RADOX® OFL®

High-grade cabling solutions that ensure safety and operational efficiency without the premium

Edition 2025/05

hubersuhner.com

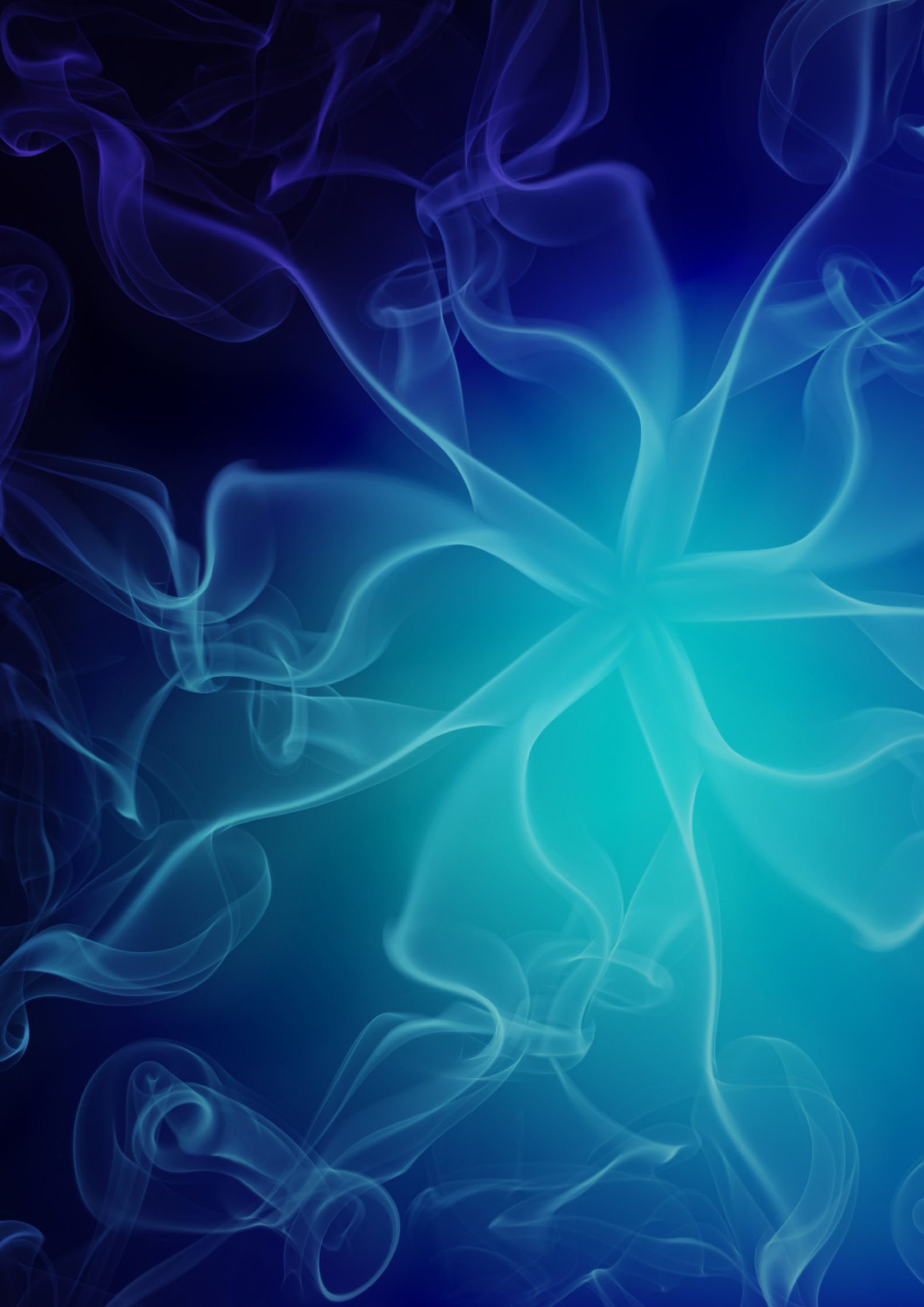
HUBER+SUHNER


Connecting – today and beyond

HUBER+SUHNER, headquartered in Switzerland, develops and manufactures components and system solutions for electrical and optical connectivity and has a global presence in over 80 countries. Our cables, connectors and systems are developed based on radio frequency, fiber optics, and low frequency technologies and serve the industrial, communication and transportation sectors.

We develop products that deliver quality, reliability, and long service life even under the toughest conditions and we maintain close relationships with our customers.

In the oil and gas industry, our high-quality solutions have helped reduce maintenance costs and carbon footprint, driving the sustainability goals of these industries. As a leading provider, we deliver high safety, cost-effective, and industry-certified connectivity solutions that have proven successful in the most challenging environments.



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The revolutionary cabling solution for process industries

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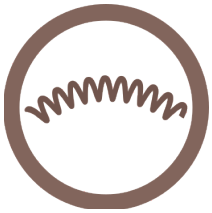
HUBER+SUHNER originally developed its unique RADOX® cable technology 40 years ago to meet the unique challenges of the railway and defense industries. Since then, our product portfolio has expanded to suit applications in harsh environments typically found in the oil and gas industry, where safety and operational reliability are critical.

Multiple benefits, one solution

- NEK 606 compliance for oil and mud resistance (cat a – d)
- Excellent mechanical, abrasion, and heat resistance
- High and low temperature tolerant (from -50° up to +130°C)
- Up to 10 times longer lifetime even in high temperature environments such as boiler or flare installations
- Up to 60% less weight than conventional cables

Safety

Lightweight

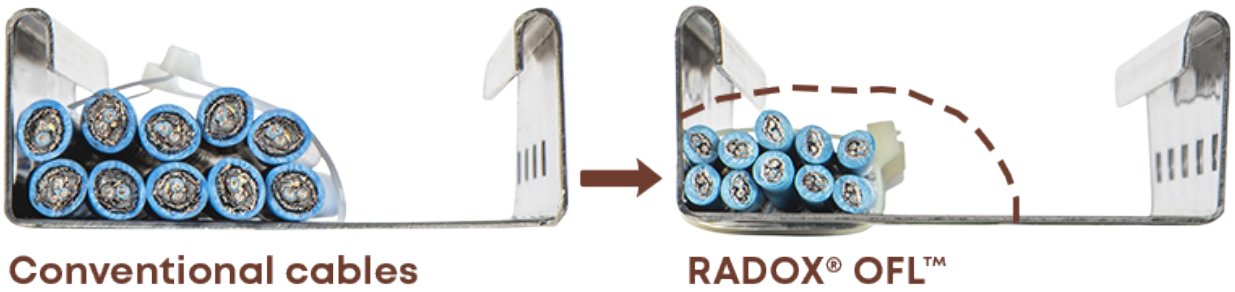


Highly Flexible

Reduced Total Cost of Ownership

A safe way to save weight

Thanks to its innovative lightweight design, RADOX® OFL® cables can reduce weight by 40% to 50% on average, which immediately can result in 100 tons weight saving. As a result, the weight of accessories such as cable glands, multi-cable transits (MCTs) and cable trays can also be reduced due to their smaller size. The much smaller size of the cable allows for extreme small bending radii which means smaller and compact designs of modules are possible.



Reduced total cost of ownership

The RADOX® OFL® cables feature the innovative electron-beam cross-link technology that delivers excellent mechanical strength and resistance against challenging environmental factors. The cable's high-performance compound ensures longer operational lifetime (up to 10 times), easier processing and installation, along with increased safety and durability – all resulting in reduced total cost of ownership when compared to other cables on the market.

Fully compliant with DNV class program

Standards in the oil and gas industry have progressively become more stringent over the years and operators face increasing challenges in meeting both safety and cost requirements. Therefore, the DNV has introduced class programme that look into the weight, lifetime and environmental requirements for cables designed for use in offshore and marine. DNV-CP0400 – Electrical light-weight cables

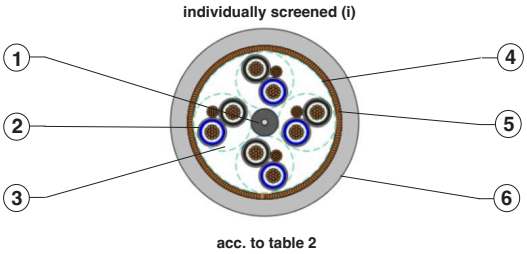
Highest NEK TS 606:2022 standard

While most other industrial cables on the market meet only the minimum requirements of NEK 606 Category A approval, RADOX® OFL® goes beyond and is approved for NEK 606 Categories A to D.

RADOX® OFL® Instrumentation cables

- For high-temperature process environments like steam boiler applications
- SHF2 sheath with extreme oil, mud & chemical resistance
- Pair, triples & quadruples from 0.5–2.5 mm^2
- -40….+130°C

Instrumentation cables



Product name	**RADOX® OFL® S 150/250V (i) Flame Retardant & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant, easily strippable, free of hygroscopic material, instrumentation cable following RFOU(i).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL	Insulation	RADOX TI303 (thin- wall)
			Dual layer high performance polymer (thin-wall)
		Colours	see table 2
3.	**Element**	Cores	2 or 3 cores
		Drain wire	Flexible tin plated copper
		Alu tape	Wrapping
		Tape	Wrapping
4.	**Layer**	Tape	Wrapping
5.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
6.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Grey or Blue acc. NEK TS 606: 2016

Printing on sheath

[a] HUBER+SUHNER RADOX OFL S 150/250V [b] SHF2 M 90°C IEC 60332-1-2
IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(i)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to IEC 60092 - 376 and - 350		
Rated voltage	U_0/U (U_m)	150/250 (300) V AC
Test voltage		3500 V AC
Max. voltage conductor to earth		250 V DC
Max. voltage conductor to conductor		500 V DC
Test voltage		8400 V DC

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→ RADOX® OFL® S 150/250V (i) Flame Retardant & Mud Resistant Instrumentation cable

586 795 G (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+145 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables
IEC 60092- 376	Electrical Installations in ships, cables for control and instrumentation circuits 150/250V (300V)
Approvals	
DNV	Certificate TAE00004KB

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→ RADOX® OFL® S 150/250V (i) Flame Retardant & Mud Resistant Instrumentation cable

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Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.75	OFL S (i)	150	0.55	10.3	26.7
triple 0.75	OFL S (i)	140	0.62	11.6	26.7
pair 1.5	OFL S (i)	175	0.53	19.3	13.7
triple 1.5	OFL S (i)	165*	0.6*	21.9*	13.7
pair 2.5	OFL S (i)	195	0.52	31.7	8.21
triple 2.5	OFL S (i)	185*	0.57*	34.7*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, Light Blue

Triple: Black, Light Blue, Brown

Table 2: individually screened (i)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	0.75	19x 0.23	1.11	1.52	0.9	3.0	0.16	1.6	3.3	5.80 ± 0.3 ●	6.5	BU GY	85117001 85116997
2	2	0.75	19x 0.23	1.11	1.52	0.9	6.1	0.16	2.8	6.4	8.90 ± 0.3 ●	13.2	BU GY	85116990 85117002
4	2	0.75	19x 0.23	1.11	1.52	0.9	7.7	0.16	3.3	10.6	10.1 ± 0.4 ●	19.3	BU GY	85119993 85117005
8	2	0.75	19x 0.23	1.11	1.52	0.9	9.4	0.21	5.55	20.1	12.2 ± 0.4 ●	29.7	BU GY	85119995 85117007
12	2	0.75	19x 0.23	1.11	1.52	0.9	12.2	0.21	7.5	29.5	15.9 ± 0.5 ●	45.2	BU GY	85119996 85117008
16	2	0.75	19x 0.23	1.11	1.52	0.9	14.4	0.21	8.3	37.8	17.1 ± 0.5 ●	57.0	BU GY	85119997 85117009
19	2	0.75	19x 0.23	1.11	1.52	0.9	15.1	0.21	9.5	44.5	18.7 ± 0.5 ●	65.2	BU GY	85116991 85119999
24	2	0.75	19x 0.23	1.11	1.52	0.9	17.4	0.21	10.1	54.5	21.0 ± 0.5 ●	80.4	BU GY	85120000 85117010
32	2	0.75	19x 0.23	1.11	1.52	0.9	20.1	0.21	11.9	71.1	23.5 ± 0.5 ○	103.2	BU GY	85120008 85120027
1	3	0.75	19x 0.23	1.11	1.52	0.9	3.3	0.16	1.7	4.4	6.05 ± 0.3 ○	7.6	BU GY	85120001 85117011
2	3	0.75	19x 0.23	1.11	1.52	0.9	6.8	0.16	3.1	8.1	9.75 ± 0.3 ○	16.2	BU GY	85116992 85186544
4	3	0.75	19x 0.23	1.11	1.52	0.9	8.4	0.16	3.8	13.8	11.2 ± 0.4 ●	23.7	BU GY	85120003 85117013

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→ RADOX® OFL® S 150/250V (i) Flame Retardant & Mud Resistant Instrumentation cable

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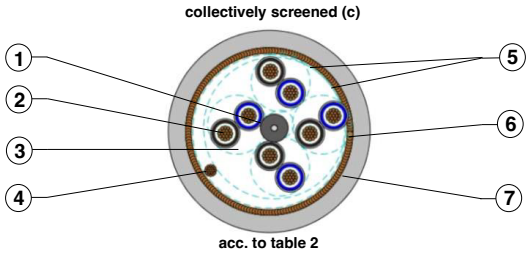
Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
8	3	0.75	19x 0.23	1.11	1.52	0.9	11.5	0.21	7.1	27.3	15.1 ± 0.5 ●	43.6	BU GY	85120004 85116993
12	3	0.75	19x 0.23	1.11	1.52	0.9	13.3	0.21	8.3	38.7	17.1 ± 0.5 ●	55.9	BU GY	85120005 85117015
16	3	0.75	19x 0.23	1.11	1.52	0.9	15.6	0.21	9.5	50.2	19.3 ± 0.5 ○	73.2	BU GY	85116994 85117016
19	3	0.75	19x 0.23	1.11	1.52	0.9	16.4	0.21	9.5	58.0	20.0 ± 0.5 ○	81.1	BU GY	85116995 85117020
24	3	0.75	19x 0.23	1.11	1.52	0.9	19.7	0.21	11.9	73.0	23.5 ± 0.5 ○	105.0	BU GY	85116996 85117021
1	2	1.5	37x 0.23	1.55	2.04	1.11	4.1	0.16	2.0	5.3	6.85 ± 0.3 ●	9.6	BU GY	85117024 85117022
2	2	1.5	37x 0.23	1.55	2.04	1.11	8.4	0.16	3.5	10.2	10.8 ± 0.4 ●	20.8	BU GY	85117026 85117025
4	2	1.5	37x 0.23	1.55	2.04	1.11	9.9	0.21	5.6	19.0	12.8 ± 0.4 ●	31.4	BU GY	85117004 85116297
8	2	1.5	37x 0.23	1.55	2.04	1.11	13.1	0.21	7.9	35.0	16.9 ± 0.5 ●	53.5	BU GY	85120010 85117030
12	2	1.5	37x 0.23	1.55	2.04	1.11	16.4	0.21	9.5	50.3	19.7 ± 0.5 ●	73.6	BU GY	85120011 85117031
16	2	1.5	37x 0.23	1.55	2.04	1.11	19.3	0.21	11.3	65.8	22.6 ± 0.5 ●	96.1	BU GY	85120013 85117121
19	2	1.5	37x 0.23	1.55	2.04	1.11	20.1	0.21	11.9	76.7	23.9 ± 0.5 ○	108.4	BU GY	85120014 85117034
24	2	1.5	37x 0.23	1.55	2.04	1.11	23.1	0.25	16.2	98.1	26.6 ± 0.6 ●	140.1	BU GY	85117006 85120015
32	2	1.5	37x 0.23	1.55	2.04	1.11	26.7	0.30	22.2	132.4	30.6 ± 0.6 ●	182.6	BU GY	85117027 85180879
1	3	1.5	37x 0.23	1.55	2.04	1.11	4.4	0.16	2.2	6.8	7.25 ± 0.3 ○	11.2	BU GY	85120016 85117038
2	3	1.5	37x 0.23	1.55	2.04	1.11	9.0	0.21	5.6	14.8	12.3 ± 0.4 ○	28.5	BU GY	85117028 85186547
4	3	1.5	37x 0.23	1.55	2.04	1.11	11.0	0.21	6.3	25.2	14.5 ± 0.4 ●	40.1	BU GY	85117029 85186549
8	3	1.5	37x 0.23	1.55	2.04	1.11	15.2	0.21	8.9	46.9	19.0 ± 0.5 ○	71.2	BU GY	85120019 85117043
12	3	1.5	37x 0.23	1.55	2.04	1.11	18.7	0.21	11.3	68.4	22.4 ± 0.5 ○	98.3	BU GY	85120024 85117045
16	3	1.5	37x 0.23	1.55	2.04	1.11	21.5	0.25	16.2	92.4	25.7 ± 0.6 ○	131.6	BU GY	85120025 85117496
24	3	1.5	37x 0.23	1.55	2.04	1.11	25.7	0.3	22.2	136.8	30.4 ± 0.6 ○	185.9	BU GY	85117046 85117497
1	2	2.5	37x 0.29	1.96	2.54	1.25	5.1	0.16	2.4	7.4	7.9 ± 0.3 ○	13.0	BU GY	85119992 85117044
1	3	2.5	37x 0.29	1.96	2.54	1.25	5.5	0.16	2.7	9.8	8.4 ± 0.3 ○	15.6	BU GY	85119994 85117047

Instrumentation cables



Product name	**RADOX® OFL® S 150/250V (c) Flame Retardant & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant, easily strippable, free of hygroscopic material, instrumentation cable following RFOU(c).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL	Insulation	RADOX TI303 (thin- wall)
			Dual layer high performance polymer (thin-wall)
		Colours	see table 2
3.	**Element**	Cores	2 or 3 cores
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
7.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Grey or Blue acc. NEK TS 606: 2016

Printing on sheath

[a] HUBER+SUHNER RADOX OFL S 150/250V [b] SHF2 M 90°C IEC 60332-1-2
IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(i)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to IEC 60092 - 376 and - 350		
Rated voltage	U_0/U (U_m)	150/250 (300) V AC
Test voltage		3500 V AC
Max. voltage conductor to earth		250 V DC
Max. voltage conductor to conductor		500 V DC
Test voltage		8400 V DC

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→ RADOX® OFL® S 150/250V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 897 H (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+145 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables
IEC 60092- 376	Electrical Installations in ships, cables for control and instrumentation circuits 150/250V (300V)
Approvals	
DNV	Certificate TAE00004KB

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→ RADOX® OFL® S 150/250V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 897 H (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.75	OFL S (c)	150	0.55	10.3	26.7
triple 0.75	OFL S (c)	140	0.62	11.6	26.7
pair 1.5	OFL S (c)	175	0.53	19.3	13.7
triple 1.5	OFL S (c)	165*	0.6*	21.9*	13.7
pair 2.5	OFL S (c)	195	0.52	31.7	8.21
triple 2.5	OFL S (c)	185*	0.57*	34.7*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, Light Blue

Triple: Black, Light Blue, Brown

Table 2: collectively screened (c)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
2	2	0.75	19x 0.23	1.11	1.52	1.11	6.5	0.16	3.0	5.7	9.45 ± 0.3 ○	14.6	BU GY	85117672 85116813
4	2	0.75	19x 0.23	1.11	1.52	1.11	7.3	0.16	3.3	8.7	10.4 ± 0.4 ●	18.5	BU GY	85116802 85116296
8	2	0.75	19x 0.23	1.11	1.52	1.11	9.3	0.21	5.6	16.5	12.4 ± 0.4 ●	28.6	BU GY	85116805 85116814
12	2	0.75	19x 0.23	1.11	1.52	1.11	11.2	0.21	6.7	23.3	14.6 ± 0.4 ○	38.4	BU GY	85116806 85116816
16	2	0.75	19x 0.23	1.11	1.52	1.11	12.9	0.21	7.5	29.8	16.4 ± 0.5 ○	48.2	BU GY	85116807 85116817
19	2	0.75	19x 0.23	1.11	1.52	1.11	13.9	0.21	8.3	34.6	17.5 ± 0.5 ○	55.0	BU GY	85116808 85116818
24	2	0.75	19x 0.23	1.11	1.52	1.11	16.3	0.21	9.5	42.9	20.0 ± 0.5 ○	68.3	BU GY	85119962 85116819
2	3	0.75	19x 0.23	1.11	1.52	1.11	7.0	0.16	3.3	7.3	10.0 ± 0.3 ○	16.9	BU GY	85119964 85116820
4	3	0.75	19x 0.23	1.11	1.52	1.11	7.9	0.16	3.8	12.0	11.0 ± 0.4 ●	22.0	BU GY	85116809 85186541
8	3	0.75	19x 0.23	1.11	1.52	1.11	10.0	0.21	6.3	22.9	13.5 ± 0.4 ●	35.6	BU GY	85119977 85116822
12	3	0.75	19x 0.23	1.11	1.52	1.11	12.2	0.21	7.9	32.8	15.7 ± 0.5 ○	47.3	BU GY	85119978 85116823
16	3	0.75	19x 0.23	1.11	1.52	1.11	13.7	0.21	8.3	41.7	17.3 ± 0.5 ○	61.2	BU GY	85116810 85116824

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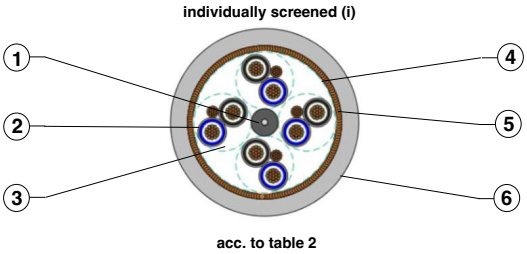
→ RADOX® OFL® S 150/250V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 897 H (e)

