

250V Instrumentation/control cable

RFOU(C), RFCU(C)

Halogen-free and/or Mud resistant cables for offshore installations



Construction

- 1** Conductor
Tinned annealed copper wire according to IEC 60228 Class 2 or Class 5
- 2** Insulation
HF EPR as per IEC 60092-360(351), thickness as per IEC 60092-376
- 3** Twisting
Two/Three insulated cores shall be twisted together to form a pair/triad
- 4** Collective screen
Screened by copper or aluminium backed polyester tape with tinned copper drain wire
- 5** Inner covering/Bedding
Halogen free thermoset compound, thickness according to IEC 60092-376
- 6** Braid armour
Tinned copper wire braid (O), Galvanized steel wire braid (C)
- 7** Outer sheath
Halogen free thermoset compound SHF2 or halogen free MUD resistant thermoset compound SHF MUD complying with IEC 60092-360(359) and / or NEK 606

Marking

e.g. : S.E.C. 250V S2/S6 RFOU(C)-M 2 X 2 X 0.75SQMM
NEK 606 IEC 60332-3A MUD SEOUL Year Length

Applicable standards

| | |
|-------------------------|---|
| NEK 606 | Design standards |
| IEC 60092-350 | Design standards |
| IEC 60092-352 | Choice and installation of electric cables |
| IEC 60092-376 | Design standards |
| IEC 60092-360(351, 359) | Insulating and sheathing materials |
| IEC 60332-1 | Flame retardant |
| IEC 60332-3-22 Cat.A | Flame retardant |
| IEC 60684-2 | Fluorine content test |
| IEC 60754-1 | Halogen gas emission test |
| IEC 60754-2 | pH and conductivity test |
| IEC 61034-1,2 | Smoke emission test |
| UL 1581 | UV resistance (sunlight resistance) |
| CSA C 22.2 No.0.3 | Cold bending test (at -40°C) and cold impact (at -35°C) test at low temperature(option) |



-40 to 90 °C



Flame retardant
IEC 60332-1 (single)
IEC 60332-3, A (bunched)
Fire retardant IEC 60331



Cold impact (-35 °C)
CSA C22.2 No.0.3
Special requirement



Halogen free



Weather
Resistance to severe
weather condition



Chemical attacks
Resistance to
chemicals



Mud
Resistance to
Mud



Oil
Resistance to
Enhanced oil

150/250V

Multi-pair, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of pairs & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|------------------------------|----------------------|-----------------|---------------------|--------------------------------|------------------------|----------------------------|--------------------------------------|------------------|
| | Area mm ² | Overall dia. mm | | | | | | |
| | 1 x 2 | 0.75 | | | | | | |
| 2 x 2 | 0.75 | 1.11 | 0.6 | 11.2 | 15.0 | 380 | 26.3 | 0.75 |
| 3 x 2 | 0.75 | 1.11 | 0.6 | 11.8 | 16.0 | 420 | 26.3 | 0.75 |
| 4 x 2 | 0.75 | 1.11 | 0.6 | 12.9 | 17.2 | 470 | 26.3 | 0.75 |
| 7 x 2 | 0.75 | 1.11 | 0.6 | 15.0 | 19.4 | 620 | 26.3 | 0.75 |
| 8 x 2 | 0.75 | 1.11 | 0.6 | 16.3 | 21.1 | 690 | 26.3 | 0.75 |
| 10 x 2 | 0.75 | 1.11 | 0.6 | 18.5 | 23.6 | 830 | 26.3 | 0.75 |
| 12 x 2 | 0.75 | 1.11 | 0.6 | 19.1 | 24.4 | 910 | 26.3 | 0.75 |
| 14 x 2 | 0.75 | 1.11 | 0.6 | 20.1 | 25.5 | 990 | 26.3 | 0.75 |
| 16 x 2 | 0.75 | 1.11 | 0.6 | 21.3 | 27.2 | 1,090 | 26.3 | 0.75 |
| 19 x 2 | 0.75 | 1.11 | 0.6 | 22.4 | 27.8 | 1,200 | 26.3 | 0.75 |
| 24 x 2 | 0.75 | 1.11 | 0.6 | 26.4 | 32.4 | 1,530 | 26.3 | 0.75 |
| 32 x 2 | 0.75 | 1.11 | 0.6 | 29.0 | 34.9 | 1,850 | 26.3 | 0.75 |
| 37 x 2 | 0.75 | 1.11 | 0.6 | 30.8 | 36.8 | 2,050 | 26.3 | 0.75 |

