



# Traction cable

## RADOX RAILCAT CAT5 4X2X22AWG XM S

### Product description:

**RADOX RAILCAT CAT5**

Multicore cables with overall screen

Impedance:

100 Ohm

Hazard level:

M (extra low temperature, extra oil and extra fuel resistant)

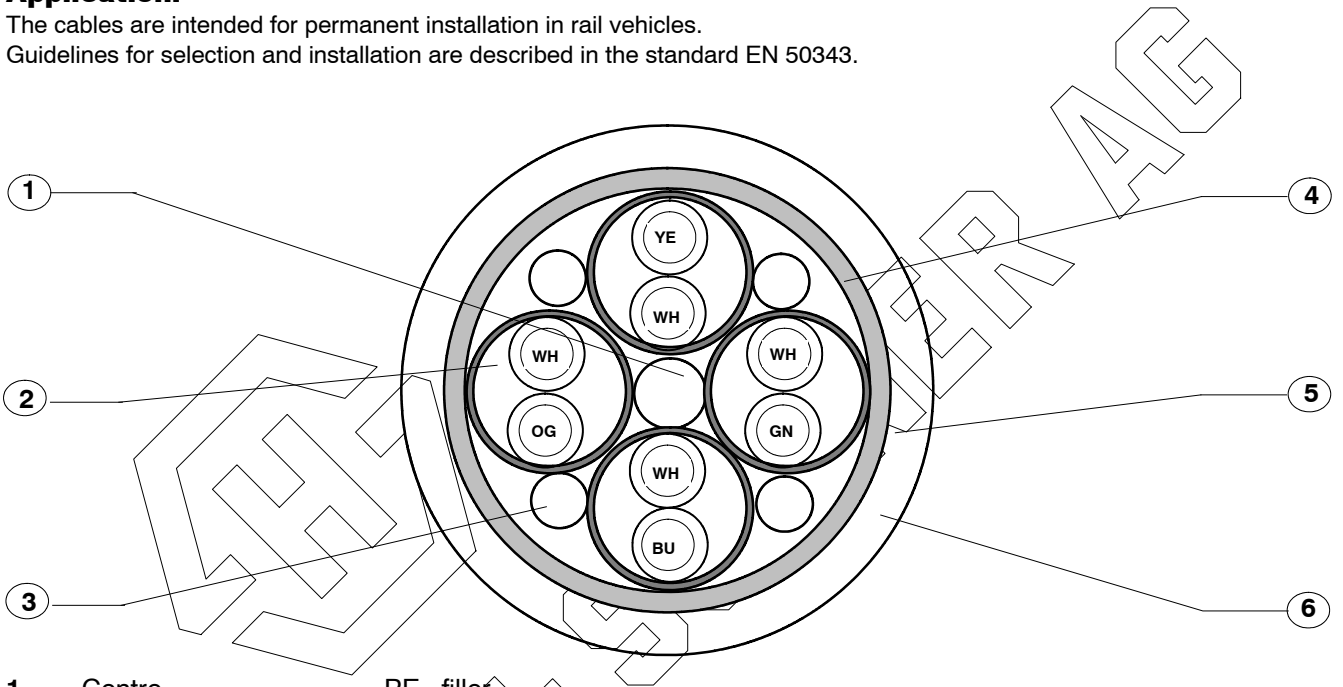
### General features:

Halogen free electron- beam cross linked cable with improved behaviour in case of fire, easy to strip, soldering iron resistant and flexible. Meet the requirements of EN 50288-2-2 and IEC 61156-6.

### Application:

The cables are intended for permanent installation in rail vehicles.

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



1.	Centre	PE- filler	
2.	4 elements 2x22AWG	Conductor: stranded silver plated copper Insulation: RADOX COM Colours: white- yellow, white- orange, white- blue, white- green Wrapping tape Screen laminated Al - tape	D : 1.95 mm D : 4.5 mm
3.	4 x Filler	PE	
4.	EMC- screen optimised	Tin plated copper braid	D : 10.7 mm
5.	Wrapping	tape	
6.	Sheath	Radox EM 104, colour : black	D : 12.6 ± 0.5 mm

**Marking:** HUBER+SUHNER RADOX RAILCAT CAT5e 4x2x22AWG XM S 12583107- [Batch no.] [Date of manufacture]

### Designation legend

X : Core insulation material is not defined in the standard EN 50264- 1

M : Sheet material EM 104 according to EN 50264- 1

S : Overall screen

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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:

