

# Traction cable

## RADOX EN 50306-3 300V MM S

### General properties:

Halogen-free, electron-beam cross-linked cables with improved behaviour in case of fire, easy to strip and flexible. Meets the requirements of the EN 50306-3 standard.

Signal and control cables - Single core and multicore cables screened and thin wall sheathed

Nominal voltage: 300 / 500 V AC

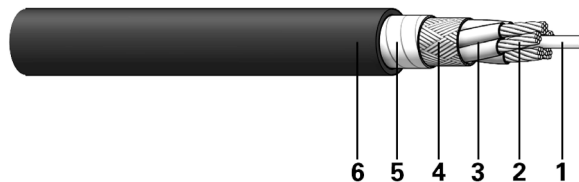
Hazard level: MM (extra low temperature, extra oil and extra fuel resistant)

Type of installation: Mechanically protected

### Application:

The cables are intended for permanent installation in rail vehicles or for applications in which a limited alternating bending stress occur during service. Guidelines for selection and installation are described in the standards EN 50355 and EN 50343.

### General composition of cable:



- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Filler (optional)</li> <li>2. RADOX EN 50306-2 300V cores</li> <li>3. RADOX EN 50306-2 300V cores</li> <li>4. EMC-screen</li> <li>5. Separater (optional)</li> <li>6. Sheath</li> </ol> | <p>RADOX 125 REC<br/>           Conductor: stranded tin plated copper, acc. to EN 50306-2<br/>           Insulation: RADOX EI 306<br/>           Colour: white, black numbered<br/>                     other colours on request</p> <p>Tin plated copper braid<br/>           Tape<br/>           RADOX S2<br/>           Colour: black, yellow marked</p> |
|---|---|

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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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## RADOX EN 50306-3 300V MM S

### Marking:

[a] HUBER+SUHNER RADOX EN 50306-3 300V [b] MM S 90 [c]-[d] [e] [f]

		example:
[a]	Meter marking (in m)	= 001234 = m
[b]	Construction	3X1.5
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	03-2017
[f]	Production place (only if China)	CN

### Technical data:

Voltage rating cond.-earth	U <sub>0</sub>	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 <sub>m</sub>	600	V AC
maximum permissible Voltage rating DC cond.-earth	V <sub>0</sub>	450	V DC
maximum permissible Voltage rating DC cond.-cond.		750	V DC
Test voltage.		2000	V AC
		4800	V DC
Temperature range		- 50 ... + 125	°C
Min. bending radius			
fixed installation		3 x D	
sporadic movement		4 x D	

### 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 tests according to EN 60811-504/505, respectively low temperature behaviour tests according to GOST 20.57.406-81, method 204-1 and GOST 17491-80 (fixed installation)

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 45545-2</b>
Vertical flame spread	50 mm < 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 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
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 μS/mm	EN 60754-2
Amount of halogen acid gas	HCl + HBr ≤ 0.5 %	EN 60754-1
Content of fluorine	HF ≤ 0.1 %	EN 60684-2, 45.2
Toxicity	ITC ≤ 6	EN 50305, 9.2

<b>Fire safety, class</b>	<b>O1.8.1.2.1 (single)</b>	<b>GOST 31565</b>
	<b>P1b.8.1.2.1 (bundle)</b>	
Vertical flame spread	50 mm < L ≤ 540 mm	EN 60332-1-2
Vertical flame spread, bunched	L ≤ 2.5 m	EN 60332-3-22
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 μS/mm	EN 60754-2
Amount of halogen acid gas	HCl + HBr ≤ 0.5 %	EN 60754-1
Toxicity	40 < Tx ≤ 120 g/m <sup>3</sup>	GOST 12.1.044-89
Smoke density	T ≥ 60 %	EN 61034-2

<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, 24h, 100°C
Extra fuel resistance	IRM 903, 168h, 70°C

