

# Data- / Signalcables

## MarineCom YOZc 250 V



Control, instrumentation, tele-and data communication cables. The tinned copper braided screen reduces Electro Magnetic Interferences (EMI) and grants extra mechanical protection. The XLPE isolation and variable twist lengths of the pairs provide perfect electrical properties and low capacitance for minimal signal loss. The special ripcord provides easy stripping of the outer sheath.

Characteristics	Properties	Unit
Product group	Communication marine-cables	
Series	Scheepskabel	
Type	MarineCom YOZc 250 V	
Standardization	IEC 60092-350/-351/-376	
Flame retardant	IEC 60332-1 / IEC 60332-3-22 Cat. A	
Conductor category	Class 2 = stranded	
Stranding element	Pair	
Core insulation	XLPE	
Core identification	Numbers	
Construction outer shield	Tinned copper braiding	
Screen over stranding	Braiding	
Material outer sheath	Flame Retardant Halogen Free Polyolefin Compound	
Maximum conductor temperature	90	°C
Operating temperature, flexible	-20 / 70	°C
Operating temperature, fixed	-40 / 70	°C
Specification	zie bijlagen	

Partnumber	Construction	Conductor category	Colour outer sheath	Net weight (kg/km)	Bending radius after installation	Outer diameter approx.	Tensile load (N)
16900	1 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	63	41	6,8	15
16915	1 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	70	43	7,1	23
16901	1 x 4 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	86	47	7,8	30
16902	2 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	106	58	9,6	30
16916	2 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	126	62	10,3	45
16903	4 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	150	67	11,1	60
16917	4 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	183	73	12,1	90
16904	6 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	206	78	13	90
16905	7 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	207	78	13	105
16918	7 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	275	89	14,9	158
16906	8 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	234	84	14	120
16907	10 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	279	94	15,7	150



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Partnumber	Construction	Conductor category	Colour outer sheath	Net weight (kg/km)	Bending radius after installation	Outer diameter approx.	Tensile load (N)
16919	10 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	367	108	18	225
16908	12 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	315	100	16,6	180
16909	14 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	351	106	17,6	210
16920	14 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	472	119	19,9	315
16910	19 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	449	121	20,1	285
16921	19 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	653	137	22,9	428
16911	24 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	606	136	22,7	360
16922	24 x 3 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	801	154	25,6	540
16912	27 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	652	143	23,8	405
16913	30 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	710	149	24,8	450
16914	37 x 2 x 0,5 mm <sup>2</sup>	Class 2 = stranded	Grey	829	163	27,2	555
16271	1 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	71	43	7,1	23
16272	1 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	85	45	7,5	34
16273	1 x 4 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	104	48	8	45
16270	2 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	128	62	10,4	45
16923	2 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	156	67	11,1	68
16274	4 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	188	73	12,1	90
16924	4 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	229	77	12,9	135
16275	6 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	274	86	14,4	135
16276	7 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	277	86	14,4	158
16925	7 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	352	96	16	236
16288	8 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	302	91	15,2	180
16277	10 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	372	104	17,3	225
16926	10 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	483	117	19,5	338
16289	12 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	414	109	18,1	270
16278	14 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	480	116	19,4	315
16927	14 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	670	131	21,8	473
16279	19 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	675	135	22,5	428
16928	19 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	869	149	24,9	641
16280	24 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	819	150	25	540
16929	24 x 3 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	1070	167	27,8	810
16283	27 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	879	157	26,2	608
16281	30 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	970	165	27,5	675
16282	37 x 2 x 0,75 mm <sup>2</sup>	Class 2 = stranded	Grey	1158	181	30,2	833
16930	1 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	80	45	7,5	30
16945	1 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	96	47	7,8	45
16931	1 x 4 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	114	52	8,6	60
16932	2 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	141	65	10,9	60
16946	2 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	177	71	11,8	90
16933	4 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	208	76	12,6	120
16947	4 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	272	84	14	180
16934	6 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	300	91	15,1	180
16935	7 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	307	91	15,1	210
16948	7 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	373	103	17,1	315

