



IEC 60584-3 Type RCB/SCB compensating cable

RCB / SCB

Type R/S Thermocouple Compensating Cable

Cu / Cu11Ni (Alloy #11) compensating cable for Platinum-Rhodium Type R & S thermocouples



IEC 60584-3 RCB / SCB / RCA / SCA

Cu (+) / Cu11Ni (-) Alloy #11

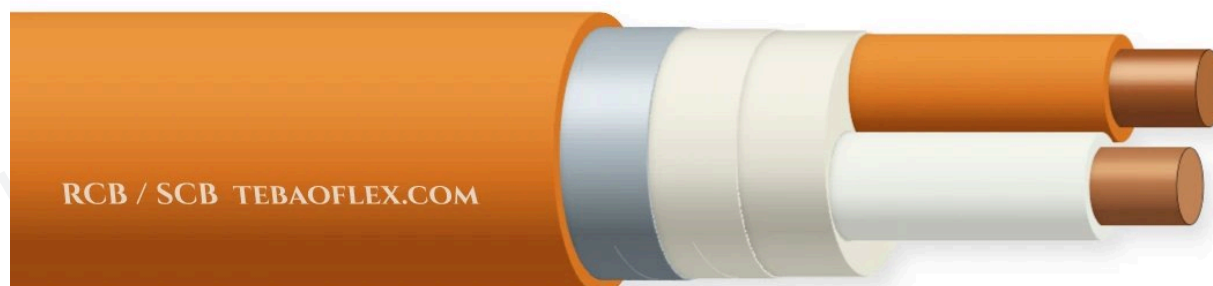
For Pt13Rh-Pt (R) & Pt10Rh-Pt (S)

Application

Noble-metal thermocouple compensating cable (IEC 60584-3 RCB/SCB 0...+100 °C and RCA/SCA 0...+200 °C; ANSI SX) with pure Copper (+ Cu) and low-nickel Copper-Nickel (- Cu11Ni, Alloy #11) conductors calibrated for Pt13Rh-Pt (R) and Pt10Rh-Pt (S) sensors.

Typical uses: Glass Melting Tanks, Forehearths & Float Lines, Steel BOF, EAF, Ladle & Tundish Pyrometry, Semiconductor Crystal Pullers & Diffusion Furnaces, Refractory, Technical Ceramic & Sintering Kilns, Precious-Metal Smelting & Assay Furnaces

Construction



Cross-section, not to scale

- 1 Matched Type RCB/SCB (SX) compensating conductors
- 2 Colour-coded core insulation
- 3 Individual & collective Al/PET screens
- 4 Optional SWA or tinned copper braid
- 5 Outer jacket (IEC Orange RAL 2003 or ANSI Green)

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

Technical data

Typical values

Compensated thermocouple types	Both Type R (Pt13Rh-Pt) & Type S (Pt10Rh-Pt) per IEC 60584-1	Positive conductor (+)	High-purity Copper (Cu, non-magnetic, ~1.72 $\mu\Omega\cdot\text{cm}$)
Negative conductor (-)	Low-nickel Copper-Nickel (Cu11Ni / Alloy #11, ~0.6 % Ni, ~3.0 $\mu\Omega\cdot\text{cm}$)	Tolerance Class 2 (IEC 60584-3)	$\pm 5.0\text{ }^{\circ}\text{C}$ ($\pm 60\text{ }\mu\text{V}$ at +1000 $^{\circ}\text{C}$) over 0...+100 $^{\circ}\text{C}$ (RCB/SCB) or 0...+200 $^{\circ}\text{C}$
Loop resistance @ 20 $^{\circ}\text{C}$	$\approx 0.095\text{ }\Omega/\text{m}$ (0.5 mm ²) · 0.048 Ω/m (1.0 mm ²) · 0.032 Ω/m (1.5 mm ²)	Permissible junction temperature range	0 $^{\circ}\text{C}$ to +100 $^{\circ}\text{C}$ (RCB/SCB) · 0 $^{\circ}\text{C}$ to +200 $^{\circ}\text{C}$ (RCA/SCA)
Insulation rating (by jacket type)	-25...+105 $^{\circ}\text{C}$ (PVC) · -40...+90 $^{\circ}\text{C}$ (XLPE/LSZH) · -60...+200 $^{\circ}\text{C}$ (FEP)	Conductor stranding	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 × OD (unarmoured) · 10 × OD (SWA armoured)	Flame retardance	IEC 60332-1-2 & IEC 60332-3-24 Cat C
EMI noise rejection	PiMF + OS screening essential for ~6.5 $\mu\text{V}/^{\circ}\text{C}$ PtRh signal integrity	Standards	IEC 60584-3, ANSI/ISA MC96.1 (SX/RX) & DIN 43722 (So/Ro)

