Automated Multiconductor Cable Break-Short Detector

By SD Cables

Sponsored by Masimo

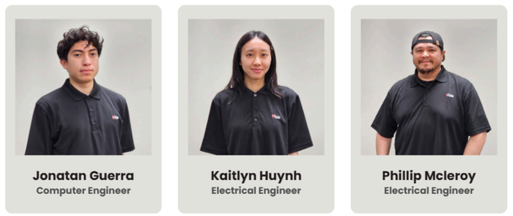
SAN DIEGO STATE UNIVERSITY

MASIMO

Project Overview

The project is a device that analyzes the durability and integrity of multiconductor cables. The device extracts voltage values from the cable to characterize it and monitor the changes. The changes may indicate a short or a break in the conductors while the cable is undergoing a destructive mechanical test. The cable is mechanically tested by using a bend cycle tester provided by Masimo. The data is stored into an SD card for the operator to analyze after the test stops or after it is manually stopped.

Team Members



Jonatan Guerra
Computer Engineer

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Electrical Engineer

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Key Technologies

Developed

Analog Interface:

. Used to test the continuity of wired connections within a cable
. Uses 1K OHM 0.1% 1/10W precision resistor

Characterization Algorithm:

. Used to check voltage values of each pin pair in the cable

Procured

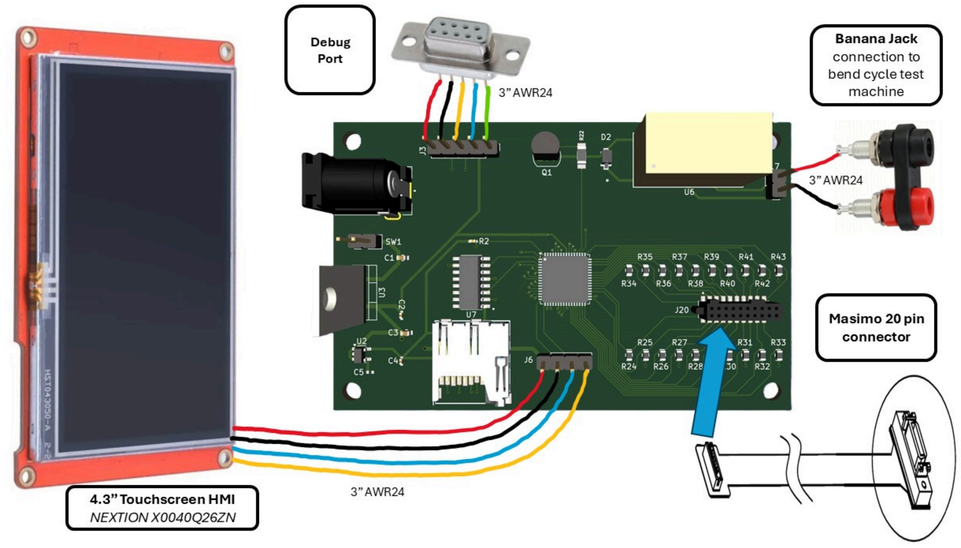
Microprocessor: AVR128DB64

Human Machine Interface: 4.3" Nextion NX4827P043-011C Touch display

SD Card Interface:

. Operates at 3.3V
. Utilizes LP2985 linear voltage regulator

System Integration



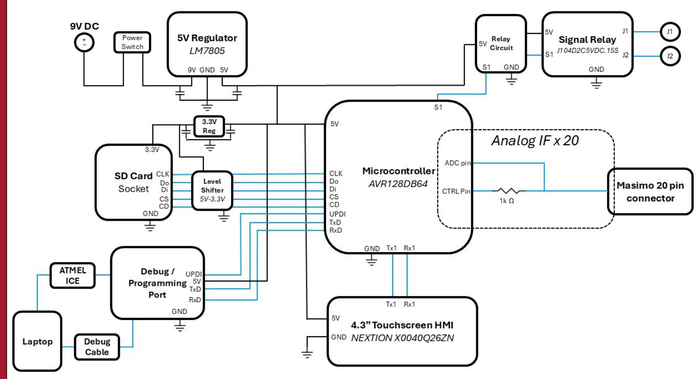
Meet the Sponsor

Masimo: A global medical technology company that develops and produces a wide array of industry-leading monitoring technologies, including innovative measurements, sensors, and patient monitors.

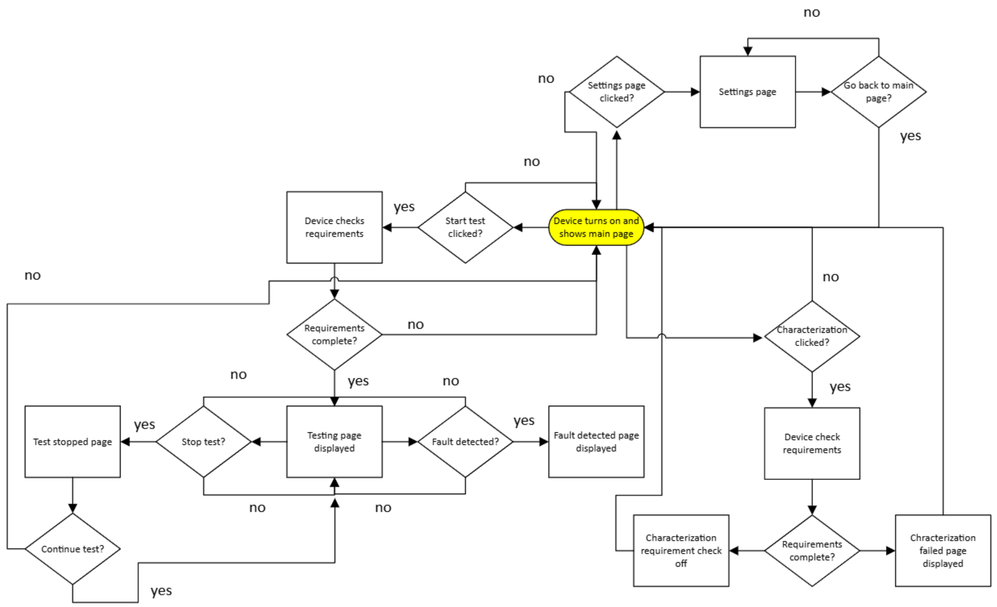
Acknowledgements

Team SD Cables thanks Professor Dorr for advising this project. Furthermore, the team appreciates the guidance and support provided by Masimo, specifically Glenn Pohly.

System Level Diagram



User Actions Required to Initiate Cable Test



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