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Partnumber	Construction	Conductor category	Colour outer sheath	Net weight (kg/km)	Bending radius after installation	Outer diameter approx.	Tensile load (N)
16936	8 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	341	96	16	240
16937	10 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	418	109	18,2	300
16949	10 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	621	128	21,3	450
16938	12 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	469	114	19	360
16939	14 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	538	122	20,4	420
16950	14 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	797	141	23,5	630
16940	19 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	754	142	23,7	570
16951	19 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	1023	161	26,9	855
16941	24 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	914	158	26,3	720
16952	24 x 3 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	1262	179	29,8	1080
16942	27 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	1008	166	27,6	810
16943	30 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	1102	174	29	900
16944	37 x 2 x 1 mm <sup>2</sup>	Class 2 = stranded	Grey	1304	190	31,7	1110
16301	1 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	100	51	8,5	45
16316	1 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	127	55	9,1	68
16302	1 x 4 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	156	61	10,1	90
16303	2 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	187	77	12,8	90
16317	2 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	239	83	13,9	135
16304	4 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	284	89	14,9	180
16318	4 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	369	98	16,3	270
16305	6 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	413	107	17,9	270
16306	7 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	426	109	18,1	315
16319	7 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	582	123	20,5	473
16307	8 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	480	115	19,2	360
16308	10 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	577	124	20,6	450
16320	10 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	872	153	25,5	675
16309	12 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	731	139	23,2	540
16310	14 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	824	148	24,7	630
16321	14 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1121	168	28	945
16311	19 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1090	171	28,5	855
16322	19 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1459	193	32,1	1283
16312	24 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1300	190	31,6	1080
16323	24 x 3 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1791	215	35,8	1620
16313	27 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1434	199	33,2	1215
16314	30 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1571	209	34,9	1350
16315	37 x 2 x 1,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1885	230	38,3	1665
16960	1 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	133	58	9,6	75
16975	1 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	165	61	10,1	113
16961	1 x 4 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	210	68	11,3	150
16962	2 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	250	87	14,5	150
16976	2 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	315	94	15,6	225
16963	4 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	376	100	16,7	300
16977	4 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	510	111	18,5	450
16964	6 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	559	122	20,3	450

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Partnumber	Construction	Conductor category	Colour outer sheath	Net weight (kg/km)	Bending radius after installation	Outer diameter approx.	Tensile load (N)
16965	7 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	588	122	20,3	525
16978	7 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	868	142	23,6	788
16966	8 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	718	133	22,2	600
16967	10 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	882	152	25,3	750
16979	10 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1225	174	29	1125
16968	12 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1003	158	26,4	900
16969	14 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1138	169	28,1	1050
16980	14 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1591	193	32,1	1575
16970	19 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1485	194	32,4	1425
16981	19 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	2083	221	36,8	2138
16971	24 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	1840	217	36,2	1800
16982	24 x 3 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	2586	247	41,1	2700
16972	27 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	2035	228	38	2025
16973	30 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	2222	240	40	2250
16974	37 x 2 x 2,5 mm <sup>2</sup>	Class 2 = stranded	Grey	2683	263	43,8	2775

### Materials

#### Insulation

All marine cables are insulated with Cross-Linked Polyethylene (XLPE) according to IEC 60092-351, type HF-XLPE. This material allows a continuous conductor temperature of 90 °C and withstands a temporary overload temperature of 130 °C and a short-circuit temperature of 250 °C. This material offers good low temperature properties with a brittleness temperature of approximately -50 °C. TKF's XLPE material shows very low dielectric losses when used in power cables and excellent transmission properties for the instrumentation and communication cables. It also has extremely low moisture absorption, and a high resistance to most chemicals. The Fire-Resistant cables have conductors fully wrapped in mica-glass tape before being insulated with XLPE insulation.

#### Sheathing

Standard TKF marine cables have a SHF1 type, halogen-free, flame retardant, low-smoke sheath. This sheath has very good abrasion resistance, good mechanical properties, low moisture absorption and high resistance to most chemicals. The material meets the requirements as specified in IEC 6092-359 under type SHF-1 for mechanical properties, as well as the IEC 60811-2-1 for oil-resistance (ASTM oil 2, 4 hours, 70 °C). The selected sheath material makes TKF marine cables are very suitable for installation and usage in areas with low temperatures. If the cables are exposed to direct sunlight protective covering or black outer sheath is recommended. On request special sheath materials can be applied (e.g. TPU or SHF2) for more extreme conditions.