150/250V

Multi-pair, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of pairs & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|------------------------------|----------------------|-----------------|---------------------|--------------------------------|------------------------|----------------------------|--------------------------------------|------------------|
| | Area mm ² | Overall dia. mm | | | | | | |
| | 1 x 2 | 1.00 | | | | | | |
| 2 x 2 | 1.00 | 1.29 | 0.6 | 11.8 | 16.2 | 410 | 19.3 | 0.67 |
| 3 x 2 | 1.00 | 1.29 | 0.6 | 12.5 | 16.9 | 460 | 19.3 | 0.67 |
| 4 x 2 | 1.00 | 1.29 | 0.6 | 13.7 | 18.3 | 530 | 19.3 | 0.67 |
| 7 x 2 | 1.00 | 1.29 | 0.6 | 15.9 | 20.6 | 690 | 19.3 | 0.67 |
| 8 x 2 | 1.00 | 1.29 | 0.6 | 17.2 | 22.4 | 770 | 19.3 | 0.67 |
| 10 x 2 | 1.00 | 1.29 | 0.6 | 19.6 | 25.1 | 950 | 19.3 | 0.67 |
| 12 x 2 | 1.00 | 1.29 | 0.6 | 20.3 | 26.0 | 1,020 | 19.3 | 0.67 |
| 14 x 2 | 1.00 | 1.29 | 0.6 | 21.4 | 27.2 | 1,130 | 19.3 | 0.67 |
| 16 x 2 | 1.00 | 1.29 | 0.6 | 22.6 | 29.0 | 1,240 | 19.3 | 0.67 |
| 19 x 2 | 1.00 | 1.29 | 0.6 | 23.8 | 29.6 | 1,390 | 19.3 | 0.67 |
| 24 x 2 | 1.00 | 1.29 | 0.6 | 28.1 | 34.4 | 1,740 | 19.3 | 0.67 |
| 32 x 2 | 1.00 | 1.29 | 0.6 | 30.8 | 37.4 | 2,120 | 19.3 | 0.67 |
| 37 x 2 | 1.00 | 1.29 | 0.6 | 32.7 | 39.2 | 2,480 | 19.3 | 0.67 |

| Conductor area. (mm ²) | Capacitance (mF/km) | | Inductance (mH/km) | |
|------------------------------------|---------------------|------------|--------------------|------------|
| | Shielded | Unshielded | Shielded | Unshielded |
| 0.75 | 90 | 80 | 0.75 | 0.75 |
| 1.0 | 100 | 90 | 0.67 | 0.69 |
| 1.5 | 110 | 100 | 0.63 | 0.63 |
| 2.5 | 135 | 120 | 0.59 | 0.60 |

150/250V

Multi-triple, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of pairs & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|---------------------------------|-----------------|--------------|---------------------------|--------------------------------------|------------------------------|----------------------------------|--|---------------------|
| | Area | Overall dia. | | | | | | |
| | mm ² | mm | | | | | | |
| 1 x 2 | 1.50 | 1.59 | 0.7 | 9.4 | 12.2 | 270 | 12.9 | 0.63 |
| 2 x 2 | 1.50 | 1.59 | 0.7 | 13.7 | 17.4 | 520 | 12.9 | 0.63 |
| 3 x 2 | 1.50 | 1.59 | 0.7 | 14.5 | 18.6 | 580 | 12.9 | 0.63 |
| 4 x 2 | 1.50 | 1.59 | 0.7 | 16.0 | 20.2 | 660 | 12.9 | 0.63 |
| 7 x 2 | 1.50 | 1.59 | 0.7 | 18.6 | 23.0 | 910 | 12.9 | 0.63 |
| 8 x 2 | 1.50 | 1.59 | 0.7 | 20.3 | 25.1 | 1,010 | 12.9 | 0.63 |
| 10 x 2 | 1.50 | 1.59 | 0.7 | 23.1 | 28.2 | 1,250 | 12.9 | 0.63 |
| 12 x 2 | 1.50 | 1.59 | 0.7 | 23.9 | 29.2 | 1,370 | 12.9 | 0.63 |
| 14 x 2 | 1.50 | 1.59 | 0.7 | 25.3 | 30.6 | 1,510 | 12.9 | 0.63 |
| 16 x 2 | 1.50 | 1.59 | 0.7 | 26.7 | 32.7 | 1,670 | 12.9 | 0.63 |
| 19 x 2 | 1.50 | 1.59 | 0.7 | 28.7 | 33.4 | 1,910 | 12.9 | 0.63 |
| 24 x 2 | 1.50 | 1.59 | 0.7 | 33.8 | 39.4 | 2,550 | 12.9 | 0.63 |
| 32 x 2 | 1.50 | 1.59 | 0.7 | 36.6 | 42.5 | 3,040 | 12.9 | 0.63 |
| 37 x 2 | 1.50 | 1.59 | 0.7 | 39.3 | 45.1 | 3,460 | 12.9 | 0.63 |

