Metal-tube radiation-resistant optical cable

M-PAC 4.0 mm

Metal-Tube Radiation-Resistant Optical Cable

IEC 60794-1 / TIA-455 · GI 1300 nm (≤1.0 dB/km) · −55…+125 °C hermetic FIMT optical cable



FIMT Metal Tube | **GI 1300 nm Rad-Hard** | **Ø 4.0 mm Compact**

Application

M-PAC 4.0 mm radiation-resistant communication and distributed sensing (DTS/DAS) optical cable enclosing graded-index radiation-hardened fibres inside a hermetic M-PAC metallic protection tube and a 4.0 mm black outer sheath with dual yellow stripes.

Typical uses: Nuclear Power Containment & Spent-Fuel Monitoring, High-Energy Particle Accelerators & Synchrotron Rings, Distributed Temperature & Acoustic Sensing (DTS / DAS), Downhole Geothermal, Oilfield & Defense Telemetry

Construction





Cross-section, not to scale

1	Radiation-Resistant Optical Fibres	IEC 60794-1-2 / ITU-T G.651.1
2	M-PAC Metallic Protection Tube	IEC 60794-1-2 / ITU-T G.651.1
3	Common Outer Sheath (Ø 4.0 mm)	IEC 60794-1-2 / ITU-T G.651.1
4	Longitudinal Identification Stripes	IEC 60794-1-2 / ITU-T G.651.1

Technical data

Typical values

Rated voltage / transmission duty	Optical Fibre (IEC 60794-1-2 / ITU-T G.651.1)	**Core / conductor construction**	Radiation-Resistant Optical Fibres — Pure-silica / fluorine-doped graded-index (GI 1300 nm, attenuation <= 1.0 dB/km) radiation-hardened optical fibres for nuclear & accelerator zones
Primary dielectric / insulation	M-PAC Metallic Protection Tube — Seamless laser-welded stainless metallic micro-tube (M-PAC) hermetically sealing fibres against hydrogen ingress, moisture, and radial crush	**Continuous operating temperature**	−55…+125 °C (rated operating envelope)
Storage & transport temperature	−40…+80 °C on export drum or reel	**Outer protection / sheath**	Longitudinal Identification Stripes — Dual opposing co-extruded yellow longitudinal identification stripes along the outer jacket for nuclear conduit tracing
Minimum bending radius	15–20 × OD	**Structural layer count**	4 concentric functional layers
Environmental & chemical resistance	Industrial moisture, oils and mechanical wear per IEC 60794-1-2 / ITU-T G.651.1	**RoHS & REACH compliance**	RoHS 2 (2011/65/EU + 2015/863) & REACH SVHC compliant
Standards	IEC 60794-1-2 / ITU-T G.651.1		

Sizes

3 standard constructions

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

Order designation	Configuration	Core / stranding	Outer Ø ≈ mm	Weight ≈ kg/km	Tensile load kN ≈	Min. bend R mm
M-PAC 4.0 mm Construction Schedule (−55…+125 °C) 3 sizes						
☐ **M-PAC 4.0 mm 2F GI Rad-Hard**	2 × 50/125 µm Rad-Hard GI	Hermetic metal tube + black/yellow jacket	4.0	24	1.2	60
☐ **M-PAC 4.0 mm 4F GI Rad-Hard**	4 × 50/125 µm Rad-Hard GI	Hermetic metal tube + black/yellow jacket	4.0	25	1.2	60
☐ **M-PAC 4.0 mm 8F SM/GI Hybrid**	4×SM Pure-Silica + 4×GI Rad-Hard	Hermetic metal tube + black/yellow jacket	4.0	26	1.2	60

– Custom core counts, cross-sections, sheath colours and factory-tested cut lengths available per IEC 60794-1-2 / ITU-T G.651.1.

Electrical, optical & thermal parameters

3 sizes

Configuration	Max. DC R_{20} / Atten. Ω/km or dB/km	Rating / Capacity	Operating temp.
2 × 50/125 µm GI (1300 nm)	0.95	≤1.0 dB/km @ 1300 nm	−55…+125 °C
4 × 50/125 µm GI (1300 nm)	0.95	≤1.0 dB/km @ 1300 nm	−55…+125 °C
4×SM + 4×GI Rad-Hard	0.45	≤0.45 dB/km @ 1550 nm / ≤1.0 @ 1300	−55…+125 °C

– Every production length undergoes routine conductor DC resistance, high-voltage dielectric and dimensional verification.

Standards and approvals

- IEC 60794-1 Compliant
- EN 10204 3.1 Factory Test Certificate
- CE, RoHS 2 (2011/65/EU) & REACH

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/m-pac-4-0mm-metal-tube-radiation-resistant-sensing-optical-cable

Typical values for this cable type, based on IEC 60794-1-2 / ITU-T G.651.1. Values for your order are confirmed in the quotation. Subject to change without notice.
Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.