

Traction cable

RADOX TENUIS-TW (EN 50306-4 1P) 600V MM

Product description:

RADOX TENUIS-TW (EN 50306-4 1P) 600V MM	Multicore cables sheathed
Nominal voltage:	600 / 1000 V AC
Hazard level:	MM (extra low temperature, extra oil and extra fuel resistant)

General features:

Halogen free electron-beam crosslinked cores with improved behaviour in case of fire, easy to strip and flexible.

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:



1. Filler (optional)	RADOX 125 REC
2. Conductor	Stranded tin plated copper, acc. to EN 50306-2
3. Insulation	RADOX EI 303, colour: white, unless otherwise specified
4. Wrapping	Tape
5. Sheath	RADOX EM 104, colour: black

Marking:

[a] HUBER+SUHNER RADOX TENUIS-TW (EN 50306-4 1P) 600V [b] MM [c]-[d] [e] [f] [g]

	example:
[a] Meter marking (in m)	= 123456 = m
[b] Cross section (in mm ²)	1X150
[c] Part number	12345678
[d] Batch number	1234567
[e] Production week and year	03-2017
[f] Production place (only if China)	CN
[g] CRCC certification (only if available)	CRCC10218P11529R1M-2

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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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Technical Data:

Voltage rating cond.-earth	U_0	600	V AC
Voltage rating cond.-cond.	U	1000	V AC
maximum permissible Voltage rating AC cond.-earth		720	V AC
maximum permissible Voltage rating AC cond.-cond.	U_m	1200	V AC
maximum permissible Voltage rating DC cond.-earth	V_0	900	V DC
maximum permissible Voltage rating DC cond.-cond.		1500	V DC
Test Voltage.		3500	V AC
		8400	V DC
Temperature range		- 50 ... + 125	°C

Min. bending radius

fixed installation	cable diameter \leq 12 mm	3 x D
	cable diameter $>$ 12 mm	4 x D
sporadic movements	cable diameter \leq 12 mm	4 x D
	cable diameter $>$ 12 mm	5 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 tests for according to GOST 20.57.406-81, method 204-1 and GOST 17491-80.

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 45545-2
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 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	Fulfilled	NFPA 130
Vertical flame spread, bunched	$L \leq 1.5$ m	UL 1685, 12 (FT4 exp.)
Smoke density	$TSR \leq 150$ m ² , $PSRR \leq 0.40$ m ² /s	UL 1685, 12 (FT4 exp.)

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:

- 581998 Current rating for multicore cables

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Table 1A: Customized Types RADOX TENUIS-TW (EN 50306-4 1P) 600V MM

