



HALOGEN-FREE,
LOW SMOKE AND
FIRE RESISTANT CABLES

TF
Kable

Table of Contents

FIRE SAFETY	002	FIRE RESISTANT, FLAME RETARDANT, HALOGEN FREE,	
TELE-FONIKA Kable	004	LOW SMOKE DATA CABLES	130
PRODUCTION POTENTIAL	005	FLAME-X 950 JE-H(St)H...Bd FE180/E90	131
LEADING STANDARDS, TESTING AND REGULATIONS	006	FlameBlocker JE-H(St)H...Bd	133
		FlameBlocker J-H(St)H...Bd	135
		FlameBlocker LiHH, LiHCH	137
FIRE RESISTANT, FLAME RETARDANT, HALOGEN FREE,		OFFSHORE/MARINE CABLES	140
LOW SMOKE CABLES AND WIRES	013	FLAME-X 950 NKOGs 0,6/1 kV	141
FLAME-X 950 (N)HXH FE180/E30 0,6/1 kV	014	FLAME-X 950 NKOGsekw 0,6/1 kV	144
FLAME-X 950 (N)HXH FE180/E90 0,6/1 kV	018	FlameBlocker NKOXs 0,6/1 kV	147
FLAME-X 950 NHXH FE180/E30 0,6/1 kV	022	FlameBlocker NKOXsekw 0,6/1 kV	151
FLAME-X 950 NHXH FE180/E90 0,6/1 kV	026	DATA MATRIX	156
FLAME-X 950 (N)HXCH FE180/E30 0,6/1 kV	030	CONSTRUCTION	156
FLAME-X 950 (N)HXCH FE180/E90 0,6/1 kV	034	FIRE PERFORMANCE	158
FLAME-X 950 (N)2XH FE180 0,6/1 kV	038	PICTOGRAMS LEGEND	160
FLAME-X 950 (N)2XCH FE180 0,6/1 kV	040		
FLAME-X 950 NHXCH FE180/E30 0,6/1 kV	042		
FLAME-X 950 NHXCH FE180/E90 0,6/1 kV	045		
FLAME-X 950 SERIES 1	050		
FLAME-X 950 SERIES 2	052		
FLAME-X 950 SERIES 2e	054		
FLAME-X 950 SERIES 3	056		
FLAME-X 950 SERIES 4	058		
FLAME-X 950 SERIES 6	061		
FLAME-X 950 FR Flex 3013 0.6/1 kV	066		
FLAME-X 950 HDGs, HLGs, HLGs,			
HDGsekwf, HLGsekwf, HLGsekwf 300/500V	071		
FLAME RETARDANT, LOW FIRE HAZARD, HALOGEN FREE,			
LOW SMOKE CABLES AND WIRES	076		
FlameBlocker N2XH 0,6/1 kV	077		
FlameBlocker N2XCH 0,6/1 kV	082		
FlameBlocker NHXMH 300/500V	085		
FlameBlocker (N)HXMH(St) 300/500V	087		
FlameBlocker H07Z-U, H07Z-R, H07Z-K 450/750V	090		
FlameBlocker H07Z1-U, H07Z1-R, H07Z1-K 450/750V	092		
FlameBlocker H07ZZ-F 450/750V	094		
FlameBlocker H05Z1Z1-F 300/500V	097		
FlameBlocker UK REF. 6181B 450/750V	099		
FlameBlocker UK REF. 6181 XB XLPE/LSF 0,6/1 kV	101		
FlameBlocker UK REF. 624(*)B 300/500V	102		
FlameBlocker UK REF. 318(*)B 300/500V	104		
FlameBlocker CU/XLPE/LSOH/AWA/LSOH			
FlameBlocker CU/XLPE/LSOH/SWA/LSOH 0,6/1kV	106		
FlameBlocker MMJ HF 450/750 V	110		
FlameBlocker EQQ LIGHT 300/500 V	112		
FlameBlocker EXQ LIGHT 300/500 V	114		
FlameBlocker EXQJ/XCMK-HF 0,6/1 kV	116		
FlameBlocker EXLQ 450/750	118		
FlameBlocker FXQJ 0,6/1 kV	120		
FlameBlocker AXQJ 0,6/1 kV	122		
FlameBlocker NSHXAFÖU 1,8/3 kV	125		
FlameBlocker NSHXAFÖU POWER CABLE 3,6/6 kV	127		

FIRE SAFETY

There would be no contemporary civilization without fire. It has been discovered and coexists with human being since ages. On the one hand it provides great support, but on the other it carries enormous risk. In the last century due to the formation of large human settlements and changing the nature of development, the possibility of fire has increased. A factor in its development is often the material used to build houses, insecure use, and lack of appropriate alarm systems and quick response safety systems.

