



Traction cable

RADOX EN 50306-4 3P 300V MM S

Product description:

RADOX EN 50306-4 3P 300V MM S Multicore cable, screened (overall screen)
 Nominal voltage: 300 / 500 V AC
 Type of installation: Mechanically protected
 Hazard level: M (extra low temperature resistant, extra oil and fuel resistant)

General features:

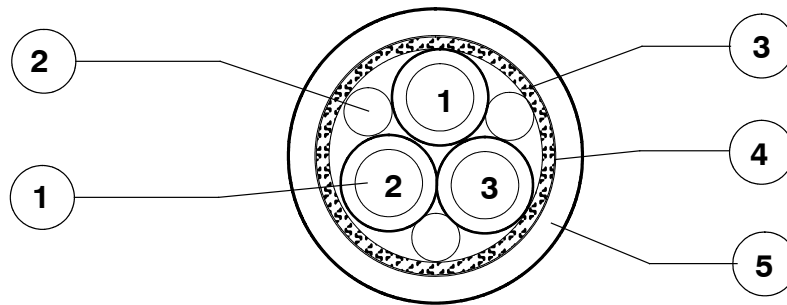
Halogen-free, electron-beam cross-linked cables with improved behaviour in case of fire, easy to strip, soldering resistant and flexible. Meets the requirements of the EN 50306-4 standard.

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 cores | Conductor: | tin plated copper wire, acc. to EN 50306-2 |
| | | Insulation: | RADOX EI 306 |
| | | colour: | white, black numbered
green-yellow optional |
| 2. | Filler (optional) | RADOX 125 REC | |
| 3. | EMC-screen | Tin plated copper braid | |
| 4. | Wrapping | Tape | |
| 5. | Sheath | RADOX EM 104, colour: black, yellow marked | |

Marking:

[a] HUBER+SUHNER RADOX EN 50306-4 3P 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	03-2019
[f]	Production place (only if China)	CN

Copyright 2019 HUBER+SUHNER AG. This document may not be amended and its content is confidential. It may not be passed on to third party which are not bound by confidentiality.

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.

HUBER+SUHNER AG

Low Frequency Division

CH-8330 Pfäffikon

+41 (0)44 952 22 11

+41 (0)44 952 26 40

www.hubersuhner.com



Traction cable

RADOX EN 50306-4 3P 300V MM S

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

Temperature range - 50 ... + 120 °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 and elongation tests according to EN 60811-504/505, respectively low temperature behaviour test 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:

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

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

* Insulation, filler, wrapping and sheath

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

Fire protection on railway vehicles	Fulfilled	NFPA 130
Vertical flame spread, bunched	$L \leq 1.5$ m	UL 1685, 12 (FT4 exp.)
Smoke density	$TSR \leq 150$ m ² , $PSSR \leq 0.40$ m ² /s	UL 1685, 12 (FT4 exp.)



Traction cable

RADOX EN 50306-4 3P 300V MM S

Requirement of hazard level code M

(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
- 586 557 Current rating for single core cables

Construction 1) n x mm ²	Conductor nom. Dia. mm	Core 2) Dia. nom. mm	Screen Dia. mm	Cable dia. mm	R ₂₀ 3) max.	Z _T max.	Fireload nom. kJ/m	Weight nom.		H + S Part No.
					Ω/km	mΩ/m		Copper kg / 100m	Cable	
2x0.5	0.9	1.42	3.3	4.9±0.2	40.1	200	325	1.6	4.0	12586036
3x0.5	0.9	1.42	3.5	5.0±0.2	40.1	180	335	2.1	4.5	12586037
4x0.5	0.9	1.42	3.9	5.4±0.2	40.1	150	380	2.7	5.4	12586038
5x0.5	0.9	1.42	4.6	5.9±0.3	40.1	120	470	3.7	6.7	84131103
6x0.5	0.9	1.42	5.0	6.3±0.2	40.1	100	560	4.0	7.5	12586039
8x0.5	0.9	1.42	5.6	6.7±0.3	40.1	90	610	5.0	8.8	12586040
9x0.5	0.9	1.42	6.6	8.0±0.3	40.1	90	920	6.2	12.0	85087574
10x0.5	0.9	1.42	6.3	7.9±0.3	40.1	70	820	6.6	11.8	84101234
12x0.5	0.9	1.42	6.5	8.2±0.3	40.1	70	990	7.6	13	84101235
15x0.5	0.9	1.42	7.4	9.0±0.3	40.1	60	1090	10.1	16.4	12586100
16x0.5	0.9	1.42	7.4	9.0±0.3	40.1	60	1090	9.7	16.1	84110710
2x0.75	1.1	1.62	3.7	5.1±0.3	26.7	160	345	2.1	4.7	12586041
3x0.75	1.1	1.62	4.0	5.4±0.3	26.7	150	370	3.0	5.6	12586042
3G0.75	1.1	1.62	4.0	5.4±0.3	26.7	150	370	3.0	5.6	84122834
4x0.75	1.1	1.62	4.6	5.9±0.3	26.7	120	470	3.9	7.0	12586043
6x0.75	1.1	1.62	5.7	6.8±0.3	26.7	90	640	5.6	9.6	12586044
8x0.75	1.1	1.62	6.1	7.4±0.2	26.7	80	705	7.6	11.9	12586045
12x0.75	1.1	1.62	7.4	9.2±0.3	26.7	60	1110	10.7	17.6	84134205
2x1	1.2	1.77	4.0	5.4±0.2	20.0	150	375	2.6	5.4	12586046
3x1	1.2	1.77	4.4	5.8±0.2	20.0	130	445	3.7	6.8	12586047
4x1	1.2	1.77	5.1	6.3±0.2	20.0	100	500	5.2	8.5	12586048
5x1	1.2	1.77	5.6	6.9±0.3	20.0	90	615	6.3	10.2	84116923
6x1	1.2	1.77	6.0	7.3±0.3	20.0	80	705	7.2	11.6	12586049
7x1	1.2	1.77	6.0	7.3±0.3	20.0	80	685	8.1	12.3	84116922
8x1	1.2	1.77	6.7	8.3±0.3	20.0	70	870	9.3	14.8	12586050
10x1	1.2	1.77	7.8	9.5±0.4	20.0	60	1070	12.2	18.9	84094674