Elements n x	Core in Element	Cross Section nom. mm^2	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm^2	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
24	3	0.75	19x 0.23	1.11	1.52	1.11	17.6	0.21	10.7	60.9	21.4 ± 0.5 ○	88.7	BU GY	85119979 85116852
2	2	1.5	37x 0.23	1.55	2.04	1.25	8.6	0.16	3.8	9.1	11.6 ± 0.4 ●	22.2	BU GY	85119980 85116857
4	2	1.5	37x 0.23	1.55	2.04	1.25	9.8	0.21	5.6	16.2	12.3 ± 0.4 ●	29.9	BU GY	85116812 85116858
8	2	1.5	37x 0.23	1.55	2.04	1.25	12.4	0.21	7.5	29.0	16.0 ± 0.5 ●	47.3	BU GY	85116815 85116859
12	2	1.5	37x 0.23	1.55	2.04	1.25	15.1	0.21	8.9	41.3	18.7 ± 0.5 ○	64.4	BU GY	85119984 85116862
16	2	1.5	37x 0.23	1.55	2.04	1.25	17.1	0.21	10.1	53.4	20.9 ± 0.5 ○	81.8	BU GY	85116853 85116864
19	2	1.5	37x 0.23	1.55	2.04	1.25	18.7	0.21	11.3	62.7	22.5 ± 0.5 ○	93.5	BU GY	85116955 85116866
24	2	1.5	37x 0.23	1.55	2.04	1.25	21.9	0.25	16.2	81.2	26.2 ±0.6 ○	121.8	BU GY	85116957 85116868
32	2	1.5	37x 0.23	1.55	2.04	1.25	23.9	0.25	18.0	104.9	28.3 ± 0.6 ●	150.0	BU GY	85119986 85116956
2	3	1.5	37x 0.23	1.55	2.04	1.25	9.2	0.21	5.6	13.4	12.2 ± 0.4 ●	29.1	BU GY	85119987 85116958
4	3	1.5	37x 0.23	1.55	2.04	1.25	10.3	0.21	6.3	22.4	14.0 ± 0.4 ○	37.5	BU GY	85116985 85116970
8	3	1.5	37x 0.23	1.55	2.04	1.25	15.0	0.21	8.9	41.3	19.0 ± 0.5 ○	68.7	BU GY	85116986 85116971
12	3	1.5	37x 0.23	1.55	2.04	1.25	16.3	0.21	10.1	58.9	20.0 ± 0.5 ○	83.2	BU GY	85119988 85116972
16	3	1.5	37x 0.23	1.55	2.04	1.25	18.4	0.21	11.9	77.0	22.2 ± 0.5 ○	106.7	BU GY	85119989 85116973
24	3	1.5	37x 0.23	1.55	2.04	1.25	23.6	0.25	18.0	115.8	28.0 ± 0.6 ○	160.0	BU GY	85119990 85116974
2	2	2.5	37x 0.29	1.96	2.54	1.55	10.7	0.21	6.3	14.6	14.1 ± 0.4 ○	33.6	BU GY	85119991 85116976
2	3	2.5	37x 0.29	1.96	2.54	1.55	11.5	0.21	6.3	18.9	14.1 ± 0.4 ●	38.5	BU GY	85189309 85181500

Instrumentation cables



Product name	**RADOX® OFL® SFR 150/250V (i) Fire & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant and FIRE RESISTANT, easily strippable, free of hygroscopic material, instrumentation cable following BFOU(i).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL FR	Wrapping	Mica Tape
		Insulation	RADOX EI303 (thin- wall)
		Colours	see table 2
3.	**Element**	Cores	2 or 3 cores
		Drain wire	Flexible tin plated copper
		Alu tape	Wrapping
		Tape	Wrapping
4.	**Layer**	Tape	Wrapping
5.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
6.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Grey or Blue acc. NEK TS 606: 2016

Printing on sheath

Outer Diameter > 20mm
[a] HUBER+SUHNER RADOX OFL SFR 150/250V [b] SHF2 M 90°C IEC 60332-1
IEC 60332-3-22 [c]-[d] [e] [f]
Outer Diameter ≤ 20mm
[a] HUBER+SUHNER RADOX OFL SFR 150/250V [b] SHF2 M 90°C IEC 60332-2
IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(i)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to IEC 60092 - 376 and - 350		
Rated voltage	U_0/U (U_m)	150/250 (300) V AC
Test voltage		2000 V AC
Max. voltage conductor to earth		250 V DC
Max. voltage conductor to conductor		500 V DC
Test voltage		4800 V DC

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→ RADOX® OFL® SFR 150/250V (i) Fire & Mud Resistant Instrumentation cable

586 789 J (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+135 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm²		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Electric cables under fire conditions		
Outer Diameter > 20 mm	830°C, 120 min.	IEC 60331-1
Outer Diameter ≤ 20 mm	830°C, 120 min.	IEC 60331-2
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables
IEC 60092- 376	Electrical Installations in ships, cables for control and instrumentation circuits 150/250V (300V)

Approvals	
DNV	Certificate TAE00004KB

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→ RADOX® OFL® SFR 150/250V (i) Fire & Mud Resistant Instrumentation cable

586 789 J (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.75	OFL SFR (i)	95	0.71	13.3	26.7
triple 0.75	OFL SFR (i)	90*	0.81*	15.2*	26.7
pair 1.5	OFL SFR (i)	115	0.65	23.7	13.7
triple 1.5	OFL SFR (i)	110	0.71	25.9	13.7
pair 2.5	OFL SFR (i)	130	0.6	36.5	8.21
triple 2.5	OFL SFR (i)	125*	0.62*	37.8*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, Light Blue

Triple: Black, Light Blue, Brown

Table 2: individually screened (i)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	0.75	19 x 0.23	1.11	2.38	0.9	4.8	0.16	2.2	3.9	7.60 ± 0.3 ●	9.9	BU GY	85183132 85189568
2	2	0.75	19 x 0.23	1.11	2.38	0.9	9.4	0.21	5.2	8.6	11.5 ± 0.4 ●	21.9	BU GY	85189582 85186529
4	2	0.75	19 x 0.23	1.11	2.38	0.9	11.5	0.21	6.3	13.4	14.0 ± 0.4 ●	31.0	BU GY	85119600 85189598
8	2	0.75	19 x 0.23	1.11	2.38	0.9	14.3	0.21	8.3	22.7	17.2 ± 0.5 ●	45.2	BU GY	85192254 85189574
12	2	0.75	19 x 0.23	1.11	2.38	0.9	18.5	0.21	10.7	32.4	21.2 ± 0.5 ●	65.3	BU GY	85189600 85117102
16	2	0.75	19 x 0.23	1.11	2.38	0.9	21.7	0.25	16.2	45.1	25.8 ± 0.6 ●	91.5	BU GY	85192255 85189576
24	2	0.75	19 x 0.23	1.11	2.38	0.9	26.8	0.30	22.2	66.6	31.2 ± 0.6 ○	133.0	BU GY	85192256 85189579
1	3	0.75	19 x 0.23	1.11	2.38	0.9	5.1	0.16	2.5	4.9	8.00 ± 0.3 ●	11.2	BU GY	85192257 85185608
2	3	0.75	19 x 0.23	1.11	2.38	0.9	10.4	0.21	5.9	10.7	13.3 ± 0.4 ●	27.0	BU GY	85192258 85192250
4	3	0.75	19 x 0.23	1.11	2.38	0.9	12.3	0.21	7.1	17.0	15.8 ± 0.5 ●	37.5	BU GY	85192259 85192251
8	3	0.75	19 x 0.23	1.11	2.38	0.9	16.1	0.21	9.5	29.8	20.1 ± 0.5 ●	60.4	BU GY	85192260 85192252

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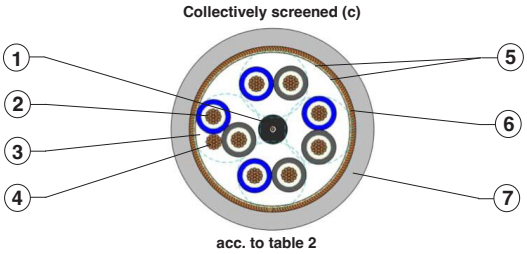
→ RADOX® OFL® SFR 150/250V (i) Fire & Mud Resistant Instrumentation cable

586 789 J (e)

Elements n x	Core in Element	Cross Section nom. mm^2	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm^2	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	1.5	37 x 0.23	1.55	2.9	1.11	5.8	0.16	2.7	5.9	8.70 ± 0.3 ●	13.5	BU GY	85189607 85186530
2	2	1.5	37 x 0.23	1.55	2.9	1.11	11.5	0.21	6.0	12.5	13.2 ± 0.4 ●	29.8	BU GY	85192261 85189571
4	2	1.5	37 x 0.23	1.55	2.9	1.11	13.7	0.21	7.6	20.8	16.4 ± 0.5 ●	43.6	BU GY	85192262 85189577
8	2	1.5	37 x 0.23	1.55	2.9	1.11	17.3	0.21	10.1	37.0	20.4 ± 0.5 ●	65.5	BU GY	85192263 85189581
12	2	1.5	37 x 0.23	1.55	2.9	1.11	22.7	0.25	15.3	55.8	25.7 ± 0.6 ●	101.1	BU GY	85192264 85189583
16	2	1.5	37 x 0.23	1.55	2.9	1.11	26.3	0.30	18.0	72.5	30.3 ± 0.6 ●	132.7	BU GY	85192265 85189599
24	2	1.5	37 x 0.23	1.55	2.9	1.11	32.1	0.30	22.2	107.1	35.6 ± 0.7 ●	190.8	BU GY	85189575 85183134
1	3	1.5	37 x 0.23	1.55	2.9	1.11	6.3	0.16	3.1	7.7	9.20 ± 0.3 ○	15.6	BU GY	85192266 85189606
2	3	1.5	37 x 0.23	1.55	2.9	1.11	12.6	0.21	7.1	16.4	16.1 ± 0.5 ○	39.1	BU GY	85192267 85189580
4	3	1.5	37 x 0.23	1.55	2.9	1.11	15.0	0.21	8.3	27.0	18.4 ± 0.5 ●	54.1	BU GY	85192268 85189566
8	3	1.5	37 x 0.23	1.55	2.9	1.11	20.1	0.21	11.9	49.7	24.3 ± 0.5 ○	91.5	BU GY	85192269 85189572
1	2	2.5	37 x 0.29	1.96	3.4	1.25	6.8	0.16	3.0	8.0	9.8 ± 0.3 ○	17.6	BU GY	85192270 85189578
1	3	2.5	37 x 0.29	1.96	3.4	1.25	7.3	0.16	3.3	13.7	10.4 ± 0.4 ○	23.8	BU GY	85189573 85192253

Instrumentation cables



Product name	**RADOX® OFL® SFR 150/250V (c) Fire & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant and FIRE RESISTANT, easily strippable, free of hygroscopic material, instrumentation cable following BFOU(c).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL FR	Wrapping	Mica Tape
		Insulation	RADOX EI303 (thin- wall)
		Colours	See table 2
3.	**Element**	Cores	2 or 3 cores
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
7.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Grey or Blue acc. NEK TS 606: 2016

Printing on sheath

Outer Diameter > 20mm	[a] HUBER+SUHNER RADOX OFL SFR 150/250V [b] SHF2 M 90°C IEC 60332-1-1 IEC 60332-3-22 [c]-[d] [e] [f]
Outer Diameter ≤ 20mm	[a] HUBER+SUHNER RADOX OFL SFR 150/250V [b] SHF2 M 90°C IEC 60332-1-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(c)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to IEC 60092 - 376 and - 350		
Rated voltage	U_0/U (U_m)	150/250 (300) V AC
Test voltage		2000 V AC
Max. voltage conductor to earth		250 V DC
Max. voltage conductor to conductor		500 V DC
Test voltage		4800 V DC

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→ RADOX® OFL® SFR 150/250V (c) Fire & Mud Resistant Instrumentation cable

586 898 H (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+135 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Electric cables under fire conditions		
Outer Diameter > 20 mm	830°C, 120 min.	IEC 60331-1
Outer Diameter ≤ 20 mm	830°C, 120 min.	IEC 60331-2
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables
IEC 60092- 376	Electrical Installations in ships, cables for control and instrumentation circuits 150/250V (300V)

Approvals	
DNV	Certificate TAE00004KC

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→ RADOX® OFL® SFR 150/250V (c) Fire & Mud Resistant Instrumentation cable

586 898 H (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.75	OFL SFR (c)	95	0.71	13.3	26.7
triple 0.75	OFL SFR (c)	90*	0.81*	15.2*	26.7
pair 1.5	OFL SFR (c)	115	0.65	23.7	13.7
triple 1.5	OFL SFR (c)	110	0.71	25.9	13.7
pair 2.5	OFL SFR (c)	130	0.6	36.5	8.21
triple 2.5	OFL SFR (c)	125*	0.62*	37.8*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, Light Blue

Triple: Black, Light Blue, Brown

Table 2: collectively screened (c)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
2	2	0.75	19 x 0.23	1.11	2.38	1.11	9.0	0.21	5.2	8.4	12.0 ± 0.4 ●	24.1	BU GY	85189584 85186522
4	2	0.75	19 x 0.23	1.11	2.38	1.11	10.8	0.21	6.3	12.3	14.0 ± 0.4 ●	30.4	BU GY	85189587 85186526
8	2	0.75	19 x 0.23	1.11	2.38	1.11	13.5	0.21	7.7	19.2	16.4 ± 0.5 ●	42.6	BU GY	85189590 85186527
12	2	0.75	19 x 0.23	1.11	2.38	1.11	16.3	0.21	9.5	26.5	19.7 ± 0.5 ●	56.4	BU GY	85192234 85189594
16	2	0.75	19 x 0.23	1.11	2.38	1.11	19.5	0.21	10.7	33.4	22.3 ± 0.5 ●	73.0	BU GY	85192226 85189604
24	2	0.75	19 x 0.23	1.11	2.38	1.11	23.7	0.25	16.2	49.8	26.9 ± 0.6 ●	104.6	BU GY	85192235 85189588
2	3	0.75	19 x 0.23	1.11	2.38	1.11	9.8	0.21	5.6	10.2	13.1 ± 0.4 ●	26.7	BU GY	85192236 85192227
4	3	0.75	19 x 0.23	1.11	2.38	1.11	11.6	0.21	6.7	15.4	14.8 ± 0.4 ●	35.3	BU GY	85192237 85192228
8	3	0.75	19 x 0.23	1.11	2.38	1.11	16.5	0.21	10.1	27.1	20.6 ± 0.5 ○	65.2	BU GY	85189596 85192229
2	2	1.5	37 x 0.23	1.55	2.9	1.25	10.7	0.21	5.9	12.0	13.2 ± 0.4 ●	29.3	BU GY	85192238 85189585
4	2	1.5	37 x 0.23	1.55	2.9	1.25	13.2	0.21	7.1	18.5	15.9 ± 0.5 ●	42.6	BU GY	85192239 85189603
8	2	1.5	37 x 0.23	1.55	2.9	1.25	16.5	0.21	9.5	31.7	19.4 ± 0.5 ●	62.8	BU GY	85192240 85189595

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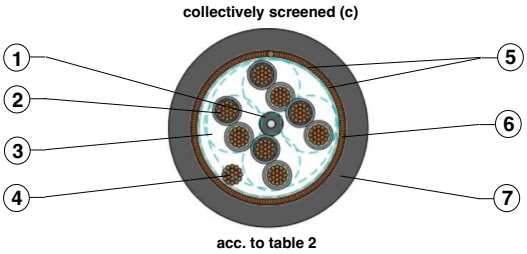
→ RADOX® OFL® SFR 150/250V (c) Fire & Mud Resistant Instrumentation cable

586 898 H (e)

Elements n x	Core in Element	Cross Section nom. mm^2	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm^2	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
12	2	1.5	37 x 0.23	1.55	2.9	1.25	19.9	0.21	11.9	44.9	23.4 ± 0.5 ●	84.2	BU GY	85192241 85189605
16	2	1.5	37 x 0.23	1.55	2.9	1.25	24.0	0.25	16.0	59.9	26.8 ± 0.6 ●	112.7	BU GY	85192242 85189589
24	2	1.5	37 x 0.23	1.55	2.9	1.25	28.9	0.30	22.2	88.8	32.5 ± 0.6 ●	161.0	BU GY	85192243 85189597
2	3	1.5	37 x 0.23	1.55	2.9	1.25	11.9	0.21	6.7	15.4	14.7 ± 0.5 ●	36.6	BU GY	85192244 85192230
4	3	1.5	37 x 0.23	1.55	2.9	1.25	14.9	0.21	8.3	25.1	18.3 ± 0.5 ○	55.6	BU GY	85192245 85192231
8	3	1.5	37 x 0.23	1.55	2.9	1.25	20.1	0.21	11.9	44.9	24.4 ± 0.5 ○	95.3	BU GY	85192246 85189591
12	3	1.5	37 x 0.23	1.55	2.9	1.25	23.7	0.25	17.8	67.0	27.8 ± 0.6 ○	125.0	BU GY	85192247 85192232
16	3	1.5	37 x 0.23	1.55	2.9	1.25	27.8	0.3	22.2	88.5	32.3 ± 0.6 ○	165.5	BU GY	85192248 85189592
2	2	2.5	37 x 0.29	1.96	3.4	1.55	12.2	0.21	7.1	16.8	15.0 ± 0.5 ○	38.1	BU GY	85189593 85192233
2	3	2.5	37 x 0.29	1.96	3.4	1.55	13.9	0.21	7.9	21.7	17.1 ± 0.5 ●	50.0	BU GY	85189586 85186528

Instrumentation cables



Product name	**RADOX® OFL® S 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant, easily strippable, free of hygroscopic material, instrumentation cable following RFOU(c).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL	Insulation	RADOX TI301
			Dual layer high performance polymer (thin-wall)
		Colours	See table 2
3.	**Element**	Cores	2 or 3 cores
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
7.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Grey or Blue acc. NEK TS 606: 2016

Printing on sheath

[a] HUBER+SUHNER RADOX OFL S 300/500V [b] SHF2 M 90°C IEC 60332-1-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(i)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to EN 50306 and IEC 60092 - 350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		3500 V AC
Max. voltage conductor to earth		450 V DC
Max. voltage conductor to conductor		900 V DC
Test voltage		8400 V DC

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→ RADOX® OFL® S 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 899 C (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+145 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T2

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→ RADOX® OFL® S 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 899 C (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL S (c)	110*	0.56*	7*	40.1
triple 0.5	OFL S (c)	100*	0.63*	7.9*	40.1
pair 0.75	OFL S (c)	150	0.55	10.3	26.7
triple 0.75	OFL S (c)	140	0.62	11.6	26.7
pair 1	OFL S (c)	165*	0.54*	13.5*	20
triple 1	OFL S (c)	155*	0.61*	15.3*	20
pair 1.5	OFL S (c)	175	0.53	19.3	13.7
triple 1.5	OFL S (c)	165*	0.6*	21.9*	13.7
pair 2.5	OFL S (c)	195	0.52	31.7	8.21
triple 2.5	OFL S (c)	185*	0.57*	34.7*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, White

Triple: Black, White, Red

Table 2: collectively screened (c)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	0.5	19x 0.184	0.9	1.3	0.77	2.6	0.16	1.6	2.7	5.30 ± 0.3 ●	5.4	BK BU	85184199 85189767
2	2	0.5	19x 0.184	0.9	1.3	0.9	5.5	0.16	2.7	4.4	8.50 ± 0.3 ○	11.5	BK BU	85185832 85189768
4	2	0.5	19x 0.184	0.9	1.3	0.9	6.4	0.16	3.1	6.5	9.30 ± 0.3 ○	14.3	BK BU	85185833 85189769
5	2	0.5	19x 0.184	0.9	1.3	0.9	6.7	0.16	3.3	7.6	9.85 ± 0.3 ○	16.2	BK BU	85185846 85189770
6	2	0.5	19x 0.184	0.9	1.3	0.9	7.6	0.16	3.5	8.8	10.8 ± 0.4 ○	19.7	BK BU	85185847 85189771
10	2	0.5	19x 0.184	0.9	1.3	0.9	9.5	0.21	5.6	14.4	12.6 ± 0.4 ○	26.8	BK BU	85185848 85189772
12	2	0.5	19x 0.184	0.9	1.3	0.9	9.6	0.21	5.9	16.6	12.9 ± 0.4 ○	28.6	BK BU	85185849 85189773
15	2	0.5	19x 0.184	0.9	1.3	0.9	10.9	0.21	6.7	20.1	14.3 ± 0.4 ○	34.8	BK BU	85185850 85189774
20	2	0.5	19x 0.184	0.9	1.3	0.9	11.9	0.21	7.1	25.0	15.5 ± 0.5 ○	41.2	BK BU	85185851 85189776
24	2	0.5	19x 0.184	0.9	1.3	0.9	13.9	0.21	7.9	29.8	17.5 ± 0.5 ○	49.8	BK BU	85185852 85189777

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→ RADOX® OFL® S 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 899 C (e)

