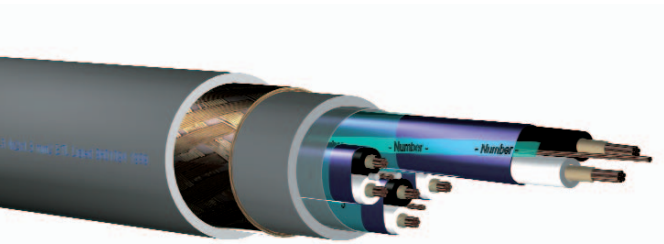


# Instrumentation and communication cables

HXXMB-FR EEP 250 V IEC 60092-3

Individually shielded and isolated\*



## Application:

Armored, individually shielded and isolated fire resistant instrumentation and communication cables 250 V with special properties for electrical installations in ships and offshore units. Temperature Class 85 °C, Flame Retardant (IEC 60332-3 category "A/F"), Low Smoke, Halogen Free, Low Toxicity and Fire Resistant (IEC 60331 950 °C). Suitable for application in cold climate areas required to pass cold bend and cold impact testing at -40 °C and -35 °C, respectively.

## Construction:

According to IEC 60092-3 with enhanced properties.

Conductors:	stranded bare annealed copper, IEC 60228, sizes 1 to 4 mm <sup>2</sup>
Insulation:	mica tape, and cross linked polyethylene (XLPE/HF XLPE) according to IEC 60092-3, IEC 60092-351 and IEEE Std 45
Twisting:	cores twisted to a pair/triad/quad
Individual shield and isolation:	tinned copper drain wire; aluminum/polyester tape; polyester tape
Assembly:	shielded pairs/triads/quads cabled together
Innersheath:	halogen free, flame retardant (SHF1, IEC 60092-359)
Braiding:	bronze wires according to IEEE Std 45, CDA 220, weight coverage 90% on nominal diameter according to IEC 60092-3, wire diameter 0.32 - 0.40 mm
Sheathing:	halogen free, flame retardant (SHF1, IEC 60092-359); all sheath and jacketing materials shall pass tear resistance testing to 35 lbs/in (6.4 N/mm)
Sheathing color:	gray (other colors are available on request)

## Identification of the groups:

1 pair	black, white
multi pairs	black, white (groups sequential numbered 1-1, 2-2, 3-3 etc.)
1 triad	black, white, red
multi triads	black, white, red (groups sequential numbered 1-1-1, 2-2-2, 3-3-3 etc.)
1 quad	black, white, red, green

## Special cable properties:

Fire propagation:	IEC 60332-3 category "A", "A/F"
Fire resistance:	IEC 60331 950 °C
Smoke:	IEC 61034-1/2, MIL-C-24643A (par. 4.7.27) and NES 711
Acidity:	IEC 60754-1/2 and MIL-C-24643A (par. 4.7.25)
Halogen content:	IEC 60754-1/2 and MIL-C-24643A (par. 4.7.26)
Toxicity index:	NES 713
Cold properties:	cold bend (-40 °C) and cold impact (-35 °C) according to CAN/CSA-C22.2 No. 0.3-Dec. '92

