PORTABLE FIELD TESTER FOR ELECTRIC VEHICLE CHADEMO CHARGING PROTOCOL

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CHADEMO DC CHARGERS

BACKGROUND

- DEFINES COMMUNICATIONS BETWEEN ELECTRIC VEHICLES AND DC VEHICLE CHARGERS

- INTERFACES WITH INTERNAL VEHICLE CONTROL SYSTEM
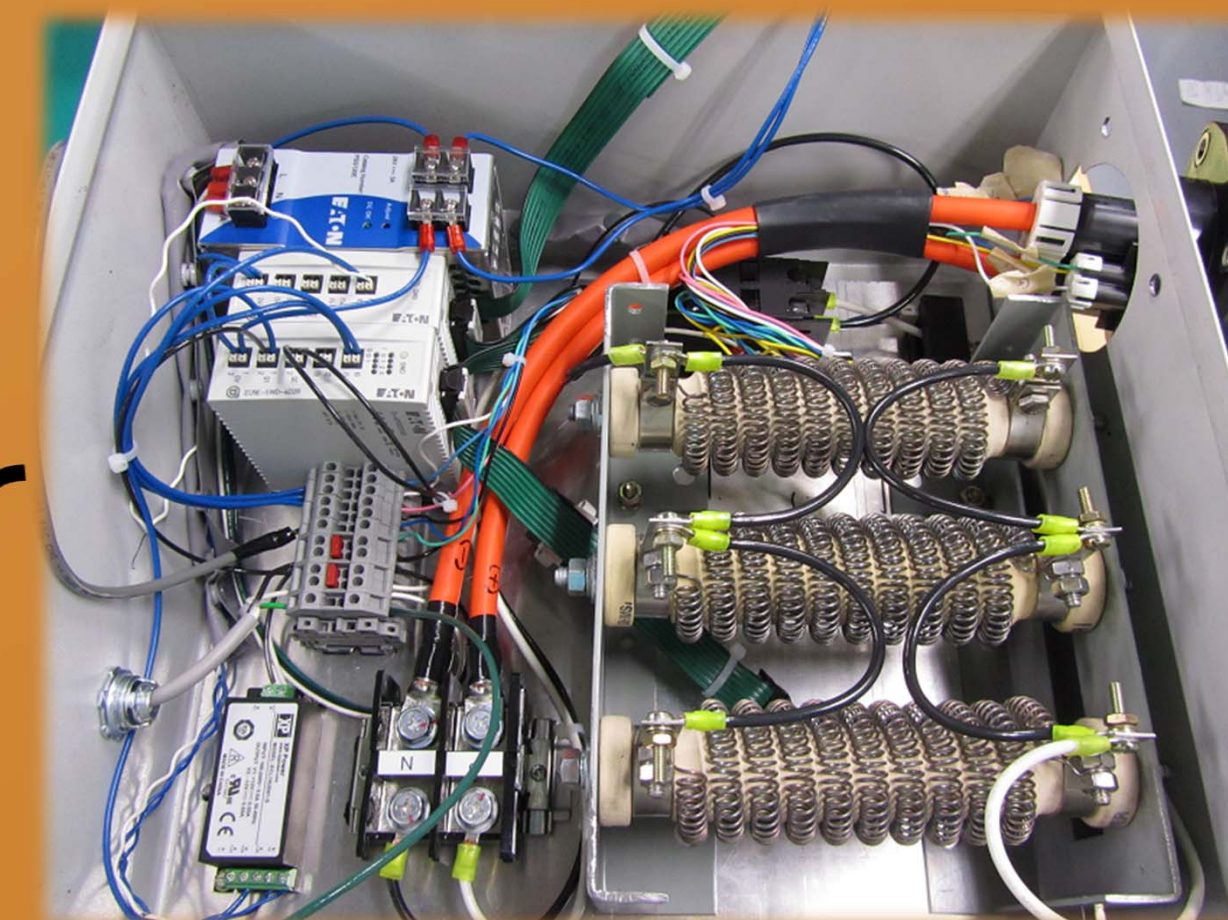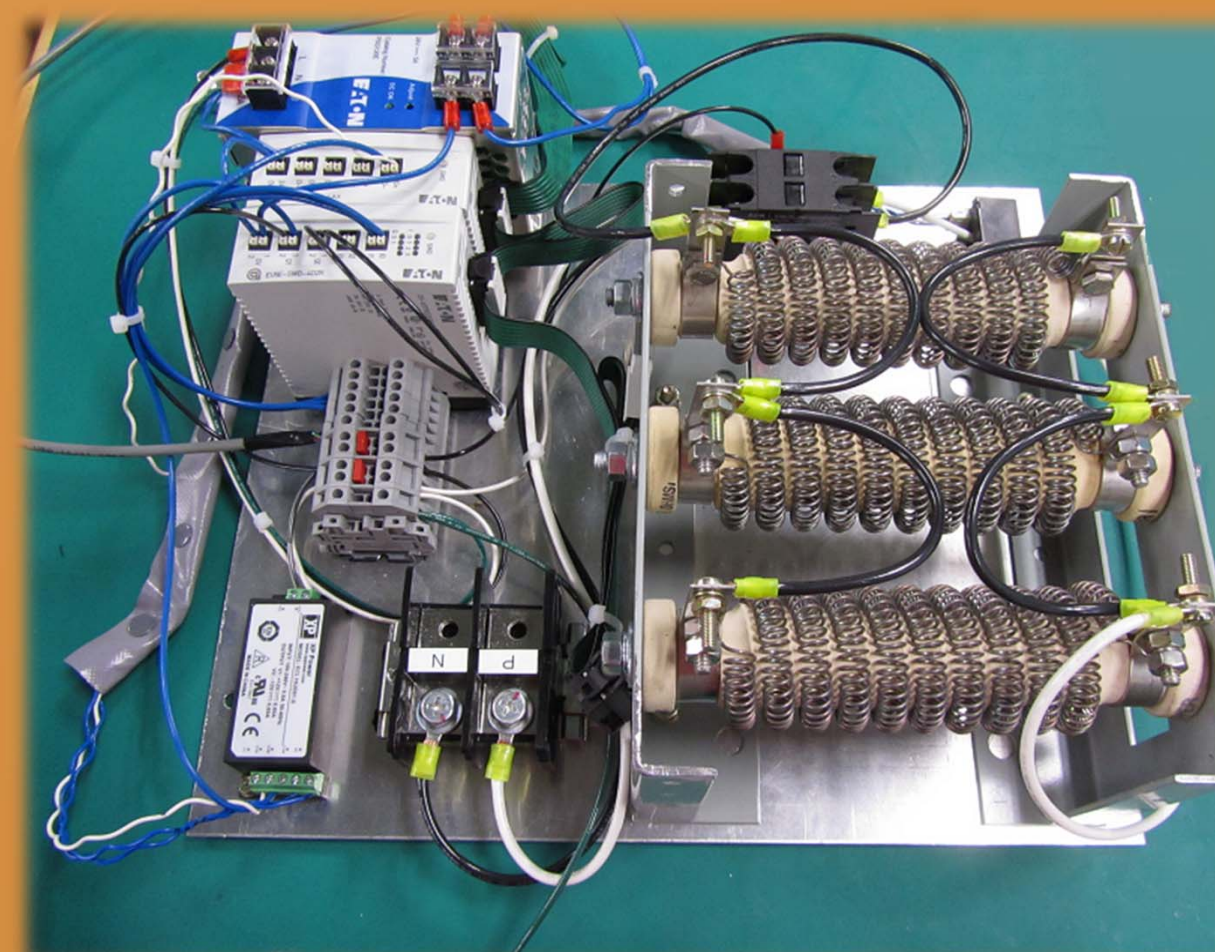
STEPS IN PROTOCOL:

