

# Railway Cables

HUBER+SUHNER is your professional partner for the development and manufacture of cables, harnesses and sophisticated cable systems specifically designed for the railway market.

All our RADOX® cables have the following characteristics

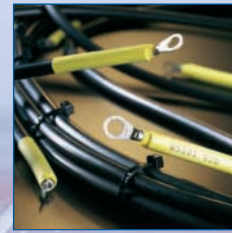
- low smoke
- halogen free
- compact
- light weight
- wide operating temperature range
- corona resistant

HUBER+SUHNER can provide a wide range of products meeting the requirements of today's modern railway industry. Contact us for advice as to which solution best suits your needs.



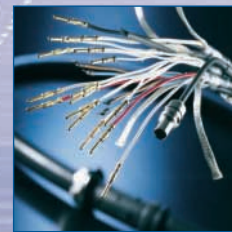
RADOX® Power cables for

- traction motors
- converters
- breaking systems



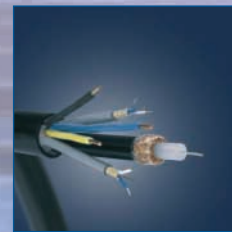
RADOX® Control cables for

- compact wiring systems where critical space conditions exist as well as signal and control circuits



RADOX® Jumper cables for

- Power and Control system cables for inter-vehicle connections



RADOX® databus cables for

- Data transmission for high frequency applications



RADOX® system solutions for

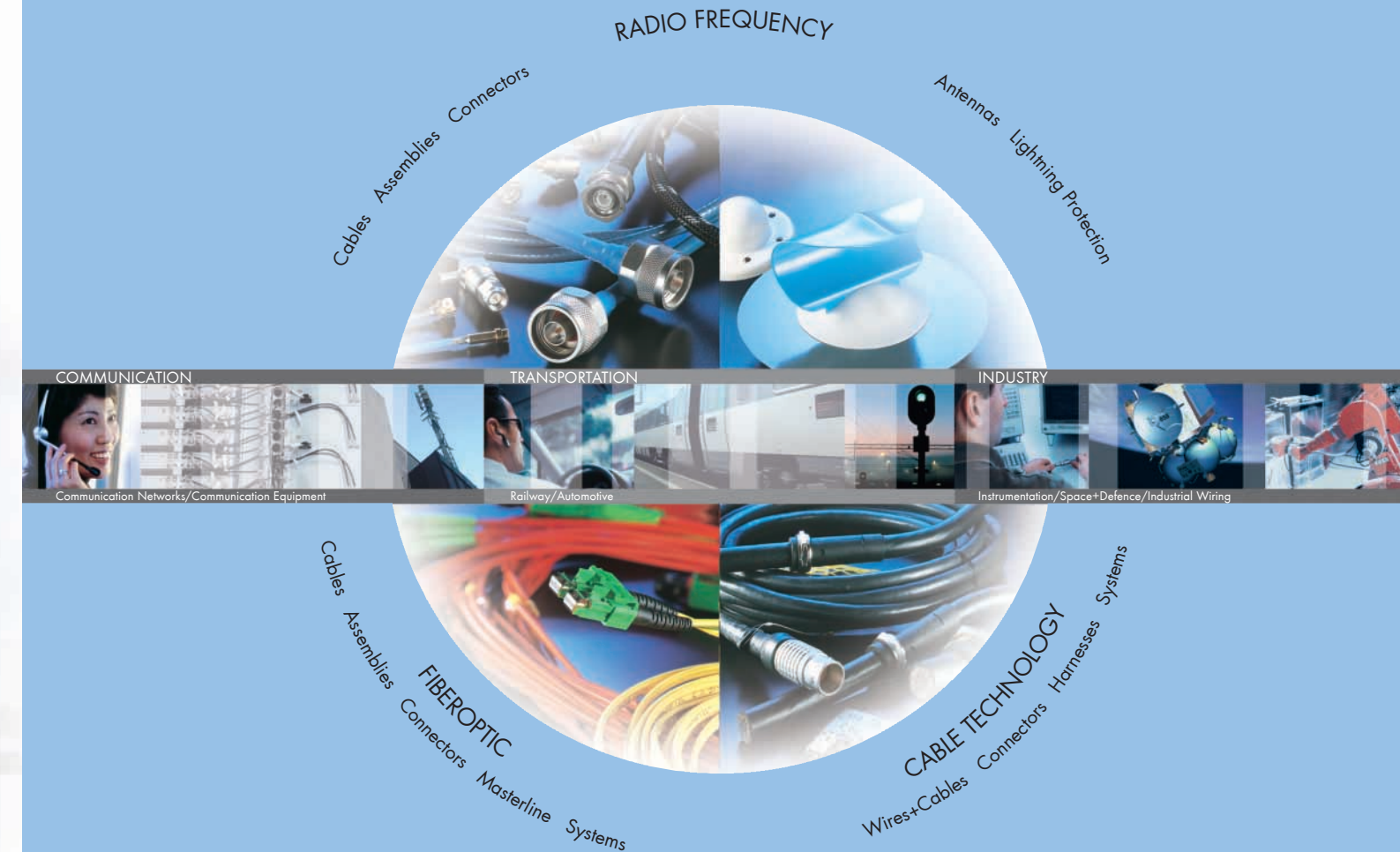
- all rolling stock and industrial harness requirements