150/250V

Multi-triple, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of pairs & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|---------------------------------|-----------------|--------------|---------------------------|--------------------------------------|------------------------------|----------------------------------|--|---------------------|
| | Area | Overall dia. | | | | | | |
| | mm ² | mm | | | | | | |
| 1 x 2 | 2.5 | 2.01 | 0.7 | 10.3 | 13.1 | 310 | 8.02 | 0.59 |
| 2 x 2 | 2.5 | 2.01 | 0.7 | 15.1 | 19.0 | 610 | 8.02 | 0.59 |
| 3 x 2 | 2.5 | 2.01 | 0.7 | 16.1 | 20.3 | 690 | 8.02 | 0.59 |
| 4 x 2 | 2.5 | 2.01 | 0.7 | 17.7 | 22.1 | 820 | 8.02 | 0.59 |
| 7 x 2 | 2.5 | 2.01 | 0.7 | 20.7 | 25.3 | 1,120 | 8.02 | 0.59 |
| 8 x 2 | 2.5 | 2.01 | 0.7 | 22.5 | 27.6 | 1,270 | 8.02 | 0.59 |
| 10 x 2 | 2.5 | 2.01 | 0.7 | 25.7 | 31.2 | 1,580 | 8.02 | 0.59 |
| 12 x 2 | 2.5 | 2.01 | 0.7 | 26.6 | 32.4 | 1,740 | 8.02 | 0.59 |
| 14 x 2 | 2.5 | 2.01 | 0.7 | 28.1 | 34.4 | 1,930 | 8.02 | 0.59 |
| 16 x 2 | 2.5 | 2.01 | 0.7 | 30.2 | 36.7 | 2,180 | 8.02 | 0.59 |
| 19 x 2 | 2.5 | 2.01 | 0.7 | 31.9 | 37.8 | 2,560 | 8.02 | 0.59 |
| 24 x 2 | 2.5 | 2.01 | 0.7 | 37.6 | 43.7 | 3,260 | 8.02 | 0.59 |
| 32 x 2 | 2.5 | 2.01 | 0.7 | 41.2 | 47.7 | 4,020 | 8.02 | 0.59 |
| 37 x 2 | 2.5 | 2.01 | 0.7 | 43.8 | 50.1 | 4,510 | 8.02 | 0.59 |

| Conductor area. (mm ²) | Capacitance (mF/km) | | Inductance (mH/km) | |
|--|---------------------|------------|--------------------|------------|
| | Shielded | Unshielded | Shielded | Unshielded |
| 0.75 | 90 | 80 | 0.75 | 0.75 |
| 1.0 | 100 | 90 | 0.67 | 0.69 |
| 1.5 | 110 | 100 | 0.63 | 0.63 |
| 2.5 | 135 | 120 | 0.59 | 0.60 |

