

CABLES FOR A MOVING WORLD



TRATOS MARINE®





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TRATOS MARINE®

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Legende

U = Unarmoured

FU = Flexible (conductor) Unarmoured

A = Armoured (2)

FA = Flexible (conductor) Armoured (2)

(2) Standard Plain Copper Braid (PCB)

Upon request: Tinned Copper Braid (TCB) or Galvanized Steel Wire Braid (GSWB)

STANDARDS AND QUALITY SYSTEM

QUALITY SYSTEM

Tratos aim to work closely with customers to find better, more environmentally friendly solutions to their challenges.

We are committed to our vision and strategy to serve all our internal and external customers by providing high quality services and products. Tratos is an established industry leader in the design, manufacture and supply of cables and products and to maintain this leading position we are committed at every level to providing our customers with quality services and products at a competitive price. As a commercial enterprise we are aware of the importance of satisfying our customers and of the financial impact of which nonconformities may have on our profitability. For these reasons we are committed to complying with all customer requirements and specifications both legal and statutory requirements. Our Quality Management System has been audited and approved by two independent, Internationally recognized and accepted authorities: BSI and AENOR-IQNET (E), in accordance to BS EN ISO 9001:2015 covering the production, purchasing of raw materials design and final test including various document types. The Tratos Quality Management system is under frequent regular surveillance by inspectors working for the Certification Authorities.



As a commercial enterprise we are aware of the importance of satisfying our customers and of the financial impact of which nonconformities may have on our profitability. For these reasons we are committed to complying with all customer requirements and specifications both legal and statutory requirements. Our Quality Management System has been audited and approved by two independent, Internationally recognized and accepted authorities: BSI and AENOR-IQNET (E), in accordance to BS EN ISO 9001:2015 covering the production, purchasing of raw materials design and final test including various document types. The Tratos Quality Management system is under frequent regular surveillance by inspectors working for the Certification Authorities.

ENVIRONMENTAL SYSTEM

Our Environmental Management System has been audited and approved by two independent, Internationally recognized and accepted authorities:

BSI and AENOR-IQNET (E), in accordance to BS EN ISO 14001:2015 covering the production, purchasing of raw materials design and final test including various document types. The Tratos Quality Management system is under frequent regular surveillance by inspectors working for the Certification Authorities.



ENERGY MANAGEMENT SYSTEMS

By complying with the BS EN ISO 50001:2018 Tratos follows a systematic approach in achieving continual improvement of energy performance and the Energy Management Systems (EnMS).

The BS EN ISO 50001:2018 is a standard issued by the International Standard Organization (ISO) which outlines the requirements for establishing, implementing, maintaining and improving an energy management system (EnMS).



CIRCULAR ECONOMY

The EU Eco-Management and Audit Scheme (EMAS) is a premium management instrument developed by the European Commission for companies and other organisations to evaluate, report, and improve their environmental performance. EMAS is open to every type of organisation eager to improve its environmental performance. It spans all economic and service sectors and is applicable worldwide.



AWARDS

Tratos cables are made with award winning Tratos-JBA® compound. Tratos UK Ltd has won a **Queen's Award for Enterprise - Innovation** for its technologically advanced Tratos-JBA® compound.



STANDARDS AND QUALITY SYSTEM

HEALTHY & SAFETY SYSTEM

Once its decision to create a board post dedicated to furthering best practice for Health and Safety, international cable manufacturer Tratos is celebrating receipt of ISO 45001.

ISO 45001 sets out the minimum requirements for occupational health and safety management best practice and helps companies achieve the maximum return for employees, operations and customers.



REACH, WEEE & ROHS



Tratos is fully compliant with the **REACH**. This is a European Union regulation concerning the **Registration, Evaluation, Authorisation and restriction of Chemicals**. It came into force on 1st June 2007 and replaced a number of European Directives and Regulations with a single system. REACH applies to substances manufactured or imported into the EU in quantities of 1 tonne or more per year. Generally, it applies to all individual chemical substances on their own, in preparations or in articles. To summarise, REACH makes the cable industry directly responsible for assessing and managing the risks posed by chemicals and providing safety information to their users.



Tratos fully subscribes to The **Waste Electrical and Electronic Equipment Directive (WEEE Directive)**, introduced into UK law in January 2007 by the Waste Electronic and Electrical Equipment Regulations 2006. The WEEE Directive aims to reduce the amount of electrical and electronic equipment being produced and to encourage everyone to reuse, recycle and recover it. The WEEE Directive also aims to improve the environmental performance of businesses that manufacture, supply, use, recycle and recover electrical and electronic equipment. TRATOS has enlisted the services of the UK's leading producer compliance scheme, Valpak, whom manage our recycling obligations and also ensure our compliance to the WEEE Regulations and the Waste Batteries and Accumulators Regulations.



Tratos is fully compliant with the **Restriction of Hazardous Substances (RoHS) Regulations**. These Regulations implement EU Directive 2011/65/EU which bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants. Tratos fully understands the requirements of the RoHS Directive and ensures that our products, and their components, comply.

CORPORATE SOCIAL RESPONSIBILITY

Tratos adopts a Code of Ethics which adheres to the United Nations Global Compact on human rights, labour standards, protection of the environment and anti corruption measures.

Under this self regulatory code, Tratos will carry out initiatives in the environmental and social fields with special reference to environmental policies and social policies regarding child labour, compulsory labour, health and security, freedom of association and the right to collective bargaining, discrimination, disciplinary procedures, working hours and wages.

APPROVALS

Marine cables made by Tratos have been tested and certified by the following Approval Organisations:



* Approval Lloyd's Register:
TRI 0300181/1 certificate number

Tratos Cavi S.p.A. reserves the right to make changes to the information contained in this publication without notice. Although every effort has been made in the preparation of this publication Tratos Cavi S.p.A. cannot accept responsibility arising out of any error or omission.

TECHNICAL INFORMATION

REDUCED INSTALLATION COST DUE TO:

CABLES INCREASED PLIABILITY

Special conductors and/or designs (cores assembly, braid...) are studied in order to obtain a new generation of pliable shipcables offering ease of bending to aid and speed installation

CABLES DIMENSION AND WEIGHT

The use of innovative designs and new materials allows a reduction in both dimensions and weight of approximately 20% against older generation cables.

LESS INSTALLATION TIME

The flame retardant outer sheath is based on Polyolefin and has been specially developed by Tratos to resist damage and to reduce to a minimum friction during installation.

