



IEC 60584-3 Type TX thermocouple cable

TX / Type T extension Thermocouple Cable

True Cu / CuNi (Type T) Class 1 (± 0.5 °C) cryogenic & pharma thermocouple cable



IEC 60584-3 / ANSI MC96.1

Cu (+) / CuNi (-) True TX

Class 1 (± 0.5 °C) · Cryogenic

Application

High-accuracy Type TX thermocouple extension cable built to IEC 60584-3 and ANSI MC96.1 with oxygen-free Copper (+ Cu) and Copper-Nickel (- CuNi) conductors, Class 1 (± 0.5 °C) tolerance, Al/PET screen and PVC, LSZH, cryogenic FEP or SWA construction.

Typical uses: Pharmaceutical Autoclaves & Lyophilisation, LNG Terminals, Air Separation & Cryogenics, Food, Beverage & Cold-Chain Monitoring, Clinical, Biomedical & Blood-Bank Freezers, Aerospace Environmental Test Chambers

Construction



Cross-section, not to scale

- 1 True Type TX thermocouple alloy conductors
- 2 Colour-coded core insulation
- 3 Individual & collective Al/PET screens
- 4 Optional SWA or tinned copper braid
- 5 Outer jacket (IEC Brown, ANSI Blue or Ex-i Blue)

IEC 60332-1-2 / IEC 60332-3-24 flame retardant

Technical data

Typical values

Positive conductor (+)	High-purity Copper (Cu, non-magnetic, ~1.72 $\mu\Omega\cdot\text{cm}$)	Negative conductor (-)	Copper-Nickel (CuNi ~55 % Cu / 45 % Ni, non-magnetic, ~49 $\mu\Omega\cdot\text{cm}$)
Tolerance Class 1 (IEC 60584-3)	$\pm 0.5\text{ }^{\circ}\text{C}$ ($\pm 30\text{ }\mu\text{V}$) over $-25\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ junction range	Tolerance Class 2 (IEC 60584-3)	$\pm 1.0\text{ }^{\circ}\text{C}$ ($\pm 60\text{ }\mu\text{V}$) over $-25\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ junction range
Nominal Seebeck coefficient	$\approx 42.8\text{ }\mu\text{V}/^{\circ}\text{C}$ (0 to $+100\text{ }^{\circ}\text{C}$) · loop R $\approx 0.51\text{ }\Omega/\text{m}$ at 1.0 mm^2	Standard IEC 60584-3 calibration range	$-25\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ (extended $-190\text{ }^{\circ}\text{C}$ to $+200\text{ }^{\circ}\text{C}$ on FEP sensor-grade)
Insulation rating (by jacket type)	$-25\text{...}+100\text{ }^{\circ}\text{C}$ (PVC) · $-40\text{...}+90\text{ }^{\circ}\text{C}$ (XLPE/LSZH) · $-190\text{...}+200\text{ }^{\circ}\text{C}$ (FEP)	Conductor stranding	0.22 mm^2 (7/0.20) · 0.5 mm^2 (7/0.30) · 1.0 mm^2 (7/0.43) · 1.5 mm^2 (7/0.53)
Min. bending radius	$7.5 \times \text{OD}$ (unarmoured) · $10 \times \text{OD}$ (SWA armoured)	Flame retardance	IEC 60332-1-2 & IEC 60332-3-24 Cat C (UL 94 V-0 on FEP)
Moisture & steam resistance	Non-hygroscopic FEP/PTFE withstands saturated CIP/SIP steam	Standards	IEC 60584-3, ANSI/ISA MC96.1 (ASTM E230) & DIN 43722