150/250V

Multi-triple, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of triples & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|-----------------------------------|-------------------------|--------------------|---------------------------|--------------------------------------|------------------------------|----------------------------------|--|---------------------|
| | Area mm ² | Overall dia. mm | | | | | | |
| | 1 x 3 | 0.75 | | | | | | |
| 2 x 3 | 0.75 | 1.11 | 0.6 | 12.4 | 16.1 | 440 | 26.3 | 0.75 |
| 3 x 3 | 0.75 | 1.11 | 0.6 | 13.2 | 16.9 | 490 | 26.3 | 0.75 |
| 4 x 3 | 0.75 | 1.11 | 0.6 | 14.4 | 18.3 | 580 | 26.3 | 0.75 |
| 7 x 3 | 0.75 | 1.11 | 0.6 | 17.2 | 22.2 | 780 | 26.3 | 0.75 |
| 8 x 3 | 0.75 | 1.11 | 0.6 | 18.7 | 23.6 | 880 | 26.3 | 0.75 |
| 10 x 3 | 0.75 | 1.11 | 0.6 | 21.8 | 26.4 | 1,100 | 26.3 | 0.75 |
| 12 x 3 | 0.75 | 1.11 | 0.6 | 22.5 | 27.8 | 1,190 | 26.3 | 0.75 |
| 14 x 3 | 0.75 | 1.11 | 0.6 | 23.8 | 28.9 | 1,320 | 26.3 | 0.75 |
| 16 x 3 | 0.75 | 1.11 | 0.6 | 25.1 | 29.7 | 1,450 | 26.3 | 0.75 |
| 19 x 3 | 0.75 | 1.11 | 0.6 | 26.3 | 31.0 | 1,610 | 26.3 | 0.75 |
| 24 x 3 | 0.75 | 1.11 | 0.6 | 31.4 | 33.5 | 2,200 | 26.3 | 0.75 |
| 32 x 3 | 0.75 | 1.11 | 0.6 | 34.0 | 40.5 | 2,610 | 26.3 | 0.75 |

150/250V

Multi-triple, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of triples & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|-----------------------------------|-------------------------|--------------------|---------------------------|--------------------------------------|------------------------------|----------------------------------|--|---------------------|
| | Area mm ² | Overall dia. mm | | | | | | |
| | 1 x 3 | 1.00 | | | | | | |
| 2 x 3 | 1.00 | 1.29 | 0.6 | 13.1 | 16.9 | 470 | 19.3 | 0.67 |
| 3 x 3 | 1.00 | 1.29 | 0.6 | 13.9 | 17.7 | 530 | 19.3 | 0.67 |
| 4 x 3 | 1.00 | 1.29 | 0.6 | 15.3 | 19.2 | 610 | 19.3 | 0.67 |
| 7 x 3 | 1.00 | 1.29 | 0.6 | 18.2 | 23.4 | 830 | 19.3 | 0.67 |
| 8 x 3 | 1.00 | 1.29 | 0.6 | 19.8 | 24.9 | 940 | 19.3 | 0.67 |
| 10 x 3 | 1.00 | 1.29 | 0.6 | 23.1 | 27.8 | 1,170 | 19.3 | 0.67 |
| 12 x 3 | 1.00 | 1.29 | 0.6 | 23.9 | 29.3 | 1,280 | 19.3 | 0.67 |
| 14 x 3 | 1.00 | 1.29 | 0.6 | 25.2 | 30.5 | 1,400 | 19.3 | 0.67 |
| 16 x 3 | 1.00 | 1.29 | 0.6 | 26.7 | 31.8 | 1,550 | 19.3 | 0.67 |
| 19 x 3 | 1.00 | 1.29 | 0.6 | 27.9 | 32.7 | 1,710 | 19.3 | 0.67 |
| 24 x 3 | 1.00 | 1.29 | 0.6 | 33.4 | 35.4 | 2,360 | 19.3 | 0.67 |
| 32 x 3 | 1.00 | 1.29 | 0.6 | 36.2 | 43.3 | 2,800 | 19.3 | 0.67 |

| Conductor area, (mm ²) | Capacitance (mF/km) | | Inductance (mH/km) | |
|--|---------------------|------------|--------------------|------------|
| | Shielded | Unshielded | Shielded | Unshielded |
| 0.75 | 90 | 80 | 0.75 | 0.75 |
| 1.0 | 100 | 90 | 0.67 | 0.69 |
| 1.5 | 110 | 100 | 0.63 | 0.63 |
| 2.5 | 135 | 120 | 0.59 | 0.60 |