- HANDSHAKE PROTOCOL
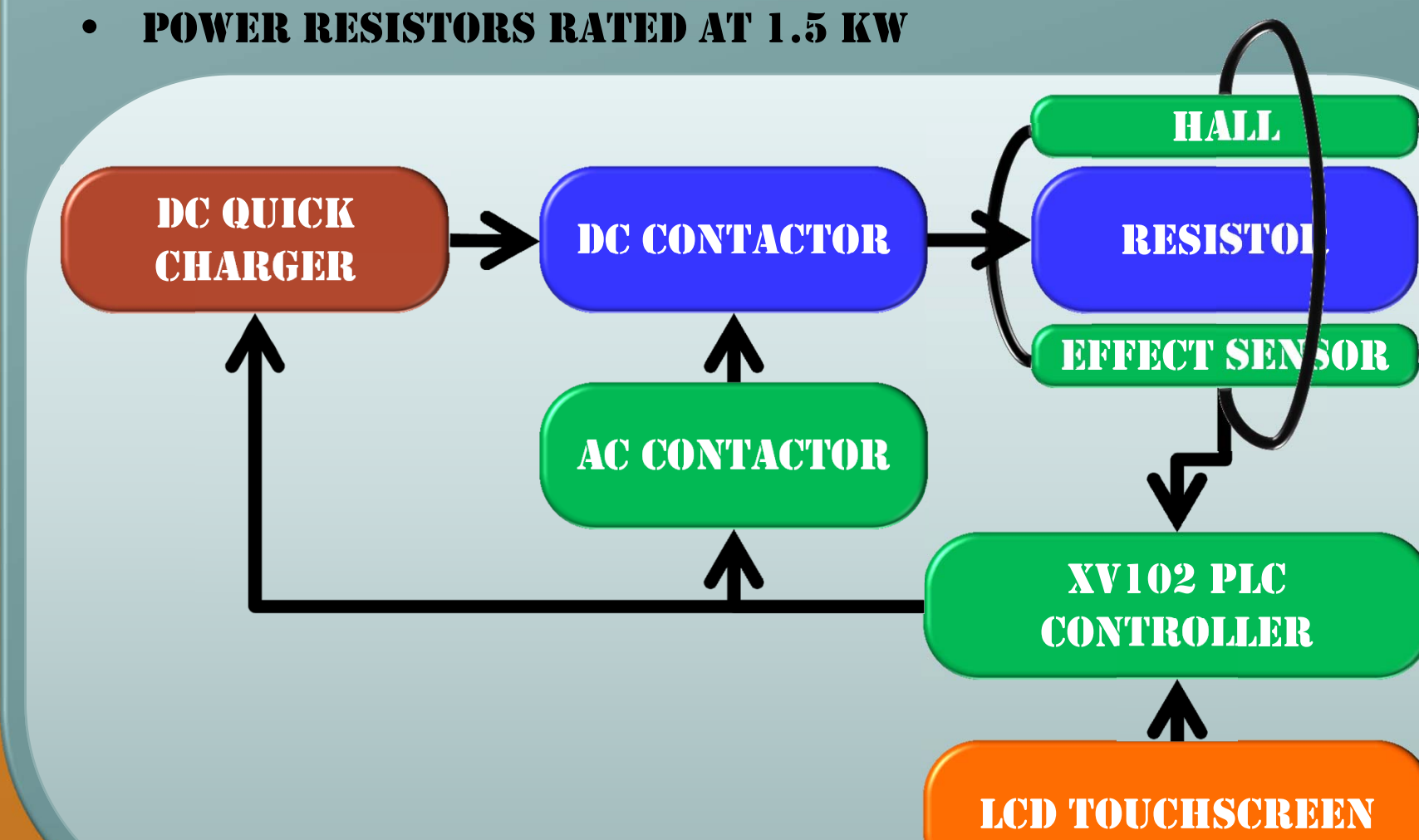- OPEN CIRCUIT TEST
- CHARGE DEMANDS

CONSTRUCTION

DESIGN

COMPONENTS

- TOUCHSCREEN PLC CONTROLLER:
  - CANBUS, ETHERNET, SMARTWIRE
- CHADEMO RECEPTACLE
- AC AND DC CONTACTORS TO PROTECT CIRCUIT
- HALL EFFECT SENSOR FOR DC CURRENT MEASUREMENT
- POWER RESISTORS RATED AT 1.5 KW

OBJECTIVE

DEVELOP A PORTABLE TESTING UNIT FOR ENGINEERS AND TECHNICIANS IN THE FIELD

THE UNIT WAS REQUIRED TO

- ENGAGE THE CHARGER IN COMMUNICATIONS, SIMULATING SIGNALS AS IF IT WERE A VEHICLE.

- BEHAVE AS IF ALL VEHICLE CHECKS ARE PASSED.

- ENGAGE A LINE FAULT TEST AND REACT APPROPRIATELY

- REQUEST A SMALL AMOUNT OF POWER FROM CHARGER

- ANALYZE CURRENT RECEIVED AND CALCULATE VOLTAGE AND POWER RECEIVED

- DISPLAY RESULTS CLEARLY TO USER VIA TOUCHSCREEN INTERFACE

CONTROL

CODESYS SOFTWARE AND DIGITAL CONTROL

- UTILIZES SMARTWIRE DIGITAL AND ANALOG I/O MODULES
  - CONTACTOR CONTROL, COMMUNICATIONS, MEASUREMENT
- CANBUS INTERFACE VIA SERIAL – VEHICLE COMMUNICATIONS
- C-BASED CODING TO CONDUCT MEASUREMENTS AND RUN COMMUNICATIONS
- GUI FOR EASY TOUCHSCREEN INTERACTION