



instrumentation cable series

MI Triaxial Signal Cable

Inconel 600 / AISI 304L MgO mineral-insulated triaxial in-core neutron detector cable



Concentric Triaxial MIMS

Picoamp Guard-Ring Design

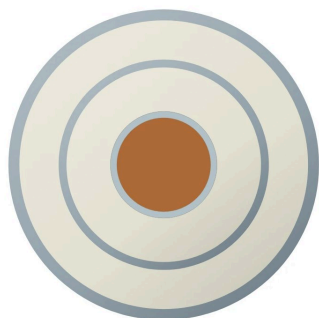
Inconel 600 · +600 °C

Application

MI Triaxial Signal Cable (Mineral-Insulated Metal-Sheathed, MIMS) featuring three concentric metallic conductors (centre signal core, inner tubular guard/return shield, and outer seamless Inconel 600 / AISI 304L pressure boundary).

Typical uses: PWR / BWR / SMR In-Core & Ex-Core Fission Chambers, Self-Powered Neutron & Gamma Detectors (SPND), Reactor Vessel Loose-Parts & Vibration Accelerometers, Liquid-Metal (LMFBR) & Molten-Salt Reactor Instrumentation, High-Temperature Jet Engine & Turbine Charge Amplifiers

Construction



Cross-section, not to scale

- 1 Solid centre signal conductor
- 2 Inner high-purity compacted MgO dielectric
- 3 Seamless concentric inner guard / HV return tube
- 4 Outer compacted MgO isolation barrier
- 5 Seamless Inconel 600 or AISI 304L outer pressure sheath

Technical data

Typical values

Characteristic impedance	50 ± 4 Ω (core-to-inner-shield) or low-capacitance charge geometry	Insulation resistivity	≥ 10 ¹² Ω·m (@ 20 °C) · ≥ 10 ⁸ Ω·m (@ +600 °C) both layers
Core-to-guard capacitance	110 to 165 pF/m (@ 1 kHz)	Dielectric test voltage	1,000–1,500 V AC (core-guard) · 1,000 V AC (guard-sheath)
Continuous operating temp.	-269 °C to +600 °C (up to +850 °C peak for Inconel 600)	Thermal cycling stability	Zero dielectric cracking across 100 thermal cycles (+20 ↔ +600 °C)
Fire & outgassing	100 % inorganic; zero outgassing or combustion	Min. cold bend radius	4 × OD (fixed forming) · 6 × OD (recommended layout)
Coolant pressure rating	25 MPa (250 bar) external hydrostatic pressure at +350 °C	Helium leak rate	< 1 × 10 ⁻⁹ mbar·L/s (100 % mass-spectrometer tested)
Neutron & gamma fluence	> 10 ¹⁰ Gy gamma and > 10 ²² n/cm ² neutron fluence	Transfer impedance (triax)	< 1 mΩ/m from 10 kHz to 30 MHz (solid tubular double shield)
Low cobalt purity	Co ≤ 0.05 % (500 ppm) nuclear grade alloy	Standards	ASTM E844, IEC 60702-1 & IEC 60568 (In-Core Instrumentation)

Sizes

4 standard constructions

Tick the sizes you need and send this page to info@tebaoflex.com or WhatsApp +86 185 9591 3361.

Order designation	Outer / Inner Tube / Core	Outer Ø mm	Weight ≈ kg/km	Core-Guard C pF/m	Core-Guard V V AC
Mineral-Insulated Metal-Sheathed (MIMS) Triaxial Cables 4 sizes					
☐ MI-TRIAx-3.0-INC	Inconel 600 / Inconel 600 / Ni (MgO)	3.00	46	155	1,000
☐ MI-TRIAx-4.0-INC	Inconel 600 / OFHC Cu / OFHC Cu (MgO)	4.00	82	135	1,200
☐ MI-TRIAx-4.76-INC (.188")	Inconel 600 / OFHC Cu / OFHC Cu (50 Ω)	4.76	115	125	1,500
☐ MI-TRIAx-6.35-304L (.250")	AISI 304L / OFHC Cu / OFHC Cu (50 Ω)	6.35	198	115	1,800

– Both MgO insulation layers are simultaneously vacuum-baked and tested to ≥ 10¹² Ω·m before hermetic end sealing.

Standards and approvals

- ✓ ASTM E844 & IEC 60568
- ✓ IEC 60702-1 MIMS Standard
- ✓ ISO 19443 / ASME NQA-1 QA

Certifications



Management systems: ISO 9001, ISO 14001, ISO 45001

Request a quotation

Send the size, length and destination. An application engineer replies within 2 business hours.

WhatsApp / phone

+86 185 9591 3361

Email

info@tebaoflex.com

Web

tebaoflex.com/cables/mineral-insulated-metal-sheathed-low-noise-triaxial-in-core-detector-cable



Typical values for this cable type, based on ASTM E844 / IEC 60702-1 / IEC 60568. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.