



# Traction cable

## RADOX EN 50306-4 5P 300V MM S

### Product description:

**RADOX EN 50306-4 5P 300V MM S** Multipair cables, individually screened and sheathed  
 Nominal voltage: 300 / 500 V AC  
 Type of installation: Mechanically protected  
 Hazard level: MM (extra low temperature resistant, extra oil and fuel resistant)

### General properties:

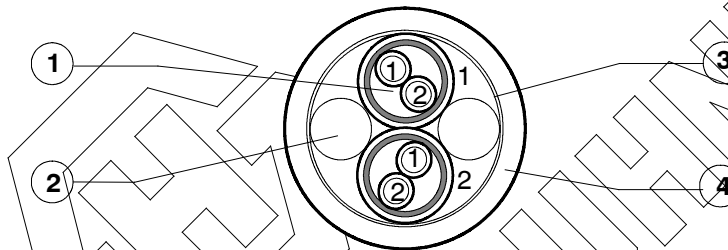
Halogen-free, electron-beam cross-linked cables with improved behaviour in case of fire, easy to strip, soldering resistant and flexible. Meets the requirements of the EN 50306-4 standard.

### Application:

The cores are intended for fixed installation inside railway vehicles or for installation in applications where limited alternating bending stresses occur during operation.

Guidelines for selection and installation are described in the standards EN 50355 and EN 50343.

### General composition of cable:



- |    |                       |   |   |
|----|-----------------------|---|---|
| 1. | EN 50306-2 300V pairs | Conductor:<br>Insulation:<br>2 cores<br>EMC-screen<br>Separator:<br>Sheath: | tin plated copper wire, acc. to EN 50306-2<br>RADOX EI 306<br>colour: white, black numbered 1/2<br>RADOX EN 50306-2 300V M, twisted<br>Tin plated copper braid<br>Tape<br>RADOX S2, colour : black, yellow numbered |
| 2. | Filler (optional)     | RADOX 125 REC   |   |
| 3. | Wrapping              | Tape  |   |
| 4. | Sheath                | RADOX EM 104, colour: black, yellow marked                                  |   |

Marking: HUBER+SUHNER RADOX EN 50306-4 5P 300V nX[*cross section*] MM S 90 [part. No.]-[batch. No.] [date of manufacture]

### Technical data:

Voltage rating cond.-earth	$U_0$	300	V AC
Voltage rating cond.-cond.	$U$	500	V AC
maximum permissible Voltage rating AC cond.-earth		360	V AC
maximum permissible Voltage rating AC cond.-cond.	$U_m$	600	V AC
maximum permissible Voltage rating DC cond.-earth	$V_0$	450	V DC
maximum permissible Voltage rating DC cond.-cond.		750	V DC
Test voltage		2000	V AC
		4800	V DC

Temperature range ..... - 40 ... + 120 ..... °C

### Min. bending radius

fixed installation	cable dia. ≤ 12 mm	3 x D
	cable dia. > 12 mm	4 x D
sporadic movement	cable dia. ≤ 12 mm	4 x D
	cable dia. > 12 mm	5 x D

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The product fulfils the test and specification requirements described in this document for the stated areas of application and operating conditions. HUBER+SUHNER AG does not expressly or implicitly guarantee performance under additional or changed conditions. Deviations are to be agreed upon in writing.

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### NB:

The upper temperature limit is determined by long term ageing according to EN 50305 Par. 7 and extrapolation to 20,000 hours.

The lower temperature limit is determined by bending and elongation tests according to EN 60811-1-4 Par. 8.

The specified bending radii require a careful and proper handling using proven fastening technologies.

### The cables are in conformity with:

<b>Fire protection on railway vehicles, hazard level</b> .....	<b>HL1 - HL3</b> .....	<b>EN 45545</b>
Vertical flame spread .....	50 < L ≤ 540 mm .....	EN 60332-1-2
Vertical flame spread, bunched, D ≤ 6 mm .....	L ≤ 1.5 m .....	EN 50305, 9.1.2
Vertical flame spread, bunched, 6 < D < 12 mm .....	L ≤ 2.5 m .....	EN 50305, 9.1.1 (EN 60332-3-25)
Vertical flame spread, bunched, D ≥ 12 mm .....	L ≤ 2.5 m .....	EN 60332-3-24
Smoke density .....	T ≥ 70 % .....	EN 61034-2
Toxicity .....	ITC ≤ 6 .....	EN 50305, 9.2

<b>Fire protection on railway vehicles, hazard level</b> .....	<b>1 - 4</b> .....	<b>DIN 5510</b>
Vertical flame spread .....	50 < L ≤ 540 mm .....	EN 60332-1-2
Vertical flame spread, bunched, D ≤ 6 mm .....	L ≤ 1.5 m .....	EN 50305, 9.1.2
Vertical flame spread, bunched, 6 < D < 12 mm .....	L ≤ 2.5 m .....	EN 50266-2-5 (EN 50305, 9.1.1)
Vertical flame spread, bunched, D ≥ 12 mm .....	L ≤ 2.5 m .....	EN 50266-2-4
Smoke density .....	T ≥ 60 % .....	EN 61034-2
Corrosivity of combustion gases*	pH ≥ 4.3, C ≤ 10 μS/mm .....	EN 50267-2-2
Amount of halogen acid gas*	HCl + HBr ≤ 0.5 % .....	EN 50267-2-1
Content of fluorine*	HF ≤ 0.1 % .....	EN 60684-2, 45.2
Toxicity, insulation .....	ITC ≤ 6 .....	EN 50305, 9.2
Toxicity, filler and wrapping .....	ITC ≤ 3 .....	EN 50305, 9.2
Toxicity, sheath .....	ITC ≤ 3 .....	EN 50305, 9.2

