



CABLES/FIBER OPTICS/COAX

BIRNS, an ISO 9001:2015-certified global leader in high-performance sub-sea products, specializes in deep-submergence custom cable assemblies. Options include fiber-optic, hybrid electro-optic, electro-coax and electro-opto-mechanical configurations. BIRNS provides full-service design, manufacturing and testing of the industry's most complex, high-performance underwater cable assemblies, with depth ratings to 6km.



High Performance . . . Under Pressure®

HIGHLY CUSTOMIZABLE

CUSTOM CABLE ASSEMBLIES CAN INCORPORATE ANY COMBINATION OF:

ELECTRICAL

High density (186 ways), high-voltage ($\approx 4.0\text{kV}$ / conductor), complex wiring (TSP, TST, TSQ). BIRNS electrical technicians and inspectors are certified IPC Specialists per J-STD-001 Class 3, WHMA-A-620-A Class 3 and work is performed per IPC-A-610C.

FIBER-OPTICS

Single-mode or multi-mode optical fibers:

- Insertion Loss (per ANSI/TIA/EIA-455)
 - Single-mode: .5dB max [typical: .1dB]
 - Multi-mode: 1dB max [typical: .25dB]
- Return Loss
 - 35 dB min

BIRNS optical technicians are ETA-I certified.

COAXIAL

BIRNS groundbreaking coaxial contacts are hydrostatic pressure rated to 1,433 m. Max. insertion loss of 0.7dB to 36GHz; Max Standing Wave Ratio (SWR) of 1.7:1.

MECHANICAL

BIRNS performs mechanical termination of load-bearing cables with central or coaxial stress members of Aramid fiber or steel; no load is transmitted to electrical conductors or optical fibers. Electro-opto-mechanical assemblies provide load strengths of $\geq 50,000$ lbs.

BIRNS custom-designs and manufactures connectors from nearly any material; performs oil-filled cable assembly, splices and breakouts; and molds epoxy, polyurethane, neoprene and other materials. BIRNS is SUBMEPP-certified to NAVSEA S9320-AM-PRO-020/MLDG.

BIRNS performs hydrostatic pressure testing to 20,000 PSI, electrical testing to 10kV, helium leak testing, and RF testing to 36.5 GHz.



BIRNS' Quality Management System is
ISO 9001:2015 Certified;
BIRNS is NAVSEA PRO-020 Certified

1720 Fiske Place, Oxnard, CA 93033-1863, U.S.A.
T +1.805.487.5393 • F 805.487.0427 • Toll-Free 1.888.BIRNS.88

**High Performance . . .
Under Pressure[®]**

CASE STUDIES

BIRNS CUSTOMERS INCLUDE:

Atlantis Submarines, Atlas Elektronik, AT&T/SSI, Bluefin Robotics, Boeing, Brookhaven National Lab, Columbia Research, General Dynamics/Electric Boat, Government of Israel, Hawai'i Undersea Research Lab, JHU/APL, Lawrence Livermore Lab, Lockheed-Martin (Undersea Systems, Perry Technologies, Engineering & Sciences, and Marine Systems divisions), Military Sealift Command, NEDU, NFESC, NSWC, NUWC, Northrop Grumman (Oceanic and Marine Divisions), Phoenix International, Portsmouth Naval Shipyard, Raytheon, Subsea 7, UT/ARL, UW/Madison, USN-DSU/UMV.



3kV 9-CONDUCTOR
OIL-FILLED CABLE
ASSEMBLIES

When **JHU/APL** needed a high-voltage connector system for a military device, BIRNS supplied S/B 3O-9 oil-filled cable assemblies with five 3kV and four .6kV conductors, all independently shielded and grounded.

L3 COMMUNICATIONS required a high-voltage miniaturized reverse-gender connector, BIRNS designed and supplied the 3F-1RS/3KV-FR and custom mating cable assembly (Ø19mm/.75" OD).

When **LOCKHEED MARTIN (PERRY TECHNOLOGIES)** required robust four-fiber multimode connectors, BIRNS supplied 3O-H0400-BR/CP connectors and cable assemblies.



3kV ELECTRO-OPTICAL
CONNECTORS AND CABLE
ASSEMBLIES

When the **U.S. NAVY** required a high-voltage electro-optical hybrid for a towed device, BIRNS designed, fabricated and tested 3T-H02012-FR/CP connectors and cable assemblies, with two multimode optical fibers, eight 2.5kV conductors, and four 600V conductors.

When the **U.S. NAVY'S DEEP SUBMERGENCE UNIT (UMV)** experienced chronic vehicle downtime due to connector problems, they chose BIRNS to design, fabricate and supply replacement connectors, resulting in the BIRNS Millennium connector series. After DSU/UMV completed a 3-year program to replace all other connectors on the vehicles with BIRNS Millennium connectors, they reported "0% connector-related vehicle down-time."



QUICK-DISCONNECT
MULTI-FIBER TETHER
ASSEMBLY

For the **HAWAI'I UNDERSEA RESEARCH LABORATORY'S (HURL)** deep-submergence research submarines' special penetrator and cable needs, BIRNS designed, tested and supplied ABS-compliant penetrators, man-rated bulkhead connectors and cable assemblies. In one emergency job, BIRNS saved HURL's dive season by providing a custom outboard 40-conductor metal shell man-rated cable assembly in one week.

When **PHOENIX INTERNATIONAL** required a quick-disconnect multi-fiber tether assembly for their innovative dual ROV system, BIRNS designed high-voltage single-mode electro-optomechanical connectors and termination.

