Documentation for LIGO In-vacuum Cable Harness

LIGO-E070029-00-C

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1. **Overview**

The following is a description of the LIGO 25 pin cable assembly for in-vacuum use in Advanced LIGO.

2. **Physical Description** - Kapton cable assembly 13 feet long:

A. Individual Wires

- 28 AWG 40 strands of .050mm bare copper wire)
- Insulation (2 layers Kapton tape 0.0012 inch, at 50% minimum overlap and 1 layer Kapton resin coating, thickness 0.001).
- Bare copper OD 0.015 inch (nominal), 2 layers Kapton tape 0.024/0.027 OD and resin coating 0.026/0.029 ID.
- 600 Volt, 8.0 KV per or 5.7 KVAC high frequency.

B. Cable

- 12 twisted pair 4-5 turns per inch. 40 AWG silver plated copper braided shield, 90% minimum coverage.
- Braid angle 24 deg. from cable center line, 9.7 picks/inch, and 24 bobbins with 10wires per bobbin.

C. Outer Braid

- 0.011 inch Natural PEEK monofilament.
- A braided metallic over-cable shield with 50% coverage.
- At each end Braided Monofilament will be knotted to prevent fraying.

3. **Cable Diagram**

Figure 1