



instrumentation cable series

WMW-30 / WMW-32 / WMW-36

Enamelled Manganin Low-Thermal-EMF

30, 32 & 36 AWG enamelled Manganin (Cu86Mn12Ni2) low-thermal-EMF cryogenic wire



Cu86Mn12Ni2 Manganin

Thermal EMF < 1.5 μ V/K vs Cu

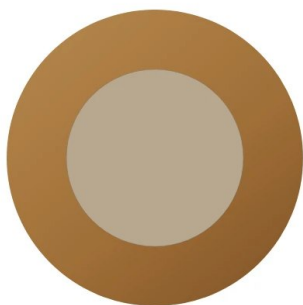
30, 32 & 36 AWG Enamelled

Application

WMW-30, WMW-32 and WMW-36 Enamelled Manganin Cryogenic Wire drawn from precision Cu86Mn12Ni2 resistance alloy with heavy Polyimide (ML) or Formvar/Polyurethane-Nylon enamel—delivering ultra-low thermal EMF against copper (< 1.5 μ V/K),.

Typical uses: Cryogenic Nanovolt & Quantum Hall Transport, Dilution Refrigerator & ⁴He Cryostat Sensor Looms, Precision Reference Resistors & Current Shunts, High-Pressure Diamond Anvil Cell (DAC) Manganin Gauges, Superconducting Magnet Quench & Voltage Tap Wiring

Construction



Cross-section, not to scale

- 1 Solid annealed Manganin (Cu86Mn12Ni2) conductor
- 2 Heavy Polyimide (ML) or Formvar/Polyurethane enamel
- 3 Thermal-anchoring protective enamel overcoat

Technical data

Typical values

DC resistance @ 295 K	9.46 Ω /m (WMW-30) · 13.7 Ω /m (WMW-32) · 34.7 Ω /m (WMW-36)
Thermoelectric EMF vs Cu	< 1.5 μ V/K (0 to +100 °C) — 25× lower than Constantan (~40 μ V/K)
Operating temperature	100 mK to 400 K (+127 °C) · Polyimide ML version to +220 °C
Specific heat @ 300 K	≈ 410 J/(kg·K)
Insulated outer diameter	0.279 mm (30 AWG) · 0.226 mm (32 AWG) · 0.147 mm (36 AWG)
Piezo-resistive coeff.	≈ +2.3 × 10 ⁻⁶ / bar (used as primary high-pressure manometer gauge)
Solderability	Readily soldered with RMA rosin or mild organic flux (unlike stainless)

DC resistance @ 77 K / 4.2 K	≈ 93 % of 295 K value (@ 77 K) · ≈ 90 % of 295 K value (@ 4.2 K)
Temp. coeff. of resistance	± 15 ppm/K (+15 °C to +35 °C parabola peak)
Thermal conductivity	22 W/(m·K) @ 300 K · 13 W/(m·K) @ 77 K · 0.5 W/(m·K) @ 4.2 K
Bare conductor diameter	0.254 mm (30 AWG) · 0.202 mm (32 AWG) · 0.127 mm (36 AWG)
Tensile strength (annealed)	400 to 520 MPa with ≥ 15 % elongation
Solvent & varnish resist.	Withstands GE 7031 varnish, ethanol, acetone & Stycast epoxies
Standards	DIN 17471 (CuMn12Ni) & ASTM B267 Class 9

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	AWG & bare Ø	Insul. Ø mm	R @ 295K Ω /m	R @ 77K Ω /m	R @ 4.2K Ω /m
Enamelled Manganin (Cu86Mn12Ni2) Cryogenic Resistance Wire 3 sizes					
☐ WMW-30 (30 AWG Manganin)	30 AWG · 0.254 mm Bare Ø	0.279	9.46	8.80	8.51
☐ WMW-32 (32 AWG Manganin)	32 AWG · 0.202 mm Bare Ø	0.226	13.70	12.74	12.33
☐ WMW-36 (36 AWG Manganin)	36 AWG · 0.127 mm Bare Ø	0.147	34.70	32.27	31.23

– Can also be ordered as factory-twisted pairs (WDT-MN) or woven 12-pair looms (WQL-MN).

Standards and approvals

- ✓ DIN 17471 CuMn12Ni
- ✓ ASTM B267 Class 9
- ✓ NEMA MW 1000 Enamel

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/wmw-30-wmw-32-wmw-36-enamelled-manganin-low-thermal-emf-cryogenic-resistance-wire



Typical values for this cable type, based on DIN 17471 / ASTM B267 / NEMA MW 1000. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.