Electrically Integrated Linear Mating Cycle Test System

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Project 20, Team M08 - Akula Zub Technologies

Sponsor: Masimo Incorporated, Irvine, CA.

Problem Statement

Design and construct a device to be used by Masimo Inc. that will be used to test and cycle electro-mechanical connectors of varying size and shape while monitoring for their insertion and removal force as well as electrical performance. The device will be able to take two inputs, a male and female connector, apply variable insertion and removal forces, and record data on how the connector performs. This data will be easily displayed and collected through an onboard user interface consisting of an LCD screen and manual keypad.

System Description

The device consists of several subsystems, each of which became the focus of a different group member. The system description diagram below breaks down the seven main subsystems of the machine, the controls, connector mounting, force and resistance measuring, drive train, power regulation, enclosure, and lid.

Manufacturing and Assembly

Team AZTech would like to thank Dr. Shaffar, Prof. Dorr, and the Masimo Team for providing us with this opportunity, and for their guidance and support. In addition, we would like to thank machining expert Mr. Lester and assistants Grant Labriola and Bruce Yam for providing manufacturing feedback and assistance.

Testing

Fig. 8: Resistance Measuring Test
Fig. 9: Load Cell Test
Fig. 10: User Interface Test

Acknowledgements

Departments of Mechanical, Electrical, and Computer Engineering, SDSU, Spring 2022