150/250V

Multi-triple, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of triples & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|--------------------------------|----------------------|-----------------|---------------------|--------------------------------|------------------------|----------------------------|--------------------------------------|------------------|
| | Area mm ² | Overall dia. mm | | | | | | |
| | 1 x 3 | 1.50 | | | | | | |
| 2 x 3 | 1.50 | 1.59 | 0.7 | 14.9 | 19.7 | 580 | 12.9 | 0.63 |
| 3 x 3 | 1.50 | 1.59 | 0.7 | 16.3 | 20.8 | 680 | 12.9 | 0.63 |
| 4 x 3 | 1.50 | 1.59 | 0.7 | 17.9 | 22.7 | 790 | 12.9 | 0.63 |
| 7 x 3 | 1.50 | 1.59 | 0.7 | 21.4 | 28.0 | 1,100 | 12.9 | 0.63 |
| 8 x 3 | 1.50 | 1.59 | 0.7 | 23.3 | 29.8 | 1,230 | 12.9 | 0.63 |
| 10 x 3 | 1.50 | 1.59 | 0.7 | 27.4 | 34.0 | 1,570 | 12.9 | 0.63 |
| 12 x 3 | 1.50 | 1.59 | 0.7 | 28.8 | 36.2 | 1,760 | 12.9 | 0.63 |
| 14 x 3 | 1.50 | 1.59 | 0.7 | 30.3 | 37.8 | 1,940 | 12.9 | 0.63 |
| 16 x 3 | 1.50 | 1.59 | 0.7 | 32.1 | 38.9 | 2,250 | 12.9 | 0.63 |
| 19 x 3 | 1.50 | 1.59 | 0.7 | 33.6 | 40.0 | 2,510 | 12.9 | 0.63 |
| 24 x 3 | 1.50 | 1.59 | 0.7 | 40.1 | 43.5 | 3,260 | 12.9 | 0.63 |
| 32 x 3 | 1.50 | 1.59 | 0.7 | 43.4 | 54.7 | 4,060 | 12.9 | 0.63 |

150/250V

Multi-triple, (HF-)EPR insulated, Collective screen, Halogen free Inner covering/Bedding, Braid armour, Halogen free SHF2 or SHF MUD Resistance Instrumentation/control cables(Flame retardant) RFOU(C), RFCU(C)

| No. of triples & cores (n x c) | Conductor | | Insulation Thick mm | Inner Covering Overall dia. mm | Outer Diameter Nom. mm | Cable weight Approx. kg/km | Conductor Resistance(20°C) max. Ω/km | Inductance mH/km |
|--------------------------------|----------------------|-----------------|---------------------|--------------------------------|------------------------|----------------------------|--------------------------------------|------------------|
| | Area mm ² | Overall dia. mm | | | | | | |
| | 1 x 3 | 2.50 | | | | | | |
| 2 x 3 | 2.50 | 2.01 | 0.7 | 16.9 | 20.5 | 720 | 8.02 | 0.59 |
| 3 x 3 | 2.50 | 2.01 | 0.7 | 18.0 | 21.7 | 830 | 8.02 | 0.59 |
| 4 x 3 | 2.50 | 2.01 | 0.7 | 19.8 | 23.7 | 980 | 8.02 | 0.59 |
| 7 x 3 | 2.50 | 2.01 | 0.7 | 23.8 | 29.2 | 1,400 | 8.02 | 0.59 |
| 8 x 3 | 2.50 | 2.01 | 0.7 | 26.0 | 31.2 | 1,580 | 8.02 | 0.59 |
| 10 x 3 | 2.50 | 2.01 | 0.7 | 30.9 | 35.1 | 2,050 | 8.02 | 0.59 |
| 12 x 3 | 2.50 | 2.01 | 0.7 | 32.0 | 37.1 | 2,370 | 8.02 | 0.59 |
| 14 x 3 | 2.50 | 2.01 | 0.7 | 33.8 | 38.7 | 2,640 | 8.02 | 0.59 |
| 16 x 3 | 2.50 | 2.01 | 0.7 | 35.8 | 40.2 | 2,930 | 8.02 | 0.59 |
| 19 x 3 | 2.50 | 2.01 | 0.7 | 37.4 | 41.3 | 3,260 | 8.02 | 0.59 |
| 24 x 3 | 2.50 | 2.01 | 0.7 | 44.7 | 44.9 | 4,260 | 8.02 | 0.59 |
| 32 x 3 | 2.50 | 2.01 | 0.7 | 48.5 | 54.8 | 5,160 | 8.02 | 0.59 |

| Conductor area, (mm ²) | Capacitance (mF/km) | | Inductance (mH/km) | |
|------------------------------------|---------------------|------------|--------------------|------------|
| | Shielded | Unshielded | Shielded | Unshielded |
| 0.75 | 90 | 80 | 0.75 | 0.75 |
| 1.0 | 100 | 90 | 0.67 | 0.69 |
| 1.5 | 110 | 100 | 0.63 | 0.63 |
| 2.5 | 135 | 120 | 0.59 | 0.60 |