RS-485
Data Link Tester

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Sponsor: LED Effects
Purpose

- Design a roving data tester and a data source.
- Test for correct wiring during the installation of LCD panels.
- Check for wiring errors such as shorts, opens, as well as AC crosses.
- Verify correct DC Voltages are being supplied to the panels.
- Check data transmissions by sending test patterns and verifying accuracy.
Project that our design will be aimed at testing the cabling for initially
Other Buildings

Hong Kong Chanel Building

Macy's Holiday Display
San Francisco

The cable tester needs to be universal enough to be configurable for testing cabling on other projects
RS-485

- RS-485 is a multidrop Low Voltage Differential Signaling (LVDS) standard regulating the electrical characteristics and not the protocol required.
- By using LVDS, long cable runs with high throughput. This is achieved by sending the signal level as a difference in DC voltages.
- There are a maximum of 128 devices on a RS-485 cable depending on the load per transceiver used.
Project Requirements

- **Roving Tester Requirements**
  - Check Physical line characteristics
    - Polarity, AC wire crosses, missing connections, DC supply voltages
  - Communicate with Data Source
    - Initiate data verification test sequence
  - Collect, analyze, and display test results
  - Battery Operated
  - Universal Connector so it can be used in many projects with adaptors

- **Data Source Requirements**
  - Check for AC voltage
  - Wall Powered
  - Autonomous, and will send known signal when communicating with roving tester
  - Universal Connector
Project Deliverables

- Working Prototype
- Source Code
- Documentation
  - Project Documentation
  - Schematics
  - Operator Manual
Potential Solution

Similar design for the Data Source but with reduced user interface