Sizes

13 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	Junction range	Outer $\varnothing \approx$ mm	Weight $\approx$ kg/km	Min. bend R fixed mm
RCB / SCB PVC / PVC Screened Process Cables (0...+100 $^{\circ}\text{C}$) 9 sizes						
☐ RCB/SCB-PVC-OS 1×2×0.5	1×2×0.5 mm ² (7/0.30)	PVC / PVC (OS)	0...+100 $^{\circ}\text{C}$	5.6	44	42
☐ RCB/SCB-PVC-PiMF 2×2×0.5	2×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	0...+100 $^{\circ}\text{C}$	8.6	84	64
☐ RCB/SCB-PVC-PiMF 4×2×0.5	4×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	0...+100 $^{\circ}\text{C}$	10.8	142	81
☐ RCB/SCB-PVC-PiMF 8×2×0.5	8×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	0...+100 $^{\circ}\text{C}$	14.1	246	106
☐ RCB/SCB-PVC-PiMF 12×2×0.5	12×2×0.5 mm ² (7/0.30)	PVC / PVC (PiMF+OS)	0...+100 $^{\circ}\text{C}$	16.9	348	127
☐ RCB/SCB-PVC-OS 1×2×1.0	1×2×1.0 mm ² (7/0.43)	PVC / PVC (OS)	0...+100 $^{\circ}\text{C}$	6.7	68	50
☐ RCB/SCB-PVC-PiMF 4×2×1.0	4×2×1.0 mm ² (7/0.43)	PVC / PVC (PiMF+OS)	0...+100 $^{\circ}\text{C}$	12.8	212	96
☐ RCB/SCB-PVC-OS 1×2×1.5	1×2×1.5 mm ² (7/0.53)	PVC / PVC (OS)	0...+100 $^{\circ}\text{C}$	7.5	92	56
☐ RCB/SCB-PVC-PiMF 4×2×1.5	4×2×1.5 mm ² (7/0.53)	PVC / PVC (PiMF+OS)	0...+100 $^{\circ}\text{C}$	14.3	286	107
RCA / SCA FEP / FEP Hot-Head Compensating Cables (0...+200 $^{\circ}\text{C}$) 2 sizes						
☐ RCA/SCA-FEP-OS 1×2×1.0	1×2×1.0 mm ² (7/0.43)	FEP / FEP (OS)	0...+200 $^{\circ}\text{C}$	5.6	58	42
☐ RCA/SCA-FEP-PiMF 4×2×1.0	4×2×1.0 mm ² (7/0.43)	FEP / FEP (PiMF+OS)	0...+200 $^{\circ}\text{C}$	11.2	188	84
RCB / SCB XLPE / LSZH / SWA Armoured Direct-Burial (0...+90 $^{\circ}\text{C}$) 2 sizes						
☐ RCB/SCB-XLPE-SWA 1×2×1.5	1×2×1.5 mm ² (7/0.53)	XLPE / SWA / LSZH	0...+90 $^{\circ}\text{C}$	12.1	298	121
☐ RCB/SCB-XLPE-SWA 4×2×1.5	4×2×1.5 mm ² (7/0.53)	XLPE / SWA / LSZH	0...+90 $^{\circ}\text{C}$	19.8	745	198

– Specify 'IEC' (+ Orange / – White, Orange jacket) or 'ANSI SX' (+ Black / – Red, Green jacket) when ordering.

Loop resistance & EMF parameters by conductor size

4 sizes

Conductor size	(+) Cu R_{20} $\Omega/\text{m} \approx$	(-) Cu11Ni R_{20} $\Omega/\text{m} \approx$	Loop R_{20} / pair $\Omega/\text{m} \approx$	Class 2 tol. (at +1000 $^{\circ}\text{C}$)
0.50 mm ² (7/0.30 mm)	0.036	0.059	0.095	$\pm 5.0\text{ }^{\circ}\text{C}$ ($\pm 60\text{ }\mu\text{V}$)
0.75 mm ² (7/0.37 mm)	0.025	0.040	0.065	$\pm 5.0\text{ }^{\circ}\text{C}$ ($\pm 60\text{ }\mu\text{V}$)
1.00 mm ² (7/0.43 mm)	0.018	0.030	0.048	$\pm 5.0\text{ }^{\circ}\text{C}$ ($\pm 60\text{ }\mu\text{V}$)
1.50 mm ² (7/0.53 mm)	0.012	0.020	0.032	$\pm 5.0\text{ }^{\circ}\text{C}$ ($\pm 60\text{ }\mu\text{V}$)

– Because Cu11Ni contains only ~0.6 % Nickel, RCB/SCB has an ultra-low loop resistance of just 0.048 Ω/m at 1.0 mm².

Standards and approvals

- ✓ IEC 60584-3 Class 2 (RCB/SCB & RCA/SCA) Certified
- ✓ ANSI/ISA MC96.1 & ASTM E230 (SX/RX) Compliant
- ✓ 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

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Typical values for this cable type, based on IEC 60584-3 / ANSI MC96.1 (SX) / BS EN 50288-7. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.