HIGH SECURITY FOR PEOPLE AND EQUIPMENT DUE TO:

FLAME RETARDANCE

The cables are self extinguishing according to IEC 60332-3-22

FIRE RESISTANCE STANDARD CONSTRUCTION (1)

For special wiring cables fire resisting acc. to IEC 60331-11 (Apparatus - Fire alone at a flame temperature of at least 750 °C) and IEC 60331-21 (Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV)

VERY LOW EMISSION OF SMOKE AND CORROSIVE GASES

The level of emissions meets the stringent requirements of IEC 61034 (Measurement of smoke density) and IEC 60754 (measurement of acidic gases)

(1) Upon request where a higher level of fire resistance is required.

For cable installed in critical environment, fire-resisting according to IEC 60331-1 and -2 (Tests for fire with shock at a temperature of at least 830°C)

1. CORES IDENTIFICATION

White or black numbering on cores coloured as follows:

Instrumentation and telecommunication cables

Cabling Element	wire a	wire b	wire c	wire d
pair	black numbered	light blue numbered		
triple	black numbered	light blue numbered	brown numbered	
quad	black numbered	brown numbered	light blue numbered	grey numbered

Power and control cables 0,6/1 kV

core	black
2 cores	blue, brown
3 cores	brown, black, grey (3X...)
	brown, blue, yellow/green (3G...)
4 cores	blue, brown, black, grey (4X...) (without earth cond.)
	brown, black, grey, yellow/green, (4G...) (with earth cond.)
>5 cores	black colour printed numbers white colours (without earth cond.)
	yellow/green+black colours numbered other cores (with earth cond.)

2. DIMENSION AND ELECTRICAL PARAMETERS OF CONDUCTORS

c.s.a. mm ²	Conductor diameter (approx) mm		Maximum conductor resistance at 20°C plain copper	
	d.2	d.5	d.2	d.5
			Ω/Km	Ω/Km
1	1,3	1,25	18,1	19,5
1,5	1,6	1,45	12,1	13,3
2,5	2	1,95	7,41	7,98
4	2,5	2,45	4,61	4,95
6	3,15	3,1	3,08	3,3
10	4	3,95	1,83	1,91
16	5,1	5	1,15	1,21
25	6,4	6,2	0,727	0,78
35	7,5	7,6	0,524	0,554

c.s.a. mm ²	Conductor diameter (approx) mm		Maximum conductor resistance at 20°C plain copper	
	d.2	d.5	d.2	d.5
			Ω/Km	Ω/Km
50	8,8	9	0,387	0,386
70	10,3	10,6	0,268	0,272
95	12,2	12,8	0,193	0,206
120	13,8	14	0,153	0,161
150	15,1	15,9	0,124	0,129
185	17	17,8	0,0991	0,106
240	19,9	20,7	0,0754	0,0801
300	21,9	23,5	0,0601	0,0641

TRATOS MARINE U - (Unarmoured) 0,6/1kV

TRATOS MARINE FU - (Flexible conductor Unarmoured) 0,6/1kV

FEATURES AND PERFORMANCES



CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (class 5 when request) acc. to IEC 60228
- **Insulation:** XLPE
- **Filler:** Halogen free compound (when necessary)
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – U – no.xcsa – 0,6/1 kV – IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092350-353
 - IEC 60092-360
 - IEC 60332-1-2 and IEC 60332-3-22
 - IEC 60754-1 and IEC 60754-2
 - IEC 61034-1 and IEC 61034-2
- Design guide
Materials
Flame retardance
Halogen free properties
Smoke emission



TRATOS MARINE U - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
1 x 4	2,50	0,7	1	6	66	27
1 x 6	3,10	0,7	1	6,6	80	30
1 x 10	4,00	0,7	1	7,7	128	35
1 x 16	5,1	0,7	1	8,8	180	40
1 x 25	6,4	0,7	1,1	10,6	295	48
1 x 35	7,6	0,9	1,1	13,7	420	53
1 x 50	9,0	1	1,2	15,2	540	60
1 x 70	10,6	1,1	1,3	17,4	760	69
1 x 95	12,8	1,1	1,3	19,6	1040	78
1 x 120	14	1,2	1,4	21,3	1250	85
1 x 150	15,6	1,4	1,5	23,6	1580	96
1 x 185	17,3	1,6	1,5	25,6	1930	140
1 x 240	19,7	1,7	1,6	29,0	2520	170

TRATOS MARINE U - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
2 x 1,5	1,6	0,7	1,1	9,0	70	38
2 x 2,5	2	0,7	1,1	9,9	100	43
2 x 4	2,5	0,7	1,1	11,2	135	48
2 x 6	3,1	0,7	1,1	12,4	180	52

TRATOS MARINE U - 0,6/1kV & TRATOS MARINE FU - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
3 x 1,5	1,6	0,7	1,1	9,7	100	38
3 x 2,5	2	0,7	1,1	10,6	135	44
3 x 4	2,5	0,7	1,1	11,4	190	49
3 x 6	3,1	0,7	1,2	12,6	260	56
3 x 10	4	0,7	1,2	14,6	380	64
3 x 16	5,1	0,7	1,3	16,6	590	75
3 x 25	6,4	0,9	1,4	20,6	940	90
3 x 35	7,6	0,9	1,5	25,0	1600	150
3 x 50	9,0	1,0	1,7	28,6	2000	162
3 x 70	10,6	1,1	1,8	33,0	2800	190
3 x 95	12,8	1,1	1,9	37,8	3850	220
3 x 120	14,0	1,2	2,1	41,8	4700	240
4 x 1,5	1,6	0,7	1,1	10,3	116	43
4 x 2,5	2	0,7	1,1	11,5	160	48
4 x 4	2,5	0,7	1,2	13,2	230	53
4 x 6	3,10	0,7	1,2	14,4	320	60
4 x 1	1,3	0,7	1	8,7	90	39
5 x 1	1,3	0,7	1,1	9,65	110	44
7 x 1	1,3	0,7	1,2	10,5	145	47
10 x 1	1,3	0,7	1,3	13,5	200	60
12 x 1	1,3	0,7	1,3	13,85	235	63
19 x 1	1,3	0,7	1,5	16,3	360	73
24 x 1	1,3	0,7	1,5	19,2	460	86
30 x 1	1,3	0,7	1,5	20,3	550	90
5 x 1,5	1,6	0,7	1,1	10,3	150	47
7 x 1,5	1,6	0,7	1,1	11,3	185	50
10 x 1,5	1,6	0,7	1,2	14,5	275	65
12 x 1,5	1,6	0,7	1,2	14,9	325	67
19 x 1,5	1,6	0,7	1,3	17,8	480	80
24 x 1,5	1,6	0,7	1,5	20,75	600	90
30 x 1,5	1,6	0,7	1,5	21,85	720	90
7 x 2,5	2,0	0,7	1,3	14	280	85
12 x 2,5	2,0	0,7	1,4	17	470	100
19 x 2,5	2,0	0,7	1,5	20	700	120
24 x 2,5	2,0	0,7	1,65	24	920	150
30 x 2,5	2,0	0,7	1,7	25,3	1000	160