Elements n x	Core in Element	Cross Section nom. mm^2	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm^2	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	3	0.5	19x 0.184	0.9	1.3	0.77	2.8	0.16	1.6	3.2	5.5 ± 0.3 ○	5.9	BK BU	85185873 85189778
2	3	0.5	19x 0.184	0.9	1.3	0.9	6.0	0.16	2.8	5.4	8.8 ± 0.3 ○	12.9	BK BU	85185874 85189779
4	3	0.5	19x 0.184	0.9	1.3	0.9	7.1	0.16	3.3	8.5	10.3 ± 0.4 ○	18.0	BK BU	85185875 85189780
5	3	0.5	19x 0.184	0.9	1.3	0.9	7.9	0.16	3.5	10.3	11.0 ± 0.4 ○	20.7	BK BU	85185876 85189782
6	3	0.5	19x 0.184	0.9	1.3	0.9	8.7	0.16	4.0	12.0	11.9 ± 0.4 ○	24.00	BK BU	85185877 85189784
10	3	0.5	19x 0.184	0.9	1.3	0.9	10.5	0.21	6.3	19.7	13.6 ± 0.4 ○	33.9	BK BU	85185878 85189785
1	2	0.75	19x 0.23	1.11	1.52	0.9	3.0	0.16	1.6	3.3	5.8 ± 0.3 ○	6.5	BK BU	85185973 85189786
2	2	0.75	19x 0.23	1.11	1.52	1.11	6.5	0.16	3.1	5.8	9.45 ± 0.3 ○	14.7	BK BU	85185974 85189787
4	2	0.75	19x 0.23	1.11	1.52	0.9	7.3	0.16	3.5	8.9	10.4 ± 0.4 ○	18.6	BK BU	85185975 85189788
5	2	0.75	19x 0.23	1.11	1.52	1.11	8.0	0.16	3.5	10.3	11.3 ± 0.4 ○	21.5	BK BU	85185853 85189789
6	2	0.75	19x 0.23	1.11	1.52	1.11	8.8	0.21	5.6	13.6	11.8 ± 0.4 ○	25.9	BK BU	85185854 85189790
10	2	0.75	19x 0.23	1.11	1.52	1.11	11.1	0.21	6.7	20.4	14.2 ± 0.4 ○	35.5	BK BU	85185855 85189792
12	2	0.75	19x 0.23	1.11	1.52	1.11	11.2	0.21	6.7	23.3	14.6 ± 0.4 ○	38.2	BK BU	85185977 85189793
15	2	0.75	19x 0.23	1.11	1.52	1.11	12.6	0.21	7.5	28.2	16.2 ± 0.5 ○	46.6	BK BU	85185856 85189794
20	2	0.75	19x 0.23	1.11	1.52	1.11	13.9	0.21	7.9	36.0	17.5 ± 0.5 ○	55.4	BK BU	85185857 85189795
24	2	0.75	19x 0.23	1.11	1.52	1.11	16.3	0.21	9.5	42.9	20.0 ±0.5 ○	68.0	BK BU	85185978 85189796
1	3	0.75	19x 0.23	1.11	1.52	0.9	3.3	0.16	1.7	4.2	6.05 ± 0.3 ○	7.4	BK BU	85185986 85189797
2	3	0.75	19x 0.23	1.11	1.52	1.11	7.0	0.16	3.3	7.3	10.0 ± 0.3 ○	16.9	BK BU	85185987 85189798
4	3	0.75	19x 0.23	1.11	1.52	1.11	8.2	0.16	3.8	11.9	11.4 ± 0.4 ○	23.0	BK BU	85185988 85189799
5	3	0.75	19x 0.23	1.11	1.52	1.11	9.2	0.16	4.2	14.5	12.4 ± 0.4 ○	27.4	BK BU	85185879 85189800
6	3	0.75	19x 0.23	1.11	1.52	1.11	10.1	0.21	5.9	18.4	13.6 ± 0.4 ○	33.4	BK BU	85185880 85189801
10	3	0.75	19x 0.23	1.11	1.52	1.11	12.3	0.21	7.1	27.8	15.6 ± 0.5 ○	46.1	BK BU	85185881 85189802
12	3	0.75	19x 0.23	1.11	1.52	1.11	12.4	0.21	7.5	28.6	16.0 ± 0.5 ○	46.4	BK BU	85185882 85189803
24	3	0.75	19x 0.23	1.11	1.52	1.11	18.2	0.21	10.7	60.8	22.1 ± 0.5 ○	91.4	BK BU	85185883 85189804

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→ RADOX® OFL® S 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 899 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	1	19x 0.26	1.25	1.67	1.11	3.3	0.16	1.7	4.1	6.1 ± 0.3 ○	7.5	BK BU	85185858 85189805
2	2	1	19x 0.26	1.25	1.67	1.25	7.2	0.16	3.3	6.7	10.3 ± 0.4 ○	17.4	BK BU	85185859 85189806
4	2	1	19x 0.26	1.25	1.67	1.25	8.0	0.16	3.5	10.6	11.2 ± 0.4 ○	21.7	BK BU	85185860 85189807
5	2	1	19x 0.26	1.25	1.67	1.25	8.9	0.21	5.6	14.2	12.3 ± 0.4 ○	26.9	BK BU	85185861 85189808
6	2	1	19x 0.26	1.25	1.67	1.25	10.2	0.21	6.3	16.8	13.8 ± 0.4 ○	32.0	BK BU	85185862 85189809
10	2	1	19x 0.26	1.25	1.67	1.25	12.2	0.21	7.1	24.7	15.5 ± 0.5 ○	42.9	BK BU	85185863 85189810
12	2	1	19x 0.26	1.25	1.67	1.25	12.3	0.21	7.5	28.7	15.9 ± 0.5 ○	46.4	BK BU	85185864 85189811
15	2	1	19x 0.26	1.25	1.67	1.25	14.2	0.21	8.3	35.0	17.7 ± 0.5 ●	57.2	BK BU	85184200 85189812
20	2	1	19x 0.26	1.25	1.67	1.25	15.3	0.21	8.9	44.6	18.9 ± 0.5 ○	66.8	BK BU	85185865 85189813
24	2	1	19x 0.26	1.25	1.67	1.25	17.9	0.21	10.7	53.4	21.7 ± 0.5 ○	82.3	BK BU	85185866 85189814
1	3	1	19x 0.26	1.25	1.67	1.11	3.6	0.16	1.7	5.1	6.35 ± 0.3 ○	8.4	BK BU	85185884 85189815
2	3	1	19x 0.26	1.25	1.67	1.25	7.7	0.16	3.5	8.7	10.8 ± 0.4 ○	20.0	BK BU	85185885 85189816
4	3	1	19x 0.26	1.25	1.67	1.25	9.0	0.21	5.2	15.8	12.4 ± 0.4 ○	28.7	BK BU	85185886 85189817
5	3	1	19x 0.26	1.25	1.67	1.25	10.1	0.21	5.9	19.2	13.6 ± 0.4 ○	35.0	BK BU	85185887 85189818
6	3	1	19x 0.26	1.25	1.67	1.25	11.2	0.21	6.7	22.5	14.9 ± 0.5 ○	40.6	BK BU	85185888 85189819
10	3	1	19x 0.23	1.25	1.67	1.25	13.5	0.21	7.9	34.5	16.9 ± 0.5 ○	55.7	BK BU	85185889 85189820
1	2	1.5	37x 0.23	1.55	2.04	1.11	4.1	0.16	2.0	5.3	6.85 ± 0.3 ○	9.6	BK BU	85185979 85189821
2	2	1.5	37x 0.23	1.55	2.04	1.25	8.6	0.16	4.0	9.3	11.6 ± 0.4 ○	22.3	BK BU	85185980 85189822
4	2	1.5	37x 0.23	1.55	2.04	1.25	9.8	0.21	5.9	16.5	13.3 ± 0.4 ○	31.2	BK BU	85185981 85189823
5	2	1.5	37x 0.23	1.55	2.04	1.25	10.5	0.21	6.7	20.0	14.4 ± 0.4 ○	36.8	BK BU	85185867 85189824
6	2	1.5	37x 0.23	1.55	2.04	1.25	11.5	0.21	7.1	23.1	15.3 ± 0.5 ○	41.8	BK BU	85185868 85189825
10	2	1.5	37x 0.23	1.55	2.04	1.25	14.9	0.21	8.9	35.8	18.3 ± 0.5 ○	61.5	BK BU	85185869 85189826
12	2	1.5	37x 0.23	1.55	2.04	1.25	15.1	0.21	8.9	42.6	18.7 ± 0.5 ○	59.0	BK BU	85185983 85189827
15	2	1.5	37x 0.23	1.55	2.04	1.25	17.1	0.21	10.1	50.6	20.9 ± 0.5 ○	79.4	BK BU	85185870 85189829

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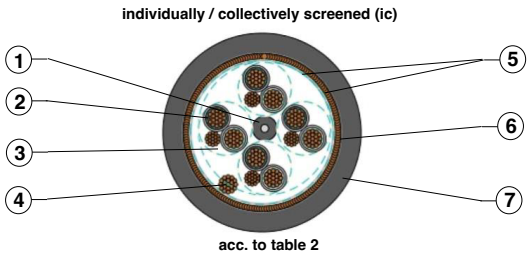
→ RADOX® OFL® S 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 899 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
20	2	1.5	37x 0.23	1.55	2.04	1.25	18.7	0.21	11.3	65.5	22.6 ± 0.5 ○	95.6	BK BU	85185871 85189830
24	2	1.5	37x 0.23	1.55	2.04	1.25	21.9	0.25	16.2	81.2	26.2 ± 0.6 ○	122.8	BK BU	85185984 85189831
32	2	1.5	37x 0.23	1.55	2.04	1.25	23.9	0.25	18.0	104.9	28.3 ± 0.6 ○	150.0	BK BU	85185985 85189832
1	3	1.5	37x 0.23	1.55	2.04	1.11	4.4	0.16	2.2	6.8	7.25 ± 0.3 ○	11.2	BK BU	85185891 85189833
2	3	1.5	37x 0.23	1.55	2.04	1.25	9.2	0.21	5.6	13.4	12.8 ± 0.4 ○	29.9	BK BU	85185989 85189834
4	3	1.5	37x 0.23	1.55	2.04	1.25	11.0	0.21	6.3	22.4	14.6 ± 0.4 ○	39.7	BK BU	85185990 85189835
5	3	1.5	37x 0.23	1.55	2.04	1.25	12.3	0.21	7.1	27.3	16.1 ± 0.5 ○	47.9	BK BU	85185892 85189836
6	3	1.5	37x 0.23	1.55	2.04	1.25	13.2	0.21	7.9	39.6	17.0 ± 0.5 ○	61.9	BK BU	85185893 85189837
10	3	1.5	37x 0.23	1.55	2.04	1.25	16.5	0.21	9.5	50.0	19.9 ± 0.5 ○	78.0	BK BU	85185894 85189838
12	3	1.5	37x 0.23	1.55	2.04	1.25	16.7	0.21	9.5	58.5	20.4 ± 0.5 ○	85.1	BK BU	85185895 85189839
24	3	1.5	37x 0.23	1.55	2.04	1.25	24.5	0.25	18.0	115.8	28.9 ± 0.6 ○	164.3	BK BU	85185896 85189840
1	2	2.5	37x 0.29	1.96	2.54	1.25	5.1	0.16	2.4	7.4	7.9 ± 0.3 ○	12.9	BK BU	85185872 85189841
1	3	2.5	37x 0.29	1.96	2.54	1.25	5.5	0.16	2.7	9.8	8.4 ± 0.3 ○	15.5	BK BU	85185897 85189843

Instrumentation cables



Product name	**RADOX® OFL® S 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant, easily strippable, free of hygroscopic material, instrumentation cable following RFOU(ic).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL	Insulation	RADOX TI301 Dual layer high performance polymer (thin-wall)
		Colours	See table 2
3.	**Element**	Cores	2 or 3 cores
		Drain wire	Flexible tin plated copper
		Alu tape	Wrapping
		Tape	Wrapping
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
7.	**Outer layer**	Sheath	RADOX Elastomer S FH Type SHF2 acc. to IEC 60092-360 and NEK TS 606
		Colour	Black or Blue acc. NEK TS 606: 2016

Printing on sheath

[a] HUBER+SUHNER RADOX OFL S 300/500V [b] SHF2 M 90°C IEC 60332-1-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(c)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to EN 50306 and IEC 60092 - 350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		3500 V AC
Max. voltage conductor to earth		450 V DC
Max. voltage conductor to conductor		900 V DC
Test voltage		8400 V DC

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→ RADOX® OFL® S 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 883 C (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+145 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T2

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→ RADOX® OFL® S 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 883 C (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL S (ic)	110*	0.56*	7*	40.1
triple 0.5	OFL S (ic)	100*	0.63*	7.9*	40.1
pair 0.75	OFL S (ic)	150	0.55	10.3	26.7
triple 0.75	OFL S (ic)	140	0.62	11.6	26.7
pair 1	OFL S (ic)	165*	0.54*	13.5*	20
triple 1	OFL S (ic)	155*	0.61*	15.3*	20
pair 1.5	OFL S (ic)	175	0.53	19.3	13.7
triple 1.5	OFL S (ic)	165*	0.6*	21.9*	13.7
pair 2.5	OFL S (ic)	195	0.52	31.7	8.21
triple 2.5	OFL S (ic)	185*	0.57*	34.7*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, White

Triple: Black, White, Red

Table 2: individually and collectively screened (ic)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
2	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	5.8	0.16	2.7	5.0	8.65 ± 0.3 ○	12.0	BK BU	85185905 85189844
4	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	7.0	0.16	3.3	8.0	10.1 ± 0.3 ○	16.8	BK BU	85185908 85189845
5	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	7.9	0.16	3.8	9.7	11.1 ± 0.4 ○	20.2	BK BU	85185910 85189846
6	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	8.7	0.16	4.0	11.2	12.0 ± 0.4 ○	23.3	BK BU	85185911 85189847
10	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	10.4	0.21	6.3	18.4	13.4 ± 0.4 ○	32.1	BK BU	85185912 85189848
12	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	10.8	0.21	6.3	21.0	14.2 ± 0.4 ○	35.3	BK BU	85185913 85189849
15	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	12.4	0.21	7.5	25.8	15.9 ± 0.5 ○	43.6	BK BU	85185914 85189850
20	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	13.3	0.21	7.9	32.5	16.9 ± 0.5 ○	50.8	BK BU	85185915 85189851
24	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	15.2	0.21	8.9	38.5	18.9 ± 0.5 ○	61.8	BK BU	85185916 85189852
2	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	6.8	0.16	3.1	6.3	9.8 ± 0.3 ○	15.1	BK BU	85185951 85189853

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→ RADOX® OFL® S 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 883 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
4	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	7.6	0.21	4.4	11.1	10.9 ± 0.4 ○	20.6	BK BU	85185952 85189854
5	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	8.3	0.21	5.2	13.4	11.8 ± 0.4 ○	24.3	BK BU	85185953 85189855
6	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	9.1	0.21	5.6	15.4	12.6 ± 0.4 ○	27.6	BK BU	85185954 85189856
10	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	11.5	0.21	6.7	23.4	14.7 ± 0.5 ○	39.2	BK BU	85185955 85189857
2	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	6.6	0.16	3.1	6.7	9.55 ± 0.3 ○	15.1	BK BU	85185917 85189858
4	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	8.3	0.16	3.8	11.0	11.5 ± 0.4 ○	22.2	BK BU	85185918 85189859
5	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	9.1	0.21	5.6	14.5	12.7 ± 0.4 ○	27.7	BK BU	85185919 85189860
6	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	10.0	0.21	5.9	17.9	13.6 ± 0.4 ○	30.0	BK BU	85185921 85189861
10	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	12.0	0.21	7.1	25.4	15.3 ± 0.5 ○	43.0	BK BU	85185922 85189862
12	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	12.5	0.21	7.5	29.5	16.0 ± 0.5 ○	46.9	BK BU	85185923 85189863
15	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	14.5	0.21	8.3	36.1	18.1 ± 0.5 ○	58.2	BK BU	85185924 85189864
20	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	15.2	0.21	8.9	45.8	18.9 ± 0.5 ○	67.8	BK BU	85185925 85189865
24	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	17.6	0.21	10.7	54.9	21.4 ± 0.5 ○	83.2	BK BU	85185926 85189866
2	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	7.4	0.16	3.3	8.3	10.6 ± 0.4 ○	18.6	BK BU	85185956 85189867
4	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	8.8	0.21	5.2	15.1	12.2 ± 0.4 ○	26.8	BK BU	85185958 85189868
5	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	9.6	0.21	5.9	18.4	13.1 ± 0.4 ○	31.3	BK BU	85185959 85189869
6	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	11.0	0.21	6.7	21.8	14.5 ± 0.5 ○	37.8	BK BU	85185960 85189870
10	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	13.2	0.21	7.5	32.9	16.5 ± 0.5 ○	52.3	BK BU	85185961 85189871
2	2	1	19 x 0.26	1.25	1.67	1.11	1.25	7.3	0.16	3.3	8.2	10.4 ± 0.4 ○	18.2	BK BU	85185927 85189872
4	2	1	19 x 0.26	1.25	1.67	1.11	1.25	9.2	0.21	5.6	15.2	12.7 ± 0.4 ○	28.7	BK BU	85185931 85189873
5	2	1	19 x 0.26	1.25	1.67	1.11	1.25	10.1	0.21	5.9	18.1	13.6 ± 0.4 ○	33.8	BK BU	85185934 85189874
6	2	1	19 x 0.26	1.25	1.67	1.11	1.25	11.1	0.21	6.7	21.3	14.7 ± 0.4 ○	38.5	BK BU	85185935 85189875
10	2	1	19 x 0.26	1.25	1.67	1.11	1.25	13.2	0.21	7.7	32.3	16.5 ± 0.5 ○	52.3	BK BU	85185936 85189876
12	2	1	19 x 0.26	1.25	1.67	1.11	1.25	13.6	0.21	8.3	37.9	17.2 ± 0.5 ○	57.6	BK BU	85185937 85189877

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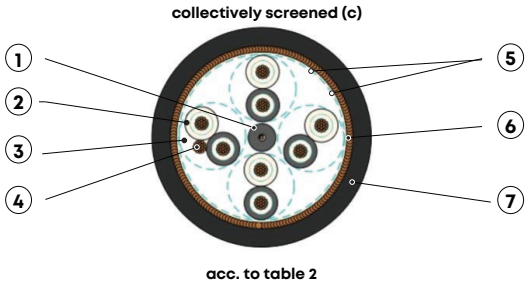
→ RADOX® OFL® S 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 883 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
15	2	1	19 x 0.26	1.25	1.67	1.11	1.25	15.9	0.21	9.5	46.6	19.6 ± 0.5 ●	72.7	BK BU	85184173 85189878
20	2	1	19 x 0.26	1.25	1.67	1.11	1.25	16.6	0.21	10.1	59.7	20.3 ± 0.5 ○	84.3	BK BU	85185938 85189879
24	2	1	19 x 0.26	1.25	1.67	1.11	1.25	19.6	0.21	11.9	71.5	23.5 ± 0.5 ○	106.1	BK BU	85185939 85189880
2	3	1	19 x 0.26	1.25	1.67	1.11	1.25	8.1	0.16	3.8	10.3	11.4 ± 0.4 ○	23.6	BK BU	85185963 85189881
4	3	1	19 x 0.26	1.25	1.67	1.11	1.25	9.9	0.21	5.9	19.2	13.4 ± 0.4 ○	33.3	BK BU	85185964 85189882
5	3	1	19 x 0.26	1.25	1.67	1.11	1.25	10.9	0.21	6.3	23.1	14.5 ± 0.4 ○	39.2	BK BU	85185965 85189883
6	3	1	19 x 0.26	1.25	1.67	1.11	1.25	12.1	0.21	7.1	27.2	15.8 ± 0.5 ○	46.2	BK BU	85185966 85189884
10	3	1	19 x 0.26	1.25	1.67	1.11	1.25	14.5	0.21	8.3	41.9	17.8 ± 0.5 ○	65.4	BK BU	85185967 85189885
2	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	8.6	0.16	4.0	10.6	11.9 ± 0.4 ○	23.4	BK BU	85185940 85189886
4	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	11.0	0.21	6.7	20.1	14.6 ± 0.4 ○	37.0	BK BU	85185941 85189887
5	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	11.8	0.21	7.1	23.9	15.6 ± 0.5 ○	42.6	BK BU	85185942 85189888
6	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	13.0	0.21	7.9	28.1	16.9 ± 0.5 ○	49.8	BK BU	85185943 85189889
10	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	15.8	0.21	9.5	43.4	19.1 ± 0.5 ○	69.9	BK BU	85185944 85189890
12	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	16.4	0.21	9.5	50.4	20.1 ± 0.5 ○	75.5	BK BU	85185945 85189891
15	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	18.9	0.21	10.7	62.1	22.8 ± 0.5 ○	94.5	BK BU	85185946 85189892
20	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	20.1	0.25	14.4	82.6	24.2 ± 0.5 ○	115.0	BK BU	85185947 85189893
24	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	23.5	0.25	17.1	98.9	27.8 ± 0.6 ○	142.6	BK BU	85185948 85189894
32	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	26.7	0.30	22.2	131.5	30.8 ± 0.6 ●	183.7	BK BU	85184201 85189895
2	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	9.7	0.21	5.6	14.9	13.2 ± 0.4 ○	29.7	BK BU	85185968 85189896
4	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	11.6	0.21	6.7	25.6	15.4 ± 0.5 ○	43.4	BK BU	85185969 85189897
5	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	12.8	0.21	7.1	31.1	16.6 ± 0.5 ○	51.0	BK BU	85185970 85189898
6	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	14.1	0.21	8.3	36.7	18.1 ± 0.5 ○	60.3	BK BU	85185971 85189899
10	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	17.4	0.21	9.5	57.5	20.8 ± 0.5 ○	85.9	BK BU	85185972 85189900
2	2	2.5	37 x 0.29	1.96	2.54	1.25	1.55	10.6	0.21	6.3	16.4	14.3 ± 0.4 ○	34.2	BK BU	85185949 85189901

Instrumentation cables



Product name	**RADOX® OFL® SFR Fire & Mud Resistant 300/500V (c)**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant and FIRE RESISTANT, easily strippable, free of hygroscopic material, instrumentation cable following BFOU(c).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL® FR	Wrapping	Mica Tape
		Insulation	RADOX®EI303 (thin- wall)
		Colours	See table 2
3.	**Element**	Cores	2 or 3 cores
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
7.	**Outer layer**	Sheath	RADOX®Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Black or Blue acc. NEK TS 606: 2016

Printing on sheath

Outer Diameter > 20mm	[a] HUBER+SUHNER RADOX® OFL® SFR 300/500V [b] SHF2 M 90°C IEC 60332-1-1 IEC 60332-3-22 [c]-[d] [e] [f]
Outer Diameter ≤ 20mm	[a] HUBER+SUHNER RADOX® OFL® SFR 300/500V [b] SHF2 M 90°C IEC 60332-1-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(c)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc to EN 50306 and IEC 60092-350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		2000 V AC
Max voltage conductor to earth		450 V DC
Max voltage conductor to conductor		900 V DC
Test voltage		4800 V DC