\* Insulation, filler, wrapping and sheath

<b>Fire protection on railway vehicles, category</b> .....	<b>A1, A2, B</b> .....	<b>NF F16-101</b>
Fire protection on railway vehicles, class .....	C / F0 .....	NF F16-101
Vertical flame spread .....	50 < L ≤ 540 mm .....	NF C32-070, 2.1
Vertical flame spread, bunched .....	L ≤ 300 mm .....	NF C32-070, 2.2
Smoke index .....	I.F. ≤ 5 .....	X10-702-2, NF X70-100-1

<b>Requirement of hazard level code M</b> .....	(according to EN 50264-1 or EN 50306-1)
Extra low temperature .....	- 40°C
Extra oil resistance .....	IRM 902, 72h, 100°C
Extra fuel resistance .....	IRM 903, 168h, 70°C

### Applicable documents:

- 585 536 Datasheet of cores
- 586 555 Current rating for single core cables



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## RADOX EN 50306-4 5P 300V MM S

Construction n x mm <sup>2</sup>	Conductor nom.		Core Dia. nom. mm	Screen nom.		Cable dia. mm	R <sub>20</sub> max. Ω/km	Z <sub>T</sub> max. mΩ/m	Fireload nom. kJ/m	Weight nom.		H + S Part No.
	Construction n x mm	Dia. mm		Dia. mm	Section mm <sup>2</sup>					Copper	Cable	
2 x 2 x 0.5	19 x 0.18	0.88	1.42	3.3	0.78	9.7±0.3	40.1	200	1310	3.4	11.7	12586059
3 x 2 x 0.5	19 x 0.18	0.88	1.42	3.3	0.78	10.3±0.3	40.1	200	1260	5.1	12.4	12586060
4 x 2 x 0.5	19 x 0.18	0.88	1.42	3.3	0.78	11.4±0.4	40.1	200	1760	6.8	17.5	12586061
7 x 2 x 0.5	19 x 0.18	0.88	1.42	3.3	0.78	13.7±0.4	40.1	200	2305	12.0	25.8	12586062
2 x 2 x 0.75	19 x 0.23	1.09	1.62	3.7	0.92	10.5±0.4	26.7	160	1525	4.65	13.2	12586063
3 x 2 x 0.75	19 x 0.23	1.09	1.62	3.7	0.92	11.2±0.4	26.7	160	1710	7.0	16.7	12586064
4 x 2 x 0.75	19 x 0.23	1.09	1.62	3.7	0.92	12.3±0.4	26.7	160	2010	9.3	20.0	12586065
7 x 2 x 0.75	19 x 0.23	1.09	1.62	3.7	0.92	14.9±0.4	26.7	160	2410	16.4	30.4	12586066
2 x 2 x 1	19 x 0.26	1.23	1.77	4.0	0.92	11.1±0.4	20.0	150	1660	5.5	14.8	12586067
3 x 2 x 1	19 x 0.26	1.23	1.77	4.0	0.92	11.7±0.4	20.0	150	1780	8.2	18.2	12586068
4 x 2 x 1	19 x 0.26	1.23	1.77	4.0	0.92	12.9±0.4	20.0	150	2135	11.0	22.1	12586069
7 x 2 x 1	19 x 0.26	1.23	1.77	4.0	0.92	15.8±0.4	20.0	150	2660	19.3	34.7	12586070
2 x 2 x 1.5	19 x 0.31	1.49	2.17	4.8	1.05	12.7±0.4	13.7	110	2330	7.5	20.5	12586071
3 x 2 x 1.5	19 x 0.31	1.49	2.17	4.8	1.05	13.6±0.4	13.7	110	2560	11.2	25.7	12586072
4 x 2 x 1.5	19 x 0.31	1.49	2.17	4.8	1.05	15.0±0.4	13.7	110	3035	15.0	31.2	12586073
7 x 2 x 1.5	19 x 0.31	1.49	2.17	4.8	1.05	18.1±0.5	13.7	110	3660	26.1	47.6	12586074

Cores: Tolerances of core diameter see H+S Datasheet 585536

R<sub>20</sub>: Conductor resistance according to EN 50306-2

### customized types

Meet the requirements of the EN 50306-4, the mechanical data are not listed in the table of the related standard.

Construction n x mm <sup>2</sup>	Conductor nom.		Core Dia. nom. mm	Screen nom.		Cable dia. mm	R <sub>20</sub> max. Ω/km	Z <sub>T</sub> max. mΩ/m	Fire load nom. kJ/m	Weight nom.		H + S Part No.
	Construction n x mm	Dia. mm		Dia. mm	Section mm <sup>2</sup>					Copper	Cable	
5 x 2 x 0.5	19 x 0.18	0.88	1.42	3.3	0.78	12.8±0.4	40.1	200	2287	8.5	22.7	84088693
5 x 2 x 1	19 x 0.26	1.23	1.77	4.1	0.9	15.2±0.5	20.0	200	2636	29.9	13.8	85009591
8 x 2 x 1	19 x 0.26	1.23	1.77	4.1	0.9	19.7±0.4	20.0	160	5320	22.0	61	84098705

Cores: Tolerances of core diameter see H+S Datasheet 585536

R<sub>20</sub>: Conductor resistance according to EN 50306-2