Only in 2006 in 37 selected countries for the population of 3.62 billion (55% of the world's population) were registered a total of up to 4 143 913 fires in which 42,291 people have been killed (source: CTIF 2008 - The international association of fire and rescue services). It is also estimated that the direct and indirect costs of all fires, including the economic impact of killed and wounded people, are nearly 1% of global GDP.

In Europe, each day after a fire 12 people on average are killed, and about 120 are seriously injured. Total economic losses are estimated at around 25 billion Euros per year (source: European Flame Retardants Association).

The most dangerous fires in respect of consequences are buildings fire events, mainly these within an urban agglomeration. This applies to places with high population density and points of interest such as:

- » Hospitals
- » Schools,
- » Shopping malls
- » Office buildings
- » Tunnels
- » Stadiums
- » Airports
- » Industrial sites.

Most fire hazards are created in these facilities due to a short circuit in electrical wiring, gas explosion or setting a fire by an accident. In these places a fire brigade intervenes most often.

There is number of tragic fires, where in recent years, the lack of adequate security system has caused loss of life and enormous material destruction.

Modern technologies used in construction involve the use of materials with improved fire resistance. If a fire occurs, the materials of which are built various structures and fire protection systems should enable people to safely evacuate, and quick extinguishing of the fire.

In the interest of public safety, the authorities on almost every level, pay attention to this aspect, which is reflected in the standards and EU directives and national regulations as well as local legislation.

Cables in the event of fire

The fire itself not only carries the risk of fire spread, but also the danger of the spread of smoke and toxic substances extremely hazardous to human life. Currently, the primary material used in the production of power cables, signal cables, control and measurement, and telecommunications is PVC - Polyvinyl chloride.

It is in several respects an ideal material for the manufacture of cables. Its mechanical properties combined with high reliability offer great opportunities for cable industry. However, in reaction to fire this polymer creates a huge risk. Fires in which the PVC is combusted are characterized by emission of large quantities of smoke, soot and toxic, corrosive substances. Already at the temperature of 120°C PVC releases hydrogen chloride (HCl) and dioxins and furans (PCDD and PCDF) - one of the most harmful substances recognized by toxicology.

The resulting large quantities of black smoke, toxic, corrosive gases and acids disable effective evacuation and greatly hinder the carrying out rescue operations.

To meet these dangers, Tele-Fonika Kable systematically develops range of alternative products manufactured



from halogen-free materials, materials made incombustible and fireproof.

Despite of the fact that the phenomenon of fire caused by the cables themselves is unheard, so very often happens the case that the fire covers the places where the cables are installed. In these extreme circumstances, it is expected that for some time there has been no interruption in energy supply, no interruption of signal for alarm points and devices, fire protection devices and devices complying with a key role in the safe evacuation.

The use of cables maintaining the circuit integrity during the fire, not emitting smoke and poisonous gases is a key issue not only for us as a producer, but for users of cable or alarm systems, both regarding to the personal safety of people and to protect equipment and property.

Security of cable routes

Safety and efficacy of the electrical installation in a fire depends on the type of cables used and the method of mounting and conducting the cable routes.

Currently, there is still no common European standard that specifies test methods throughout the entire cable route, so as binding rules are adopted the rules of research and classification according to German DIN 4102-12. This standard specifies requirements for fire testing of cables and systems for conducting with a common classification of E30 (keeping the system functions for 30 minutes in a fire) and E90 (keeping the system functions for 90 minutes in a fire).

Observation of phenomena occurring during the fire tests can unequivocally state that electrical installations are safe only if the correct choice of cable elements and strict adherence to the recommendations of manufacturers of cable systems are kept.

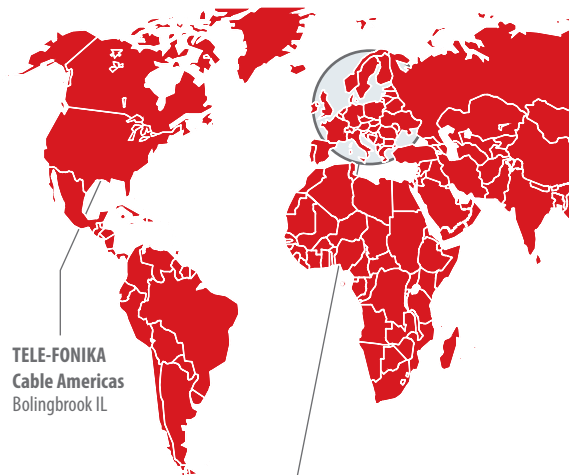
The continuity of energy supply and signal is determined equally by quality of used cables and other components, and by the method of cables installation.