TRATOS MARINE A - (Armoured) 0,6/1kV

TRATOS MARINE FA - (Flexible conductor Armoured) 0,6/1kV

FEATURES AND PERFORMANCES

CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** XLPE
- **Filler:** Halogen free compound (when necessary)
- **Inner covering:** SHF1 Halogen-free thermoplastic sheath
- **Armour:** Plain copper wire braid (tinned when requested)
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – A – no.xcsa – 0,6/1 kV – IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092350-353
 - IEC 60092-360
 - IEC 60332-1-2 and IEC 60332-3-22
 - IEC 60754-1 and IEC 60754-2
 - IEC 61034-1 and IEC 61034-2
- Design guide
Materials
Flame retardance
Halogen free properties
Smoke emission



TRATOS MARINE A - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
1 x 4	2,5	0,7	0,20	1,0	7,1	90	48
1 x 6	3,1	0,7	0,20	1,0	8,0	118	52
1 x 10	4,0	0,7	0,20	1,1	9,0	165	59
1 x 16	5,1	0,7	0,20	1,1	10,1	230	65
1 x 25	6,4	0,7	0,20	1,2	11,9	360	75
1 x 35	7,6	0,9	0,20	1,2	14,7	500	82
1 x 50	9,0	1	0,30	1,3	16,6	740	100
1 x 70	10,6	1,1	0,30	1,4	18,9	990	113
1 x 95	12,8	1,1	0,30	1,5	21,2	1300	125
1 x 120	14	1,2	0,30	1,5	22,8	1600	135
1 x 150	15,6	1,4	0,30	1,6	25	1890	152
1 x 185	17,3	1,6	0,30	1,7	27,3	2350	164
1 x 240	19,7	1,7	0,30	1,8	30,5	2950	190

TRATOS MARINE A - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
2 x 1,5	1,6	0,7	0,2	1,1	9,0	120	60
2 x 2,5	2	0,7	0,2	1,1	9,9	145	66
2 x 4	2,5	0,7	0,2	1,2	11,2	200	73
2 x 6	3,1	0,7	0,2	1,2	12,4	280	79

TRATOS MARINE A - 0,6/1kV & TRATOS MARINE FA - 0,6/1kV*

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
3 x 1,5	1,6	0,7	0,2	1,1	9,7	140	60
3 x 2,5	2,0	0,7	0,2	1,1	10,7	180	70
3 x 4	2,5	0,7	0,2	1,2	12,5	240	80
3 x 6	3,1	0,7	0,3	1,2	13,5	350	85
3 x 10	4,0	0,7	0,3	1,3	16,3	530	100
3 x 16	5,1	0,7	0,3	1,4	18,9	760	120
3 x 25	6,4	0,9	0,3	1,5	22,5	1150	140
3 x 35	7,6	0,9	0,3	1,7	27,0	1680	165
3 x 50	9	1	0,3	1,8	30,0	2090	190
3 x 70	10,6	1,1	0,3	2,0	34,8	3050	220
3 x 95	12,8	1,1	0,4	2,1	40,0	4050	250
3 x 120	14,0	1,2	0,4	2,3	43,8	5050	270
4 x 1,5	1,6	0,7	0,2	1,1	10,7	185	70
4 x 2,5	2,0	0,7	0,2	1,2	12,3	230	80
4 x 4	2,5	0,7	0,2	1,2	13,2	320	85
4 x 6	3,1	0,7	0,3	1,3	15,0	415	95
4 x 1	1,3	0,7	0,2	1,1	10,2	145	70
5 x 1	1,3	0,7	0,2	1,1	11	160	70
7 x 1	1,3	0,7	0,2	1,2	12,5	205	80
10 x 1	1,3	0,7	0,3	1,3	16,2	300	100
12 x 1	1,3	0,7	0,3	1,3	16,7	350	105
19 x 1	1,3	0,7	0,3	1,4	17,8	470	110
24 x 1	1,3	0,7	0,3	1,5	21,8	590	135
30 x 1	1,3	0,7	0,3	1,5	22,8	690	140
5 x 1,5	1,6	0,7	0,2	1,2	12	205	75
7 x 1,5	1,6	0,7	0,2	1,2	12,8	250	80
10 x 1,5	1,6	0,7	0,3	1,3	17	390	110
12 x 1,5	1,6	0,7	0,3	1,4	17,3	430	110
19 x 1,5	1,6	0,7	0,3	1,5	20,3	620	130
24 x 1,5	1,6	0,7	0,3	1,6	23,2	840	145
30 x 1,5	1,6	0,7	0,3	1,6	24,3	910	155
7 x 2,5	2,0	0,7	0,3	1,5	15	400	95
12 x 2,5	2,0	0,7	0,3	1,5	19,5	620	120
19 x 2,5	2,0	0,7	0,3	1,6	23	910	130
24 x 2,5	2,0	0,7	0,3	1,7	26,5	1050	160
30 x 2,5	2,0	0,7	0,3	1,8	27,7	1200	170

UNARMoured POWER and CONTROL CABLES - LOW SMOKE HALOGEN FREE

TRATOS MARINE UFR - (Unarmoured Fire Resistant) 0,6/1kV

TRATOS MARINE FUFR - (Flexible conductor Unarmoured Fire Resistant) 0,6/1kV

FEATURES AND PERFORMANCES

CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** Mica tape and XLPE
- **Filler:** Halogen free compound (when necessary)
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – UFR – no.xcsa – 0,6/1 kV – IEC 60331-21 - IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092350-353 Design guide
- IEC 60092-360 Materials
- IEC 60331-11 and IEC 60331-21 Fire resistance
- IEC 60332-1-2 and IEC 60332-3-22 Flame retardance
- IEC 60754-1 and IEC 60754-2 Halogen free properties
- IEC 61034-1 and IEC 61034-2 Smoke emission