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→ RADOX® OFL® SFR Fire & Mud Resistant 300/500V (c)

586 904 C (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092	+90 °C	
Temperature index of core insulation TI/20kh	+135 °C	
Temperature index of sheath TI/20kh	+130 °C	
Max. storage temperature	+40 °C	
Max. storage temperature ≤ 5000h	+65 °C	
Min. operation, installation and handling temperature	-40 °C	
Min. storage temperature	-50 °C	
Max. tensile load, only for installation	50 x A N	
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Electric cables under fire conditions		
Outer Diameter > 20 mm	830°C, 120 min.	IEC 60331-1
Outer Diameter ≤ 20 mm	830°C, 120 min.	IEC 60331-2
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and Offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T0

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→ RADOX® OFL® SFR Fire & Mud Resistant 300/500V (c)
586 904 C (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL® FR (c)	85	0.78	9.7	40.1
triple 0.5	OFL® FR (c)	80	0.81	10.1	40.1
pair 0.75	OFL® FR (c)	95	0.71	13.3	26.7
triple 0.75	OFL® FR (c)	90*	0.81*	15.2*	26.7
pair 1.0	OFL® FR (c)	95	0.71	17.8	20
triple 1.0	OFL® FR (c)	90	0.75	18.8	20
pair 1.5	OFL® FR (c)	115	0.65	23.7	13.7
triple 1.5	OFL® FR (c)	110	0.71	25.9	13.7
pair 2.5	OFL® FR (c)	130	0.6	36.5	8.21
triple 2.5	OFL® FR (c)	125*	0.62*	37.8*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm2

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, white

Triple: Black, white, red

Table 2: collectively screened (c)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	0.5	19 x 0.184	0.9	2.17	0.9	4.3	0.16	2.0	3.3	7.20 ± 0.3 ●	8.8	BK BU	85183127 85190058
2	2	0.5	19 x 0.184	0.9	2.17	0.9	8.1	0.16	3.5	5.6	10.8 ± 0.4 ●	17.5	BK BU	85186164 85190059
4	2	0.5	19 x 0.184	0.9	2.17	0.9	9.8	0.21	5.9	9.7	13.3 ± 0.4 ○	26.0	BK BU	85186226 85190060
5	2	0.5	19 x 0.184	0.9	2.17	0.9	10.9	0.21	6.7	11.4	14.6 ± 0.4 ○	31.0	BK BU	85186227 85190061
6	2	0.5	19 x 0.184	0.9	2.17	0.9	12.5	0.21	7.5	13.1	16.3 ± 0.5 ○	37.7	BK BU	85186168 85190062
10	2	0.5	19 x 0.184	0.9	2.17	0.9	15.2	0.21	8.9	17.6	18.5 ± 0.5 ○	47.4	BK BU	85186169 85190063
12	2	0.5	19 x 0.184	0.9	2.17	0.9	14.9	0.21	8.9	19.9	18.6 ± 0.5 ○	47.5	BK BU	85186170 85190064
15	2	0.5	19 x 0.184	0.9	2.17	0.9	17.9	0.21	10.7	24.3	21.7 ± 0.5 ○	61.2	BK BU	85186171 85190065
20	2	0.5	19 x 0.184	0.9	2.17	0.9	18.1	0.21	10.7	28.9	21.9 ± 0.5 ○	66.5	BK BU	85186172 85190066
24	2	0.5	19 x 0.184	0.9	2.17	0.9	21.5	0.25	15.3	36.9	25.0 ± 0.6 ●	84.0	BK BU	85172213 85190067

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→ RADOX® OFL® SFR Fire & Mud Resistant 300/500V (c)

586 904 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	3	0.5	19 x 0.184	0.9	2.17	0.9	4.7	0.16	2.4	4.1	7.20 ± 0.3 ○	9.7	BK BU	85186173 85190068
2	3	0.5	19 x 0.184	0.9	2.17	0.9	8.6	0.16	4.0	6.9	11.8 ± 0.4 ○	21.0	BK BU	85186174 85190069
4	3	0.5	19 x 0.184	0.9	2.17	0.9	11.0	0.21	6.3	12.0	14.6 ± 0.4 ○	32.2	BK BU	85186175 85190070
5	3	0.5	19 x 0.184	0.9	2.17	0.9	12.5	0.21	7.5	14.4	16.3 ± 0.5 ○	39.4	BK BU	85186176 85190071
6	3	0.5	19 x 0.184	0.9	2.17	0.9	13.9	0.21	8.3	16.6	17.7 ± 0.5 ○	46.5	BK BU	85186177 85190072
10	3	0.5	19 x 0.184	0.9	2.17	0.9	17.3	0.21	10.1	23.7	20.7 ± 0.5 ○	61.7	BK BU	85186178 85190073
1	2	0.75	19 x 0.23	1.11	2.38	1.11	4.8	0.16	2.2	4.2	7.60 ± 0.3 ○	10.0	BK BU	85158201 85190074
2	2	0.75	19 x 0.23	1.11	2.38	1.11	8.3	0.21	5.2	8.4	11.6 ± 0.4 ●	22.1	BK BU	85158604 85190075
4	2	0.75	19 x 0.23	1.11	2.38	1.11	10.8	0.21	6.3	12.3	14.4 ± 0.4 ○	30.9	BK BU	85186179 85190076
5	2	0.75	19 x 0.23	1.11	2.38	1.11	12.3	0.21	7.5	14.9	16.1 ± 0.5 ○	38.0	BK BU	85186180 85190077
6	2	0.75	19 x 0.23	1.11	2.38	1.11	13.3	0.21	7.9	16.6	17.1 ± 0.5 ○	42.8	BK BU	85186181 85190078
10	2	0.75	19 x 0.23	1.11	2.38	1.11	16.3	0.21	9.5	23.7	19.7 ± 0.5 ○	54.8	BK BU	85186182 85190079
12	2	0.75	19 x 0.23	1.11	2.38	1.11	16.4	0.21	9.5	26.5	19.7 ± 0.5 ○	56.5	BK BU	85158605 85190080
15	2	0.75	19 x 0.23	1.11	2.38	1.11	19.9	0.21	10.7	32.0	22.4 ± 0.5 ●	72.3	BK BU	85185620 85190081
20	2	0.75	19 x 0.23	1.11	2.38	1.11	19.9	0.21	11.9	40.0	23.8 ± 0.5 ○	81.8	BK BU	85186183 85190082
24	2	0.75	19 x 0.23	1.11	2.38	1.11	23.7	0.25	16.2	49.8	26.9 ± 0.6 ○	104.6	BK BU	85186184 85190083
1	3	0.75	19 x 0.23	1.11	2.38	1.11	5.1	0.16	2.4	3.8	8.00 ± 0.3 ○	10.1	BK BU	85186185 85190084
2	3	0.75	19 x 0.23	1.11	2.38	1.11	9.8	0.21	5.6	10.1	12.9 ± 0.4 ○	26.4	BK BU	85186186 85190085
4	3	0.75	19 x 0.23	1.11	2.38	1.11	11.7	0.21	6.7	15.5	15.5 ± 0.5 ○	37.0	BK BU	85186187 85190086
5	3	0.75	19 x 0.23	1.11	2.38	1.11	13.9	0.21	8.3	19.1	17.7 ± 0.5 ○	47.5	BK BU	85186188 85190087
6	3	0.75	19 x 0.23	1.11	2.38	1.11	15.9	0.21	9.5	22.3	19.9 ± 0.5 ○	59.1	BK BU	85186189 85190088
10	3	0.75	19 x 0.23	1.11	2.38	1.11	19.0	0.21	11.3	32.4	22.4 ± 0.5 ○	75.1	BK BU	85186190 85190089
1	2	1	19 x 0.26	1.25	2.66	1.25	5.3	0.16	2.5	5.1	8.20 ± 0.3 ○	11.8	BK BU	85186191 85190090
2	2	1	19 x 0.26	1.25	2.66	1.25	9.9	0.21	5.6	9.8	12.9 ± 0.4 ●	25.9	BK BU	85186192 85190091

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→ RADOX® OFL® SFR Fire & Mud Resistant 300/500V (c)

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Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
4	2	1	19 x 0.26	1.25	2.66	1.25	12.0	0.21	7.1	14.8	15.8 ± 0.5 ○	36.9	BK BU	85186193 85190092
5	2	1	19 x 0.26	1.25	2.66	1.25	13.5	0.21	8.3	17.7	17.3 ± 0.5 ○	44.6	BK BU	85186194 85190093
6	2	1	19 x 0.26	1.25	2.66	1.25	13.5	0.21	8.3	19.5	17.3 ± 0.5 ●	44.6	BK BU	85186195 85190094
10	2	1	19 x 0.26	1.25	2.66	1.25	18.3	0.21	10.7	29.0	21.9 ± 0.5 ○	66.4	BK BU	85186196 85190095
12	2	1	19 x 0.26	1.25	2.66	1.25	18.3	0.21	10.7	32.6	21.9 ± 0.5 ○	67.6	BK BU	85186197 85190096
12	2	1	19 x 0.26	1.25	2.66	1.25	18.3	0.21	10.7	32.6	21.9 ± 0.5 ○	67.6	BK BU	85186197 85190096
15	2	1	19 x 0.26	1.25	2.66	1.25	22.3	0.25	16.2	43.2	26.6 ± 0.6 ○	94.3	BK BU	85186198 85190097
20	2	1	19 x 0.26	1.25	2.66	1.25	22.3	0.25	16.2	52.2	26.6 ± 0.6 ○	102.7	BK BU	85186199 85190098
24	2	1	19 x 0.26	1.25	2.66	1.25	26.5	0.30	22.2	65.4	31.2 ± 0.6 ○	132.3	BK BU	85186200 85190099
1	3	1	19 x 0.26	1.25	2.66	1.25	5.7	0.16	2.7	6.1	8.70 ± 0.3 ○	13.4	BK BU	85186201 85190100
2	3	1	19 x 0.26	1.25	2.66	1.25	10.6	0.21	5.6	11.5	14.2 ± 0.4 ○	30.9	BK BU	85186202 85190101
4	3	1	19 x 0.26	1.25	2.66	1.25	13.5	0.21	7.9	19.2	17.4 ± 0.5 ○	47.0	BK BU	85186203 85190102
5	3	1	19 x 0.26	1.25	2.66	1.25	15.0	0.21	8.9	22.8	19.0 ± 0.5 ○	55.1	BK BU	85186204 85190103
6	3	1	19 x 0.26	1.25	2.66	1.25	15.6	0.21	9.5	26.0	19.7 ± 0.5 ○	59.8	BK BU	85186205 85190104
10	3	1	19 x 0.26	1.25	2.66	1.25	21.2	0.25	15.3	42.3	25.1 ± 0.6 ●	93.8	BK BU	85183133 85190105
1	2	1.5	37 x 0.23	1.55	2.9	1.25	5.8	0.16	2.7	6.1	8.75 ± 0.3 ○	13.7	BK BU	85186206 85190106
2	2	1.5	37 x 0.23	1.55	2.9	1.25	9.6	0.21	6.3	12.3	14.2 ± 0.4 ○	31.7	BK BU	85186207 85190107
4	2	1.5	37 x 0.23	1.55	2.9	1.25	13.2	0.21	7.7	19.1	17.0 ± 0.5 ○	44.6	BK BU	85158999 85190108
5	2	1.5	37 x 0.23	1.55	2.9	1.25	14.7	0.21	8.9	18.5	18.6 ± 0.5 ○	48.1	BK BU	85186208 85190109
6	2	1.5	37 x 0.23	1.55	2.9	1.25	16.3	0.21	9.5	26.3	20.3 ± 0.5 ○	61.7	BK BU	85186209 85190110
10	2	1.5	37 x 0.23	1.55	2.9	1.25	20.3	0.21	11.9	39.4	23.6 ± 0.5 ○	81.7	BK BU	85186210 85190111
12	2	1.5	37 x 0.23	1.55	2.9	1.25	19.9	0.21	11.9	44.9	23.4 ± 0.5 ○	84.2	BK BU	85158606 85190112
15	2	1.5	37 x 0.23	1.55	2.9	1.25	24.0	0.25	17.1	58.1	28.3 ± 0.6 ○	113.4	BK BU	85186211 85190113
20	2	1.5	37 x 0.23	1.55	2.9	1.25	24.2	0.25	18.0	72.5	28.6 ± 0.6 ○	127.2	BK BU	85186212 85190114
24	2	1.5	37 x 0.23	1.55	2.9	1.25	28.9	0.30	22.2	88.8	32.5 ± 0.6 ○	161.0	BK BU	85158607 85190115

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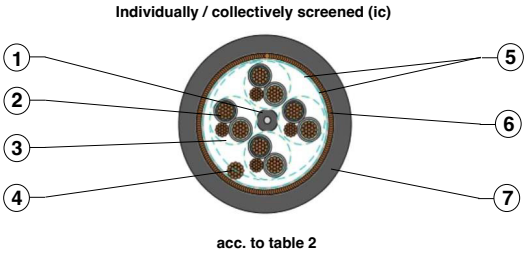
Elements n x	Core in Element	Cross Section nom. mm^2	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm^2	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	3	1.5	37 x 0.23	1.55	2.9	1.25	6.3	0.16	3.0	7.8	9.2 ± 0.3 ○	15.7	BK BU	85186213 85190116
2	3	1.5	37 x 0.23	1.55	2.9	1.25	11.9	0.21	7.1	15.8	15.7 ± 0.5 ○	38.5	BK BU	85186214 85190117
4	3	1.5	37 x 0.23	1.55	2.9	1.25	14.8	0.21	8.3	25.3	18.7 ± 0.5 ○	55.6	BK BU	85186215 85190118
5	3	1.5	37 x 0.23	1.55	2.9	1.25	16.5	0.21	9.5	30.5	20.6 ± 0.5 ○	67.1	BK BU	85186216 85190119
6	3	1.5	37 x 0.23	1.55	2.9	1.25	19.6	0.21	10.7	35.5	21.3 ± 0.5 ○	73.6	BK BU	85186217 85190120
10	3	1.5	37 x 0.23	1.55	2.9	1.25	23.2	0.25	16.2	57.2	27.0 ± 0.6 ○	114.4	BK BU	85186218 85190121
1	2	2.5	37 x 0.29	1.96	3.4	1.55	6.8	0.16	3.0	8.5	9.80 ± 0.3 ○	17.9	BK BU	85186219 85190122
2	2	2.5	37 x 0.29	1.96	3.4	1.55	12.9	0.21	7.1	16.8	16.0 ± 0.5 ●	41.3	BK BU	85183136 85190123
1	3	2.5	37 x 0.29	1.96	3.4	1.55	7.3	0.16	3.5	11.1	10.5 ± 0.4 ○	21.4	BK BU	85186221 85190124
2	3	2.5	37 x 0.29	1.96	3.4	1.55	13.9	0.21	7.5	21.7	17.5 ± 0.5 ○	48.6	BK BU	85186222 85190125

Instrumentation cables



Product name	**RADOX® OFL® SFR 300/500V (ic) Fire & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant and FIRE RESISTANT, easily strippable, free of hygroscopic material, instrumentation cable following BFOU(ic).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL FR	Wrapping	Mica Tape
		Insulation	RADOX EI303 (thin- wall)
		Colours	see table 2
3.	**Element**	Cores	2 or 3 cores
		Drain wire	Flexible tin plated copper
		Alu tape	Wrapping
		Tape	Wrapping
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Shielding**	Screen	Tin plated copper braid, coverage density: ≥ 90%
7.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Black or Blue acc. NEK TS 606: 2016

Printing on sheath

Outer Diameter > 20mm	[a] HUBER+SUHNER RADOX OFL FR 300/500V [b] SHF2 M 90°C IEC 60332-1-1 IEC 60332-3-22 [c]-[d] [e] [f]
Outer Diameter ≤ 20mm	[a] HUBER+SUHNER RADOX OFL FR 300/500V [b] SHF2 M 90°C IEC 60332-1-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(ic)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc to EN 50306 and IEC 60092-350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		2000 V AC
Max voltage conductor to earth		450 V DC
Max voltage conductor to conductor		900 V DC
Test voltage		4800 V DC

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→ RADOX® OFL® SFR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

586 884 F (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092	+90 °C	
Temperature index of core insulation TI/20kh	+135 °C	
Temperature index of sheath TI/20kh	+130 °C	
Max. storage temperature	+40 °C	
Max. storage temperature ≤ 5000h	+65 °C	
Min. operation, installation and handling temperature	-40 °C	
Min. storage temperature	-50 °C	
Max. tensile load, only for installation	50 x A N	
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Electric cables under fire conditions		
Outer Diameter > 20 mm	830°C, 120 min.	IEC 60331-1
Outer Diameter ≤ 20 mm	830°C, 120 min.	IEC 60331-2
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and Offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T0

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→ RADOX® OFL® SFR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

586 884 F (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL FR (ic)	85	0.78	9.7	40.1
triple 0.5	OFL FR (ic)	80	0.81	10.1	40.1
pair 0.75	OFL FR (ic)	95	0.71	13.3	26.7
triple 0.75	OFL FR (ic)	90*	0.81*	15.2*	26.7
pair 1.0	OFL FR (ic)	95	0.71	17.8	20
triple 1.0	OFL FR (ic)	90	0.75	18.8	20
pair 1.5	OFL FR (ic)	115	0.65	23.7	13.7
triple 1.5	OFL FR (ic)	110	0.71	25.9	13.7
pair 2.5	OFL FR (ic)	130	0.6	36.5	8.21
triple 2.5	OFL FR (ic)	125*	0.62*	37.8*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm2

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, white

Triple: Black, white, red

Table 2: individually and collectively screened (ic)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
2	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	9.1	0.16	4.0	6.3	11.9 ± 0.4 ●	20.4	BK BU	85209557 85190126
4	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	11.0	0.21	6.3	11.0	14.0 ± 0.4 ○	28.9	BK BU	85186232 85190127
5	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	12.2	0.21	7.1	13.0	15.3 ± 0.5 ○	33.8	BK BU	85186233 85190128
6	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	13.5	0.21	7.9	15.0	16.6 ± 0.5 ○	39.7	BK BU	85186234 85190129
10	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	16.5	0.21	9.5	21.6	19.4 ± 0.5 ○	50.4	BK BU	85186235 85190130
12	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	17.2	0.21	9.5	24.1	20.1 ± 0.5 ○	55.5	BK BU	85186236 85190131
15	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	19.7	0.21	11.3	29.5	22.6 ± 0.5 ○	69.5	BK BU	85186237 85190132
20	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	21.0	0.25	14.4	38.9	24.2 ± 0.5 ○	82.0	BK BU	85186238 85190133
24	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	24.6	0.25	18.0	47.0	28.0 ± 0.6 ●	106.5	BK BU	85186239 85190134
2	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	10.0	0.21	5.9	9.0	13.3 ± 0.4 ○	25.6	BK BU	85186240 85190135

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→ RADOX® OFL® SFR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

586 884 F (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
4	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	12.2	0.21	7.1	13.6	16.0 ± 0.5 ○	35.9	BK BU	85186241 85190136
5	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	13.5	0.21	7.7	15.9	17.4 ± 0.5 ○	42.2	BK BU	85186242 85190137
6	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	15.0	0.21	8.9	18.7	18.9 ± 0.5 ○	49.6	BK BU	85186243 85190138
10	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	18.5	0.21	10.7	27.2	21.4 ± 0.5 ○	64.7	BK BU	85186244 85190139
2	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	10.0	0.21	5.9	9.4	13.1 ± 0.4 ●	25.8	BK BU	85209574 85190140
4	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	12.2	0.21	7.1	14.2	15.7 ± 0.5 ○	35.4	BK BU	85186245 85190141
5	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	12.7	0.21	7.1	16.4	16.9 ± 0.5 ○	40.4	BK BU	85186246 85190142
6	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	14.2	0.21	7.9	19.2	18.2 ± 0.5 ○	47.2	BK BU	85186247 85190143
10	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	18.1	0.21	10.7	28.8	20.9 ± 0.5 ○	64.4	BK BU	85186248 85190144
12	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	19.1	0.21	10.7	32.6	22.0 ± 0.5 ○	68.7	BK BU	85186249 85190145
15	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	21.6	0.25	11.9	40.0	25.7 ± 0.6 ○	88.6	BK BU	85186250 85190146
20	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	23.0	0.25	16.1	53.2	27.3 ± 0.6 ○	104.5	BK BU	85186251 85190147
24	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	26.8	0.30	22.2	66.8	31.7 ± 0.6 ○	136.5	BK BU	85186252 85190148
2	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	11.0	0.21	6.3	11.2	14.6 ± 0.4 ○	30.6	BK BU	85186253 85190149
4	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	13.4	0.21	7.5	17.6	17.3 ± 0.5 ○	43.7	BK BU	85186254 85190150
5	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	15.0	0.21	7.9	20.9	18.6 ± 0.5 ○	50.7	BK BU	85186255 85190151
6	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	16.6	0.21	9.5	24.4	20.3 ± 0.5 ○	60.0	BK BU	85186256 85190152
10	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	20.0	0.21	11.9	37.2	23.9 ± 0.5 ○	82.4	BK BU	8518625 85190153
2	2	1	19 x 0.26	1.25	2.66	1.11	1.25	11.2	0.21	5.9	10.6	13.6 ± 0.4 ●	29.4	BK BU	85209577 85190154
4	2	1	19 x 0.26	1.25	2.66	1.11	1.25	13.6	0.21	7.5	17.2	16.7 ± 0.5 ○	41.4	BK BU	85186259 85190155
5	2	1	19 x 0.26	1.25	2.66	1.11	1.25	15.1	0.21	8.3	20.5	18.2 ± 0.5 ○	48.4	BK BU	85186260 85190156
6	2	1	19 x 0.26	1.25	2.66	1.11	1.25	15.4	0.21	8.9	23.4	18.3 ± 0.5 ●	51.3	BK BU	85186261 85190157
10	2	1	19 x 0.26	1.25	2.66	1.11	1.25	20.0	0.21	11.3	35.9	22.9 ± 0.5 ○	73.6	BK BU	85186262 85190158
12	2	1	19 x 0.26	1.25	2.66	1.11	1.25	20.8	0.25	14.4	43.8	24.0 ± 0.5 ○	85.1	BK BU	85186263 85190159