HUBER+SUHNER railway solutions

## HUBER+SUHNER – Excellence in Connectivity Solutions

HUBER+SUHNER is a leading global supplier of components and systems for electrical and optical connectivity in communications, industrial and transportation markets. HUBER+SUHNER can draw on core competences in the

areas of high frequency technology, fibre optics, cables and polymers. Working in close collaboration with our customers around the globe, we strive for excellence in the development and manufacturing of high quality products.



HUBER+SUHNER is certified according to ISO 9001 and ISO 14001.

**WAIVER**  
 It is exclusively in written agreements that we provide our customers with warrants and representations as to the technical specifications and/or the fitness for any particular purpose. The facts and figures contained herein are carefully compiled to the best of our knowledge, but they are intended for general informational purposes only.



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## RADOX®TENUIS-TW SIGNAL AND CONTROL CABLES FOR RAIL AND MASS TRANSIT



HUBER+SUHNER

Excellence in Connectivity Solutions

# The Lightweight Thin-wall Railway Cables



## Light, flexible and compact

With the railway cable family RADOX®TENUIS-TW HUBER+SUHNER offers a new generation of control and signal cables. Its characteristic achieves new dimensions of lightness and flexibility. RADOX®TENUIS-TW is smaller, lighter and more flexible than previous products on the railway market. As a thin-wall cable is it particularly suitable for the wiring of cable looms, control panels and electrical cabinets and meets the requirements of the most important European Safety Standards for railways.

Unique characteristics of the cable improve its processability making it easier to strip without the need for special tooling. Therefore, greatly improving installation time and reducing costs.

RADOX®TENUIS-TW cables are available in single core as well as in multi core screened and unscreened versions. The cable cores are manufactured using a dual-wall insulation system made from high-tech polymers and have excellent electrical and mechanical characteristics.

Especially developed for rolling stock the cables are recognised for their high resistance to all types of media, UV-rays, ozone and humidity as well as harsh environmental conditions. The cables are halogen free and do not release any corrosive gases in the event of fire. They are flame retardant and do not propagate fire, generate low smoke emissions and have an extremely low toxicity index.

## Railway cable RADOX®TENUIS-TW single core

Cable type wide mm <sup>2</sup>	Conductor construction n x mm	D <sub>nom</sub> mm	Core Ø mm	R20 max Ω/km	Weight cable kg/100 m	H+S item no.
0.50	19 x 0.18	0.89 ± 0.05	1.40 ± 0.05	40.1	0.58	12 564379
0.75	19 x 0.22	1.10 ± 0.05	1.60 ± 0.05	26.7	0.83	12566838
1.0	19 x 0.25	1.21 ± 0.05	1.75 ± 0.05	20.0	0.99	12561500
1.5	19 x 0.31	1.52 ± 0.05	2.15 ± 0.05	13.7	1.52	12564381
2.5	19 x 0.40	1.96 ± 0.05	2.70 ± 0.10	8.21	2.53	12564382
4.0	56 x 0.31	2.46 ± 0.10	3.35 ± 0.05	5.09	3.90	12581455

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## Applications

### Relay cubicles, control panels and driver desks

RADOX®TENUIS-TW cables have been specifically developed for such applications and can be used as both signal and control cables with voltages of 600/1000V AC in a temperature range from -40 °C to +120 °C.

### Cable conduits, trunking and cabinets in rail cars

RADOX®TENUIS-TW cables are recognised for their thin-wall insulations and reduced weight.

The thin-wall, lightweight and compact construction satisfies the most modern cabling requirements where weight and space conditions are limited. Some of the characteristics include:

- light weight
- compact
- excellent flexibility
- easy to strip
- easy to install

### Meeting the most important railway safety standards

RADOX®TENUIS-TW single and multicore cables meet the most important national fire protection regulations

- BS 6853 (Cat. 1a, 1b, II)
- DIN 5510-2 (Cat. 1, 2, 3, 4)
- NF F 16-101 (Classification C/F0, Cat. A1, A2, B)