TRATOS MARINE UFR - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
2 x 1,5	1,6	0,7	1,1	9	80	45
2 x 2,5	2	0,7	1,1	10	105	50
2 x 4	2,5	0,7	1,1	11,5	150	55
2 x 6	3,10	0,7	1,1	12,6	200	60

TRATOS MARINE UFR - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
3 x 1,5	1,6	0,7	1	9,9	105	45
3 x 2,5	2	0,7	1,1	10,9	140	50
3 x 4	2,5	0,7	1,1	11,8	200	55
3 x 6	3,1	0,7	1,2	13,5	280	60
3 x 10	4	0,7	1,2	15,8	395	72
3 x 16	5,1	0,7	1,3	18,2	600	100
3 x 25	6,4	0,9	1,4	22,3	950	130
3 x 35	7,7	0,9	1,6	26	1430	150
3 x 50	9	1	1,7	28,8	1850	170
3 x 70	10,6	1,1	1,8	33,3	2650	190
3 x 95	12,8	1,1	2	38	3600	220
3 x 120	14,00	1,2	2,2	42,3	4600	240
4 x 1,5	1,6	0,7	1,1	10,7	135	50
4 x 2,5	2	0,7	1,1	11,8	190	54
4 x 4	2,5	0,7	1,2	13,2	260	60
4 x 6	3,10	0,7	1,2	14,6	350	65
4 x 1	1,3	0,7	1	9,9	103	45
5 x 1	1,3	0,7	1,1	11	130	50
7 x 1	1,3	0,7	1,1	12	170	55
10 x 1	1,3	0,7	1,2	15,8	245	72
12 x 1	1,3	0,7	1,2	18,3	290	78
19 x 1	1,3	0,7	1,3	19,3	440	80
24 x 1	1,3	0,7	1,4	22,2	550	92
30 x 1	1,3	0,7	1,4	23,8	660	100
5 x 1,5	1,6	0,7	1,1	11,8	165	54
7 x 1,5	1,6	0,7	1,1	12,8	225	60
10 x 1,5	1,6	0,7	1,2	16,9	315	80
12 x 1,5	1,6	0,7	1,3	17,3	370	80
19 x 1,5	1,6	0,7	1,4	20,3	560	90
24 x 1,5	1,6	0,7	1,5	24,3	710	150
30 x 1,5	1,6	0,7	1,5	25,8	850	160
7 x 2,5	2,0	0,7	1,5	15,0	340	90
12 x 2,5	2,0	0,7	1,5	19,0	540	120
19 x 2,5	2,0	0,7	1,6	22,1	820	140
24 x 2,5	2,0	0,7	1,7	26	950	160
30 x 2,5	2,0	0,7	1,8	28,2	1020	175

ARMOURED POWER and CONTROL CABLES - LOW SMOKE HALOGEN FREE

TRATOS MARINE AFR - (Armoured Fire Resistant) 0,6/1kV

TRATOS MARINE FAFR - (Flexible conductor Armoured Fire Resistant) 0,6/1kV

FEATURES AND PERFORMANCES



CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** Mica tape and XLPE
- **Filler:** Halogen free compound (if necessary)
- **Inner covering:** SHF1 Halogen-free thermoplastic sheath
- **Armour:** Plain copper wire braid (tinned when requested)
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – AFR – no.xcsa – 0,6/1 kV – IEC 60331-21 - IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092350-353 Design guide
- IEC 60092-360 Materials
- IEC 60331-11 and IEC 60331-21 Fire resistance
- IEC 60332-1-2 and IEC 60332-3-22 Flame retardance
- IEC 60754-1 and IEC 60754-2 Halogen free properties
- IEC 61034-1 and IEC 61034-2 Smoke emission

TRATOS MARINE AFR - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Armour Wire	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
2 x 1,5	1,6	0,7	0,2	1,1	11,6	200	70
2 x 2,5	2	0,7	0,2	1,2	12,7	260	80
2 x 4	2,5	0,7	0,2	1,2	14,0	315	90
2 x 6	3,10	0,7	0,2	1,3	15,3	440	90

TRATOS MARINE AFR - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Armour wire	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
3 x 1,5	1,6	0,7	0,2	1,2	12,5	220	75
3 x 2,5	2	0,7	0,2	1,2	13,5	280	80
3 x 4	2,5	0,7	0,2	1,2	14,5	340	90
3 x 6	3,1	0,7	0,2	1,3	16,0	480	100
3 x 10	4	0,7	0,3	1,4	19,2	680	120
3 x 16	5,1	0,7	0,3	1,4	21,3	920	120
3 x 25	6,4	0,9	0,3	1,6	25	1380	150
3 x 35	7,6	0,9	0,3	1,7	27,7	1730	160
3 x 50	9	1	0,3	1,8	31	2150	185
3 x 70	10,6	1,1	0,3	2	36	3120	220
3 x 95	12,8	1,1	0,4	2,1	41	4120	245
3 x 120	14	1,2	0,4	2,3	44	5050	270

TRATOS MARINE AFR - 0,6/1kV

Cable	Diameter of conductor	Insulation thickness	Armour wire	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
4 x 1,5	1,6	0,7	0,2	1,2	13,4	210	80
4 x 2,5	2	0,7	0,2	1,2	14,5	300	90
4 x 4	2,5	0,7	0,2	1,3	16	370	100
4 x 6	3,1	0,7	0,3	1,3	18	510	110
4x10	4	0,7	0,3	1,4	20,5	730	120
4x16	5,1	0,7	0,3	1,5	23	980	140
4x25	6,4	0,9	0,3	1,7	27,6	1450	165
4 x 1	1,3	0,7	0,2	1,2	12,7	235	80
5 x 1	1,3	0,7	0,2	1,2	13,6	250	80
7 x 1	1,3	0,7	0,2	1,3	14,7	320	90
10 x 1	1,3	0,7	0,3	1,4	18,5	460	110
12 x 1	1,3	0,7	0,3	1,4	19	515	115
19 x 1	1,3	0,7	0,3	1,4	22	690	130
24 x 1	1,3	0,7	0,3	1,5	25	840	150
30 x 1	1,3	0,7	0,3	1,6	27,0	990	165
5 x 1,5	1,6	0,7	0,2	1,2	14,5	315	90
7 x 1,5	1,6	0,7	0,2	1,3	15,6	380	90
10 x 1,5	1,6	0,7	0,3	1,4	19,8	550	120
12 x 1,5	1,6	0,7	0,3	1,4	20	610	120
19 x 1,5	1,6	0,7	0,3	1,5	23,4	840	140
24 x 1,5	1,6	0,7	0,3	1,6	27	1100	165
30 x 1,5	1,6	0,7	0,3	1,7	29	1200	175
7 x 2,5	2,0	0,7	0,3	1,5	16,5	430	105
12 x 2,5	2,0	0,7	0,3	1,6	20,7	650	130
19 x 2,5	2,0	0,7	0,3	1,7	23,8	940	150
24 x 2,5	2,0	0,7	0,3	1,8	28,0	1080	180
30 x 2,5	2,0	0,7	0,3	2,0	29,5	1250	200