To ensure the implementation of a comprehensive solution for safe installation, Tele-Fonika Kable has performed fire tests of its cables together with the best producers of cable elements.

TELE-FONIKA Kable

The Group TELE-FONIKA Kable (TF Kable) is ranked in the forefront of the global cable industry. The Group is the third manufacturer of cables and wires in Europe with significant development potential, based entirely on Polish capital.

TELE-FONIKA Kable Group's considerable investment in research and development centers and multi-skilled work teams, which have included eminent scientists working with our specialists, has been rewarded by the introduction of new-generation products and comprehensive services in the field of cable engineering. Products manufactured in our plants are sold in over 90 countries. Our product assortment includes 25 thousand cable types. The highest quality of our products is confirmed by over 460 certificates for groups of wares licensed by 34 renown centres of certifications worldwide. The company combines the good traditions of the cable industry in Poland and innovative technical solutions. TELE-FONIKA Kable Group consists of seven plants — four in Poland, one in Ukraine, and one in Serbia. We own over a dozen trade agencies abroad, reaching customers in several dozen countries around the world



PRODUCTION POTENTIAL

Our chief asset is extensive technological know-how in the field of production of wide variety of cables and wires supported by our experienced personnel. Our products match to a great extent the general trends concerning ecology and maintenance safety of wares. Extremely strict legislation in these areas has become the indicator of the technological progress of the manufactured cables.

Kraków-Wielicka Plant

Kraków-Wielicka Plant was established in 1928. In 1992, it received the ISO 9002 certificate (now ISO 9001) and in 1998 the ISO 14001 given by the British certification body: BASEC. The plant specializes in the production of rubber insulated cables and wires for mining and industrial applications. All types of rubber mixes used for EPR, CR, EVA and CSP cables are based on an original prescription designed together with research and development centres. The production offer of the plant are also medium voltage cables made in XLPE technology, as well as signal and control wires for special purposes.

Kraków-Bieżanów Plant

Kraków-Bieżanów Plant was established in 2001. In 2002, it received the ISO 9001 certificate and 14001 given by the British certification body: BASEC. The plant specializes in the production of overhead conductors from alloyed aluminium, conductors for railway traction network from copper and its alloys and installation wires for general usage.

Bydgoszcz Plant

Bydgoszcz Plant started production of cables and wires back in 1923. In 1992, it received the ISO 9002 certificate (now ISO 9001) and in 1998 the ISO 14001 given by the British certification body: BASEC. Bydgoszcz Plant specializes in power supply cables of medium and high voltage up to 400 kV. It is equipped with six modern chain lines for crosslinking polyethylene in XLPE technology. Complementary technological lines for producing the abovementioned cables ranging from thick wire drawing machines, cable stranding machines and screening machines to covering lines and two large-size high voltage laboratories called "Faraday cage" place the plant in the top of the list of the largest production centres of medium and high voltage cables in Europe.

Myślenice Plant

Myślenice Plant was established in April 1992 under the name Zakłady Kablowe TELE-FONIKA s.c. In 1995, it received the ISO 9001 certificate and in 1999 the ISO 14001 certificate. The certification body is BASEC. In September 2007 the plant received the ISO/TS 16949 certificate for automotive cables given by the certification body: SGS. Myślenice Plant specializes in the production of copper and fibre optic telecommunication cables, computer cables and automotive wires.

TOW TF Kabel (Ukraine)

The plant was established in 2002. In 2007, the plant was joined into the TELE-FONIKA Kable Group. This Plant is certified according to ISO 9001 and 14001. It specializes in the production of overhead conductors and cables for voltage up to 1 kV, including halogen-free, fire resistant and flame retardant cables versions.

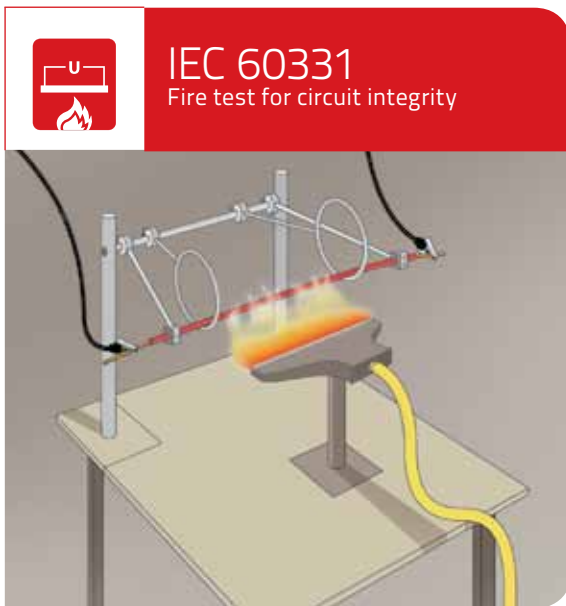
TF Kable Fabrika Kablova Zajecar A.D. (Serbia)

The plant was established in 1974. In 2007, the plant was joined into the TELE-FONIKA Kable Group. This plant is certified according to ISO 9001 and 14001 by DAS Certification Ltd. It specializes in the production of low and medium voltage cables, as well as halogen-free, fire resistant and flame retardant cables, telecommunication cables and PVC and polyethylene-coated conductors.