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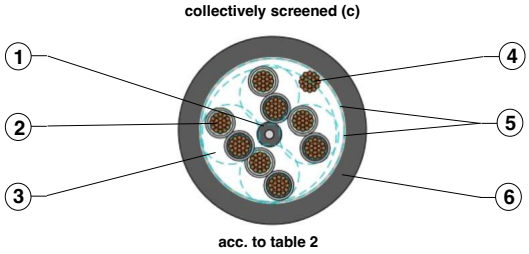
→ RADOX® OFL® SFR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

586 884 F (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Screen Wire ø nom. mm	Overall screen cross section nom. mm²	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
15	2	1	19 x 0.26	1.25	2.66	1.11	1.25	24.1	0.25	17.1	53.9	27.3 ± 0.6 ○	109.6	BK BU	85186264 85190160
20	2	1	19 x 0.26	1.25	2.66	1.11	1.25	25.5	0.25	18.0	67.4	28.8 ± 0.6 ○	124.1	BK BU	85186265 85190161
24	2	1	19 x 0.26	1.25	2.66	1.11	1.25	30.1	0.3	22.2	83.9	33.7 ± 0.6 ○	160.4	BK BU	85186266 85190162
2	3	1	19 x 0.26	1.25	2.66	1.11	1.25	12.2	0.21	7.1	13.5	15.8 ± 0.5 ○	36.5	BK BU	85186267 85190163
4	3	1	19 x 0.26	1.25	2.66	1.11	1.25	15.0	0.21	8.9	22.0	19.0 ± 0.5 ○	52.2	BK BU	85186268 85190164
5	3	1	19 x 0.26	1.25	2.66	1.11	1.25	16.7	0.21	10.1	26.5	20.8 ± 0.5 ○	62.4	BK BU	85186269 85190165
6	3	1	19 x 0.26	1.25	2.66	1.11	1.25	18.5	0.21	11.3	31.1	22.7 ± 0.5 ○	73.8	BK BU	85186270 85190166
10	3	1	19 x 0.26	1.25	2.66	1.11	1.25	22.4	0.25	15.3	48.5	25.7 ± 0.6 ○	98.4	BK BU	85186271 85190167
2	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	12.0	0.21	6.7	13.2	15.2 ± 0.5 ○	34.8	BK BU	85186272 85190168
4	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	14.5	0.21	8.3	22.9	18.1 ± 0.5 ○	45.3	BK BU	85186273 85190169
5	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	15.7	0.21	8.9	25.6	19.5 ± 0.5 ○	52.9	BK BU	85186274 85190170
6	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	18.0	0.21	10.1	30.3	21.8 ± 0.5 ○	68.5	BK BU	85186275 85190171
10	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	21.8	0.25	15.2	49.3	26.2 ± 0.6 ○	95.2	BK BU	85186276 85190172
12	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	22.6	0.25	16.1	56.5	26.5 ± 0.6 ○	104.7	BK BU	85186277 85190173
15	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	26.3	0.25	18.0	69.0	30.4 ± 0.6 ○	132.7	BK BU	85186278 85190174
20	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	27.7	0.30	20.0	91.0	32.5 ± 0.7 ○	156.8	BK BU	85186279 85190175
24	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	32.4	0.30	22.2	107.1	35.5 ± 0.7 ●	194.1	BK BU	85186280 85190176
2	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	13.2	0.21	7.5	16.8	17.1 ± 0.5 ○	42.6	BK BU	85186281 85190177
4	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	16.2	0.21	8.9	27.8	19.9 ± 0.5 ○	60.4	BK BU	85186282 85190178
5	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	18.2	0.21	9.5	33.9	22.4 ± 0.5 ○	74.0	BK BU	85186283 85190179
6	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	20.3	0.21	11.9	40.5	24.7 ± 0.5 ○	89.6	BK BU	85186284 85190180
10	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	24.1	0.25	17.1	64.2	28.3 ± 0.6 ●	121.9	BK BU	85186285 85190181
2	2	2.5	37 x 0.29	1.96	3.4	1.25	1.55	14.0	0.21	7.9	18.0	17.7 ± 0.5 ○	45.9	BK BU	8518628 685190182
2	3	2.5	37 x 0.29	1.96	3.4	1.25	1.55	15.4	0.21	8.9	23.1	19.2 ± 0.5 ○	54.7	BK BU	85186287 85190183

Instrumentation cables



Product name	**RADOX® OFL® 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant, easily strippable, free of hygroscopic material, instrumentation cable following RFOU(c).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL	Insulation	RADOX TI301
			Dual layer high performance polymer (thin-wall)
		Colours	See table 2
3.	**Element**	Cores	2 or 3 cores
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092-360 and NEK TS 606
		Colour	Black or Blue acc. NEK TS 606: 2016

Printing on sheath

[a] HUBER+SUHNER RADOX OFL 300/500V [b] SHF2 M 90°C IEC 60332-1-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(i)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to IEC 60092 -376 and -350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		3500 V AC
Max voltage conductor to earth		450 V DC
Max voltage conductor to conductor		900 V DC
Test voltage		8400 V DC

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→ RADOX® OFL® 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 901 D (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+145 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T3

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→ RADOX® OFL® 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 901 D (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL (c)	110*	0.56*	7*	40.1
triple 0.5	OFL (c)	100*	0.63*	7.9*	40.1
pair 0.75	OFL (c)	150	0.55	10.3	26.7
triple 0.75	OFL (c)	140	0.62	11.6	26.7
pair 1	OFL (c)	165*	0.54*	13.5*	20
triple 1	OFL (c)	155*	0.61*	15.3*	20
pair 1.5	OFL (c)	175	0.53	19.3	13.7
triple 1.5	OFL (c)	165*	0.6*	21.9*	13.7
pair 2.5	OFL (c)	195	0.52	31.7	8.21
triple 2.5	OFL (c)	185*	0.57*	34.7*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, White

Triple: Black, White, Red

Table 2: collectively screened (c)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	0.5	19 x 0.184	0.9	1.3	0.77	2.6	1.2	4.55 ± 0.3 ●	3.5	BK BU	85184202 85189609
2	2	0.5	19 x 0.184	0.9	1.3	0.9	5.1	1.8	7.70 ± 0.3 ○	8.3	BK BU	85186024 85189611
4	2	0.5	19 x 0.184	0.9	1.3	0.9	5.9	3.6	8.55 ± 0.3 ○	10.8	BK BU	85186026 85189612
5	2	0.5	19 x 0.184	0.9	1.3	0.9	6.7	4.6	8.90 ± 0.3 ○	12.0	BK BU	85186027 85189613
6	2	0.5	19 x 0.184	0.9	1.3	0.9	7.6	5.5	9.85 ± 0.3 ○	15.1	BK BU	85186028 85189616
10	2	0.5	19 x 0.184	0.9	1.3	0.9	9.5	9.1	12.0 ± 0.4 ○	20.9	BK BU	85186029 85189617
12	2	0.5	19 x 0.184	0.9	1.3	0.9	9.6	11.0	12.1 ± 0.4 ○	22.2	BK BU	85186030 85189618
15	2	0.5	19 x 0.184	0.9	1.3	0.9	10.9	13.7	13.4 ± 0.4 ○	27.2	BK BU	8518603 185189619
20	2	0.5	19 x 0.184	0.9	1.3	0.9	11.9	18.3	14.5 ± 0.4 ○	32.8	BK BU	85186032 85189620
24	2	0.5	19 x 0.184	0.9	1.3	0.9	13.7	22.0	16.5 ± 0.5 ●	41.2	BK BU	85184203 85189621

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→ RADOX® OFL® 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 901 D (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	3	0.5	19 x 0.184	0.9	1.3	0.77	2.8	1.7	4.75 ± 0.3 ○	4.0	BK BU	85186063 85189622
2	3	0.5	19 x 0.184	0.9	1.3	0.9	6.0	2.7	8.00 ± 0.3 ○	9.5	BK BU	85186065 85189623
4	3	0.5	19 x 0.184	0.9	1.3	0.9	7.1	5.4	9.30 ± 0.3 ○	13.6	BK BU	85186066 85189624
5	3	0.5	19 x 0.184	0.9	1.3	0.9	7.9	6.8	10.2 ± 0.4 ○	16.4	BK BU	85186067 85189625
6	3	0.5	19 x 0.184	0.9	1.3	0.9	8.7	8.2	11.1 ± 0.4 ○	19.4	BK BU	85186068 85189626
10	3	0.5	19 x 0.184	0.9	1.3	0.9	10.5	13.7	13.1 ± 0.4 ○	27.5	BK BU	85186069 85189627
1	2	0.75	19 x 0.23	1.11	1.52	0.9	3.0	1.8	4.95 ± 0.3 ○	4.4	BK BU	85186033 85189628
2	2	0.75	19 x 0.23	1.11	1.52	1.11	6.5	2.8	8.65 ± 0.3 ○	11.1	BK BU	85186034 85189629
4	2	0.75	19 x 0.23	1.11	1.52	1.11	6.7	5.6	9.50 ± 0.3 ○	14.2	BK BU	85186035 85189630
5	2	0.75	19 x 0.23	1.11	1.52	1.11	8.0	7.0	10.4 ± 0.4 ○	17.0	BK BU	85186036 85189631
6	2	0.75	19 x 0.23	1.11	1.52	1.11	8.8	8.4	11.3 ± 0.4 ○	20.0	BK BU	85186037 85189632
10	2	0.75	19 x 0.23	1.11	1.52	1.11	11.3	14.0	13.7 ± 0.4 ○	28.8	BK BU	85186038 85189633
12	2	0.75	19 x 0.23	1.11	1.52	1.11	11.2	16.8	13.9 ± 0.4 ○	31.2	BK BU	85186039 85189634
15	2	0.75	19 x 0.23	1.11	1.52	1.11	12.6	21.0	15.4 ± 0.5○	38.4	BK BU	85186040 85189635
20	2	0.75	19 x 0.23	1.11	1.52	1.11	13.9	28.1	16.8 ± 0.5 ○	46.9	BK BU	85186041 85189636
24	2	0.75	19 x 0.23	1.11	1.52	1.11	16.3	33.8	19.4 ± 0.5 ○	58.3	BK BU	85186042 85189637
1	3	0.75	19 x 0.23	1.11	1.52	0.9	3.3	2.5	5.20 ± 0.3 ○	5.2	BK BU	85186070 85189638
2	3	0.75	19 x 0.23	1.11	1.52	1.11	7.0	4.2	9.15 ± 0.3 ○	12.9	BK BU	85186071 85189639
4	3	0.75	19 x 0.23	1.11	1.52	1.11	8.2	8.4	10.6 ± 0.4 ○	18.6	BK BU	85186072 85189640
5	3	0.75	19 x 0.23	1.11	1.52	1.11	9.2	10.5	11.6 ± 0.4 ○	22.6	BK BU	85186073 85189641
6	3	0.75	19 x 0.23	1.11	1.52	1.11	10.1	12.6	12.6 ± 0.4 ○	26.6	BK BU	85186074 85189642
10	3	0.75	19 x 0.23	1.11	1.52	1.11	12.3	21.1	15.1 ± 0.5 ○	38.7	BK BU	85186075 85189643
1	2	1	19 x 0.26	1.25	1.67	1.11	3.3	2.5	5.25 ± 0.3 ○	5.2	BK BU	85186043 85189644
2	2	1	19 x 0.26	1.25	1.67	1.25	6.6	3.6	9.35 ± 0.3 ○	13.1	BK BU	85186044 85189645

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→ RADOX® OFL® 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

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Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
4	2	1	19 x 0.26	1.25	1.67	1.25	8.0	7.1	10.4 ± 0.4 ○	17.5	BK BU	85186045 85189646
5	2	1	19x 0.26	1.25	1.67	1.25	8.8	9.0	11.3 ± 0.4 ○	20.7	BK BU	85186046 85189647
6	2	1	19x 0.26	1.25	1.67	1.25	10.2	10.7	12.9 ± 0.4 ○	25.3	BK BU	85186047 85189648
10	2	1	19 x 0.26	1.25	1.67	1.25	12.2	18.0	15.0 ± 0.5 ○	35.5	BK BU	85186048 85189649
12	2	1	19 x 0.26	1.25	1.67	1.25	12.3	21.5	15.1 ± 0.5 ○	38.2	BK BU	85186049 85189650
15	2	1	19 x 0.26	1.25	1.67	1.25	14.6	27.0	17.5 ± 0.5 ●	51.4	BK BU	85184204 85189651
20	2	1	19 x 0.26	1.25	1.67	1.25	15.3	36.0	18.3 ± 0.5 ○	57.8	BK BU	85186051 85189652
24	2	1	19 x 0.26	1.25	1.67	1.25	17.9	43.2	21.1 ± 0.5 ○	71.5	BK BU	85186052 85189653
1	3	1	19 x 0.26	1.25	1.67	1.11	3.6	3.4	5.50 ± 0.3 ○	6.2	BK BU	85186076 85189654
2	3	1	19 x 0.26	1.25	1.67	1.25	7.7	5.3	10.0 ± 0.4 ○	15.9	BK BU	85186077 85189655
4	3	1	19 x 0.26	1.25	1.67	1.25	9.0	10.7	11.4 ± 0.4 ○	22.6	BK BU	85186079 85189656
5	3	1	19 x 0.26	1.25	1.67	1.25	10.1	13.4	12.6 ± 0.4 ○	28.2	BK BU	85186080 85189657
6	3	1	19 x 0.26	1.25	1.67	1.25	11.2	16.1	13.7 ± 0.4 ○	32.4	BK BU	85186081 85189658
10	3	1	19 x 0.26	1.25	1.67	1.25	13.5	27.0	16.3 ± 0.5 ○	47.0	BK BU	85186082 85189659
1	2	1.5	37 x 0.23	1.55	2.04	1.11	4.1	3.4	6.05 ± 0.3 ○	7.0	BK BU	85186053 85189661
2	2	1.5	37 x 0.23	1.55	2.04	1.25	8.0	5.5	11.0 ± 0.4 ○	17.5	BK BU	85186054 85189662
4	2	1.5	37 x 0.23	1.55	2.04	1.25	9.8	10.9	12.2 ± 0.4 ○	24.2	BK BU	85186055 85189663
5	2	1.5	37 x 0.23	1.55	2.04	1.25	10.5	13.6	13.0 ± 0.4 ○	28.9	BK BU	85186056 85189664
6	2	1.5	37 x 0.23	1.55	2.04	1.25	11.5	16.3	14.1 ± 0.4 ○	33.2	BK BU	85186057 85189665
10	2	1.5	37 x 0.23	1.55	2.04	1.25	14.9	27.3	17.8 ± 0.5 ○	51.9	BK BU	85186058 85189666
12	2	1.5	37 x 0.23	1.55	2.04	1.25	15.1	32.8	18.0 ± 0.5 ○	54.7	BK BU	85186059 85189667
15	2	1.5	37 x 0.23	1.55	2.04	1.25	17.1	41.0	20.1 ± 0.5 ○	68.1	BK BU	85186060 85189668
20	2	1.5	37 x 0.23	1.55	2.04	1.25	18.7	54.8	21.8 ± 0.5 ○	83.3	BK BU	85186061 85189669
24	2	1.5	37 x 0.23	1.55	2.04	1.25	21.9	65.8	25.4 ± 0.6 ○	106.1	BK BU	85186062 85189670

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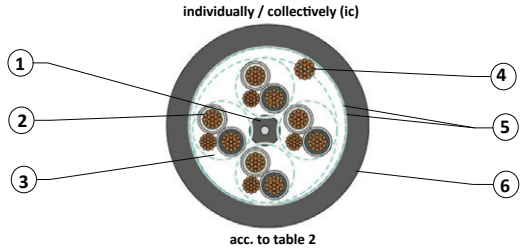
→ RADOX® OFL® 300/500V (c) Flame Retardant & Mud Resistant Instrumentation cable

586 901 D (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	3	1.5	37 x 0.23	1.55	2.04	1.11	4.4	4.8	6.4 ± 0.3 ○	8.5	BK BU	85186083 85189671
2	3	1.5	37 x 0.23	1.55	2.04	1.25	9.2	8.1	11.7 ± 0.4 ○	23.2	BK BU	85186084 85189673
4	3	1.5	37 x 0.23	1.55	2.04	1.25	11.0	16.3	13.5 ± 0.4 ○	32.1	BK BU	85186085 85189674
5	3	1.5	37 x 0.23	1.55	2.04	1.25	12.3	20.4	15.0 ± 0.5 ○	39.4	BK BU	85186086 85189675
6	3	1.5	37 x 0.23	1.55	2.04	1.25	13.2	24.6	16.0 ± 0.5 ○	45.7	BK BU	85186087 85189676
10	3	1.5	37 x 0.23	1.55	2.04	1.25	16.5	41.0	19.6 ± 0.5 ○	68.6	BK BU	85186088 85189677
1	2	2.5	37 x 0.29	1.96	2.54	1.25	5.1	5.2	7.15 ± 0.3 ●	10.1	BK BU	85184205 85189678

Instrumentation cables



Product name	**RADOX® OFL® 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant, easily strippable, free of hygroscopic material, instrumentation cable following RFOU(ic).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL	Insulation	RADOX TI301
			Dual layer high performance polymer (thin-wall)
		Colours	See table 2
3.	**Element**	Cores	2 or 3 cores
		Drain wire	Flexible tin plated copper
		Alu tape	Wrapping
		Tape	Wrapping
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Black or Blue acc. NEK TS 606: 2016

Printing on sheath

[a] HUBER+SUHNER RADOX OFL 300/500V [b] SHF2 M 90°C IEC 60332-1-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(ic)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to EN 50306 and IEC 60092-350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		3500 V AC
Max voltage conductor to earth		450 V DC
Max voltage conductor to conductor		900 V DC
Test voltage		8400 V DC

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→ RADOX® OFL® 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 900 C (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+145 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm^2		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T3

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→ RADOX® OFL® 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 900 C (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL (ic)	110*	0.56*	7*	40.1
triple 0.5	OFL (ic)	100*	0.63*	7.9*	40.1
pair 0.75	OFL (ic)	150	0.55	10.3	26.7
triple 0.75	OFL (ic)	140	0.62	11.6	26.7
pair 1	OFL (ic)	165*	0.54*	13.5*	20
triple 1	OFL (ic)	155*	0.61*	15.3*	20
pair 1.5	OFL (ic)	175	0.53	19.3	13.7
triple 1.5	OFL (ic)	165*	0.6*	21.9*	13.7
pair 2.5	OFL (ic)	195	0.52	31.7	8.21
triple 2.5	OFL (ic)	185*	0.57*	34.7*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, White

Triple: Black, White, Red

Table 2: individually and collectively screened (ic)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
2	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	5.7	2.5	7.75 ± 0.3 ○	8.6	BK BU	85186089 85189705
4	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	7.0	4.9	9.25 ± 0.3 ○	12.8	BK BU	85186090 85189707
5	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	7.9	6.2	10.3 ± 0.3 ○	15.9	BK BU	85186091 85189709
6	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	8.7	7.4	11.2 ± 0.4 ○	18.8	BK BU	85186092 85189710
10	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	10.5	12.5	13.0 ± 0.4 ○	25.9	BK BU	85186093 85189711
12	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	10.9	14.9	13.4 ± 0.4 ○	28.1	BK BU	85186094 85189712
15	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	12.4	18.7	15.1 ± 0.5 ○	35.5	BK BU	85186095 85189713
20	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	13.2	24.9	16.0 ± 0.5 ○	42.4	BK BU	85186096 85189714
24	2	0.5	19 x 0.184	0.9	1.3	0.77	0.9	15.2	30.0	18.2 ± 0.5 ○	52.5	BK BU	85186097 85189715
2	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	6.8	3.4	8.95 ± 0.3 ○	11.4	BK BU	85186132 85189716

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→ RADOX® OFL® 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 900 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
4	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	7.3	6.7	9.80 ± 0.3 ○	15.3	BK BU	85186133 85189717
5	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	8.3	8.5	10.7 ± 0.4 ○	18.3	BK BU	85186134 85189718
6	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	9.1	10.2	11.6 ± 0.4 ○	21.5	BK BU	85186135 85189719
10	3	0.5	19 x 0.184	0.9	1.3	0.77	0.9	11.4	17.0	14.0 ± 0.4 ○	32.0	BK BU	85186136 85189720
2	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	6.6	3.7	8.80 ± 0.3 ○	11.7	BK BU	85186098 85189721
4	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	8.5	7.4	10.9 ± 0.4 ○	18.3	BK BU	85186099 85189722
5	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	9.1	9.3	11.6 ± 0.4 ○	21.2	BK BU	85186100 85189723
6	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	10.0	11.1	12.6 ± 0.4 ○	25.0	BK BU	85186102 85189726
10	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	12.0	18.6	14.6 ± 0.4 ○	36.0	BK BU	85186103 85189727
12	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	12.5	22.3	15.2 ± 0.5 ○	40.0	BK BU	85186105 85189728
15	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	14.5	28.0	17.4 ± 0.5 ○	50.2	BK BU	85186106 85189729
20	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	15.2	37.3	18.2 ± 0.5 ○	58.5	BK BU	85186107 85189730
24	2	0.75	19 x 0.23	1.11	1.52	0.9	1.11	17.6	44.8	20.8 ± 0.5 ○	72.5	BK BU	85186108 85189731
2	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	7.4	5.1	9.60 ± 0.3 ○	14.2	BK BU	85186137 85189732
4	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	8.8	10.2	11.2 ± 0.4 ○	21.0	BK BU	85186138 85189733
5	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	9.6	12.8	12.1 ± 0.4 ○	24.8	BK BU	85186139 85189734
6	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	11.0	15.4	13.5 ± 0.4 ○	30.3	BK BU	85186140 85189735
10	3	0.75	19 x 0.23	1.11	1.52	0.9	1.11	13.2	25.7	16.0 ± 0.5 ○	44.4	BK BU	85186141 85189736
2	2	1	19 x 0.26	1.25	1.67	1.11	1.25	7.3	5.0	9.40 ± 0.3 ○	14.0	BK BU	85186109 85189737
4	2	1	19 x 0.26	1.25	1.67	1.11	1.25	9.2	9.9	11.6 ± 0.4 ○	22.1	BK BU	85186110 85189738
5	2	1	19 x 0.26	1.25	1.67	1.11	1.25	10.1	12.5	12.6 ± 0.4 ○	27.1	BK BU	85186112 85189739
6	2	1	19 x 0.26	1.25	1.67	1.11	1.25	11.1	15.0	13.6 ± 0.4 ○	30.7	BK BU	85186113 85189740
10	2	1	19 x 0.26	1.25	1.67	1.11	1.25	13.2	25.0	16.0 ± 0.5 ○	45.6	BK BU	85186114 85189741
12	2	1	19 x 0.26	1.25	1.67	1.11	1.25	13.6	30.0	16.4 ± 0.5 ○	49.9	BK BU	85186115 85189742