TRATOS MARINE UCS - (Unarmoured Collective Screen) 60 V

TRATOS MARINE UCS - (Unarmoured Collective Screen) 250 V

FEATURES AND PERFORMANCES



CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** XLPE
- **Lay up:** Assembled pairs/ triples/ quads
- **Shield:** Aluminium/polyester tape with drain wire stranded tinned copper
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – UCS – no.xcsa – Voltage – IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092-370 Design guideline
- IEC 60092-376 Design guideline
- IEC 60092351; -359 Materials
- IEC 60332-1-2 and IEC 60332-3-22 Flame retardance
- IEC 60754-1 and IEC 60754-2 Halogen free properties
- IEC 61034-1 and IEC 61034-2 Smoke emission

TRATOS MARINE UCS - 60 V

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x0,50	0,96	0,5	1	7,5	62	64
2x2x0,50	0,96	0,5	1,1	9,8	105	80
4x2x0,50	0,96	0,5	1,1	11,3	140	95
7x2x0,50	0,96	0,5	1,2	13,7	200	115
10x2x0,50	0,96	0,5	1,3	17	270	140
14x2x0,50	0,96	0,5	1,4	19	360	160
19x2x0,50	0,96	0,5	1,5	21	450	180
24x2x0,50	0,96	0,5	1,6	24,5	550	200
30x2x0,50	0,96	0,5	1,6	25,9	650	215
1x4x0,50	0,96	0,5	1	8,3	80	70

TRATOS MARINE UCS - 250 V

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x0,75	1,1	0,7	1	8,3	78	70
2x2x0,75	1,1	0,7	1,1	11,7	140	100
4x2x0,75	1,1	0,7	1,2	14	180	120
7x2x0,75	1,1	0,7	1,3	16,7	280	140
10x2x0,75	1,1	0,7	1,4	20,5	380	170
14x2x0,75	1,1	0,7	1,5	23	500	190
19x2x0,75	1,1	0,7	1,7	25,7	650	210
24x2x0,75	1,1	0,7	1,8	30	830	250
30x2x0,75	1,1	0,7	1,9	31,5	980	260
1x4x0,75	1,1	0,7	1,1	9,2	105	80

TRATOS MARINE UCS - 250 V

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x1	1,29	0,7	1	8,5	85	72
2x2x1	1,29	0,7	1,2	12	149	100
4x2x1	1,29	0,7	1,2	15,2	200	130
7x2x1	1,29	0,7	1,3	18	330	150
10x2x1	1,29	0,7	1,5	22	440	180
14x2x1	1,29	0,7	1,6	24	600	200
19x2x1	1,29	0,7	1,7	27	750	220
24x2x1	1,29	0,7	1,9	31	950	260
30x2x1	1,29	0,7	2	33,5	1200	275
1x4x1	1,29	0,7	1,1	9,8	115	80
1x2x1,5	1,59	0,7	1	9,2	95	80
2x2x1,5	1,59	0,7	1,2	13,0	155	110
4x2x1,5	1,59	0,7	1,3	15,0	245	125
7x2x1,5	1,59	0,7	1,4	18,2	420	150
10x2x1,5	1,59	0,7	1,6	23,3	600	190
14x2x1,5	1,59	0,7	1,7	25,5	800	210
19x2x1,5	1,59	0,7	1,8	28,5	1030	235
24x2x1,5	1,59	0,7	2	33,7	1300	275
30x2x1,5	1,59	0,7	2,1	36	1600	295
1x3x1,5	1,59	0,7	1,1	9,8	118	80
4x3x1,5	1,59	0,7	1,4	18,5	380	155
7x3x1,5	1,59	0,7	1,5	22,5	600	185
10x3x1,5	1,59	0,7	1,7	29,3	850	240
14x3x1,5	1,59	0,7	1,8	32	1090	265
19x3x1,5	1,59	0,7	2	36	1500	295
1x4x1,5	1,59	0,7	1,1	10,5	145	90

TRATOS MARINE UIS - (Unarmoured Individual Screen) 60 V - 250 V

TRATOS MARINE UICS - (Unarmoured Individual & Collective Screen) 60 V - 250 V

FEATURES AND PERFORMANCES



CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** XLPE
- **Lay up:** Assembled pairs/ triples/ quads
- **Shield:** Indiv. or indiv & collective alum/ polyester tape with drain wire stranded tinned copper
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – UIS – no.xcsa – Voltage – IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092-370 Design guideline
- IEC 60092-376 Design guideline
- IEC 60092351; -359 Materials
- IEC 60332-1-2 and IEC 60332-3-22 Flame retardance
- IEC 60754-1 and IEC 60754-2 Halogen free properties
- IEC 61034-1 and IEC 61034-2 Smoke emission

TRATOS MARINE UIS & UICS - 60 V

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
2x2x0,50	0,96	0,5	1	11	115	90
4x2x0,50	0,96	0,5	1,1	13	160	105
7x2x0,50	0,96	0,5	1,2	15,6	258	125
10x2x0,50	0,96	0,5	1,3	20	360	160
14x2x0,50	0,96	0,5	1,4	21,5	470	170
19x2x0,50	0,96	0,5	1,5	24,2	605	190
24x2x0,50	0,96	0,5	1,6	28,6	750	230
30x2x0,50	0,96	0,5	1,6	30,3	900	240