#### Armouring and Screening

All TKF's braided cables (designated with the "O" in the type designation) have tinned-copper wire braiding with a coverage of at least 90%. The tinned wires give a high corrosion resistance of the braid and offer both mechanical and EMI protection. Screened cables ("af" type designation) offer only EMI protection with alu-PET tapes in combination with a tinned copper drain wire.

### International Standards

The Marine cables in this catalogue are designed and tested in accordance with the following standards, where applicable.

Standard	Description
IEC 60092-350	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications
IEC 60092-351	Insulating materials for shipboard offshore units, power, control, instrumentation, telecommunication and data cables
IEC 60092-352	Electrical installations in ships -Choice and installation of cables for low-voltage power systems
IEC 60092-353	Single and multicore non-radial field power cables with extruded solid insulation for rated voltages 1 kV and 3 kV
IEC 60092-354	Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV (Um = 7.2 kV) up to 30 kV (Um = 36 kV)
IEC 60092-359	Sheathing materials for shipboard power and telecommunication cables
IEC 60092-376	Cables for control and instrumentation circuits 150/250 V (300 V)
IEC 60228	Conductors of insulated cables
IEC 60331-11	Tests for electric cables under fire conditions - circuit integrity - apparatus - fire alone at a flame temperature of at least 750 °C
IEC 60331-21	Tests for electric cables under fire conditions - circuit integrity - procedures and requirements - cables of rated voltage up to and including 0.6/1.0 kV
IEC 60332-1	Tests on electric cables under fire conditions - part 1: test on a single vertical insulated wire or cable
IEC 60332-3-22 - A	Tests on electric cables under fire conditions - part 3-22: test for vertical flame spread of vertically mounted bunched wires or cables - category A
IEC 60754-1	Test on gases evolved during combustion of electric cables - determination of the amount of halogen acid gas
IEC 60811	Common test methods for insulating and sheathing materials of electric cables
IEC 61034 series	Measurement of smoke density of electric cables burning under defined conditions

### Bending Radius

#### Bending Radii according to IEC 60092-352

Voltage Rating	Cable Construction	Outer Diameter	Bending Radius	Cable Types
Up to 1.8/ 3 kV	Unarmoured	<25 mm	R = 4 x D	YZp, YZs
	Unarmoured	>25 mm	R = 6 x D	YZp, YZs
	Armoured/Screened	any	R = 6 x D	YOZp, YOZs, YOZc
	Foil screened	any	R = 8 x D	YOZ2c, YZafp, YZafc
≥3.6/6 kV	Single Core	any	R = 12 x D	YOZmv
	Triple Core	any	R = 9 x D	YZOZmv

### Current Rating for General Installations

The current ratings are applicable for d.c. and a.c. with a nominal frequency of 50 Hz or 60 Hz and an ambient air temperature of 45° C. For higher frequencies, the current rating shall be calculated with an appropriate method (e.g. IEC 60287). For other ambient air temperatures the correction factors have to be applied. These ratings are applicable, without correction factors, for cables bunched together on cable trays, in cable conduits, pipes or trunking, unless more than six cables operating simultaneously at their full rated capacity are laid close together without free air circulating around them. In this case a correction factor of 0.85 should be applied. The tables are for general reference purposes only, and do not describe all installation methods existing in practice. For more detailed information see IEC 60092-352(2005) Annex A & B. For specific situations not covered by these standards exact current calculations can be made by our engineering office.

#### Correction Factors for ambient air temperatures for maximum conductor temperature of 90° C

Air Temperature	35° C	40° C	45° C	50° C	55° C	60° C
Correction Factor	1.10	1.05	1.00	0.94	0.88	0.82
Air Temperature	65° C	70° C	75° C	80° C	85° C	90° C
Correction Factor	0.74	0.67	0.58	0.47	-	-

#### Current carrying capacities in continuous service at maximum rated conductor temperature of 90° C in A, at 45° C ambient air temperature