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Construction n x mm <sup>2</sup>	Conductor nom. Construction Dia. n x mm mm		Core Dia. nom. mm	Screen nom. Dia. Section mm mm <sup>2</sup>		Cable dia. mm	R <sub>20</sub> max. Ω/km	Fireload nom. kJ/m	Combustible material nom. kg/100m	Cable weight nom. kg/100m	H + S Part No.
1x0.5	19x0.18	0.84	1.42	1.9	0.46	2.65±0.2	40.1	115	0.54	1.39	84097978
1x0.75	19x0.22	1.04	1.62	2.1	0.52	2.70±0.2	26.7	105	0.51	1.64	84111017
1x1	19x0.26	1.21	1.77	2.2	0.52	2.85±0.2	20.0	110	0.54	1.92	84097980
1x1.5	19x0.30	1.44	2.17	2.6	0.65	3.30±0.2	13.7	160	0.76	2.59	84111019
1x2.5	19x0.40	1.85	2.75	3.2	0.78	3.90±0.2	8.21	225	1.08	3.86	84111020
2x0.5	19x0.18	0.84	1.42	3.3	0.72	4.00±0.2	40.1	185	0.85	2.37	84103799
2x0.75	19x0.22	1.04	1.62	3.7	0.78	4.60±0.2	26.7	255	1.17	3.19	84111022
2x1	19x0.26	1.21	1.77	4.0	0.85	4.70±0.2	20.0	220	1.01	3.59	84111023
2x1.5	19x0.30	1.44	2.17	4.8	1.05	5.70±0.2	13.7	355	1.65	5.08	84111024
2x2.5	19x0.40	1.85	2.75	6.0	1.31	6.80±0.2	8.21	460	2.14	7.46	84111025
3x0.5	19x0.18	0.84	1.42	3.5	0.85	4.40±0.2	40.1	260	1.22	3.28	84111026
3x0.75	19x0.22	1.04	1.62	4.0	0.92	4.70±0.2	26.7	260	1.20	4.23	84111027
3x1	19x0.26	1.21	1.77	4.3	1.05	5.20±0.2	20.0	325	1.50	5.02	84111028
3x1.5	19x0.30	1.44	2.17	5.1	1.24	6.05±0.2	13.7	435	2.05	6.89	84111029
3x2.5	19x0.40	1.85	2.75	6.5	1.87	7.40±0.2	8.21	605	2.86	10.8	84111031
4x0.5	19x0.18	0.84	1.42	3.9	0.92	4.75±0.2	40.1	305	1.40	3.96	84111034
4x0.75	19x0.22	1.04	1.62	4.4	1.05	5.15±0.2	26.7	325	1.52	5.07	84111032
4x1	19x0.26	1.21	1.77	4.8	1.18	5.70±0.2	20.0	385	1.80	6.46	84111035
4x1.5	19x0.30	1.44	2.17	5.8	1.77	6.70±0.2	13.7	525	2.46	9.08	84111037
4x2.5	19x0.40	1.85	2.75	7.4	2.82	8.25±0.2	8.21	735	3.5	14.4	85164052
8x1.5	19x0.30	1.44	2.17	7.8	2.5	8.75±0.2	13.7	890	4.2	16.4	85190463

### Cables with coloured cores:

Construction n x mm <sup>2</sup>	Conductor nom. Construction Dia. n x mm mm		Core Dia. nom. mm	Core Colours	Screen Dia. mm	Cable dia. mm	R <sub>20</sub> max. Ω/km	Fireload nom. kJ/m	Combustible material nom. kg/100m	Cable weight nom. kg/100m	H + S Part No.
4V0.5	19x0.18	0.84	1.42	WH BU RD BK	3.9	4.75±0.2	40.1	305	1.40	3.96	85096746

V: various colours  
 Cores: Tolerances of core diameter see H+S Datasheet 585536  
 R<sub>20</sub>: Conductor resistance according to EN 50306-2

### Colour Legend

BK: black  
 BU: blue  
 RD: red  
 WH: white