TRATOS MARINE UIS & UICS - 250 V

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
2x2x0,75	1,1	0,7	1,2	12,2	162	100
4x2x0,75	1,1	0,7	1,2	14	235	120
7x2x0,75	1,1	0,7	1,3	17	360	145
10x2x0,75	1,1	0,7	1,6	22	510	185
14x2x0,75	1,1	0,7	1,7	24,2	640	200
19x2x0,75	1,1	0,7	1,7	27	850	230
24x2x0,75	1,1	0,7	1,8	31	1070	260
30x2x0,75	1,1	0,7	1,9	33,4	1290	280

TRATOS MARINE UIS & UICS - 250 V

Cable	Diameter of conductor	Insulation thickness	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm (approx)	Kg/Km (approx)	mm
2x2x1	1,29	0,7	1,2	13,2	170	105
4x2x1	1,29	0,7	1,3	15,6	260	125
7x2x1	1,29	0,7	1,4	18,7	405	150
10x2x1	1,29	0,7	1,5	23,7	550	190
14x2x1	1,29	0,7	1,6	26,2	735	210
19x2x1	1,29	0,7	1,8	29,5	980	240
24x2x1	1,29	0,7	1,9	34,5	1230	280
30x2x1	1,29	0,7	2	37	1480	300
4x3x1	1,29	0,7	1,3	18	335	150
7x3x1	1,29	0,7	1,5	21	540	170
10x3x1	1,29	0,7	1,6	26,8	760	215
14x3x1	1,29	0,7	1,7	29,3	970	234
19x3x1	1,29	0,7	1,9	33,2	1280	270
2x2x1,5	1,59	0,7	1,2	14,2	195	115
4x2x1,5	1,59	0,7	1,3	16,8	295	135
7x2x1,5	1,59	0,7	1,4	20,2	480	160
10x2x1,5	1,59	0,7	1,6	26,1	695	210
14x2x1,5	1,59	0,7	1,7	28,4	920	230
19x2x1,5	1,59	0,7	1,8	32	1170	260
24x2x1,5	1,59	0,7	2	38	1530	310
30x2x1,5	1,59	0,7	2,1	40	1820	320
4x3x1,5	1,59	0,7	1,4	18,7	410	150
7x3x1,5	1,59	0,7	1,6	22,6	650	180
10x3x1,5	1,59	0,7	1,7	29	930	230
14x3x1,5	1,59	0,7	1,8	31,8	1240	255
19x3x1,5	1,59	0,7	2	36	1650	290

TRATOS MARINE ACS - (Armoured Collective Screen) 60 V

TRATOS MARINE ACS - (Armoured Collective Screen) 250 V

FEATURES AND PERFORMANCES



CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** XLPE
- **Lay up:** Assembled pairs/ triples/ quads
- **Shield:** Aluminium/ polyester tape with drain wire stranded tinner copper
- **Inner covering:** Synthetic tape
- **Armour:** Plain copper wire braid
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – ACS – no.xcsa – Voltage – IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092-370 Design guideline
- IEC 60092-376 Design guideline
- IEC 60092351; -359 Materials
- IEC 60332-1-2 and IEC 60332-3-22 Flame retardance
- IEC 60754-1 and IEC 60754-2 Halogen free properties
- IEC 61034-1 and IEC 61034-2 Smoke emission

TRATOS MARINE ACS - 60 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x0,50	0,96	0,5	0,2	1,2	8,5	80	75
2x2x0,50	0,96	0,5	0,2	1,2	10,9	120	95
4x2x0,50	0,96	0,5	0,2	1,2	12,3	175	105
7x2x0,50	0,96	0,5	0,3	1,3	14,9	270	125
10x2x0,50	0,96	0,5	0,3	1,4	18,5	375	155
14x2x0,50	0,96	0,5	0,3	1,5	20	470	170
19x2x0,50	0,96	0,5	0,3	1,6	22,3	585	185
24x2x0,50	0,96	0,5	0,3	1,7	26	705	220
30x2x0,50	0,96	0,5	0,3	1,8	27,6	815	230
1x4x0,50	0,96	0,5	0,2	1,2	9	110	80

TRATOS MARINE ACS - 250 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x0,75	1,1	0,7	0,2	1,2	9,5	110	80
2x2x0,75	1,1	0,7	0,2	1,2	11,9	160	100
4x2x0,75	1,1	0,7	0,3	1,3	14,2	277	120
7x2x0,75	1,1	0,7	0,3	1,4	16,7	385	140
10x2x0,75	1,1	0,7	0,3	1,6	21,1	515	175
14x2x0,75	1,1	0,7	0,3	1,7	22,8	640	190
19x2x0,75	1,1	0,7	0,3	1,8	25,5	820	210
24x2x0,75	1,1	0,7	0,3	1,9	29,5	1010	245
30x2x0,75	1,1	0,7	0,3	2	31,2	1160	260
1x4x0,75	1,1	0,7	0,2	1,2	10,2	130	88

TRATOS MARINE ACS - 250 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x1	1,3	0,7	0,20	1	10	120	80
2x2x1	1,3	0,7	0,20	1,3	13,1	210	105
4x2x1	1,3	0,7	0,30	1,4	15,5	315	130
7x2x1	1,3	0,7	0,30	1,5	18,3	450	150
10x2x1	1,3	0,7	0,30	1,6	22,9	605	185
14x2x1	1,3	0,7	0,30	1,7	24,9	765	200
19x2x1	1,3	0,7	0,30	1,9	28,3	950	230
24x2x1	1,3	0,7	0,30	2,0	32,5	1170	270
30x2x1	1,3	0,7	0,30	2,1	34,5	1410	280
4x3x1	1,3	0,7	0,30	1,5	17,7	390	145
7x3x1	1,3	0,7	0,30	1,6	19,7	600	160
10x3x1	1,3	0,7	0,30	1,9	25,1	830	205
14x3x1	1,3	0,7	0,30	2	27,2	1040	220
19x3x1	1,3	0,7	0,30	2,1	30,5	1310	250
1x4x1	1,3	0,7	0,20	1	11,5	160	100
1x2x1,5	1,6	0,7	0,20	1	11	130	90
2x2x1,5	1,6	0,7	0,20	1,3	14,3	240	120
4x2x1,5	1,6	0,7	0,30	1,4	16,5	360	140
7x2x1,5	1,6	0,7	0,30	1,5	19,5	550	160
10x2x1,5	1,6	0,7	0,30	1,7	24,7	780	200
14x2x1,5	1,6	0,7	0,30	1,8	26,9	1000	220
19x2x1,5	1,6	0,7	0,30	2,0	30	1250	250
24x2x1,5	1,6	0,7	0,30	2,1	35,0	1530	280
30x2x1,5	1,6	0,7	0,30	2,2	37,2	1910	300
4x3x1,5	1,6	0,7	0,30	1,5	18	480	150
7x3x1,5	1,6	0,7	0,30	1,6	21,2	690	175
10x3x1,5	1,6	0,7	0,30	1,8	27,7	1010	230
14x3x1,5	1,6	0,7	0,30	1,9	30,2	1250	250
19x3x1,5	1,6	0,7	0,30	2,1	33,4	1750	270
1x4x1,5	1,6	0,7	0,20	1,2	12,5	190	100