Characteristic Impedance .....  $f = 100\text{MHz}$  .....  $100 \pm 5$  .....  $\Omega$   
 Resistance unbalance at 20 °C .....  $\leq 1.1$  .....  $\Omega / \text{km}$   
 Capacitance ..... core / core .....  $\leq 65$  ..... pF / m  
 ..... core / screen .....  $\leq 100$  ..... pF / m  
 Voltage rating ..... 300 ..... VAC  
 Test voltage, 50 Hz, 5 min. .... 2000 ..... VAC  
 Screening attenuation .....  $30\text{MHz} \leq f \leq 100\text{MHz}$  . 40 ..... dB  
 Transfer impedance .....  $f \leq 30\text{MHz}$  ..... 200 ..... m $\Omega/\text{m}$

Conductor resistance at 20 °C .....  $\leq 54.7$  .....  $\Omega / \text{km}$   
 Signal propagation ..... 66 ..... %

Frequency (MHz)	Attenuation (db/100m)		NEXT(db) Pr/Pr		FEXT (db) Pr/Pr		Return loss (db)	
	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.
1	2	3.2	90	65.3	80	-	-	-
4	4	6	85	56.3	75	51.8	25	23
10	6.5	9.5	80	50.3	65	43.8	35	25
31.5	8	17.1	75	42.9	60	33.9	34	23.6
62.5	14	24.8	70	38.4	55	27.9	30	21.5
100	18	32.0	60	35.3	50	23.8	28	20.1

Max. / Min. : standard defaults

Temperature range ..... fixed ..... - 50 ... + 90 ..... °C  
 Cable weight ..... 17.4 ..... Kg/100m  
 Min. bending radius ..... fixed ..... 6 x cable dia

Fireload ..... 2050 ..... kJ/m

### 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- 1- 4 Par. 8, 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.



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### The cables are in conformity with:

<b>Fire protection on railway vehicles, category</b> .....	<b>la, lb, II</b> .....	<b>BS 6853, GM/RT 2130</b>
Vertical flame spread .....	$50 < L \leq 540$ mm .....	EN 60332-1-2
Vertical flame spread, bunched .....	$L \leq 2.5$ m .....	EN 50266, BS 6853 An. D.8.7
Smoke density .....	$A_0 \leq$ BS 6853 .....	BS 6853 An. D.8.7
Toxicity .....	$R \leq 1.0$ .....	BS 6853 An. B.1
<b>Fire protection on railway vehicles, hazard level</b> .....	<b>HL1 - HL3</b> .....	<b>EN 45545</b>
Vertical flame spread .....	$50 < L \leq 540$ mm .....	EN 60332-1-2
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
<b>Fire protection on railway vehicles, level of protection</b> .....	<b>1 - 4</b> .....	<b>DIN 5510</b>
Vertical flame spread .....	$50 < L \leq 540$ mm .....	EN 60332-1-2
Vertical flame spread, bunched, $D \geq 12$ mm .....	$L \leq 2.5$ m .....	EN 60332-3-24
Smoke density .....	$T \geq 60$ % .....	EN 61034-2
Corrosivity of combustion gases .....	$pH \geq 4.3, C \leq 10 \mu S/mm$ .....	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 .....	$ITC \leq 3$ .....	EN 50305, 9.2
<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 .....	$50 < L \leq 540$ 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
<b>Fire protection on railway vehicles, hazard level</b> .....	<b>LR1 - LR4</b> .....	<b>UNI CEI 11170</b>
Vertical flame spread .....	$50 < L \leq 540$ mm .....	EN 60332-1-2
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
Corrosivity of combustion gases .....	$pH \geq 4.3, C \leq 10 \mu S/mm$ .....	EN 50267-2-2
Amount of halogen acid gas .....	$HCl + HBr \leq 0.5$ % .....	EN 50267-2-1
Toxicity .....	$ITC \leq 3$ .....	EN 50305, 9.2
<b>Fire protection on railway vehicles</b> .....	<b>Fulfilled</b> .....	<b>NFPA 130</b>
Vertical flame spread, bunched .....	$L \leq 1.5$ m .....	UL 1685, 12 (FT4 exp.)
Smoke density .....	$TSR \leq 150$ m <sup>2</sup> , $PSRR \leq 0.40$ m <sup>2</sup> /s ...	UL 1685, 12 (FT4 exp.)
<b>Requirement of hazard level code M:</b>	<b>(according to EN 50264-1 or EN 50306-1)</b>	
Extra low temperature .....	- 40°C	
Extra oil resistance .....	IRM 902, 72h, 100°C	
Extra fuel resistance .....	IRM 903, 168h, 70°C	