Cable ¹⁾ Type [n x mm ²]	Conductor ²⁾		Core ²⁾		Cable		Fire Load nom. [kJ/m]	Combustible Material nom. [kg/100m]	Cable Weight nom. [kg/100m]	H+S Part No.
	Ø nom. [mm]	R ₂₀ max. [Ω/km]	Ø nom. [mm]	Colours	Ø [mm]	Colour				
4X0.25	0.60	88.5	1.17	WH	4.5±0.3	BK	322	2.1	3	85064923
4X0.25	0.60	88.5	1.17	WH	4.95±0.15	BK	385	2.7	3.6	85024776 ⁴⁾
6X0.25	0.6	88.5	1.17	WH	4.85±0.3	BK	365	2.5	3.8	85109902
3X2X0.25	0.60	88.5	1.17	WH	5.9±0.3	BK	452	3.2	4.5	85204737
2X0.34	0.75	54.7	1.30	WH	3.95±0.3	BK	236	1.7	2.4	85027193
2X0.5	0.84	40.1	1.42	WH	4.4±0.2	BK	290	2.2	3.1	12568036
2V0.5				BN-BU						12584136
3X0.5	0.84	40.1	1.42	WH	4.6±0.2	BK	315	2.2	3.6	12568037
3V0.5				BN-BK-BU						12584137
4X0.5	0.84	40.1	1.42	WH	5.0±0.2	BK	365	2.6	4.4	12568038
4V0.5				BN-BK-BU-WH						12584138
5V0.5	0.84	40.1	1.42	BN-WH-GY-YE-GN	5.2±0.3	BK	400	2.7	4.8	85185034
5X0.5	0.84	40.1	1.42	WH	5.5±0.2	BK	473	3.1	5.4	12566304
5V0.5				BN-BK-BU-WH-GY						12585752
6X0.5	0.84	40.1	1.42	WH	6.0±0.2	BK	569	3.7	6.4	12568039
6V0.5				BN-RD-WH-BK-GY-BU						84118473
8X0.5	0.84	40.1	1.42	WH	6.6±0.3	BK	663	4.3	7.7	85100133
9X0.5	0.84	40.1	1.42	WH	7.3±0.3	BK	792	5	9.1	12583000
10X0.5	0.84	40.1	1.42	WH	7.3±0.3	BK	760	5	9.6	85073536
12X0.5	0.84	40.1	1.42	WH	7.6±0.3	BK	862	5.2	10.7	12585961
15X0.5	0.84	40.1	1.42	WH	8.6±0.3	BK	1102	6.6	13.5	12583667
16X0.5	0.84	40.1	1.42	WH	8.6±0.3	BK	1102	6.6	13.9	84096896
25X0.5	0.84	40.1	1.42	WH	10.5±0.4	BK	1623	9.4	20.9	12583001
2X2X0.5	0.84	40.1	1.42	WH	6.8±0.3	BK	630	4.6	6.4	12568040
4X2X0.5	0.84	40.1	1.42	WH	8.5±0.3	BK	966	6.7	10.3	12568041
5X(3X0.5)	0.84	40.1	1.42	WH	14.5±0.4	BK	3345	21.5	32.2	85118440 ⁵⁾
6X(3X0.5)	0.84	40.1	1.42	WH	15.2±0.5	BK	3775	23.2	35.5	85192890 ⁵⁾
2X0.75	1.04	26.7	1.62	WH	4.75±0.3	BK	330	2.4	3.8	12568047
3X0.75	1.04	26.7	1.62	WH	5.15±0.3	BK	380	2.7	4.8	12568048
3G0.75	1.04	26.7	1.62	WH-GNYE	5.15±0.3	BK	380	2.7	4.8	12583990
4X0.75	1.04	26.7	1.62	WH	5.6±0.3	BK	468	3.1	5.9	12568049
4G0.75				WH-GNYE						5.6±0.3
5G0.75	1.04	26.7	1.62	WH-GNYE	5.75±0.3	BK	495	3.3	6.8	85111986
6X0.75	1.04	26.7	1.62	WH	6.75±0.3	BK	707	4.5	8.7	12568050
6G0.75				WH-GNYE						6.30±0.3
8X0.75	1.04	26.7	1.62	WH	7.8±0.3	BK	978	5.9	11.5	12584272
10X0.75	1.04	26.7	1.62	WH	8.1±0.3	BK	935	5.8	12.8	12585274
36X0.75	1.04	26.7	1.62	WH	14.1±0.4	BK	2600	16.1	41.6	85070303
4X2X0.75	1.04	26.7	1.62	WH	9.5±0.3	BK	1200	8.3	13.9	84097783
5X(4X0.75)	1.04	26.7	1.62	WH	18.3±0.5	BK	4700	33.2	53.8	12583090 ⁶⁾
2X1	1.22	20.0	1.77	WH	5.1±0.2	BK	370	2.7	4.5	12568052

