



High-temperature wire

301-KAPM-PAIR

Polyimide UHV Screened Twisted-Pair Wire

10⁻¹⁰ mbar UHV silver-copper-braid screened polyimide twisted-pair wire (-269 to +250 °C)

ASTM E595 UHV (10⁻¹⁰ mbar)

Ag-Cu Braid Screen

-269 °C to +250 °C

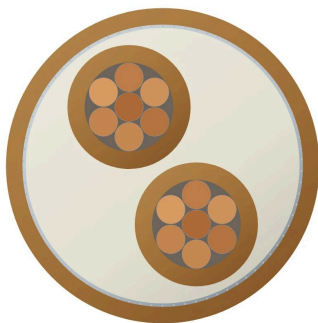


Application

301-KAPM-PAIR ultra-high-vacuum (UHV) screened twisted-pair cable featuring multistrand silver-plated OFHC copper cores, thin-wall aromatic polyimide insulation, and a braided silver-plated copper EMC shield for 10⁻¹⁰ mbar and 4 K to +250 °C.

Typical uses: Synchrotron Goniometers & Stages, UHV Scanning Probe Microscopy, Semiconductor E-Beam Lithography, Cryogenic Quantum & Detector Readout, Aerospace & Satellite Vacuum Harnesses

Construction



Cross-section, not to scale

- 1 Multistrand silver-plated OFHC copper
- 2 Thin-wall polyimide film (KAPM)
- 3 Silver-plated copper EMC braid
- 4 Optional open-spiral polyimide wrap

Technical data

Typical values

Rated voltage	300 V AC / 500 V DC	Dielectric test voltage	1500 V AC core-to-core & core-to-screen
Max. current in UHV (20 °C)	1.5 A (28 AWG) · 3.0 A (24 AWG) · 4.5 A (22 AWG)	Mutual capacitance (1 kHz)	≈ 85 pF/m core-to-core · 145 pF/m core/screen
Operating temperature range	-269 °C (4 K) to +250 °C	UHV bakeout temperature	+250 °C continuous bakeout
Cryogenic thermal cycling	Stable from 4 K liquid helium to +250 °C	Conductor stranding	19×0.07 mm (28 AWG) to 19×0.15 mm (22 AWG)
Pair twist lay length	20 to 25 mm precision symmetrical twist	Min. bending radius	5 × OD static · 10 × OD in-vacuum motion
Vacuum outgassing (ASTM E595)	TML < 1.0 %, CVCM < 0.05 % (UHV < 10 ⁻¹⁰ mbar)	Radiation resistance	10 ⁷ Gy (10 MGy) ionizing radiation
Non-magnetic construction	100 % non-magnetic Ag-OFC (no nickel)	Standards	ASTM E595 / ECSS-Q-ST-70-02C

Sizes

8 standard constructions

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

Order designation	Cross-section / size	Conductor build	Wall ≈ mm	Outer Ø ≈ mm	Metal kg/km	Weight ≈ kg/km	Min. bend R fixed mm
Standard 301-KAPM-PAIR configurations 8 sizes							
☐ 301-KAPM-PAIR (1×2×28 AWG)	1×2×0.09 mm ²	19×0.07 mm Ag-OFC	0.07	1.40	3.8	5.2	7
☐ 301-KAPM-PAIR-26 (1×2×26 AWG)	1×2×0.15 mm ²	19×0.10 mm Ag-OFC	0.08	1.70	5.4	7.5	9
☐ 301-KAPM-PAIR-24 (1×2×24 AWG)	1×2×0.22 mm ²	19×0.12 mm Ag-OFC	0.08	1.90	7.6	10.2	10
☐ 301-KAPM-PAIR-22 (1×2×22 AWG)	1×2×0.35 mm ²	19×0.15 mm Ag-OFC	0.09	2.30	11.2	14.8	12
☐ 301-KAPM-PAIR-J (1×2×28 AWG Wrapped)	1×2×0.09 mm ²	19×0.07 mm Ag-OFC	0.12	1.60	3.8	6.0	8
☐ 301-KAPM-PAIR-24J (1×2×24 AWG Wrapped)	1×2×0.22 mm ²	19×0.12 mm Ag-OFC	0.13	2.10	7.6	11.4	11
☐ 301-KAPM-2PAIR (2×2×28 AWG)	2×2×0.09 mm ²	19×0.07 mm Ag-OFC	0.12	2.60	7.2	10.8	13
☐ 301-KAPM-4PAIR (4×2×28 AWG)	4×2×0.09 mm ²	19×0.07 mm Ag-OFC	0.14	3.40	13.8	19.5	17

– Outer diameters and weights are nominal engineering values for 301-KAPM-PAIR subject to standard manufacturing tolerances per ASTM E595 UHV Outgassing / MIL-DTL-81381.

Electrical & rating data

8 sizes

Configuration	Max. DC R @ 20 °C Ω/km	Primary rating (A or kV)	Derated / AC rating	Dielectric test V/AC rms
301-KAPM-PAIR (1×2×28 AWG) (1×2×0.09 mm ²)	210.00	2.5	1.5	1,500
301-KAPM-PAIR-26 (1×2×26 AWG) (1×2×0.15 mm ²)	128.00	3.5	2.1	1,500
301-KAPM-PAIR-24 (1×2×24 AWG) (1×2×0.22 mm ²)	86.00	5.0	3.0	1,500
301-KAPM-PAIR-22 (1×2×22 AWG) (1×2×0.35 mm ²)	54.00	7.0	4.5	1,500
301-KAPM-PAIR-J (1×2×28 AWG Wrapped) (1×2×0.09 mm ²)	210.00	2.5	1.5	1,500
301-KAPM-PAIR-24J (1×2×24 AWG Wrapped) (1×2×0.22 mm ²)	86.00	5.0	3.0	1,500
301-KAPM-2PAIR (2×2×28 AWG) (2×2×0.09 mm ²)	210.00	2.2	1.3	1,500
301-KAPM-4PAIR (4×2×28 AWG) (4×2×0.09 mm ²)	210.00	2.0	1.2	1,500

– Electrical resistance at +20 °C and dielectric withstand voltages verified per ASTM E595 UHV Outgassing / MIL-DTL-81381.

Standards and approvals

- ✓ ASTM E595 UHV Outgassing / MIL-DTL-81381
- ✓ CE (2014/35/EU) & RoHS 3 (2015/863/EU) Compliant
- ✓ REACH SVHC & Halogen/Asbestos Compliance Verified

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

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Email

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Web

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Typical values for this cable type, based on ASTM E595 UHV Outgassing / MIL-DTL-81381. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.