H.aHKbox Chassis Technical Guide

1.1 – Preface

This technical build guide applies only to the Modular Chassis of the H.aHKbox project and was designed with no particular application in mind. Even though the project was designed around control equipment for the ZEUS 2, this guide is setup to aid in the building of the chassis for any use. As such, there will not be any references or technical information given directly related to the hardware and cards designed for the ZEUS 2.

1.2 – Goals

To build the chassis of the H.aHKbox project catered for a specific application, balancing features, requirements, room for future expansion, and budget. This guide will assist in the selection of parts and building of the backplane and chassis with explanations of the choices to be made.

1.3 – Description

Using the Eurocard format we want to have a chassis with a backplane that can fit up to 10 cards. These cards will be will be able to communicate to an Arduino via I2C, a raspberry pi via another I2C channel, or a paired SPI channel. The backplane will supply 5 Volts and 20 Volts. Each card will have 9 channels of 4 pin output/input signals for things like temperature sensors. Each card will also have 2 high power output/inputs that can be used for things like driving motors. The backplane will have 3 onboard temperature sensors, 2 power LEDs, and one 7 segment LED display for debug output. The chassis will also have a touch screen to control the cards as well as ethernet to allow for remote communication.

2.0 – Backplane

2.1 – Sockets

The chosen sockets have 64 positions, 4 of which are high power. Of the high power pins, one is used for high input power, another for ground, and the remaining two can be used as high power output or input via a screw terminal. Each socket requires 4 separate high current pins for these features to work. Unless the given card is known to be extremely low power, it is advised to use to these HC pins, at least for ground.