

RADOX OFL S 150/250V (i)

Flame Retardant & Mud Resistant Instrumentation cable

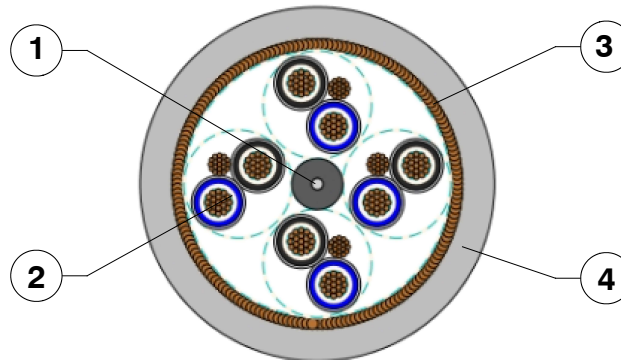
General Properties

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).

Application

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.

individually screened (i)



acc. to table 2

1.	Center und Fillers (optional)	non hygroscopic
2.	Cores RADOX Type OFL	Conductor: Stranded tin plated copper Insulation: RADOX TI301, dual layer high performance polymer (thin-wall) Colours: see table 2 Drain wire: Flexible tin plated copper Wrapping: Alu Tape Wrapping: Tape
3.	Screen	Tin plated copper braid, coverage density: $\geq 90\%$
4.	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

Cable marking:

Outer Diameter: HUBER+SUHNER RADOX OFL S 150/250V [cable type] SHF2 M 90°C

IEC 60332-1-2 IEC 60332-3-22 [part no]-[batch no] [date of manufacture] [production place]

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The product fulfils the test and specification requirements described in this document for the stated areas of application and operating conditions. HUBER+SUHNER AG does not expressly or implicitly guarantee performance under additional or changed conditions. Deviations are to be agreed upon in writing.

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Technical data:

acc. to IEC 60092-376 and - 350

Rated voltage a.c. $U_0/U (U_m)$	150/250 (300) ..	V
Max. voltage d.c. conductor to earth	250	V
Max. voltage d.c. conductor to conductor	500	V
Test voltage a.c.	3500	V
Test voltage d.c.	8400	V

Storage & Installation 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 . $\leq 5000h$	+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 \leq 12 mm	3 x D
.....	D > 12 mm	4 x D
..... free movement	D \leq 12 mm	5 x D
.....	D > 12 mm	6 x D

The cables pass 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 ₂ O)	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 ₂ O)	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

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The cables pass the following fire tests

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

Approvals :

DNV : TAE00004KB

Applicable standards :

DNVGL-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 sheating 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)

Table 1: Capacitance, Inductance & L/R ratio

Cable type mm ²	Family	Type of measuring Core - Core		L/R Ratio μ H/ Ω	Resistance at 20°C max. Ω /km
		C nf/km nom.	L μ H/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.

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Core colours

Pair: Black, Light Blue

Triple: Black, Light Blue, Brown

Table 2: individually screened (i)

Ele-ments n x	Core in Ele-ment	Core Cross section mm ²	Con-ductor n x diameter mm	Nom. diameter after twisting mm	Screen Wire diameter nom mm	Overall screen cross section nom mm ²	Copper weight nom kg/100m	Cable diameter mm ● = Fixed ○ = Apprx.	Cable weight nom kg/100m	Sheat colour	H+S part no
1	2	0.75	19 x 0.23	3.0	0.16	1.6	3.3	5.80 +/- 0.3 ●	6.5	BU GY	85117001 85116997
2	2	0.75	19 x 0.23	6.1	0.16	2.8	6.4	8.90 +/- 0.3 ●	13.2	BU GY	85116990 85117002
4	2	0.75	19 x 0.23	7.7	0.16	3.3	10.6	10.1 +/- 0.4 ●	19.3	BU GY	85119993 85117005
8	2	0.75	19 x 0.23	9.4	0.21	5.55	20.1	12.2 +/- 0.4 ○	29.7	BU GY	85119995 85117007
12	2	0.75	19 x 0.23	12.2	0.21	7.5	29.5	15.9 +/- 0.5 ●	45.2	BU GY	85119996 85117008
16	2	0.75	19 x 0.23	14.4	0.21	8.3	37.8	17.1 +/- 0.5 ●	57.0	BU GY	85119997 85117009
19	2	0.75	19 x 0.23	15.1	0.21	9.5	44.5	18.7 +/- 0.5 ○	65.2	BU GY	85116991 85119999
24	2	0.75	19 x 0.23	17.4	0.21	10.1	54.5	21.0 +/- 0.5 ●	80.4	BU GY	85120000 85117010
32	2	0.75	19 x 0.23	20.1	0.21	11.9	71.1	23.5 +/- 0.5 ○	103.2	BU GY	85120008 85120027
1	3	0.75	19 x 0.23	3.3	0.16	1.7	4.4	6.05 +/- 0.3 ●	7.6	BU GY	85120001 85117011
2	3	0.75	19 x 0.23	6.8	0.16	3.1	8.1	9.75 +/- 0.3 ○	16.2	BU GY	85116992 85186544
4	3	0.75	19 x 0.23	8.4	0.16	3.8	13.8	11.2 +/- 0.4 ●	23.7	BU GY	85120003 85117013
8	3	0.75	19 x 0.23	11.5	0.21	7.1	27.0	15.1 +/- 0.5 ●	43.6	BU GY	85120004 85116993
12	3	0.75	19 x 0.23	13.3	0.21	8.3	38.7	17.1 +/- 0.5 ○	55.9	BU GY	85120005 85117015
16	3	0.75	19 x 0.23	15.6	0.21	9.5	50.1	19.3 +/- 0.5 ○	73.2	BU GY	85116994 85117016
19	3	0.75	19 x 0.23	16.4	0.21	9.5	58.0	20.0 +/- 0.5 ○	81.1	BU GY	85116995 85117020
24	3	0.75	19 x 0.23	19.7	0.21	11.9	73.0	23.5 +/- 0.5 ○	105.0	BU GY	85116996 85117021