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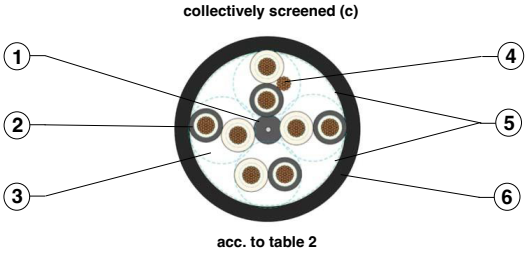
→ RADOX® OFL® 300/500V (ic) Flame Retardant & Mud Resistant Instrumentation cable

586 900 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
15	2	1	19 x 0.26	1.25	1.67	1.11	1.25	15.9	37.6	18.8 ± 0.5 ●	62.3	BK BU	85184206 85189743
20	2	1	19 x 0.26	1.25	1.67	1.11	1.25	16.6	50.1	19.7 ± 0.5 ○	74.1	BK BU	85186116 85189744
24	2	1	19 x 0.26	1.25	1.67	1.11	1.25	19.6	60.2	22.9 ± 0.5 ○	94.1	BK BU	85186117 85189745
2	3	1	19 x 0.26	1.25	1.67	1.11	1.25	8.1	6.7	10.5 ± 0.4 ○	19.0	BK BU	85186142 85189746
4	3	1	19 x 0.26	1.25	1.67	1.11	1.25	9.9	13.5	12.3 ± 0.4 ○	26.4	BK BU	85186143 85189747
5	3	1	19 x 0.26	1.25	1.67	1.11	1.25	10.9	17.0	13.4 ± 0.4 ○	31.7	BK BU	85186144 85189748
6	3	1	19 x 0.26	1.25	1.67	1.11	1.25	12.1	20.4	14.7 ± 0.4 ○	38.0	BK BU	85186145 85189749
10	3	1	19 x 0.26	1.25	1.67	1.11	1.25	14.5	34.0	17.4 ± 0.5 ○	56.9	BK BU	85186146 85189750
2	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	8.1	6.9	11.0 ± 0.4 ○	18.3	BK BU	85186120 85189751
4	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	11.0	13.7	13.5 ± 0.4 ○	30.1	BK BU	85186121 85189753
5	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	11.8	17.1	14.4 ± 0.4 ○	34.0	BK BU	85186123 85189754
6	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	13.0	20.6	15.8 ± 0.5 ○	40.7	BK BU	85186124 85189755
10	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	15.7	34.4	18.6 ± 0.5 ○	61.5	BK BU	85186126 85189756
12	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	16.4	41.3	19.5 ± 0.5 ○	67.4	BK BU	85186128 85189757
15	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	18.9	51.6	22.1 ± 0.5 ○	82.8	BK BU	85186129 85189758
20	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	20.1	68.9	23.4 ± 0.5 ○	100.2	BK BU	85186130 85189759
24	2	1.5	37 x 0.23	1.55	2.04	1.11	1.25	23.8	82.8	27.3 ± 0.6 ●	128.3	BK BU	85184207 85189760
2	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	9.7	9.5	12.1 ± 0.4 ○	23.1	BK BU	85186147 85189761
4	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	11.6	19.2	14.2 ± 0.4 ○	35.2	BK BU	85186148 85189762
5	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	12.8	24.0	15.6 ± 0.5 ○	42.8	BK BU	85186149 85189763
6	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	14.1	28.8	17.0 ± 0.5 ○	50.8	BK BU	85186150 85189764
10	3	1.5	37 x 0.23	1.55	2.04	1.11	1.25	17.4	48.1	20.6 ± 0.5 ○	77.5	BK BU	85186151 85189765
2	2	2.5	37 x 0.29	1.96	2.54	1.25	1.55	10.7	10.4	13.2 ± 0.4 ○	26.5	BK BU	85186131 85189766

Instrumentation cables



Product name	**RADOX® OFL® FR 300/500V (c) Fire & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant and FIRE RESISTANT, easily strippable, free of hygroscopic material, instrumentation cable following BFOU(c).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center und Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL FR	Wrapping	Mica Tape
		Insulation	RADOX EI303 (thin- wall)
		Colours	see table 2
3.	**Element**	Cores	2 or 3 cores
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092- 360 and NEK TS 606
		Colour	Black or Blue acc. NEK TS 606: 2016

Printing on sheath

Outer Diameter > 20mm	[a] HUBER+SUHNER RADOX OFL FR 300/500V [b] SHF2 M 90°C IEC 60331-1 IEC 60332-3-22 [c]-[d] [e] [f]
Outer Diameter ≤ 20mm	[a] HUBER+SUHNER RADOX OFL FR 300/500V [b] SHF2 M 90°C IEC 60331-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(c)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to EN 50306 and IEC 60092-350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		2000 V AC
Max voltage conductor to earth		450 V DC
Max voltage conductor to conductor		900 V DC
Test voltage		4800 V DC

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→ RADOX® OFL® FR 300/500V (c) Fire & Mud Resistant Instrumentation cable

586 902 E (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+135 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm²		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Electric cables under fire conditions		
Outer Diameter > 20 mm	830°C, 120 min.	IEC 60331-1
Outer Diameter ≤ 20 mm	830°C, 120 min.	IEC 60331-2
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T1

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→ RADOX® OFL® FR 300/500V (c) Fire & Mud Resistant Instrumentation cable

586 902 E (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL FR (c)	85	0.78	9.7	40.1
triple 0.5	OFL FR (c)	80	0.81	10.1	40.1
pair 0.75	OFL FR (c)	95	0.71	13.3	26.7
triple 0.75	OFL FR (c)	90*	0.81*	15.2*	26.7
pair 1.0	OFL FR (c)	95	0.71	17.8	20
triple 1.0	OFL FR (c)	90	0.75	18.8	20
pair 1.5	OFL FR (c)	115	0.65	23.7	13.7
triple 1.5	OFL FR (c)	110	0.71	25.9	13.7
pair 2.5	OFL FR (c)	130	0.6	36.5	8.21
triple 2.5	OFL FR (c)	125*	0.62*	37.8*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, White

Triple: Black, White, Red

Table 2: collectively screened (c)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	2	0.5	19 x 0.184	0.9	2.17	0.9	4.3	1.4	6.40 ± 0.3 ●	6.1	BK BU	85186884 85189932
2	2	0.5	19 x 0.184	0.9	2.17	0.9	8.1	2.3	10.4 ± 0.4 ○	13.7	BK BU	85186289 85189933
4	2	0.5	19 x 0.184	0.9	2.17	0.9	9.8	4.1	12.2 ± 0.4 ○	19.5	BK BU	85186290 85189934
5	2	0.5	19 x 0.184	0.9	2.17	0.9	10.9	5.0	13.5 ± 0.4 ○	23.0	BK BU	85186291 85189935
6	2	0.5	19 x 0.184	0.9	2.17	0.9	12.5	5.9	15.3 ± 0.5 ○	29.2	BK BU	85186292 85189936
10	2	0.5	19 x 0.184	0.9	2.17	0.9	14.9	9.1	17.7 ± 0.5 ○	37.8	BK BU	85186293 85189937
12	2	0.5	19 x 0.184	0.9	2.17	0.9	14.9	11.4	17.8 ± 0.5 ○	38.6	BK BU	85186294 85189938
15	2	0.5	19 x 0.184	0.9	2.17	0.9	17.9	14.1	21.0 ± 0.5 ○	50.3	BK BU	85186295 85189939
20	2	0.5	19 x 0.184	0.9	2.17	0.9	18.1	18.7	21.3 ± 0.5 ○	56.2	BK BU	85186296 85189940
24	2	0.5	19 x 0.184	0.9	2.17	0.9	21.5	22.4	24.9 ± 0.5 ○	69.6	BK BU	85186297 85189941

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→ RADOX® OFL® FR 300/500V (c) Fire & Mud Resistant Instrumentation cable

586 902 E (e)

Elements n x	Core in Element	Cross Section nom. mm^2	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	3	0.5	19 x 0.184	0.9	2.17	0.9	4.7	1.8	7.20 ± 0.3 ○	7.8	BK BU	85186298 85189942
2	3	0.5	19 x 0.184	0.9	2.17	0.9	8.6	3.2	11.0 ± 0.4 ○	16.2	BK BU	85186299 85189943
4	3	0.5	19 x 0.184	0.9	2.17	0.9	11.0	5.9	13.5 ± 0.4 ○	24.7	BK BU	85186300 85189944
5	3	0.5	19 x 0.184	0.9	2.17	0.9	12.5	7.3	15.3 ± 0.5 ○	31.3	BK BU	85186301 85189945
6	3	0.5	19 x 0.184	0.9	2.17	0.9	13.9	8.7	16.7 ± 0.5 ○	37.6	BK BU	85186302 85189946
10	3	0.5	19 x 0.184	0.9	2.17	0.9	17.3	14.1	20.4 ± 0.5 ○	51.4	BK BU	85186303 85189947
1	2	0.75	19 x 0.23	1.11	2.38	1.11	4.8	2.1	6.75 ± 0.3 ○	7.2	BK BU	85186304 85189948
2	2	0.75	19 x 0.23	1.11	2.38	1.11	8.9	3.5	11.3 ± 0.4 ○	16.6	BK BU	85186305 85189949
4	2	0.75	19 x 0.23	1.11	2.38	1.11	10.8	6.3	13.3 ± 0.4 ○	23.3	BK BU	85186306 85189950
5	2	0.75	19 x 0.23	1.11	2.38	1.11	12.3	7.7	15.0 ± 0.5 ○	29.5	BK BU	8518630 85189951
6	2	0.75	19 x 0.23	1.11	2.38	1.11	13.3	9.1	16.1 ± 0.5 ○	33.9	BK BU	85186308 85189952
10	2	0.75	19 x 0.23	1.11	2.38	1.11	16.2	14.7	19.2 ± 0.5 ○	44.4	BK BU	85186309 85189953
12	2	0.75	19 x 0.23	1.11	2.38	1.11	16.3	17.5	19.3 ± 0.5 ○	46.6	BK BU	85186310 85189954
15	2	0.75	19 x 0.23	1.11	2.38	1.11	19.9	21.7	23.2 ± 0.5 ○	63.3	BK BU	85186311 85189955
20	2	0.75	19 x 0.23	1.11	2.38	1.11	19.9	28.7	23.2 ± 0.5 ○	70.1	BK BU	85186312 85189956
24	2	0.75	19 x 0.23	1.11	2.38	1.11	23.7	34.4	27.3 ± 0.6 ○	89.8	BK BU	85186313 85189957
1	3	0.75	19 x 0.23	1.11	2.38	1.11	5.1	2.8	7.20 ± 0.3 ○	8.6	BK BU	85186314 85189958
2	3	0.75	19 x 0.23	1.11	2.38	1.11	9.8	4.9	12.2 ± 0.4 ○	20.4	BK BU	85186315 85189959
4	3	0.75	19 x 0.23	1.11	2.38	1.11	11.7	9.1	14.3 ± 0.4 ○	29.0	BK BU	85186316 85189960
5	3	0.75	19 x 0.23	1.11	2.38	1.11	13.9	11.2	16.7 ± 0.5 ○	38.7	BK BU	85186317 85189961
6	3	0.75	19 x 0.23	1.11	2.38	1.11	15.9	13.3	18.8 ± 0.5 ○	48.5	BK BU	85186318 85189962
10	3	0.75	19 x 0.23	1.11	2.38	1.11	19.0	21.7	22.2 ± 0.5 ○	64.5	BK BU	85186319 85189963
1	2	1	19 x 0.26	1.25	2.66	1.25	5.3	2.7	7.40 ± 0.3 ○	8.7	BK BU	85186320 85189964
2	2	1	19 x 0.26	1.25	2.66	1.25	9.9	4.5	12.3 ± 0.4 ○	19.8	BK BU	85186321 85189965

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→ RADOX® OFL® FR 300/500V (c) Fire & Mud Resistant Instrumentation cable

586 902 E (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
4	2	1	19 x 0.26	1.25	2.66	1.25	12.0	8.1	14.7 ± 0.4 ○	28.4	BK BU	85186322 85189966
5	2	1	19 x 0.26	1.25	2.66	1.25	13.2	9.8	16.0 ± 0.5 ○	34.0	BK BU	85186323 85189967
6	2	1	19 x 0.26	1.25	2.66	1.25	13.5	11.6	16.2 ± 0.5 ●	35.3	BK BU	85186324 85189968
10	2	1	19 x 0.26	1.25	2.66	1.25	18.2	18.8	21.3 ± 0.5 ○	54.7	BK BU	85186325 85189969
12	2	1	19 x 0.26	1.25	2.66	1.25	18.3	21.4	21.4 ± 0.5 ○	57.4	BK BU	85186326 85189970
15	2	1	19 x 0.26	1.25	2.66	1.25	22.3	27.8	25.8 ± 0.6 ○	78.0	BK BU	85186327 85189971
20	2	1	19 x 0.26	1.25	2.66	1.25	22.2	36.8	27.2 ± 0.6 ○	85.9	BK BU	85186328 85189972
24	2	1	19 x 0.26	1.25	2.66	1.25	26.5	44.0	30.3 ± 0.6 ○	110.1	BK BU	85186329 85189973
1	3	1	19 x 0.26	1.25	2.66	1.25	5.7	3.6	7.80 ± 0.3 ○	10.2	BK BU	85186330 85189974
2	3	1	19 x 0.26	1.25	2.66	1.25	10.6	6.3	13.1 ± 0.4 ○	24.2	BK BU	85186331 85189975
4	3	1	19 x 0.26	1.25	2.66	1.25	13.5	11.6	16.3 ± 0.5 ○	38.1	BK BU	85186332 85189976
5	3	1	19 x 0.26	1.25	2.66	1.25	15.0	14.3	18.0 ± 0.5 ○	45.6	BK BU	85186333 85189977
6	3	1	19 x 0.26	1.25	2.66	1.25	15.6	17.0	18.6 ± 0.5 ●	49.0	BK BU	85186334 85189978
10	3	1	19 x 0.26	1.25	2.66	1.25	21.2	27.8	24.6 ± 0.5 ○	77.8	BK BU	85186335 85189979
1	2	1.5	37 x 0.23	1.55	2.90	1.25	5.8	3.6	7.85 ± 0.3 ○	10.2	BK BU	85186336 85189980
2	2	1.5	37 x 0.23	1.55	2.90	1.25	9.6	6.3	13.2 ± 0.4 ○	23.4	BK BU	85186338 85189981
4	2	1.5	37 x 0.23	1.55	2.90	1.25	13.2	11.8	16.0 ± 0.5 ○	36.8	BK BU	85186339 85189982
5	2	1.5	37 x 0.23	1.55	2.90	1.25	14.7	14.5	17.6 ± 0.5 ○	42.6	BK BU	85186340 85189983
6	2	1.5	37 x 0.23	1.55	2.90	1.25	16.3	17.2	19.3 ± 0.5 ○	51.6	BK BU	85186341 85189984
10	2	1.5	37 x 0.23	1.55	2.90	1.25	19.7	28.2	22.9 ± 0.5 ○	66.8	BK BU	85186343 85189985
12	2	1.5	37 x 0.23	1.55	2.90	1.25	19.9	33.6	23.1 ± 0.5 ○	71.8	BK BU	85186344 85189986
15	2	1.5	37 x 0.23	1.55	2.90	1.25	24.0	41.8	27.6 ± 0.6 ○	96.2	BK BU	85186346 85189987
20	2	1.5	37 x 0.23	1.55	2.90	1.25	24.2	55.5	27.9 ± 0.6 ○	109.8	BK BU	85186347 85189988
24	2	1.5	37 x 0.23	1.55	2.90	1.25	28.9	66.5	32.9 ± 0.6 ○	139.6	BK BU	85186348 85189989

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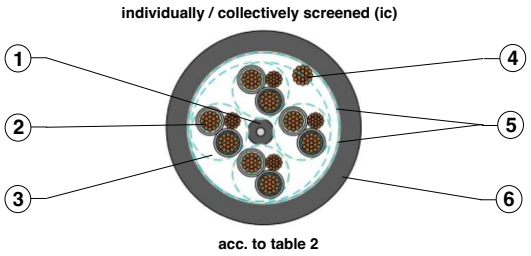
→ RADOX® OFL® FR 300/500V (c) Fire & Mud Resistant Instrumentation cable

586 902 E (e)

Elements n x	Core in Element	Cross Section nom. mm^2	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
1	3	1.5	37 x 0.23	1.55	2.90	1.25	6.3	5.0	8.40 ± 0.3 ○	12.2	BK BU	85186349 85189990
2	3	1.5	37 x 0.23	1.55	2.90	1.25	11.9	9.0	14.5 ± 0.4 ○	30.1	BK BU	85186351 85189991
4	3	1.5	37 x 0.23	1.55	2.90	1.25	14.8	17.2	17.7 ± 0.5 ○	46.0	BK BU	85186352 85189992
5	3	1.5	37 x 0.23	1.55	2.90	1.25	16.5	21.3	19.6 ± 0.5 ○	56.9	BK BU	85186353 85189993
6	3	1.5	37 x 0.23	1.55	2.90	1.25	19.6	25.4	22.8 ± 0.5 ○	74.5	BK BU	85186354 85189994
10	3	1.5	37 x 0.23	1.55	2.90	1.25	23.2	41.8	26.7 ± 0.6 ○	98.2	BK BU	85186355 85189995
1	2	2.5	37 x 0.29	1.96	3.40	1.55	6.8	5.6	8.95 ± 0.3 ○	14.1	BK BU	85186356 85189996
2	2	2.5	37 x 0.29	1.96	3.40	1.55	12.9	10.0	15.7 ± 0.5 ○	33.9	BK BU	85186357 85189997
1	3	2.5	37 x 0.29	1.96	3.40	1.55	7.3	7.7	9.50 ± 0.3 ○	16.8	BK BU	85186358 85189998
2	3	2.5	37 x 0.29	1.96	3.40	1.55	13.9	14.2	16.8 ± 0.5 ○	40.6	BK BU	85186359 85189999

Instrumentation cables



Product name	**RADOX® OFL® FR 300/500V (ic) Fire & Mud Resistant Instrumentation cable**
Description	Mud, diesel fuel, oil, ozone, hydrolysis resistant, excellent flexibility, light weight, halogen free, flame retardant and FIRE RESISTANT, easily strippable, free of hygroscopic material, instrumentation cable following BFOU(ic).
	Highly flexible cable for fixed and free installations for electrical instrument, control alarm and communication systems, applications where harsh environments can generate a potential risk on life and equipment in areas exposed to mud, oil and drilling fluids and/or safety areas.

