



Traction cable

RADOX 4 GWK-AX 1800V M J

Product description:

RADOX 4 GWK-AX 1800V M J Single core cables with reduced wall thickness
 Nominal voltage: 1800 / 3000 V AC
 Hazard level: M (extra low temperature, extra oil and extra 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.

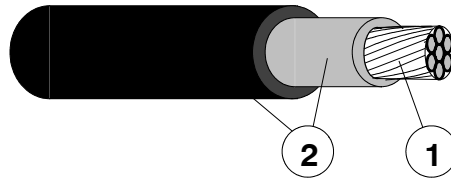
Application :

The cables are intended for permanent installation in rail vehicles or for applications in which alternating bending stresses occur during service.

Guidelines for installation are described in the standard EN 50343.

For unscreened cables the guidelines of EN 50153 shall be followed.

General composition of cable:



1. Conductor : specially stranded tin plated copper, acc. to EN 60228 cl. 5
2. Insulation : inner layer RADOX EI 110, colour: white
 outer layer RADOX EI 109, colour : black

Marking:

[a] HUBER+SUHNER RADOX 4 GWK-AX 1800V [b] M J [c][d]- [e] [f] [g]

		example:
[a]	Meter marking (in m)	= 1234 = m
[b]	Construction	1X150
[c]	Customized cablediameter (only if table 2)	SPEC
[d]	Part number	12345678
[e]	Batch number	1234567
[f]	Production week and year	03-2017
[g]	Production place (only if China)	CN

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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.

HUBER+SUHNER AG
Low Frequency Division
 CH- 8330 Pfäffikon
 +41 (0)44 952 22 11
 +41 (0)44 952 26 40
www.hubersuhner.com



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Technical Data :

Voltage rating cond.- earth	U_0	1800	V AC
Voltage rating cond.- cond.	U	3000	V AC
maximum permissible Voltage rating AC cond.- earth	.....		.....	2100	.....	V AC
maximum permissible Voltage rating AC cond.- cond.	.....	U_m	.....	3600	.....	V AC
maximum permissible Voltage rating DC cond.- earth	.....	V_0	.....	2700	.....	V DC
maximum permissible Voltage rating DC cond.- cond.	.....		.....	4500	.....	V DC
Test voltage.	.....		.....	6500	.....	V AC
Temperature range						
fixed installation	.....		.....	- 50 ... + 120	.....	°C
free installation	.....		.....	- 30 ... + 120	.....	°C
Min. bending radius *)						
fixed installation	.....	at bending angle $\leq 90^\circ$	.....	all D	.....	2 x D
	.....	at bending angle $> 90^\circ$	.....	$D \leq 10 \text{ mm}$	.....	3 x D
	.....	at bending angle $> 90^\circ$	.....	$D > 10 \text{ mm}$	.....	4 x D
free installation	.....		.....		.....	10 x D
smaller bending radius on request						

Conditions:

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 static conditions, e.g. for fixed installation 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.



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The cables are in conformity with:

Fire protection on railway vehicles, hazard level	HL1 - HL3	EN 45545
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
Fire protection on railway vehicles, level of protection	1 - 4	DIN 5510
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 60332- 3- 25
Vertical flame spread, bunched, D ≥ 12 mm	L ≤ 2.5 m	EN 60332- 3- 24
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	ITC ≤ 3	EN 50305, 9.2
Fire protection on railway vehicles, category	A1, A2, B	NF F16- 101
Fire protection on railway vehicles, class	C / F1	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
Fire protection on railway vehicles, hazard level	LR1 - LR4	UNI CEI 11170
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 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 50267- 2- 2
Amount of halogen acid gas	HCl + HBr ≤ 0.5 %	EN 50267- 2- 1
Toxicity	ITC ≤ 3	EN 50305, 9.2
Fire protection on railway vehicles, category	Ia, Ib, II	BS 6853, GM/RT 2130
Vertical flame spread	50 < L ≤ 540 mm	EN 60332- 1- 2
Vertical flame spread, bunched	L ≤ 2.5 m	EN 50266, BS 6853 An. D.8.7
Smoke density	A ₀ ≤ BS 6853	BS 6853 An. D.8.7
Toxicity	R ≤ 1.0	BS 6853 An. B.1
Fire protection on railway vehicles	Fulfilled	NFPA 130
Vertical flame spread, bunched	L ≤ 1.5 m	UL 1685, 12 (FT4 exp.)
Smoke density	TSR ≤ 150 m ² , PSRR ≤ 0.40 m ² /s	UL 1685, 12 (FT4 exp.)
Test Eh, hammer test	20 J	EN60068- 2- 75, IEC 60068- 2- 75

Requirement of hazard level code M (according to EN 50264- 1 oder EN 50306- 1)

Extra low temperature	- 40 °C
Extra oil resistance	IRM 902, 72h, 100°C
Extra fuel resistance	IRM 903, 168h, 70°

Applicable documents :

H+S 557 578 Current rating for single core cables



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Table 1 :

Cross section mm ²	Conductor nom.		Cable dia. mm	R ₂₀ ¹⁾ max. Ω / km	C _{H2O} ²⁾ nom. pF/m	Fireload nom. kJ / m	Weight nom.		H+S Part Nr.
	Construction n x mm	D mm					copper	kg / 100m	
16	266 x 0.30	6.0	9.1±0.2	1.22	590	990	15	22	12 557 793
25	518 x 0.25	7.6	11.2±0.3	0.795	640	1350	24	33	12 558 031
35	700 x 0.25	8.7	12.6±0.3	0.554	670	1870	31	43	12 558 032
50	610 x 0.28	10.9	15.2±0.3	0.385	740	2670	45	61	12 558 033
70	1008 x 0.30	12.2	16.7±0.3	0.271	790	3150	62	82	12 558 034
95	1400 x 0.30	14.1	18.8±0.3	0.206	860	3752	82	105	12 558 035
120	960 x 0.40	16.2	21.2±0.3	0.164	920	4770	108	138	12 558 036
150	880 x 0.40 + 588 x 0.30	17.6	22.8±0.3	0.132	940	5480	136	169	12 558 037
185	1520 x 0.40	19.7	25.5±0.4	0.108	950	6270	172	211	12 558 038
240	1920 x 0.40	22.9	29.2±0.4	0.0817	1010	8480	217	269	12 558 039
300	2400 x 0.40	25.1	31.4±0.4	0.0654	1110	8920	271	326	12 559 787
400	2867 x 0.40	26.2	32.9±0.4	0.0495	1085	8091	396	448	85 079 754

1) conductor resistance according to EN 60228

2) capacity in water

Table 2 : Customized cable diameter

Cross section mm ²	Conductor nom.		Cable dia. mm	R ₂₀ ¹⁾ max. Ω / km	C _{H2O} ²⁾ nom. pF/m	Fireload nom. kJ / m	Weight nom.		H+S Part Nr.
	Construction n x mm	D mm					copper	kg / 100m	
25	518 x 0.25	7.6	10.7±0.3	0.795	630	1290	24	31	85 030 406 ³⁾
35	700 x 0.25	8.7	12.2±0.3	0.554	680	1640	31	42	85 030 594 ³⁾
70	1008 x 0.30	12.2	16.3±0.3	0.271	790	2780	62	80	85 030 411 ³⁾
95	1400 x 0.30	14.1	18.5±0.3	0.206	870	3370	82	102	85 030 595 ³⁾