\*Remark: Other constructions available on request

**General data for HXXMB-FR Individually shielded and isolated EEP 250 V IEC 60092-3**

number of cores and nominal cross sectional area (n x mm <sup>2</sup> )	number of wires in conductor class 2 (n)	nominal conductor diameter (mm)	nominal core diameter (mm)	nominal diameter over inner-sheath (inches)	nominal diameter over inner-sheath (mm)	nominal diameter of braiding wire (mm)	nominal outer diameter (inches)	nominal outer diameter (mm)	minimum bending radius (mm)	approximate weight (lbs/M')	approximate weight (kg/km)	conductor resistance at 20 °C DC (Ω/M')	conductor resistance at 20 °C DC (Ω/km)
1 x 2 x 1	7	1.3	3.8	0.406	10.3	0.32	0.559	14.2	85	195	290	5.6	18.5
2 x 2 x 1	7	1.3	3.8	0.677	17.2	0.32	0.846	21.5	129	390	580	5.6	18.5
4 x 2 x 1	7	1.3	3.8	0.799	20.3	0.32	0.969	24.6	148	484	720	5.6	18.5
7 x 2 x 1	7	1.3	3.8	0.909	23.1	0.32	1.087	27.6	166	625	930	5.6	18.5
8 x 2 x 1	7	1.3	3.8	1.004	25.5	0.32	1.189	30.2	181	739	1,100	5.6	18.5
10 x 2 x 1	7	1.3	3.8	1.177	29.9	0.40	1.390	35.3	212	1,008	1,500	5.6	18.5
12 x 2 x 1	7	1.3	3.8	1.264	32.1	0.40	1.476	37.5	225	1,075	1,600	5.6	18.5
16 x 2 x 1	7	1.3	3.8	1.429	36.3	0.40	1.650	41.9	251	1,344	2,000	5.6	18.5
19 x 3 x 1	7	1.3	3.8	1.465	37.2	0.40	1.693	43.0	258	1,411	2,100	5.6	18.5
1 x 2 x 1.5	7	1.6	4.1	0.429	10.9	0.32	0.579	14.7	88	208	310	3.7	12.3
2 x 2 x 1.5	7	1.6	4.1	0.717	18.2	0.32	0.882	22.4	134	423	630	3.7	12.3
4 x 2 x 1.5	7	1.6	4.1	0.846	21.5	0.32	1.024	26.0	156	551	820	3.7	12.3
5 x 2 x 1.5	7	1.6	4.1	0.945	24.0	0.32	1.122	28.5	171	645	960	3.7	12.3
8 x 2 x 1.5	7	1.6	4.1	1.063	27.0	0.32	1.248	31.7	190	796	1,185	3.7	12.3
12 x 2 x 1.5	7	1.6	4.1	1.350	34.3	0.40	1.571	39.9	239	1,243	1,850	3.7	12.3
1 x 2 x 2.5	7	2.0	4.5	0.472	12.0	0.32	0.622	15.8	95	269	400	2.30	7.56
12 x 2 x 2.5	7	2.0	4.5	1.480	37.6	0.40	1.709	43.4	260	1,411	2,100	2.30	7.56
2 x 2 x 4	7	2.5	5.3	0.898	22.8	0.32	1.075	27.3	164	605	900	1.43	4.70
1 x 3 x 1	7	1.3	3.8	0.429	10.9	0.32	0.583	14.8	89	215	320	5.6	18.5
4 x 3 x 1	7	1.3	3.8	0.909	23.1	0.32	1.087	27.6	166	591	880	5.6	18.5
1 x 3 x 1.5	7	1.6	4.1	0.461	11.7	0.32	0.614	15.6	94	249	370	3.7	12.3
10 x 3 x 1.5	7	1.6	4.1	1.469	37.3	0.40	1.697	43.1	259	1,478	2,200	3.7	12.3
16 x 3 x 1.5	7	1.6	4.1	1.819	46.2	0.40	2.063	52.4	314	1,781	2,650	3.7	12.3

**Electrical characteristics for HXXMB-FR Individually shielded and isolated EEP 250 V IEC 60092-3**

cross section of the conductor (mm <sup>2</sup> )	mutual capacitance core to core (nF/M') pair & triad	mutual capacitance core to core (nF/km) pair & triad	mutual capacitance core to shield (nF/M') pair & triad	mutual capacitance core to shield (nF/km) pair & triad	loop inductance (mH/M') pair & triad	loop inductance (mH/km) pair & triad
1	20	66	35	115	0.24	0.80
1.5	22	73	38	124	0.23	0.76
2.5	25	82	42	138	0.21	0.70
4	26	84	43	141	0.21	0.68