TRATOS MARINE AIS - (Armoured Individual Screen) 60 V - 250 V

TRATOS MARINE AICS - (Armoured Individual & Collective Screen) 60 V - 250 V

FEATURES AND PERFORMANCES



CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** XLPE
- **Lay up:** Assembled pairs/ triples/ quads
- **Shield:** Indiv. or indiv & collective aluminium/ polyester tape with drain wire stranded tinned copper
- **Inner covering:** Synthetic tape or halogen free compound when necessary
- **Armour:** Plain copper wire braid
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – AICS – no.xcsa – Voltage – IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092-370 Design guideline
- IEC 60092-376 Design guideline
- IEC 60092351; -359 Materials
- IEC 60332-1-2 and IEC 60332-3-22 Flame retardance
- IEC 60754-1 and IEC 60754-2 Halogen free properties
- IEC 61034-1 and IEC 61034-2 Smoke emission

TRATOS MARINE AICS - 60 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
2x2x0,50	0,96	0,5	0,2	1	12	170	100
4x2x0,50	0,96	0,5	0,2	1,1	14,3	230	120
7x2x0,50	0,96	0,5	0,3	1,2	17	360	145
10x2x0,50	0,96	0,5	0,3	1,3	21,3	490	180
14x2x0,50	0,96	0,5	0,3	1,4	22,9	620	190
19x2x0,50	0,96	0,5	0,3	1,5	25,5	780	210
24x2x0,50	0,96	0,5	0,3	1,6	30	950	250
30x2x0,50	0,96	0,5	0,3	1,6	31,6	1150	265

TRATOS MARINE AICS - 250 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
2x2x0,75	1,1	0,7	0,2	1,2	13	180	110
4x2x0,75	1,1	0,7	0,3	1,3	15,5	315	130
7x2x0,75	1,1	0,7	0,3	1,4	18,4	440	155
10x2x0,75	1,1	0,7	0,3	1,6	23,3	650	195
14x2x0,75	1,1	0,7	0,3	1,7	25,5	770	210
19x2x0,75	1,1	0,7	0,3	1,8	28,2	1030	230
24x2x0,75	1,1	0,7	0,3	1,9	32,9	1230	270
30x2x0,75	1,1	0,7	0,3	2	35,1	1510	290

TRATOS MARINE AICS - 250 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
2x2x1	1,29	0,7	0,2	1,3	14,7	260	125
4x2x1	1,29	0,7	0,3	1,4	17	370	145
7x2x1	1,29	0,7	0,3	1,5	20	535	170
10x2x1	1,29	0,7	0,3	1,6	25,3	720	210
14x2x1	1,29	0,7	0,3	1,7	27,6	915	225
19x2x1	1,29	0,7	0,3	1,8	30,7	1200	250
24x2x1	1,29	0,7	0,3	1,9	35,9	1450	300
30x2x1	1,29	0,7	0,3	2,1	38,4	1830	320
2x3x1	1,29	0,7	0,3	1,3	16,8	340	140
4x3x1	1,29	0,7	0,3	1,4	19,4	435	160
7x3x1	1,29	0,7	0,3	1,6	22,6	665	190
10x3x1	1,29	0,7	0,3	1,7	28,3	920	230
14x3x1	1,29	0,7	0,3	1,8	30,8	1200	250
19x3x1	1,29	0,7	0,3	2	34,5	1540	280
2x2x1,5	1,59	0,7	0,3	1,3	15,7	295	130
4x2x1,5	1,59	0,7	0,3	1,4	18	435	150
7x2x1,5	1,59	0,7	0,3	1,5	21,6	630	180
10x2x1,5	1,59	0,7	0,3	1,7	27,5	880	225
14x2x1,5	1,59	0,7	0,3	1,8	30	1120	250
19x2x1,5	1,59	0,7	0,3	2	33,6	1450	280
24x2x1,5	1,59	0,7	0,3	2,1	39,3	1860	320
30x2x1,5	1,59	0,7	0,3	2,2	41,8	2220	340
4x3x1,5	1,59	0,7	0,3	1,4	20	550	170
7x3x1,5	1,59	0,7	0,3	1,6	23,9	815	200
10x3x1,5	1,59	0,7	0,3	1,7	30,3	1130	250
14x3x1,5	1,59	0,7	0,3	1,8	33	1460	270
19x3x1,5	1,59	0,7	0,3	2	37,1	1980	310

TRATOS MARINE ACS-FR - (Armoured Collectively Screen-Fire Resistant) 250 V

FEATURES AND PERFORMANCES



CONSTRUCTION

- **Conductor:** Plain (tinned when request) annealed copper cl. 2 (cl.5 when request) acc. to IEC 60228
- **Insulation:** Mica tape and XLPE
- **Lay up:** Assembled pairs/ triples/ quads
- **Shield:** Aluminium/ polyester tape with stranded tinned copper wire drain wire
- **Inner covering:** Synthetic tape or halogen free compound when necessary
- **Armour:** Plain copper wire braid
- **Sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – ACS – FR - no.xcsa – 250V – IEC 60331-21 - IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092-376
 - IEC 60092351-359
 - IEC 60332-1-2 and IEC 60332-3-22
 - IEC 60754-1 and IEC 60754-2
 - IEC 61034-1 and IEC 61034-2
 - IEC 60331-11 and IEC 60331-21
- Design guideline
Materials
Flame retardance
Halogen free properties
Smoke emission
Fire resistance