General data

1.	**Center and Fillers (optional)**	Characteristic	Non hygroscopic
2.	**Cores RADOX**	Conductor	Stranded tin plated copper
	Type OFL FR	Wrapping	Mica Tape
		Insulation	RADOX EI303 (thin- wall)
		Colours	see table 2
3.	**Element**	Cores	2 or 3 cores
		Drain wire	Flexible tin plated copper
		Alu tape	Wrapping
		Tape	Wrapping
4.	**Conductor**	Drain wire	Flexible tin plated copper
5.	**First layer**	Alu tape	Wrapping
5.	**Second layer**	Tape	Wrapping
6.	**Outer layer**	Sheath	RADOX Elastomer S FH
			Type SHF2 acc. to IEC 60092-360 and NEK TS 606
		Colour	Black or Blue acc. NEK TS 606: 2016

Printing on sheath

Outer Diameter > 20mm	[a] HUBER+SUHNER RADOX OFL FR 300/500V [b] SHF2 M 90°C IEC 60331-1 IEC 60332-3-22 [c]-[d] [e] [f]
Outer Diameter ≤ 20mm	[a] HUBER+SUHNER RADOX OFL FR 300/500V [b] SHF2 M 90°C IEC 60331-2 IEC 60332-3-22 [c]-[d] [e] [f]

[a]	Meter marking (in m)	= 123456 = m
[b]	Construction (in mm_2)	2x2x0.75(ic)
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	01-2025
[f]	Production place	CH

Technical data

acc. to EN 50306 and IEC 60092-350		
Rated voltage	U_0/U (U_m)	300/500 (600) V AC
Test voltage		2000 V AC
Max voltage conductor to earth		450 V DC
Max voltage conductor to conductor		900 V DC
Test voltage		4800 V DC

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→ RADOX® OFL® FR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

586 903 C (e)

Storage, Installation and Operation recommendation		
Max. rated conductor temperature normal operation IEC 60092		+90 °C
Temperature index of core insulation TI/20kh		+135 °C
Temperature index of sheath TI/20kh		+130 °C
Max. storage temperature		+40 °C
Max. storage temperature ≤ 5000h		+65 °C
Min. operation, installation and handling temperature		-40 °C
Min. storage temperature		-50 °C
Max. tensile load, only for installation		50 x A N
A = number of conductors cross section mm²		
Min. bending radius fixed installation	D ≤ 12 mm	3 x D
	D > 12 mm	4 x D
free movement	D ≤ 12 mm	5 x D
	D > 12 mm	6 x D

The cable sheath passes the following fluid tests		
Drilling fluid resistance for SHF mud	Fulfilled	NEK TS 606, 4.4.1
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, 4.4.1 Cat. b
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Base oil EDC 95-11	56 d / 70 °C	NEK TS 606, 4.4.1 Cat. c
Drilling fluid resistance	Fulfilled	IEC 60092-360
Mineral oil type IRM 902	24 h / 100 °C	IEC 60811-404
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092-360, An. C
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092-360, An. D
Calcium bromide brine (45 % w/w $CaBr_2$ / H_2O)	56 d / 70 °C	IEC 60092-360, An. D
Oil based test fluid (CAS no.: 64742-46-7)	56 d / 70 °C	IEC 60092-360, An. D

The cable passes the following fire tests		
Electric cables under fire conditions		
Outer Diameter > 20 mm	830°C, 120 min.	IEC 60331-1
Outer Diameter ≤ 20 mm	830°C, 120 min.	IEC 60331-2
Fire protection in ships	Fulfilled	IEC 60092-350 + DNV-CP-0400
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332-1-2
Vertical flame spread of bunched cables	L ≤ 2.5 m	IEC 60332-3- 22 Cat. A
Smoke density	T ≥ 70 %	IEC 61034-1,2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754-2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754-1
Content of fluorine	HF ≤ 0.1 %	IEC 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2

Applicable standards	
DNV-CP-0400	Class programme - Type approval - Lightweight electric cables
EN 50306	Railway rolling stock cables having special fire performance - Thin wall
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant
IEC 60092- 350	General construction and test methods of cables for shipboard and offshore applications
IEC 60092- 353	Electrical installations in ships - Power cables
IEC 60092- 360	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables

Approvals	
DNV	Certificate TAE00004T1

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→ RADOX® OFL® FR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

586 903 C (e)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm²	Family	Type of measuring Core - Core		L/R Ratio µH/ Ω	Resistance at 20°C max. Ω/km
		C nf/km nom.	L mH/km** nom.		
pair 0.5	OFL FR	85	0.78	9.7	40.1
triple 0.5	OFL FR	80	0.81	10.1	40.1
pair 0.75	OFL FR	95	0.71	13.3	26.7
triple 0.75	OFL FR	90*	0.81*	15.2*	26.7
pair 1.0	OFL FR	95	0.71	17.8	20
triple 1.0	OFL FR	90	0.75	18.8	20
pair 1.5	OFL FR	115	0.65	23.7	13.7
triple 1.5	OFL FR	110	0.71	25.9	13.7
pair 2.5	OFL FR	130	0.6	36.5	8.21
triple 2.5	OFL FR	125*	0.62*	37.8*	8.21

*calculated values, verification pending

**measurements were carried at 1kHz, all values refer to (1xnxm)mm²

EX attachment: worst case values depend on construction of cables and customer applications, therefore worst case values (inductivity / capacity / LR ratio) are available only on request.

Core colours

Pair: Black, White

Triple: Black, White, Red

Table 2: individually and collectively screened (ic)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
2	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	8.7	2.5	11.6 ± 0.4 ○	16.3	BK BU	85186363 85190000
4	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	11.0	5.0	13.6 ± 0.4 ○	22.1	BK BU	85186364 85190001
5	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	12.2	6.2	14.8 ± 0.4 ○	26.3	BK BU	85186365 85190002
6	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	13.5	7.5	16.3 ± 0.5 ○	32.0	BK BU	85186366 85190003
10	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	16.5	12.5	19.5 ± 0.5 ○	41.8	BK BU	85186367 85190004
12	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	17.2	15.0	20.2 ± 0.5 ○	46.5	BK BU	85186368 85190005
15	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	19.7	18.8	22.9 ± 0.5 ○	59.4	BK BU	85186369 85190006
20	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	21.0	25.1	24.3 ± 0.5 ○	68.2	BK BU	85186370 85190007
24	2	0.5	19 x 0.184	0.9	2.17	0.77	0.9	24.5	30.0	27.8 ± 0.6 ●	89.2	BK BU	85186371 85190008
2	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	10.0	3.3	12.5 ± 0.4 ●	19.2	BK BU	85186372 85190009

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→ RADOX® OFL® FR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

586 903 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
4	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	12.2	6.8	14.9 ± 0.4 ○	27.9	BK BU	85186374 85190010
5	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	13.5	8.5	16.3 ± 0.5 ○	33.5	BK BU	85186375 85190011
6	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	15.0	10.2	17.9 ± 0.5 ○	39.9	BK BU	85186376 85190012
10	3	0.5	19 x 0.184	0.9	2.17	0.77	0.9	18.5	17.0	21.6 ± 0.5 ○	55.0	BK BU	85186377 85190013
2	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	9.9	3.7	12.4 ± 0.4 ○	19.1	BK BU	85186378 85190014
4	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	12.2	7.4	14.8 ± 0.5 ○	28.3	BK BU	85186405 85190015
5	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	13.3	9.3	16.2 ± 0.5 ○	32.5	BK BU	85186406 85190016
6	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	14.7	11.2	17.6 ± 0.5 ○	38.3	BK BU	85186407 85190017
10	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	18.1	18.6	21.2 ± 0.5 ○	51.8	BK BU	85186408 85190018
12	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	18.5	22.3	21.7 ± 0.5 ○	57.5	BK BU	85186409 85190019
15	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	21.6	28.0	25.1 ± 0.6 ○	75.5	BK BU	85186410 85190020
20	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	23.0	37.3	26.5 ± 0.6 ○	87.3	BK BU	85186411 85190021
24	2	0.75	19 x 0.23	1.11	2.38	0.9	1.11	26.8	44.8	30.7 ± 0.6 ○	112.2	BK BU	85186412 85190022
2	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	11.0	5.1	13.5 ± 0.4 ○	23.1	BK BU	85186413 85190023
4	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	13.4	10.2	16.3 ± 0.5 ○	35.1	BK BU	85186414 85190024
5	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	15.0	12.8	17.8 ± 0.5 ○	41.2	BK BU	85186415 85190025
6	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	16.6	15.4	19.6 ± 0.5 ○	49.9	BK BU	85186416 85190026
10	3	0.75	19 x 0.23	1.11	2.38	0.9	1.11	20.0	25.9	23.3 ± 0.5 ○	70.3	BK BU	85186417 85190027
2	2	1	19 x 0.26	1.25	2.66	1.11	1.25	11.1	5.0	13.6 ± 0.4 ○	23.2	BK BU	85186418 85190028
4	2	1	19 x 0.26	1.25	2.66	1.11	1.25	13.6	10.0	16.4 ± 0.5 ○	33.8	BK BU	85186419 85190029
5	2	1	19 x 0.26	1.25	2.66	1.11	1.25	15.1	12.5	18.0 ± 0.5 ○	39.5	BK BU	85186420 85190030
6	2	1	19 x 0.26	1.25	2.66	1.11	1.25	15.4	15.0	18.3 ± 0.5 ○	42.6	BK BU	85186421 85190031
10	2	1	19 x 0.26	1.25	2.66	1.11	1.25	20.0	25.2	23.3 ± 0.5 ○	63.4	BK BU	85186422 85190032
12	2	1	19 x 0.26	1.25	2.66	1.11	1.25	20.8	30.2	24.1 ± 0.5 ○	71.5	BK BU	85186423 85190033

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→ RADOX® OFL® FR 300/500V (ic) Fire & Mud Resistant Instrumentation cable

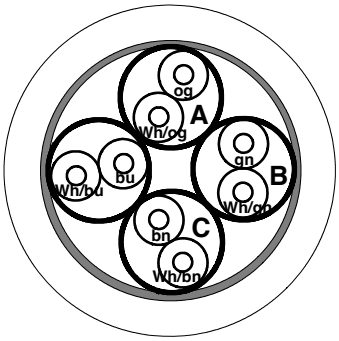
586 903 C (e)

Elements n x	Core in Element	Cross Section nom. mm²	Conductor ø nom. n x mm	Conductor ø max. mm	Core ø nom. mm	Drain wire i ø max. mm	Drain wire c ø max. mm	Nom. ø After twisting mm	Copper weight nom. kg/100m	Cable ø mm. ● = Fixed ○ = Apprx.	Cable weight nom. kg/100m	Sheath colour	H+S part no
15	2	1	19 x 0.26	1.25	2.66	1.11	1.25	24.1	37.7	27.8 ± 0.6 ○	94.4	BK BU	85186424 85190034
20	2	1	19 x 0.26	1.25	2.66	1.11	1.25	25.5	50.3	29.3 ± 0.6 ○	108.0	BK BU	85186425 85190035
24	2	1	19 x 0.26	1.25	2.66	1.11	1.25	30.1	60.7	34.2 ± 0.6 ○	138.2	BK BU	85186426 85190036
2	3	1	19 x 0.26	1.25	2.66	1.11	1.25	12.1	6.7	14.7 ± 0.4 ●	29.0	BK BU	85186428 85190037
4	3	1	19 x 0.26	1.25	2.66	1.11	1.25	15.0	13.5	18.0 ± 0.5 ○	42.4	BK BU	85186429 85190038
5	3	1	19 x 0.26	1.25	2.66	1.11	1.25	16.7	16.9	19.8 ± 0.5 ○	51.4	BK BU	85186430 85190039
6	3	1	19 x 0.26	1.25	2.66	1.11	1.25	18.5	20.4	21.6 ± 0.5 ○	61.7	BK BU	85186431 85190040
10	3	1	19 x 0.26	1.25	2.66	1.11	1.25	22.4	33.9	25.9 ± 0.6 ○	84.1	BK BU	85186432 85190041
2	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	12.0	6.8	14.6 ± 0.4 ○	27.4	BK BU	85186433 85190042
4	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	14.5	13.7	17.3 ± 0.5 ○	41.3	BK BU	85186434 85190043
5	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	15.7	17.1	18.7 ± 0.5 ○	46.2	BK BU	85186435 85190044
6	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	18.0	20.6	21.2 ± 0.5 ○	57.9	BK BU	85186436 85190045
10	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	21.8	34.3	25.3 ± 0.6 ○	78.7	BK BU	85186437 85190046
12	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	22.6	41.2	26.2 ± 0.6 ○	89.1	BK BU	85186438 85190047
15	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	26.3	51.5	30.2 ± 0.6 ○	114.7	BK BU	85186439 85190048
20	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	27.7	68.7	31.7 ± 0.6 ○	133.4	BK BU	85186440 85190049
24	2	1.5	37 x 0.23	1.55	2.9	1.11	1.25	32.1	82.4	35.3 ± 0.7 ●	161.4	BK BU	85190050 85186441
2	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	13.2	9.6	16.0 ± 0.5 ○	34.1	BK BU	85186442 85190051
4	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	16.2	19.1	19.1 ± 0.5 ○	50.6	BK BU	85186443 85190052
5	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	18.2	24.0	21.3 ± 0.5 ○	62.5	BK BU	85186444 85190053
6	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	20.3	28.7	23.6 ± 0.5 ○	76.3	BK BU	85186445 85190054
10	3	1.5	37 x 0.23	1.55	2.9	1.11	1.25	24.1	48.0	27.8 ± 0.6 ○	105.0	BK BU	85186446 85190055
2	2	2.5	37 x 0.29	1.96	3.4	1.25	1.55	14.0	10.4	16.9 ± 0.5 ○	38.8	BK BU	85186448 85190056
2	3	2.5	37 x 0.29	1.96	3.4	1.25	1.55	15.4	14.6	18.4 ± 0.5 ○	45.4	BK BU	85186449 85190057

RADOX® OFL® CAT cables

- CAT5e or CAT7 (both can be used as CAT6)
- PE foamed cores
- SHF2 sheath with extreme oil, mud & chemical resistance
- For fixed and moving applications
- -40....+85°C

CAT cables



Product name	**RADOX® OFL® CAT5**
Product ID	**4x (2x24AWG) BK**
Description	Limited fire hazard databus cable, zero halogen, flame retardant; high temperature, low temperature and ozone resistance, solder iron resistant, easily strippable, flexible, excellent screening properties. Cable for symmetrical data transmission with impedance of 100 Ω with very good transmission properties at high frequencies.
	For permanent installation as category 5 communication cable on: ships, oil&gas platforms, refineries and other harsh environment. The cable can also be used as a CAT6 or CAT7 cable, depending on the installation parameters and cable length.

General data	
H+S part no	**85188410**
Construction	
Conductor	Tin plated copper, stranded 7x32AWG (7x0.20mm)
Core insulation	RADOX®Foam
Core diameter	1.35 mm
Core colour, numbering, pair	og- wh/og, gn- wh/gn, bn- wh/bn, bu- wh/bu
Wrapping over pair	Aluminium tape
Filler	-
EMC- screen	Braid, tin plated copper
Screen diameter	6.0 mm
Wrapping	Tape
Cable sheath	RADOX®Elastomer S FH (SHF2, SHF mud)
Sheath colour	black
Cable diameter	8.1 ± 0.5mm
Type of installation	fixed
Cable weight nom.	8.8 kg/100m
Pulling force	max. 50 N
Printing on sheath	HUBER+SUHNER RADOX® OFL® CAT5e 4X(2X24AWG) SHF2 MUD IEC 60332- 1- 2 85188410- [batch no] [date of manufacture] [prod- place]

Technical data		
Voltage rating		125 VAC
Test voltage, 50 Hz, 5 min.		1000 VAC
Temperature index of sheath TI/20kh		> 130 °C
Max. Operating temperature	fixed installation	85* °C
Min. operating temperature	fixed installation	- 40 °C
Min. installation and handling temperature		- 20 °C
Max. storage temperature		40 °C
Min. storage temperature		- 40 °C
Min. bending radius	fixed installation	8 x cable dia
Characteristic Impedance	f = 100MHz	100 ± 5 Ω
Resistance at 20 °C		≤ 95 Ω / km
Capacitance	core / core	≤ 65 pF / m
	core / screen	≤ 100 pF / m
Transfer impedance	f ≤ 30 MHz	≤ 30 mΩ/m

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→ RADOX® OFL® CAT5
4x (2x24AWG) BK

Frequency (MHz)	Attenuation (dB/100m) Max.	PS NEXT (dB) Min.	PS ACR- F (dB) Min.	Return loss (dB) Min.
1**	2.1	-	-	-
4	4.1	53.3	79	23.0
10	6.5	47.3	71	25.0
31.25	12.0	39.9	61.1	23.6
62.5	17.1	35.4	55.1	21.5
100	22.1	32.3	51	20.1
300****	50	62.3	43.0	15.6
600****	73.3	57.8	35.4	15.6

Applications according to the following standards are possible

EN61156-5 Horizontal floor wiring			EN61156-6 Work area wiring Flexible-application		
CAT5***	CAT6	CAT7	CAT5	CAT6	CAT7****
x	-	-	x	x	x

* According IEC60092- 379 the max. operating temperature is +80 °C

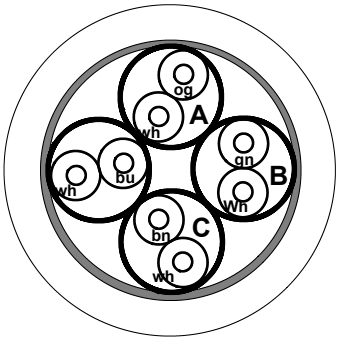
** The cable performance between 1 MHz and 4 MHz is achieved by design only and it is therefore not necessary to test for this performance below 4 Mhz.

*** 5% deviations of attenuation are possible

**** Data for frequencies above 100 Mhz reference the properties for CAT7 cable

The cable sheath passes the following fluid tests		
Enhanced oil resistance	**Fulfilled**	**NEK TS 606**
Mineral oil type IRM 902	7 d / 100 °C	NEK TS 606, table 1, cat. c
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, table 1, cat. c
Mud resistance	**Fulfilled**	**NEK TS 606**
Calcium bromide brine (45 % $CaBr_2$ / H_2O)	56d/ 70 °C	NEK TS 606, table 1, cat. c
Base oil EDC 95- 11	56 d / 70 °C	NEK TS 606, table 1, cat. c
Enhanced oil resistance	**Fulfilled**	**IEC 60092- 360**
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092- 360, An. C
Drilling fluid resistance	**Fulfilled**	**IEC 60092- 360**
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092- 360, An. C
Calcium bromide brine (45 % $CaBr_2$ / H_2O)	56d/ 70 °C	IEC 60092- 360, An. D
The cable passes the following fire tests		
Fire protection in ships	**Fulfilled**	**DNV-CP-0403**
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332- 1- 2
Smoke density	T ≥ 60 %	IEC 61034- 2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754- 2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754- 1
Content of fluorine	HF ≤ 0.1 %	IEC 60684- 2, 45.2
Applicable standards		
DNV CP- 0403	Type approval - Data communication cables- category cables	
IEC 61156- 5	Multicore and symmetrical pair/quad cables for digital communications - Symmetrical pair/quad cables with transmission characteristics up to 600Mhz - Horizontal floor wiring	
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant	
Approvals		
DNV	TAE00004V1	

CAT cables



Product name	**RADOX® OFL® CAT7**
Product ID	**4x(2x23AWG) BK**
Description	Limited fire hazard databus cable, zero halogen, flame retardant; high temperature, low temperature and ozone resistance, solder iron resistant, easily strippable, flexible, excellent screening properties. Cable for symmetrical data transmission with impedance of 100 Ω with very good transmission properties at high frequencies.
	For permanent installation as category 7 communication cable on: ships, oil & gas platforms, refineries and other harsh environment. The cable can also be used as a CAT5 or CAT6 cable, depending on the installation parameters and cable length.

General data	
H+S part no	**85188411**
Construction	
Conductor	bare copper, stranded 7x31AWG (7x0.23mm)
Core insulation	RADOX®Foam
Core diameter	1.6 mm
Core colour, numbering, pair	og -wh, gn -wh, bn -wh, bu -wh
Wrapping over pair	Aluminium tape
Filler	-
EMC- screen	Braid, tin plated copper
Screen diameter	7.5 mm
Wrapping	Tape
Cable sheath	RADOX®Elastomer S FH (SHF2, SHF mud)
Sheath colour	black
Cable diameter	9.8 ± 0.5mm
Type of installation	fixed
Cable weight nom.	10.3 kg/100m
Pulling force	max. 50 N
Printing on sheath	HUBER+SUHNER RADOX® OFL® CAT7 4X(2X23AWG) SHF2 MUD IEC 60332--1--2 85188411--[batch no] [date of manufacture] [prod-- place]

Technical data		
Voltage rating		125 VAC
Test voltage, 50 Hz, 5 min.		1000 VAC
Temperature index of sheath TI/20kh		> 130 °C
Max. Operating temperature	fixed installation	85* °C
Min. operating temperature	fixed installation	–40 °C
Min. installation and handling temperature		–20 °C
Max. storage temperature		40 °C
Min. storage temperature		–40 °C
Min. bending radius	fixed installation	8 x cable dia
Characteristic Impedance	f = 100MHz	100 ± 5 Ω
Resistance at 20 °C		≤ 95 Ω / km
Capacitance	core / core	≤ 65 pF / m
	core / screen	≤ 100 pF / m
Transfer impedance	f ≤ 30 MHz	≤ 30 mΩ/m

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→ RADOX® OFL® CAT7
4x(2x23AWG) BK

Frequency (MHz)	Attenuation (dB/100m) Max.	PS NEXT (dB) Min.	PS ACR- F (dB) Min.	Return loss (dB) Min.
1**	2.0	-	-	-
4	3.7	75	79	23.0
10	5.9	75	71	25.0
31.25	10.4	75	60.8	23.5
62.5	14.9	72.5	55.1	21.5
100	19	69.4	51.0	20.1
300	34.2	62.2	41.5	17.3
600	50.1	57.7	35.4	17.3

Applications according to the following standards are possible

EN61156-5 Horizontal floor wiring			EN61156-6 Work area wiring Flexible-application		
CAT5	CAT6	CAT7	CAT5	CAT6	CAT7
x	x	x	x	x	x

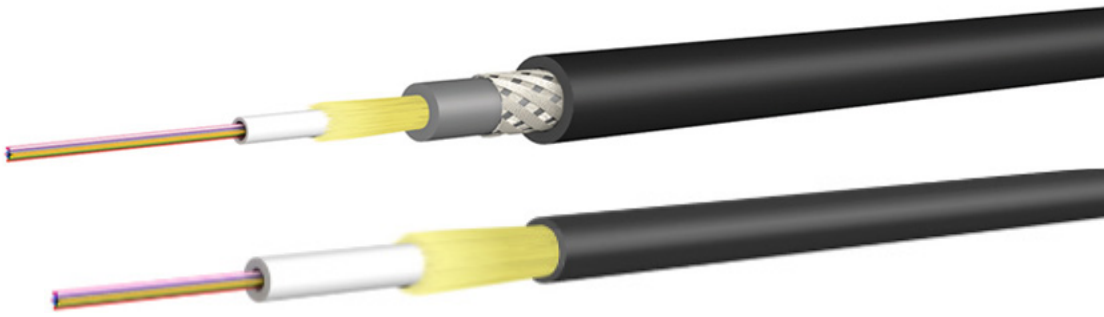
* According IEC60092- 379 the max. operating temperature is +80 °C

** The cable performance between 1 MHz and 4 MHz is achieved by design only and it is therefore not necessary to test for this performance below 4 Mhz.

