CABLE PULL AND TWIST TEST STATION

TEAM 6

Colin Putnam
Blake Watzke
Stephen Penn
David Marx
Liyu Xiao

Reference: GE Cable Testing Specification Document
CABLE PULL AND TWIST TEST STATION

DESCRIPTION

Purpose of Product – System that places load and strain on a cable in order to verify its integrity.

Twists cable 720°
Places cable under 15kg load
Tests continuity of cable being tested
Test duration is 5 min and repeated 5 times

Market – global GE manufacturing plants

* All underlined fields are customizable with UI for different cables and tests
KEY REQUIREMENTS

Cost
- Sales Price: $550, Component Cost: $340, Assembly & Test Costs: $160

Environment
- Stationary indoors, designed for lab environment
- Operating Temp Range: (0° to 50°c)
- Operating Humidity Range: (0% to 100%) Non Condensing

Power Input(s)
- Residential AC Power: 102 – 132 VAC @ 1.5 Amps Max

Major Functions, Quantities Measured, Displayed
- Functions: On, Off, Standby, & Measure
- Measurements: Load, Temperature, Humidity, Continuity
- Load: Range: 0 to 30kg, Accuracy: +/-0.1kg, Resolution: 0.1kg
- Temperature Range: 0-40°C, Accuracy: +/- 2°C, Resolution: 1°C
BLOCK DIAGRAM

INSIDE PRODUCT CASE
+12V DC

A
Power Supply
+12V DC

B
Microcontroller
+5V DC

C
Actuator Driver
+12V
Linear Actuator

D
Motor Driver
+12V
Twist Motor

E
Amplifier & Signal Conditioning
+5V DC

Load Cell

Temp/Humidity Sensor

USB

GPIO

Block Ownership:
A. Power Supply – Colin
B. Microcontroller – David
C. Motor Driver Circuitry – Liyu
D. User Interface – Blake
E. Sensors - Steve

USB Interface
Computer
Emergency Stop Button