Sizes

15 standard constructions

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

Order designation	Configuration	Insulation / Sheath	Temp. range	Outer $\varnothing \approx$ mm	Weight $\approx$ kg/km	Min. bend R fixed mm
TX PVC / PVC Screened Process Cables ($-25\text{...}+100\text{ }^{\circ}\text{C}$) 9 sizes						
☐ TX-PVC-OS 1×2×0.5	1×2×0.5 mm ² (7/0.30)	PVC / PVC (OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	5.6	44	42
☐ TX-PVC-PiMF 2×2×0.5	2×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	8.6	84	64
☐ TX-PVC-PiMF 4×2×0.5	4×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	10.8	142	81
☐ TX-PVC-PiMF 8×2×0.5	8×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	14.1	246	106
☐ TX-PVC-PiMF 12×2×0.5	12×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	16.9	348	127
☐ TX-PVC-OS 1×2×1.0	1×2×1.0 mm ² (7/0.43)	PVC / PVC (OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	6.7	68	50
☐ TX-PVC-PiMF 4×2×1.0	4×2×1.0 mm ² (7/0.43)	PVC / PVC (PiMF+OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	12.8	212	96
☐ TX-PVC-OS 1×2×1.5	1×2×1.5 mm ² (7/0.53)	PVC / PVC (OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	7.5	92	56
☐ TX-PVC-PiMF 4×2×1.5	4×2×1.5 mm ² (7/0.53)	PVC / PVC (PiMF+OS)	$-25\text{...}+100\text{ }^{\circ}\text{C}$	14.3	286	107
TX FEP / FEP Cryogenic & Steam-Autoclave Cables ($-190\text{...}+200\text{ }^{\circ}\text{C}$) 4 sizes						
☐ TX-FEP-OS 1×2×0.22	1×2×0.22 mm ² (7/0.20)	FEP / FEP (OS)	$-190\text{...}+200\text{ }^{\circ}\text{C}$	3.6	22	27
☐ TX-FEP-OS 1×2×0.5	1×2×0.5 mm ² (7/0.30)	FEP / FEP (OS)	$-190\text{...}+200\text{ }^{\circ}\text{C}$	4.6	38	34
☐ TX-FEP-PiMF 4×2×0.5	4×2×0.5 mm ² (7/0.30)	FEP / FEP (PiMF+OS)	$-190\text{...}+200\text{ }^{\circ}\text{C}$	9.2	128	69
☐ TX-FEP-OS 1×2×1.0	1×2×1.0 mm ² (7/0.43)	FEP / FEP (OS)	$-190\text{...}+200\text{ }^{\circ}\text{C}$	5.6	58	42
TX XLPE / LSZH / SWA Armoured LNG & Cold-Box Cables ($-40\text{...}+90\text{ }^{\circ}\text{C}$) 2 sizes						
☐ TX-XLPE-SWA 1×2×1.5	1×2×1.5 mm ² (7/0.53)	XLPE / SWA / LSZH	$-40\text{...}+90\text{ }^{\circ}\text{C}$	12.1	298	121
☐ TX-XLPE-SWA 4×2×1.5	4×2×1.5 mm ² (7/0.53)	XLPE / SWA / LSZH	$-40\text{...}+90\text{ }^{\circ}\text{C}$	19.8	745	198

– Specify 'IEC' (+ Brown / – White) or 'ANSI' (+ Blue / – Red) colour coding and Class 1 ($\pm 0.5\text{ }^{\circ}\text{C}$) tolerance when ordering.

Loop resistance & EMF parameters by conductor size

4 sizes

Conductor size	(+) Cu R ₂₀ $\Omega/\text{m} \approx$	(-) CuNi R ₂₀ $\Omega/\text{m} \approx$	Loop R ₂₀ / pair $\Omega/\text{m} \approx$	Class 1 tol. ($-25\text{...}+100\text{ }^{\circ}\text{C}$)
0.22 mm ² (7/0.20 mm · AWG 24)	0.082	2.23	2.31	$\pm 0.5\text{ }^{\circ}\text{C}$ ($\pm 30\text{ }\mu\text{V}$)
0.50 mm ² (7/0.30 mm · AWG 20)	0.036	0.98	1.02	$\pm 0.5\text{ }^{\circ}\text{C}$ ($\pm 30\text{ }\mu\text{V}$)
1.00 mm ² (7/0.43 mm · AWG 17)	0.018	0.49	0.51	$\pm 0.5\text{ }^{\circ}\text{C}$ ($\pm 30\text{ }\mu\text{V}$)
1.50 mm ² (7/0.53 mm · AWG 16)	0.012	0.33	0.34	$\pm 0.5\text{ }^{\circ}\text{C}$ ($\pm 30\text{ }\mu\text{V}$)

– Because the positive leg is high-purity copper (0.018 Ω/m at 1.0 mm^2), Type TX has the lowest loop resistance ($\sim 0.51\text{ }\Omega/\text{m}$) of any base-metal thermocouple extension cable.

Standards and approvals

- ✓ IEC 60584-3 Class 1 (± 0.5 °C) Certified
- ✓ ANSI/ISA MC96.1 & ASTM E230 Special Limits
- ✓ 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/tx-thermocouple-extension-cable



Typical values for this cable type, based on IEC 60584-3 / ANSI MC96.1 / ASTM E230. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.