##### Current Rating (A)

Cross Section (mm <sup>2</sup> )	Number of cores loaded					
	1		2		3 & 4	
1.5	23	20	16			
2.5	40	26	21			
4	51	34	28			
6	52	44	36			
10	72	61	50			
16	96	82	67			
25	127	108	89			
35	157	133	110			
50	196	167	137			
70	242	206	169			
95	293	249	205			
120	339	288	237			
150	389	331	272			
185	444	377	311			
240	522	444	365			
300	601	511	421			
	d.c.	a.c.	d.c.	a.c.	d.c.	a.c.
400	690	670	587	570	483	469
500	780	720	663	612	546	504
630	890	780	757	663	623	548

## Marine Cables

### Short Circuit Current

The maximum permissible short circuit current for different cables is based on the formula

$$I_k = 146 \cdot \frac{S}{\sqrt{t}}$$

$I_k$  = the maximum permissible short-circuit current in Ampere  
 $S$  = the cross section area of the conductor in  $\text{mm}^2$   
 $t$  = the duration of the short-circuit in seconds

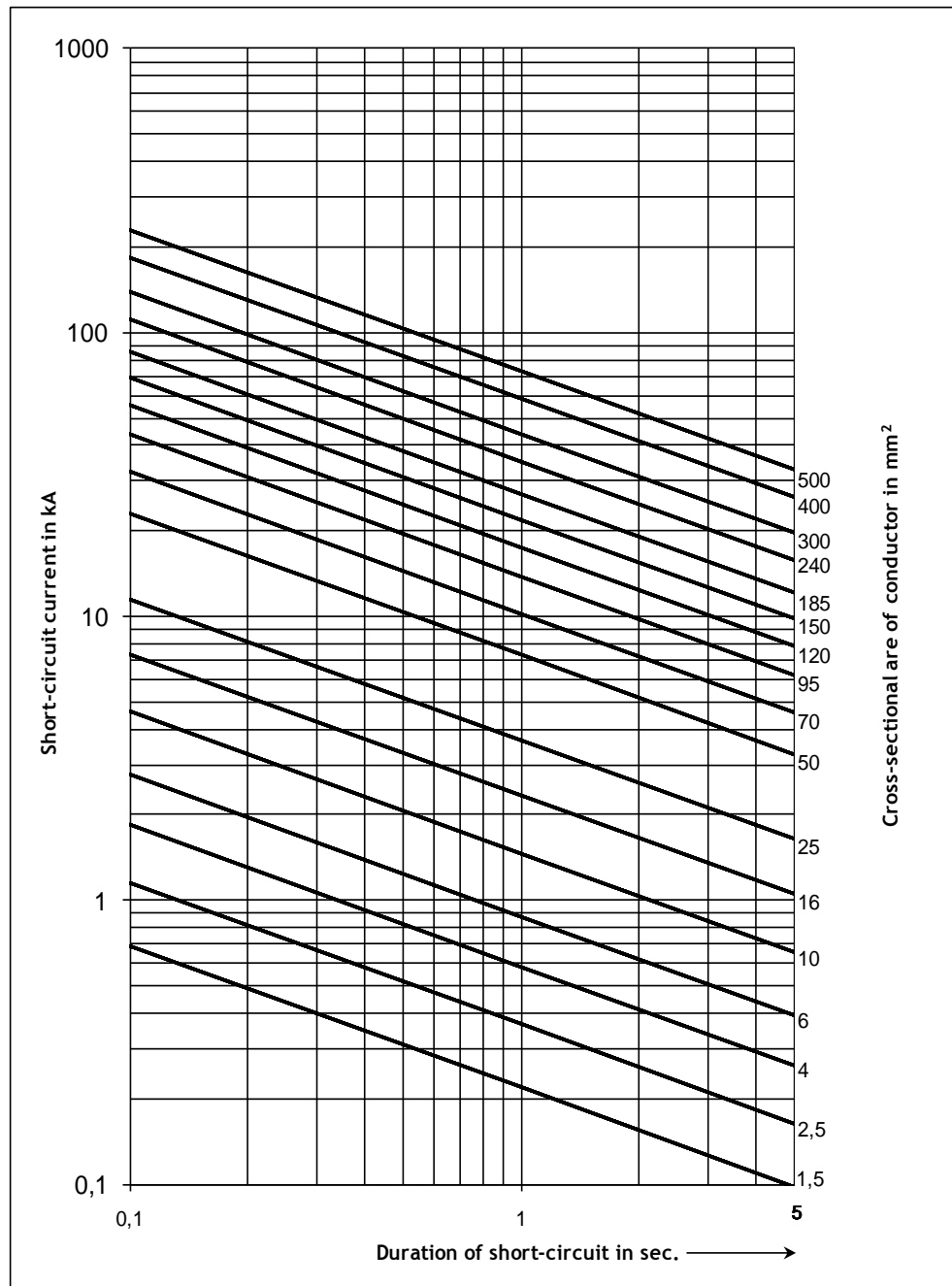
The formula is acceptable for an increase in temperature from  $90^\circ\text{C}$  at the start to  $250^\circ\text{C}$  at the end (according to IEC 60093-3). In the figure the permissible short-circuit current is given in kA as a function of time (from 0.1 to 5 seconds) and as a function of the cross sectional area of the conductor.