The cable sheath passes the following fluid tests		
Enhanced oil resistance	**Fulfilled**	**NEK TS 606**
Mineral oil type IRM 902	7 d / 100 °C	NEK TS 606, table 1 cat. c
Mineral oil type IRM 903	7 d / 100 °C	NEK TS 606, table 1 cat. c
Mud resistance	**Fulfilled**	**NEK TS 606**
Calcium bromide brine (45 % $CaBr_2$ / H_2O)	56d/ 70 °C	NEK TS 606, table 1 cat. c
Base oil EDC 95- 11	56 d / 70 °C	NEK TS 606, table 1 cat. c
Enhanced oil resistance	**Fulfilled**	**IEC 60092- 360**
Mineral oil type IRM 902	7 d / 100 °C	IEC 60092- 360, An. C
Drilling fluid resistance	**Fulfilled**	**IEC 60092- 360**
Mineral oil type IRM 903	7 d / 100 °C	IEC 60092- 360, An. C
Calcium bromide brine (45 % $CaBr_2$ / H_2O)	56d/ 70 °C	IEC 60092- 360, An. D
The cable passes the following fire tests		
Fire protection in ships	**Fulfilled**	**DNV GL- CP- 0403**
Vertical flame spread of a single cable	50 < L ≤ 540 mm	IEC 60332- 1- 2
Smoke density	T ≥ 60 %	IEC 61034- 2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	IEC 60754- 2
Amount of halogen acid gas	HCl+HBr ≤ 0.5%	IEC 60754- 1
Content of fluorine	HF ≤ 0.1 %	IEC 60684- 2, 45.2
Applicable standards		
DNV CP- 0403	Type approval - Data communication cables- category cables	
IEC 61156- 5	Multicore and symmetrical pair/quad cables for digital communications - Symmetrical pair/quad cables with transmission characteristics up to 600Mhz - Horizontal floor wiring	
NEK TS 606	Cables for offshore installation, halogenfree and/or mud resistant	
Approvals		
DNV	TAE00004V1	

RADOX® OFL® Fiber Optics cables

- Up to 24 fibers
- SHF2 sheath with extreme oil, mud & chemical resistance
- SWB or glass-armoured
- Flame retardant and fire resistant
- -50….+85°C



Product name	**Multi-fiber Loose Tube Cable RADOX®**
Product ID	**24-.../W(ZNG)R-...85-DNV**
Description	• Metal-free rodent-protected indoor and outdoor cable • High flexibility and form stability • UV and Ozone resistance • High abrasion and soldering iron resistance • Halogen free cable with improved behavior in case of fire • Meets requirements for circuit integrity in case of fire • Best oil and fluid resistance

Available Types

Type of Fiber	
E9/125	according to IEC 60793-2-50 Typ B1.3 + ITU G.652.D
E9/125.A1	according to IEC 60793-2-50 Typ B1.3 + ITU G.652.D + ITU G.657.A1
E9/125A2	according to IEC 60793-2-50 Typ B6_a2 + ITU G.657.A2
G50/125-OM2	according to IEC 60793-2-10 A1b-OM2 + ITU G.651 BendOptimized
G50/125-OM3	according to IEC 60793-2-10 A1b-OM3 + ITU G.651 BendOptimized
G50/125-OM4	according to IEC 60793-2-10 A1b-OM4 + ITU G.651 BendOptimized
G50/125-OM5	according to IEC 60793-2-10 A1b-OM5 + ITU G.651 BendOptimized
Standard Colours	
Fiber:	According to colour code
Tube:	White or natural
Jacket (outer):	Customer specific

Construction

Description / Material	**Size**	**Options / Notice**
Up to 24 Optical fiber	250 µm	Fiber type, colour
1 Multi-fiber loose tube, up to 24 fibers each	2.8 mm	Colour, jelly-filled
Reinforcement / glass-roving		Swellable
Outer jacket / RADOX	8.5 mm	Colour, inscription

Mechanical data

Characteristics	**Conditions**	**Tested acc. to**	**Values**
Weight			90 kg/km
Tensile strength	During installation In service	IEC 60794-1-21 E1	3000 N 1500 N
Minimal bending radius	During installation In service	IEC 60794-1-21 E11	130 mm 80 mm
Cold bend	Radius = 120mm	IEC 60794-1-21 E11A	3 cycles -20°C
Repeated bending	Radius = 80mm	IEC 60794-1-21 E6	3 cycles
Crush resistance	During installation In service	IEC 60794-1-21 E3	1'000 N/dm 2'500 N/dm
Impact resistance	Wp = 5 J	IEC 60794-1-21 E4	3 impacts
Kink resistance	Radius = 40mm	IEC 60794-1-21 E10	Passed
Torsion	Angle = ±180° Length = 1000mm	IEC 60794-1-21 E7	500 cycles

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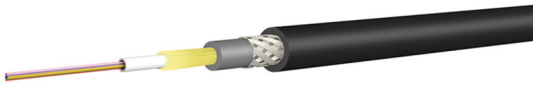
→ Multi-fiber Loose Tube Cable RADOX®
24-.../W(ZNG)R-...85-DNV

Environmental data			
Characteristics	**Conditions**	**Tested acc. To**	**Values**
Temperature range	During installation In service In storage	IEC 60794-1-22 F1	-20 °C up to +70°C -40 °C up to +85°C -60 °C up to +85°C
Fire load			1 MJ/m
Fire propagation	On a vertical single cable On a vertical cable bundle	IEC 60332-1-2 IEC 60332-3-25	Passed Passed
Fire test with circuit integrity (CI)	90 min	IEC 60331-25	Passed
Fire resistance with shock	180 min	IEC 60331-2	Passed
Fire Test: smoke density	Jacket material	IEC 61034-2	Passed
Fire Test: halogen acid gas	Jacket material	IEC 60754-1	Halogen free
Fire Test: degree of acidity	Jacket material	IEC 60754-2	Passed
Water penetration	h = 1 m, 24 h, p <3 m	IEC 60794-1-2 F5B	Passed
Ozone resistance		IEC 60811-403	Passed
(EU) No 305/2011 (CPR)		EN50575	Cca-s1a, d0,a1
2011/65/EC (RoHS)			Compliant

Specification for singlemode at 1550nm, for multimode at 1300nm
Smaller bending radius are possible with E9/125 LowBend (ITU G.657) and G50/125-OM3/OM4/OM5 BendOptimized.

Certifications
Meets LSFH properties
Fulfills the flame, fire, oil and drilling fluid resistance acc. NEK 606
NEK 606 standard for offshore oil and gas, ship and marine applications
Application acc. NEK 606: outdoor cable for emergency systems – operational during fire
Compliant to EN 45545 / hazard level 3
DNV Type approved
DNV Certificate no.: ...

Fiber Optics cables



Product name	**Steel-Armoured Multi-fiber Loose Tube Cable RADOX®**
Product ID	**24-.../W(ZN)HAR-...82-DNV**
Description	• Outer jacket according to SHF2 class • Fulfil the flame, fire, oil and drilling fluid resistance acc. NEK 606 • NEK 606 standard for offshore oil and gas, ship and marine applications • Rodent protected, steel armoured • For high mechanical and thermal stability • Low smoke, halogen free and self-extinguishing • Low fire load for high safety requirements

Available Types

Type of Fiber	
E9/125	according to IEC 60793-2-50 Typ B1.3 + ITU G.652.D
E9/125.A1	according to IEC 60793-2-50 Typ B1.3 + ITU G.652.D + ITU G.657.A1
E9/125A2	according to IEC 60793-2-50 Typ B6_a2 + ITU G.657.A2
G50/125-OM2	according to IEC 60793-2-10 A1b-OM2 + ITU G.651 BendOptimized
G50/125-OM3	according to IEC 60793-2-10 A1b-OM3 + ITU G.651 BendOptimized
G50/125-OM4	according to IEC 60793-2-10 A1b-OM4 + ITU G.651 BendOptimized
G50/125-OM5	according to IEC 60793-2-10 A1b-OM5 + ITU G.651 BendOptimized
Standard Colours	
Fiber:	According to colour code
Tube:	White or natural
Jacket (outer):	Customer specific

Construction

Description / Material	Size	Options / Notice
Up to 24 Optical fiber	250 µm	Fiber type, colour
1 Multi-fiber loose tube, up to 24 fibers each	2.8 mm	Colour, jelly-filled
Reinforcement / aramide yarn		
Jacket / PE flame retardant	5.0 mm	Colour
Steel armouring	braided	
Outer jacket / RADOX	8.2 mm	Colour, inscription

Mechanical data

Characteristics	Conditions	Tested acc. to	Values
Weight			114 kg/km
Tensile strength	During installation In service	IEC 60794-1-21 E1	1800 N 500 N
Minimal bending radius	During installation In service	IEC 60794-1-21 E11	120 mm 80 mm
Cold bend	Radius = 120mm	IEC 60794-1-21 E11A	3 cycles -20°C
Repeated bending	Radius = 100mm	IEC 60794-1-21 E6	3 cycles
Crush resistance	During installation In service	IEC 60794-1-21 E3	2'000 N/dm 8'000 N/dm
Impact resistance	Wp = 5 J	IEC 60794-1-21 E4	3 impact
Kink resistance	Radius = 20mm	IEC 60794-1-21 E10	Passed
Torsion	Angle = ±180° Length = 1000mm	IEC 60794-1-21 E7	500 cycles

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→ Steel-Armoured Multi-fiber Loose Tube Cable RADOX®
24-.../W(ZN)HAR-...82-DNV

Environmental data			
Characteristics	**Conditions**	**Tested acc. To**	**Values**
Temperature range	During installation In service In storage	IEC 60794-1-22 F1	-20 °C up to +70°C -50 °C up to +85°C -60 °C up to +85°C
Fire load			1.7 MJ/m
Fire propagation	On a vertical single cable On a vertical cable bundle	IEC 60332-1-2 IEC 60332-3-25	IEC 60332-1-2 IEC 60332-3-22
Fire Test: smoke density Fire Test: halogen acid gas Fire Test: degree of acidity	Jacket material Jacket material Jacket material	IEC 61034-2 IEC 60754-1 IEC 60754-2	Passed Halogen free Passed
Fire resistance with shock	180min	IEC 60331-2	Passed
Ozone resistance		IEC 60811-2-1	Passed
Oil resistance Drilling fluid resistance Drilling fluid resista	IRM 902 IRM 903 CaBr2	IEC 60092-360 IEC 60092-360 IEC 60092-360	168h; 100°C 168h; 100°C 56d; 70°C
2011/65/EC (RoHS)			Compliant

Specification for singlemode at 1550nm, for multimode at 1300nm
Smaller bending radius are possible with E9/125 LowBend (ITU G.657) and G50/125-OM3/OM4/OM5 BendOptimized.

Certifications
Meets LSFH properties
Fulfills the flame, fire, oil and drilling fluid resistance acc. NEK 606
NEK 606 standard for offshore oil and gas, ship and marine applications
Application acc. NEK 606: outdoor cable for emergency systems – operational during fire
Compliant to EN 45545 / hazard level 3
DNV Type approved
DNV Certificate no.: ...

RADOX® OFL® RF/Coax cables

- Up to 6-8GHz bandwidth with lowest loss factor
- Double braided for optimum signal immunity
- SHF2 sheath with extreme oil, mud & chemical resistance
- -40….+105°C
- Wide range of connectors, adapters and ESP

Product name	**RADOX® OFL® - RG142 LSFH, 50 Ohm, 8 GHz, 105°C, ø5.34 mm, RADOX® jacket**
Product ID	**RADOX® OFL® RF 142**
Description	• Flexible and lightweight • Suitable for use in applications up to 8 GHz • Flame retardant • Oil and mud resistance • Oil and gas qualified • HUBER+SUHNER RADOX® jacket material

Construction			
Component	**Material**	**Detail**	**Diameter**
Centre conductor	Copper, Silver plated	Wire	0.95 mm
Dielectric	SPEX (Crosslink Foam PE)		2.98 mm
Outer conductor	Copper, Silver plated	Braid, 97%	3.58 mm
Outer conductor	Copper, Silver plated	Braid, 95%	4.18 mm
Jacket	RADOX®EM104	RAL 9005 - bk	5.34 mm ± 0.06 mm

Electrical data	
Impedance	50 Ω ±25
Operating frequency	≤ 8 GHz
Capacitance	94.5 pF/m
Velocity of signal propagation	70.9 %
Signal delay	4.7 ns/m
Screening effectiveness	≥ 75 dB at frequency 0.01 GHz ... 5GHz
Insulation resistance	10,000,000 MΩ*m
Operating Voltage (at sea level)	≤ 2.5 kVrms
Test voltage (50 Hz/1 min)	≤ 5 kVrms

Mechanical data	
Weight	approx. 57 g/m
Static bending radius	≥ 30 mm
Repeated bending radius	50 mm

Environmental data	
Operation temperature	-40 °C ... 105 °C
Installation temperature	-20 °C ... 60 °C
Oil and mud resistance	IEC 60092-360 NEK TS 606: 2016 (cat. a/b/c, cat. d on request)*
Flame propagation standard	(acc. construction) EN 60332-1-2 (acc. construction) EN 50305, 9.1.2
Fire characteristics	free of halogens, acc. standard IEC 60754
Smoke test	(acc. construction) EN 61034-2
UV resistance	ISO 4892-2A

Certifications	
RoHS	cert_ROHS
REACH	cert_REACH
Flammability rating	ul-rating
UV resistance	resistance-uv

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→ RADOX® OFL® - RG142 LSFH, 50 Ohm, 8 GHz, 105°C, ø5.34 mm, RADOX® jacket

RADOX® OFL® RF 142

Additional Information

* Tested with BASEC (UK).

Flame propagation tested according to IEC 60079-1:2014 (Equipment protection by flameproof enclosures "d") with CCG A2F, gland size 0, part no. 054100, passed IIB/IIC gas test.

Suitable connectors

Cable group	U9

Ordering information

Item number	Item description	Available as assembly only
85182100	RADOX® OFL® RF 142	No

Power Matrix

Calculation: typical Attenuation [formula: (a*f^0.5 + b*f)] and maximum Power CW [formula: (p/f^0.5)]

a coefficient typical =	**0.365**	b coefficient typical =	**0.142**
fmax =	**8**	P at 1 GHz =	**225**
Frequency (GHz)	**Nom. attenuation (dB/m)**	**Nom. attenuation (dB/ft)**	**CW power (W)**
	sea level 25°C ambient temperature	sea level 25°C ambient temperature	sea level 40°C ambient temperature
0.10	0.130	0.040	712
0.20	0.192	0.058	503
0.30	0.243	0.074	411
0.40	0.288	0.088	356
0.60	0.368	0.112	290
0.80	0.440	0.134	252
1.00	0.507	0.155	225
1.20	0.570	0.174	205
1.40	0.631	0.192	190
1.60	0.689	0.210	178
1.80	0.745	0.227	168
2.00	0.800	0.244	159
2.50	0.932	0.284	142
3.00	1.058	0.323	130
3.50	1.180	0.360	120
4.00	1.298	0.396	112
5.00	1.526	0.465	101
6.00	1.746	0.532	92
7.00	1.960	0.597	85
8.00	2.168	0.661	80

Product name	**RADOX® OFL® - RG214 LSFH, 50 Ohm, 6 GHz, 105°C, ø11.1 mm, RADOX® jacket**
Product ID	**RADOX® OFL® RF 214**
Description	• Flexible and lightweight • Suitable for use in applications up to 6 GHz • Flame retardant • Oil and mud resistance • Oil and gas qualified • HUBER+SUHNER RADOX® jacket material

Construction			
Component	**Material**	**Detail**	**Diameter**
Centre conductor	Copper, Silver plated	Strand-07	2.25 mm
Dielectric	SPEX (Crosslink Foam PE)		7.28 mm
Outer conductor	Copper, Silver plated	Braid, 93%	8 mm
Outer conductor	Copper, Silver plated	Braid, 95%	8.6 mm
Jacket	RADOX®EM104	RAL 9005 - bk	11.1 mm ± 0.1 mm

Electrical data	
Impedance	50 Ω ±24
Operating frequency	≤ 6 GHz
Capacitance	101.4 pF/m
Velocity of signal propagation	66 %
Signal delay	5.03 ns/m
Screening effectiveness	81 dB at frequency 0.01 GHz ... 6GHz
Insulation resistance	10,000,000 MΩ*ms
Operating Voltage (at sea level)	≤ 5 kVrms
Test voltage (50 Hz/1 min)	≤ 10 kVrms

Mechanical data	
Weight	approx. 203 g/m
Static bending radius	≥ 50 mm
Repeated bending radius	110 mm (bendings, up to 50)

Environmental data	
Operation temperature	-40 °C ... 105 °C
Installation temperature	-20 °C ... 60 °C
Oil and mud resistance	IEC 60092-360 NEK TS 606: 2016 (cat. a/b/c, cat. d on request)*
Flame propagation standard	(acc. construction) EN 60332-1-2 (acc. construction) EN 50305, 9.1.2
Fire characteristics	free of halogens, acc. standard IEC 60754
Smoke test	(acc. construction) EN 61034-2
UV resistance	ISO 4892-2A

Certifications	
RoHS	cert_ROHS
REACH	cert_REACH
Flammability rating	ul-rating
UV resistance	resistance-uv

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→ RADOX® OFL® - RG214 LSFH, 50 Ohm, 6 GHz, 105°C, ø11.1 mm, RADOX® jacket

RADOX® OFL® RF 214

Additional Information

* Tested with BASEC (UK).

Flame propagation tested according to IEC 60079-1:2014 (Equipment protection by flameproof enclosures "d") with CCG A2F, gland size 0, part no. 054100, passed IIB/IIC gas test

Suitable connectors

Cable group	U43

Ordering information

Item number	Item description	Available as assembly only
85182102	RADOX® OFL® RF 214	No

Power Matrix

Calculation: typical Attenuation [formula: (a*f^0.5 + b*f)] and maximum Power CW [formula: (p/f^0.5)]

a coefficient typical =	**0.2203**	b coefficient typical =	**0.0874**
fmax =	**6**	P at 1 GHz =	**560**
Frequency (GHz)	**Nom. attenuation (dB/m)**	**Nom. attenuation (dB/ft)**	**CW power (W)**
	sea level 25°C ambient temperature	sea level 25°C ambient temperature	sea level 40°C ambient temperature
0.10	0.078	0.024	1771
0.20	0.116	0.035	1252
0.30	0.147	0.045	1022
0.40	0.174	0.053	885
0.60	0.223	0.068	723
0.80	0.267	0.081	626
1.00	0.308	0.094	560
1.20	0.346	0.106	511
1.40	0.383	0.117	473
1.60	0.418	0.128	443
1.80	0.453	0.138	417
2.00	0.486	0.148	396
2.50	0.567	0.173	354
3.00	0.644	0.196	323
3.50	0.718	0.219	299
4.00	0.790	0.241	280
5.00	0.930	0.283	250
6.00	1.064	0.324	229

Product name	**RADOX® OFL® - RG316D/ RD316 LSFH, 50 Ohm, 8 GHz, 105°C, ø3.2 mm, RADOX® jacket**
Product ID	**RADOX® OFL® RF 316 D**
Description	• Flexible and lightweight • Suitable for use in applications up to 8 GHz • Flame retardant • Oil and mud resistance • Oil and gas qualified • HUBER+SUHNER RADOX® jacket material

Construction			
Component	**Material**	**Detail**	**Diameter**
Centre conductor	Steel, Copper + Silver plated	Strand-07	0.54 mm
Dielectric	SPEX (Crosslink Foam PE)		1.53 mm
Outer conductor	Copper, Silver plated	Braid, 96%	1.99 mm
Outer conductor	Copper, Silver plated	Braid, 90%	2.44 mm
Jacket	RADOX®EM104	RAL 9005 - bk	3.2 mm ± 0.1 mm

Electrical data	
Impedance	50 Ω ±23
Operating frequency	≤ 8 GHz
Capacitance	94.5 pF/m
Velocity of signal propagation	70.1 %
Signal delay	4.72 ns/m
Screening effectiveness	≥ 70 dB at frequency 0.01 GHz ... 6GHz
Insulation resistance	10,000,000 MΩ*m
Operating Voltage (at sea level)	≤ 1.5 kVrms
Voltage Rating UL	300 V
Test voltage (50 Hz/1 min)	≤ 3 kVrms

Mechanical data	
Weight	approx. 20 g/m
Static bending radius	≥ 5 mm
Repeated bending radius	30 mm (bendings, up to 50)

Environmental data	
Operation temperature	-40 °C ... 105 °C
Installation temperature	-20 °C ... 60 °C
Oil and mud resistance	IEC 60092-360 NEK TS 606: 2016 (cat. a/b/c, cat. d on request)*
Flame propagation standard	(acc. construction) EN 60332-1-2 (acc. construction) EN 50305, 9.1.2
Fire characteristics	free of halogens, acc. standard IEC 60754
Smoke test	(acc. construction) EN 61034-2
UV resistance	ISO 4892-2A

Certifications	
RoHS	cert_ROHS
REACH	cert_REACH
Flammability rating	ul-rating
UV resistance	resistance-uv

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→ RADOX® OFL® - RG316D/RD316 LSFH, 50 Ohm, 8 GHz, 105°C, ø3.2 mm, RADOX® jacket

RADOX® OFL® RF 316 D

Additional Information

* Tested with BASEC (UK).

Flame propagation tested according to IEC 60079-1:2014 (Equipment protection by flameproof enclosures "d") with CCG A2F, gland size 0, part no. 054100, passed IIB/IIC gas test.

Suitable connectors

Cable group	U4

Ordering information

Item number	Item description	Available as assembly only
85182099	RADOX® OFL® RF 316 D	No

Power Matrix

Calculation: typical Attenuation [formula: (a*f^0.5 + b*f)] and maximum Power CW [formula: (p/f^0.5)]

a coefficient typical =	**0.7648**	b coefficient typical =	**0.1301**
fmax =	**8**	P at 1 GHz =	**110**
Frequency (GHz)	**Nom. attenuation (dB/m)**	**Nom. attenuation (dB/ft)**	**CW power (W)**
	sea level 25°C ambient temperature	sea level 25°C ambient temperature	sea level 40°C ambient temperature
0.10	0.255	0.078	348
0.20	0.368	0.112	246
0.30	0.458	0.140	201
0.40	0.536	0.163	174
0.60	0.670	0.204	142
0.80	0.788	0.240	123
1.00	0.895	0.273	110
1.20	0.994	0.303	100
1.40	1.087	0.331	93
1.60	1.176	0.358	87
1.80	1.260	0.384	82
2.00	1.342	0.409	78
2.50	1.535	0.468	70
3.00	1.715	0.523	64
3.50	1.886	0.575	59
4.00	2.050	0.625	55
5.00	2.361	0.720	49
6.00	2.654	0.809	45
7.00	2.934	0.894	42
8.00	3.204	0.977	39

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