

TOXFREE[®] MARINE PLUS

XOxZ1-K (AS+)

XOxTCuZ1-K (AS+)

The marine armoured instrumentation cable.

ACCORDING TO: IEC 60092-376



APPLICATION

The Toxfree Marine Plus XOxZ1-K (AS+) and XOxTCuZ1-K (AS+) cable with halogen free is a safety instrumentation and telecommunication cable.

It is fire resistant and specially designed to continue transmitting information/data in case of fire. For this reason, it is recommended for use in public places and marine applications.

CONSTRUCTION

Conductor

Electrolytic annealed copper, class 5 (flexible) according to IEC 60228 (conductor resistance according to IEC 60092-376, Table 1).

Insulation

Mica Tape + Cross-linked polyethylene type HF XLPE 90°C according to IEC 60092-360.

The standard identification of insulated conductors is the following:
Pair White + Blue (each core numbered with the pair number)
Other colours available on request.

Assembly of cores

Stranded conductors in pairs.

Individual screen (XO3Z1-K and XO3TCuZ1-K)

Aluminium + polyester tape with 100% coverage + tinned copper drain wire applied over the assembled cores.

Assembly of pairs

Cabled in concentric layers.

Collective screen

Aluminium + polyester tape with 100% coverage + tinned copper drain wire applied over the assembled pairs.

Only for XO2TCuZ1-K (AS+) cables, the tinned copper drain wire will be removed, and the aluminium side of the tape will put in contact with the braid armour.

Braid armour (XO2TCuZ1-K and XO3TCuZ1-K)

Tinned copper wire braid armour over the collective screen.

Outer sheath

Low smoke halogen free thermoplastic polyolefin, type SHF1 according to IEC 60092-360.

Orange colour, non-toxic, fire retardant and fire resistant.

CHARACTERISTICS



Electrical performance

Instrumentation: 150/250 V.



Thermal performance

Maximum conductor temperature: 90°C.

Maximum short-circuit temperature: 250°C (max 5 s).

Minimum service temperature: -40°C (fixed installations).

Lowest installation temperature: -15°C



Fire performance

Flame non-propagation according to IEC 60332-1.

Fire non-propagation according to IEC 60332-3-22.

Fire resistant minimum 90 minutes at 840 °C:

According to IEC 60331-2 for cable diameter ≤ 20 mm.

According to IEC 60331-1 for cable diameter > 20 mm.

Halogen free according to IEC 60754-1.

Low corrosive gases emission according to IEC 60754-2.

Low smoke emission according to IEC 61034:

light transmittance > 60%.



Mechanical performance

Minimum bending radius:

∅ ≤ 25mm 4x cable diameter.

∅ > 25mm 6x cable diameter.

Impact resistance: AG3 high severity.



Environmental performance

Chemical & Oil resistance: Acceptable.

UV Resistant according to EN 50618.

Water resistance: AD6 waves.



Installation conditions

Open Air.

In conduit on a bulkhead.

On a bulkhead.

STANDARDS / COMPLIANCE



According to
IEC 60092-376



Standards and approvals
ABS / DNV-GL / BUREAU VERITAS / CE / RoHS

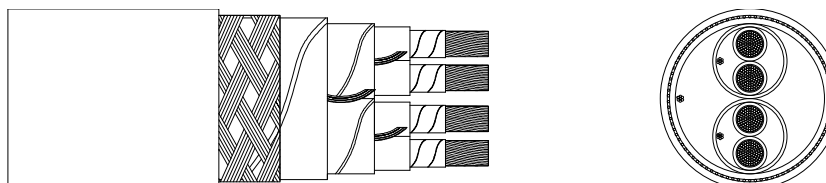


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DIMENSIONS & ADMISSIBLE INTENSITIES



XO2Z1-K (AS+)				
Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open Air (A) ¹	R max. 20°C (Ω/km)
1 x 2 x 0,75	7,5	65	17,1	27,6
2 x 2 x 0,75	11,2	110	13,7	27,6
4 x 2 x 0,75	13,0	160	11,2	27,6
7 x 2 x 0,75	15,8	250	9,2	27,6
10 x 2 x 0,75	20,5	385	8,6	27,6
14 x 2 x 0,75	22,5	465	7,4	27,6
19 x 2 x 0,75	25,3	605	6,5	27,6
24 x 2 x 0,75	29,9	765	6,5	27,6

XO3Z1-K (AS+)				
Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open Air (A) ¹	R max. 20°C (Ω/km)
2 x 2 x 0,75	12,2	145	13,7	27,6
4 x 2 x 0,75	14,2	225	11,2	27,6
7 x 2 x 0,75	17,3	350	9,2	27,6
10 x 2 x 0,75	22,7	445	8,6	27,6
14 x 2 x 0,75	24,7	575	7,4	27,6
19 x 2 x 0,75	27,8	755	6,5	27,6
24 x 2 x 0,75	33,1	970	6,5	27,6

XO2TCuZ1-K (AS+)				
Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open Air (A) ¹	R max. 20°C (Ω/km)
1 x 2 x 0,75	8,3	100	17,1	27,6
2 x 2 x 0,75	11,6	145	13,7	27,6
4 x 2 x 0,75	14,9	215	11,2	27,6
7 x 2 x 0,75	20,1	335	9,2	27,6
10 x 2 x 0,75	22,5	495	8,6	27,6
14 x 2 x 0,75	23,7	585	7,4	27,6
19 x 2 x 0,75	26,5	745	6,5	27,6
24 x 2 x 0,75	31,3	945	6,5	27,6

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XO3TCuZ1-K (AS+)				
Cross-section (mm ²)	Diameter (mm)	Weight (kg/km)	Open Air (A) ¹	R max. 20°C (Ω/km)
2 x 2 x 0,75	13,1	180	13,7	27,6
4 x 2 x 0,75	15,3	255	11,2	27,6
7 x 2 x 0,75	18,8	425	9,2	27,6
10 x 2 x 0,75	22,3	545	8,6	27,6
14 x 2 x 0,75	24,4	680	7,4	27,6
19 x 2 x 0,75	27,3	905	6,5	27,6
24 x 2 x 0,75	34,3	1.180	6,5	27,6

¹Reference method E according to IEC 60092-352 and IEC 60364-5-52 in open air at 30°C ambient temperature.
For cables having more than 1 unit a factor is applied according to the Table A6 of the IEC 60092-352 standard



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SHORT-CIRCUIT CURRENT-CARRYING CAPACITIES

Time (s)	0,1	0,2	0,3	0,5	1	1,5	2	2,5	3
A/mm²	452	320	261	202	143	117	101	90	83

CORRECTION FACTORS FOR AIR TEMPERATURE

Air T. (°C)	10	15	20	25	30	35	40	45	50	55
Factor	1,15	1,12	1,08	1,04	1	0,96	0,91	0,87	0,82	0,76

Other correction factors (for grouping cables, for harmonic currents), that are not in this specification, can be applied. Further information can be found in IEC 60092-352 and IEC 60364-5-52.