### Reactance Calculations

The reactance of cables can be calculated with the following formula:

$$2 \cdot \pi \cdot f \cdot L$$

$f$  = frequency in Hz  
 $L$  = inductance in H



# Technical Product information

## Marine Cables

### Sheath Colours & Core Identification

#### Overview types, standards, core identification and sheath colour

Application	Type	Standard	Core Identification	Sheath Colour
Low voltage	Marineline (+) Y(O)Z(af)p 0,6/1 kV	IEC 60092-350/-351/-353	HD308 S2-2001	black
	MarineFlex Y(O)Zp & YOQp 0,6/1 kV	IEC 60092-350/-351/-353	HD308 S2-2001	black
	MarineFlex YOZp 1,8/3 kV	IEC 60092-350/-351/-353	HD308 S2-2001	black
	Marineline (+) Y(O)Zp FR 0,6/1 kV	IEC 60331-11/21	HD308 S2-2001	orange
Medium voltage	MarinePower Y(O)Z(mv) 3,6-30 kV	IEC 60092-350/-351/-354	Coloured tape + numbers	red
	MarinePower Multiflex YQOQmv 6/10kV	IEC 60092-350/-351/-354	Coloured tape + numbers	red
Communication	Marine(2)Com Y(O)Z(af)(2)c 250V	IEC 60092-350/-351/-376	Blue/White cores + numbers	grey
	Marine(2)Com Y(O)Z(af)(2)c FR 250V	IEC 60331-11/21	Blue/White cores + numbers	orange
Signal	MarineSignal (+) Y(O)Zs 250V	IEC 60092-350/-351/-376	Black cores + numbers	grey

Different sheath colours on request

### Core Identification

#### Low voltage power cables 0,6/1 kV -1,8/3kV - According to HD308 S2-2001

Cond .	Without Yellow/Green Conductor					With Yellow/Green Conductor (G)				
	N	L1/L2	L/L2	L3	L3	PE	N	L1/L2	L/L2	L3
1			Black							
2	Blue	Orange								
3		Orange	Black	Grey		Green/Yellow	Blue	Orange		
4	Blue	Orange	Black	Grey		Green/Yellow	Blue	Orange	Black	Grey
5	Blue	Orange	Black	Grey	Black	Green/Yellow	Blue	Orange		
>5			Nr.			Green/Yellow			Nr.	

- Notes:
- 1) PE = protective conductor - beschermingsleiding - Schutzleiter - conducteur de protection  
N = neutral conductor - nulleiding - Neutralleiter - conducteur neutre  
L, L1, L2, L3 = phase conductors - faseleidingen - Phasenleiter - conducteurs de phase
  - 2) Nr. = black numbered - zwart genummerd - schwarz nummeriert - noir numéroté

#### Communication Cables 250 V

Pairs (n x 2 x y mm <sup>2</sup> )	
1	2
3..etc	4..etc

Triples (n x 3 x y mm <sup>2</sup> )		
1	2	3
4..etc	5..etc	6..etc

#### Medium Voltage cables 3,6-30kV

Triple Cores (YZOZmv, YQOQmv)		
Spiral wound red tape with number	Spiral wound white tape with number	Spiral wound blue tape with number

#### Signal Cables 250 V

Multicores
1
2..etc