TRATOS MARINE ACS-FR - 250 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x1	1,29	0,7	0,2	1,2	13	280	110
2x2x1	1,29	0,7	0,3	1,3	16,5	410	140
4x2x1	1,29	0,7	0,3	1,4	19,5	580	160
7x2x1	1,29	0,7	0,3	1,5	23,0	790	190
10x2x1	1,29	0,7	0,3	1,6	29,0	1040	240
14x2x1	1,29	0,7	0,3	1,7	31,5	1290	260
19x2x1	1,29	0,7	0,3	1,9	34	1610	280
24x2x1	1,29	0,7	0,3	2	40	2020	330
30x2x1	1,29	0,7	0,3	2,1	42	2350	350

TRATOS MARINE ACS-FR - 250 V

Cable	Diameter of conductor	Insulation thickness	Armour wires	Outer sheath thickness	Finished cable O. D.	Weight	Minimum bending radius
n x mm ²	mm (approx)	mm	mm	mm	mm (approx)	Kg/Km (approx)	mm
1x2x1,5	1,59	0,7	0,2	1,2	13,5	310	115
2x2x1,5	1,59	0,7	0,3	1,4	18,3	440	155
4x2x1,5	1,59	0,7	0,3	1,4	20,9	660	175
7x2x1,5	1,59	0,7	0,3	1,6	25,4	900	215
10x2x1,5	1,59	0,7	0,3	1,7	31,8	1230	265
14x2x1,5	1,59	0,7	0,3	1,8	35	1500	290
19x2x1,5	1,59	0,7	0,3	2,0	39	1900	320
24x2x1,5	1,59	0,7	0,3	2,1	45,7	2500	370
30x2x1,5	1,59	0,7	0,3	2,3	48,5	2800	400

POWER MEDIUM VOLTAGE - LOW SMOKE HALOGEN FREE

TRATOS MARINE AMV - 3,6/6 kV ($U_{max} = 7,2KV$)

FEATURES AND PERFORMANCES

CONSTRUCTION

- **Tinned copper conductor Cl.2** (Cl. 5 upon request)
- **Semiconducting layer**
- **HEPR insulation or XLPE**
- **Semiconducting layer**
- **Copper tape shield**
- **Extruded filler** halogen free (If necessary)
- **Synthetic tape**
- **Inner covering** SHF1 Halogen-free thermoplastic sheath
- **Tinned copper braid armour**
- **Outer sheath** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – AMV – no.xcsa – 3,6/6 kV – IEC 60332-3-22 – year + metre marking

STANDARDS

- IEC 60092-354; IEC 60092-350
 - IEC 60332-1-2 and IEC 60332-3-22
 - IEC 60754-1 and IEC 60754-2
 - IEC 61034-1 and IEC 61034-2
- Design guideline
Flame retardance
Halogen free properties
Smoke emission



TRATOS MARINE AMV - 3,6/6 kV

N.cond X sec.	Nominal outer diameter	Nominal cable weight	Minimum Bending Radius
n x mm ²	mm	Kg/Km	mm
1x70	27,0	1600	270
1x95	28,5	1850	285
1x120	30,0	2200	300
1x150	32,0	2600	320
1x185	34,0	2800	340
1x240	37,0	3500	370
3x25	43,0	2700	430
3x50	49,0	3700	490
3x70	53,0	4500	530
3x95	57,0	5500	570
3x120	61,0	6500	610

POWER MEDIUM VOLTAGE - LOW SMOKE HALOGEN FREE

TRATOS MARINE AMV - 6/10 kV ($U_{max} = 12KV$)**FEATURES AND PERFORMANCES****CONSTRUCTION**

- **Tinned copper conductor Cl.2** (Cl. 5 upon request)
- **Semiconducting layer**
- **HEPR insulation or XLPE**
- **Semiconducting layer**
- **Copper tape shield**
- **Extruded filler** halogen free (If necessary)
- **Synthetic tape**
- **Inner covering** SHF1 Halogen-free thermoplastic sheath
- **Tinned copper braid armour**
- **Outer sheath:** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – AMV – no.xcsa – 6/10 kV – IEC 60332-3-22 – year + metre marking

STANDARDS

- EC 60092-354; IEC 60092-350
 - IEC 60332-1-2 and IEC 60332-3-22
 - IEC 60754-1 and IEC 60754-2
 - IEC 61034-1 and IEC 61034-2
- Design guideline
Flame retardance
Halogen free properties
Smoke emission

TRATOS MARINE AMV - 6/10 kV

N.cond X sec.	Nominal outer diameter	Nominal cable weight	Minimum Bending Radius
n x mm ²	mm	Kg/Km	mm
1x70	28,0	1650	280
1x95	30,0	1900	300
1x120	32,0	2250	320
1x150	33,5	2650	335
1x185	35,0	3150	350
1x240	38,0	3750	380
3x25	46,5	2900	465
3x50	52,0	3800	520
3x70	55,0	5000	550
3x95	59,0	5800	590
3x120	62,0	7100	620

POWER MEDIUM VOLTAGE - LOW SMOKE HALOGEN FREE

TRATOS MARINE AMV - 8,7/15 kV ($U_{max} = 17,5KV$)

FEATURES AND PERFORMANCES

CONSTRUCTION

- **Tinned copper conductor** (Cl. 5 upon request)
- **Semiconducting layer**
- **HEPR insulation or XLPE**
- **Semiconducting layer**
- **Copper tape shield**
- **Extruded filler** halogen free (If necessary)
- **Synthetic tape**
- **Inner covering** SHF1 Halogen-free thermoplastic sheath
- **Tinned copper braid armour**
- **Outer sheath** SHF1 Halogen-free thermoplastic sheath
- **Marking:** TRATOSMARINE – AMV – no.xcsa – 8.7/15 kV – IEC 60332-3-22 – year + metre marking

STANDARDS

- EC 60092-354; IEC 60092-350
 - IEC 60332-1-2 and IEC 60332-3-22
 - IEC 60754-1 and IEC 60754-2
 - IEC 61034-1 and IEC 61034-2
- Design guideline
Flame retardance
Halogen free properties
Smoke emission



TRATOS MARINE AMV - 8,7/15 kV

N.cond X sec.	Nominal outer diameter	Nominal cable weight	Minimum Bending Radius
n x mm ²	mm	Kg/Km	mm
1x70	29,5	1800	300
1x95	31,5	2200	315
1x120	32,5	2400	325
1x150	34,5	2800	345
1x185	36,5	3300	365
1x240	40,0	4000	400
3x25	50,0	3500	500
3x50	56,0	5000	560
3x70	59,0	6200	590
3x95	63,0	7000	630
3x120	66,5	8300	660







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