## Railway cable RADOX®TENUIS-TW/S Multi core, unscreened

Cable Type n x mm <sup>2</sup>	Conductor construction n x mm	D <sub>nom</sub> mm	Core Ø D <sub>nom</sub> mm	Cable Ø D <sub>nom</sub> mm	R20 max Ω/km	Weight cable kg/100 m	H+S item no.
2 x 0.50	19 x 0.18	0.90	1.40	4.4 ± 0.2	40.1	3.1	12568036
3 x 0.50	19 x 0.18	0.90	1.40	4.6 ± 0.2	40.1	3.6	12568037
4 x 0.50	19 x 0.18	0.90	1.40	5.0 ± 0.2	40.1	4.3	12568038
5 x 0.50	19 x 0.18	0.90	1.40	5.5 ± 0.2	40.1	5.3	12566304
6 x 0.50	19 x 0.18	0.90	1.40	6.0 ± 0.2	40.1	6.2	12568039
2 x 2 x 0.50	19 x 0.18	0.90	1.40	6.5 ± 0.3	40.1	5.8	12568040
4 x 2 x 0.50	19 x 0.18	0.90	1.40	8.7 ± 0.3	40.1	9.9	12568041
2 x 0.75	19 x 0.22	1.10	1.60	4.75 ± 0.3	26.7	3.5	12568047
3 x 0.75	19 x 0.22	1.10	1.60	5.15 ± 0.3	26.7	4.7	12568048
4 x 0.75	19 x 0.22	1.10	1.60	5.6 ± 0.3	26.7	5.7	12568049
6 x 0.75	19 x 0.22	1.10	1.60	6.75 ± 0.3	26.7	8.3	12568050
2 x 2 x 0.75	19 x 0.22	1.10	1.60	7.75 ± 0.3	26.7	8.1	12568051
2 x 1.0	19 x 0.25	1.21	1.75	5.1 ± 0.3	20.0	4.5	12568052
3 x 1.0	19 x 0.25	1.21	1.75	5.4 ± 0.3	20.0	5.4	12568053
4 x 1.0	19 x 0.25	1.21	1.75	5.8 ± 0.3	20.0	6.4	12568054
6 x 1.0	19 x 0.25	1.21	1.75	7.3 ± 0.3	20.0	9.8	12568055
2 x 1.5	19 x 0.31	1.52	2.15	6.0 ± 0.3	13.7	6.3	12568098
3 x 1.5	19 x 0.31	1.52	2.15	6.3 ± 0.3	13.7	7.6	12568099
4 x 1.5	19 x 0.31	1.52	2.15	6.9 ± 0.3	13.7	9.4	12568100
2 x 2.5	19 x 0.40	1.96	2.70	7.3 ± 0.3	8.21	9.8	12568101
4 x 2.5	19 x 0.40	1.96	2.70	8.7 ± 0.3	8.21	15.2	12566306

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## Railway cable RADOX®TENUIS-TW/S EMC Multi core, screened

Cable Type n x mm <sup>2</sup>	Conductor construction n x mm	D <sub>nom</sub> mm	Core Ø D <sub>nom</sub> mm	Cable Ø D <sub>nom</sub> mm	R20 max Ω/km	Weight cable kg/100 m	H+S item no.
2 x 0.50	19 x 0.18	0.90	1.40	4.8 ± 0.3	40.1	4.2	12568117
3 x 0.50	19 x 0.18	0.90	1.40	5.3 ± 0.3	40.1	5.1	12568118
4 x 0.50	19 x 0.18	0.90	1.40	5.4 ± 0.3	40.1	5.6	12568119
6 x 0.50	19 x 0.18	0.90	1.40	6.5 ± 0.3	40.1	8.2	12568120
2 x 2 x 0.50	19 x 0.18	0.90	1.40	7.2 ± 0.3	40.1	8.0	12568121
4 x 2 x 0.50	19 x 0.18	0.90	1.40	9.3 ± 0.3	40.1	13.1	12568122
2 x 1.0	19 x 0.25	1.21	1.75	5.6 ± 0.3	20.0	6.0	12568162
3 x 1.0	19 x 0.25	1.21	1.75	6.0 ± 0.3	20.0	7.6	12568163
4 x 1.0	19 x 0.25	1.21	1.75	6.5 ± 0.3	20.0	8.8	12568164
6 x 1.0	19 x 0.25	1.21	1.75	7.8 ± 0.3	20.0	11.4	12568165
2 x 1.5	19 x 0.31	1.52	2.15	6.5 ± 0.3	13.7	8.6	12568172
3 x 1.5	19 x 0.31	1.52	2.15	6.8 ± 0.3	13.7	9.5	12568173
4 x 1.5	19 x 0.31	1.52	2.15	7.4 ± 0.3	13.7	11.8	12568174
2 x 2.5	19 x 0.40	1.96	2.70	7.8 ± 0.3	8.21	12.2	12568175

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Multi core cables are available in a selected range of core colours.