility
  - Software maintenance
    - Programming language
    - Coding standard
    - Version control

4.2 Software Design specification

The software design specification is a brief description of different modules in the developed software. Normally this specification is generated directly from the source code with the doxygen tool (http://www.doxygen.org).

In addition to the documentation produced by doxygen the Software Design specification may contain additional information, example of possible sections below:

- Introduction
- Overview
  - Glossary
  - References
  - Required software
    - Operating system / Real Time Operating system
    - Compiler
    - Third party modules
- Modules
- System Data
- User Interface

4.3 Software Test Specification

The Software Test Specification describes all tests to perform on the final software implementation to verify all the requirements in the User requirement specification.

If the developed software is one part of a hardware product the Software Test specification can be a part of the Hardware acceptance test specification.

The Software Test specification may contain the following sections:

- Introduction
- Overview
  - Glossary
  - References
  - Required test equipment/environment
- Operational tests
  - Functional tests
  - Data integrity tests
  - Interface tests
  - User interface tests
- Compatibility tests

4.4 Other software documentation

If required by the customer additional software documentation and tests can be performed by Ardy Electronics AB or a third party, example:

- Source code reviews
- Fault analyze
- Load testing
- Performance tests
- Data backup procedures
- Software Maintenance