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	Ø nom. [mm]	R ₂₀ max. [Ω/km]	Ø nom. [mm]	Colours	Ø [mm]	Colour				
2V1				BU-RD						84090409
3X1	1.22	20.0	1.77	WH	5.4±0.2	BK	434	2.9	5.6	12568053
3G1				WH-GNYE						85093498
4X1	1.22	20.0	1.77	WH	5.8±0.2	BK	445	3.1	6.7	12568054
4G1				WH-GNYE						85106526
5X1	1.22	20.0	1.77	WH	6.65±0.3	BK	580	4.2	8.7	85072779
5G1				WH-GNYE						85103631
6X1	1.22	20.0	1.77	WH	7.3±0.3	BK	814	5.1	10.5	12568055
7X1	1.22	20.0	1.77	WH	8.0±0.3	BK	994	6.1	12.4	12585459
8X1	1.22	20.0	1.77	WH	8.3±0.3	BK	1093	6.6	13.8	84121018
9G1	1.22	20.0	1.77	WH-GNYE	8.65±0.3	BK	1101	6.9	15	85110070
10X1	1.22	20.0	1.77	WH	8.7±0.3	BK	1055	6.5	15.5	12581348
12X1	1.22	20.0	1.77	WH	9.1±0.3	BK	1151	6.9	17.7	12584271
16X1	1.22	20.0	1.77	WH	10.4±0.4	BK	1524	9.1	23.5	12584654
19X1	1.22	20.0	1.77	WH	11.6±0.4	BK	1925	11.2	28.4	12585980
25X1	1.22	20.0	1.77	WH	12.8±0.4	BK	2234	13	35.6	12581349
37X1	1.22	20.0	1.77	WH	15.7±0.5	BK	3000	19	52.5	85095097
2X2X1	1.22	20.0	1.77	WH	8.0±0.3	BK	886	6	9.6	12583421
2X1.5	1.45	13.7	2.17	WH	6.0±0.3	BK	520	3.8	6.4	12568098
2V1.5				BU-BN						85170889
3X1.5	1.45	13.7	2.17	WH	6.3±0.3	BK	572	3.9	7.8	12568099
3G1.5				WH-GNYE						12582026
4X1.5	1.45	13.7	2.17	WH	6.9±0.3	BK	650	4.4	9.6	12568100
4G1.5				WH-GNYE						12583172
5X1.5	1.45	13.7	2.17	WH	7.8±0.3	BK	884	5.6	12.2	12581350
5G1.5				WH-GNYE						12582027
6X1.5	1.45	13.7	2.17	WH	8.45±0.3	BK	1058	6.5	14.4	12582028
7X1.5	1.45	13.7	2.17	WH	9.1±0.3	BK	1253	7.6	16.8	12583724
7G1.5				WH-GNYE						12582029
8X1.5	1.45	13.7	2.17	WH	10.3±0.4	BK	1639	9.9	20.5	12582030
9G1.5	1.45	13.7	2.17	WH-GNYE	10.6±0.4	BK	1474	9.2	21.1	12584489
10X1.5	1.45	13.7	2.17	WH	10.6±0.4	BK	1443	8.9	22.1	12582031
12X1.5	1.45	13.7	2.17	WH	11.1±0.4	BK	1639	10	25.8	12583725
16X1.5	1.45	13.7	2.17	WH	12.6±0.4	BK	2130	12.7	33.8	12583726
18X1.5	1.45	13.7	2.17	WH	13.4±0.4	BK	2449	14.4	38.2	85063742
20X1.5	1.45	13.7	2.17	WH	14.0±0.4	BK	2599	16.4	41.1	12586297
25X1.5	1.45	13.7	2.17	WH	15.5±0.5	BK	3059	17.9	51	84103977
25G1.5				WH-GNYE						12582033
30X1.5	1.45	13.7	2.17	WH	16.7±0.5	BK	3606	20.9	60.6	12586298
2X2.5	1.94	8.21	2.75	WH	7.3±0.3	BK	766	5.4	9.8	12568101
2V2.5				BU-BN						85170961
3X2.5	1.94	8.21	2.75	WH	7.8±0.3	BK	854	5.6	12.2	12582034
3G2.5				WH-GNYE						12582035
4X2.5	1.94	8.21	2.75	WH	8.7±0.3	BK	1049	6.7	15.5	12566306
4G2.5				WH-GNYE						12583173

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Cable ¹⁾ Type [n x mm ²]	Conductor ²⁾		Core ²⁾		Cable		Fire Load nom. [kJ/m]	Combustible Material nom. [kg/100m]	Cable Weight nom. [kg/100m]	H+S Part No.
	∅ nom. [mm]	R ₂₀ max. [Ω/km]	∅ nom. [mm]	Colours	∅ [mm]	Colour				
5X2.5	1.94	8.21	2.75	WH	9.4±0.3	BK	1249	7.7	18.7	12581346
5G2.5				WH-GNYE						12585007
6X2.5	1.94	8.21	2.75	WH	10.6±0.4	BK	1628	10	23.2	12581347
7G2.5	1.94	8.21	2.75	WH-GNYE	11.5±0.4	BK	1960	11.9	27.3	12583995
16X2.5	1.94	8.21	2.75	WH	15.8±0.5	BK	3239	19.3	54.6	85002904
20X2.5	1.94	8.21	2.75	WH	17.6±0.5	BK	4126	24	68.1	12585070
30X2.5	1.94	8.21	2.75	WH	20.9±0.5	BK	5418	31.3	97.5	12584363
46X2.5	1.94	8.21	2.75	WH	25.5±0.6	BK	7870	46.4	141.4	85185017
4X4	2.44	5.09	3.35	WH	10.2±0.4	BK	1442	8.9	22.9	12585458
10X4	2.44	5.09	3.35	WH	16.0±0.5	BK	2108	20.3	55.2	85084353

¹⁾ X: one colour, numbered

G: one green-yellow core, others one colour, numbered

V: various colours

²⁾ Conductor resistance according to EN 50306- 2

³⁾ Construction details of the core is according Technical Datasheet 564264

⁴⁾ increased sheath thickness

⁵⁾ Pairs/Triples screened

⁶⁾ Quad-core no.: 1, 4, 2, 3 / 5, 8, 6, 7 / 9, 12, 10, 11 / 13, 16, 14, 15 / 17, 20, 18, 19