Traction cable

RADOX EN 50306-4 3P 300V MM S

Construction ¹⁾ n x mm ²	Conductor nom. Dia. mm	Core ²⁾ Dia. nom. mm	Screen Dia. mm	Cable dia. mm	R ₂₀ ³⁾ max. Ω/km	Z _T max. mΩ/m	Fireload nom. kJ/m	Weight		H + S Part No.
								Copper	Cable kg / 100m	
2x1.5	1.5	2.17	4.8	6.4±0.3	13.7	110	545	3.6	7.6	12586051
3x1.5	1.5	2.17	5.3	6.7±0.3	13.7	100	595	5.0	9.0	12586052
4x1.5	1.5	2.17	5.8	7.3±0.3	13.7	80	650	6.9	11.4	12586053
4G1.5	1.5	2.17	5.8	7.3±0.3	13.7	80	650	6.9	11.4	84135186
6x1.5	1.5	2.17	7.2	8.9±0.3	13.7	60	1070	10.2	16.9	12586054
8x1.5	1.5	2.17	8.1	9.8±0.3	13.7	50	1180	13.7	21.1	12586055
12x1.5	1.5	2.17	10.0	11.9±0.4	13.7	40	1680	21.3	31.6	84134204
2x2.5	1.9	2.75	6.1	7.9±0.3	8.21	80	830	6.2	11.9	12586056
3x2.5	1.9	2.75	6.6	8.25±0.3	8.21	70	875	8.6	14.4	12586057
4x2.5	1.9	2.75	7.5	9.3±0.3	8.21	60	1110	11.0	18.3	12586058
5x2.5	1.9	2.75	8.5	10.2±0.4	8.21	50	1330	14.2	22.6	84115627
6x2.5	1.9	2.75	9.2	10.9±0.4	8.21	50	1550	16.8	26.4	84094675
7x2.5	1.9	2.75	8.8	10.8±0.4	8.21	50	1405	18.2	27.4	84115630

multi-pair cables , screened (overall screen)

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

Construction ¹⁾ n x mm ²	Conductor nom. Dia. mm	Core ²⁾ Dia. nom. mm	Screen Dia. mm	Cable dia. mm	R ₂₀ ³⁾ max. Ω/km	Z _T max. mΩ/m	Fireload nom. kJ/m	Weight		H + S Part No.
								Copper	Cable kg / 100m	
2 x 2 x 0.5	0.9	1.42	5.8	7.6±0.3	40.1	80	715	3.6	8.8	84106024
3 x 2 x 0.5	0.9	1.42	6.4	8.2±0.3	40.1	70	778	4.8	10.1	84106035
4 x 2 x 0.5	0.9	1.42	7.4	9.0±0.3	40.1	60	708	6.0	10.6	84118200
5 x 2 x 0.5	0.9	1.42	8.2	9.7±0.3	40.1	90	1095	7.0	14.5	85109192
6 x 2 x 0.5	0.9	1.42	8.9	10.7±0.4	40.1	50	1480	9.3	19.0	85026844
2 x 2 x 0.75	1.1	1.62	6.7	8.3±0.3	26.7	70	810	5.1	10.8	85003521
3 x 2 x 0.75	1.1	1.62	7.3	9.0±0.3	26.7	60	855	6.5	12.3	85010158
6 x 2 x 0.75	1.1	1.62	10.5	12.3±0.4	26.7	40	1870	12.5	25.3	85075376
2 x 2 x 1	1.2	1.77	7.3	8.9±0.3	20.0	60	843	5.9	11.5	84120776
3 x 2 x 1	1.2	1.77	8.0	10.0±0.3	20.0	50	1067	6.4	15.9	84106036
2 x 2 x 1.5	1.5	2.17	8.9	10.6±0.4	13.7	50	1241	9.04	17.6	84120783



Traction cable

RADOX EN 50306-4 3P 300V MM S

Cables with colored cores:

Construction 1) n x mm ²	Conductor		Core 2) Dia. nom. mm	Core Colors	Screen Dia. mm	Cable dia. mm	R ₂₀ 3) max. Ω/km	Z _T max. mΩ/m	Fireload nom. kJ/m	Weight		H + S Part No.
	Construction n x mm	nom. Dia. mm								nom. Copper kg / 100m	nom. Cable kg / 100m	
4 V 0.5	19 x 0.18	0.9	1.42	YE GN BN WH	3.9	5.4±0.2	40.1	150	380	2.7	5.4	85067099
2 V 2 V 0.5	19 x 0.18	0.9	1.42	RD BK WH BU	5.8	7.6±0.3	40.1	80	730	3.6	8.9	84101783

- 1) X: one colour, numbered
G: one green-yellow core, others one colour, numbered
V: various colours
2) Cores: Tolerances of core diameter see H+S Datasheet 585536
3) R₂₀: Conductor resistance according to EN 50306-2

Colour Legend

BK: black
BN: brown
RD: red
OG: orange
YE: yellow
GN: green
BU: blue
VT: violet
GNYE: green-yellow
GY: grey
WH: white
PK: pink
TQ: turquoise