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Elements n x	Core in Element	Core Cross section mm ²	Con- ductor n x diameter mm	Nom. diameter after twisting mm	Screen Wire diameter nom mm	Overall screen cross section nom mm ²	Copper weight nom kg/100m	Cable diameter mm ● = Fixed ○ = Apprx.	Cable weight nom kg/100m	Sheat colour	H+S part no
1	2	1.5	37 x 0.23	4.1	0.16	2.0	5.3	6.85 +/- 0.3 ●	9.6	BU GY	85117024 85117022
2	2	1.5	37 x 0.23	8.4	0.16	3.5	10.2	10.8 +/- 0.4 ●	20.8	BU GY	85117026 85117025
4	2	1.5	37 x 0.23	9.9	0.21	5.6	19.0	12.8 +/- 0.4 ●	31.4	BU GY	85117004 85116297
8	2	1.5	37 x 0.23	13.1	0.21	7.9	35.0	16.9 +/- 0.5 ●	53.5	BU GY	85120010 85117030
12	2	1.5	37 x 0.23	16.4	0.21	9.5	50.3	19.7 +/- 0.5 ●	73.6	BU GY	85120011 85117031
16	2	1.5	37 x 0.23	19.3	0.21	11.3	65.8	22.6 +/- 0.5 ●	96.1	BU GY	85120013 85117121
19	2	1.5	37 x 0.23	20.1	0.21	11.9	76.7	23.9 +/- 0.5 ○	108.4	BU GY	85120014 85117034
24	2	1.5	37 x 0.23	23.1	0.25	16.2	98.1	26.6 +/- 0.6 ●	140.1	BU GY	85117006 85120015
32	2	1.5	37 x 0.23	26.7	0.30	22.2	132.4	30.6 +/- 0.6 ●	182.3	BU GY	85117027 85180879
1	3	1.5	37 x 0.23	4.4	0.16	2.2	6.8	7.25 +/- 0.3 ○	11.2	BU GY	85120016 85117038
2	3	1.5	37 x 0.23	9.0	0.21	5.6	14.8	12.3 +/- 0.4 ○	28.5	BU GY	85117028 85186547
4	3	1.5	37 x 0.23	11.0	0.21	6.3	25.3	14.5 +/- 0.4 ○	40.1	BU GY	85117029 85186549
8	3	1.5	37 x 0.23	15.2	0.21	8.9	46.9	19.0 +/- 0.5 ○	71.2	BU GY	85120019 85117043
12	3	1.5	37 x 0.23	18.7	0.21	11.3	68.4	22.4 +/- 0.5 ○	98.3	BU GY	85120024 85117045
16	3	1.5	37 x 0.23	21.5	0.25	16.2	92.4	25.7 +/- 0.6 ○	131.6	BU GY	85120025 85117496
24	3	1.5	37 x 0.23	25.7	0.30	22.2	136.8	30.4 +/- 0.6 ○	185.9	BU GY	85117046 85117497
1	2	2.5	37 x 0.29	5.1	0.16	2.4	7.4	7.90 +/- 0.3 ○	13.0	BU GY	85119992 85117044
1	3	2.5	37 x 0.29	5.5	0.16	2.7	9.8	8.40 +/- 0.3 ○	15.6	BU GY	85119994 85117047

Other articles on request