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Document
EV Charger HRS-0100

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EV CHARGER

HARDWARE REQUIREMENTS SPECIFICATION

Snoblen & Associates
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Contact:

Tom Snoblen
Snoblen & Associates
1218 City Drive
Ann Arbor, Michigan 48103
734-665-7366

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1. Introduction

This is the Hardware Requirements Specification (HRS) for the EV Charger project.

1.1 Purpose

The purpose of this HRS is to specify the requirements for development of the hardware to control the operation of the battery charger for an electric vehicle

1.2 Scope

This document shall contain all the requirements for the EV Charger hardware.

1.3 Definitions, acronyms, and abbreviations

EV Electric Vehicle
SRS Software Requirements Specification
HRS Hardware Requirements Specification
SCR Silicon Control Rectifier

1.4 References

The following documents form a part of this specification to the extent specified. In the case of conflict between a cited document and this specification, this specification shall be considered a superseding document.

Data Sheets

Maxim MAX110/MAX111 19-0283 Rev 3 3/96 data sheet
Intel 8752 Manual
Maxim MAX232 data sheet
7805 data sheet
LCD display data sheet

2. Overall description

This section describes general factors that affect the product and its requirements. Items presented in these subparagraphs are **not** requirements but provide **background information** for the requirements specified in section 3.

2.1 Product perspective

This document describes the hardware for battery charger controller.

2.2 The Interface box

This unit contains the processor and performs the following services:

- Provide a variable delayed trigger to the SCRs with the delay controlling the desired output of the charger.
- The controller shall provide a hardware interrupt that is at the same rate and phase as the power source zero crossing.
- Report battery current and voltage
- Status will be reported through an RS-232 port
- Three push buttons will be provided to allow output adjustment and mode changes.

2.3 The VA box.

This unit will measure the main pack battery voltage and battery current.

2.4 Constraints

The platform for this hardware is an 8752 base processor board running on an 11.05 MHz clock.

3. Specific requirements

The following paragraphs specify the hardware requirements of the EV Charger Controller in sufficient detail to enable designers to design the system to satisfy these requirements, and testers to validate that the designed system satisfies the requirements.

3.1 Environmental Requirements

All components shall operate under the following conditions.

- Operate over Temp -20 to 110 degrees Fahrenheit.
- Units shall be sealed against the environment.

3.2 Interface Box requirements

3.2.1 LCD Display

The LCD shall display messages from the processor

3.2.2 LED

An LED that can be turn on and off by the processor shall be provided.

3.2.3 VA box interface

The Interface box shall communicate with the VA box to get the battery voltage and current.

3.2.4 RS-232

An RS-232 port shall be provided (outgoing only).

3.2.5 Trigger

A trigger output shall be provided signal levels that will drive the SCRs directly.

3.2.6 Buttons

Three buttons shall be provide up, down, mode.

3.3 The VA box

- The VA box shall communication with the interface box.

- The VA box shall maintain traction batteries and aux. battery isolation.
- The VA box shall provide 12 bits of data per conversion
- The VA box shall provide 20 conversions per second.