LEADING STANDARDS, TESTING AND REGULATIONS

Fire-resistant cables, also known as safety cables or function cables are widely used in the building and construction industry as part of a fire protection systems. Like any other halogen-free cables HFFR-type, these cables are also characterized by limited flame spread during the fire and reduced smoke emissions (especially corrosive gases). However, their crucial role in the fire safety system is to maintain circuit integrity during a fire, within a specified period of time.

On the basis of the experience arising from research which have been implemented over the behaviour of the cables at the time of the fire and security-related research related to fire safety in buildings, there was developed a number of national and international standards for the construction of cables and determining the way of their testing and acceptance criteria.



IEC 60331-11

Apparatus - Fire alone at a temperature of flame of at least 750 ° C

IEC 60331-12

Apparatus - Fire with shock at a flame temperature of at least 830 ° C

IEC 60331-21

Test for electric cables under fire conditions - Circuit integrity. Procedures and requirements - Cables of rated voltage up to and including 0.6 / 1 kV

IEC 60331-23

Tests for Electric Cables under Fire Conditions - Circuit Integrity. Procedures and Requirements - Electric Data Cables

IEC 60331-25

Tests for Electric Cables under Fire Conditions - Circuit Integrity - Part 25: Procedures and Requirements - Optical Fibre Cables

IEC 60331-31

Test for electric cables under fire conditions and shock - Circuit integrity. Procedures and requirements for Fire with Shock - Cables of rated voltage up to and including 0.6 / 1 kV

TEST DESCRIPTION

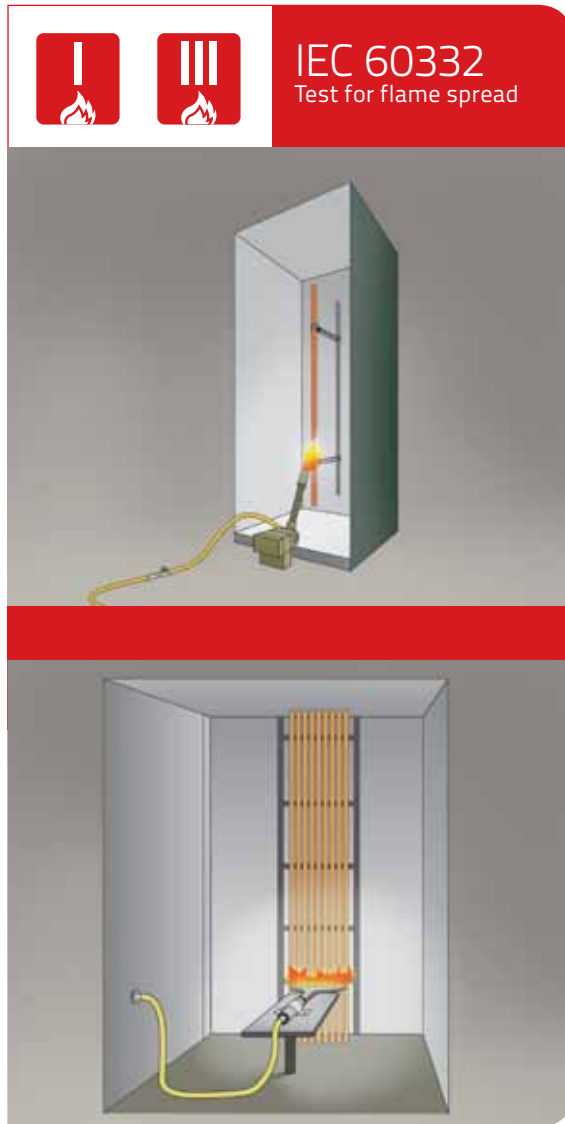
Part 60331-21. A sample of the cable length of 1200 mm sustained by two metal rings is mounted horizontally in a special ventilated cabin. During the test, to the wire cores of cable a voltage of the nominal value is applied (for telecommunication cables equal to 110 V), thereby creating a closed electric circuit. The sample is subjected to an action of linear gas burner with a length of 500 mm and the flame temperature equal to 750 ° C till 800 ° C. The time of the fire is 180 minutes. Result of the test is considered positive if at that time will not be considered a short circuit in the circuit being researched.

Part 60331-31 applies to the cables with a diameter greater than 20mm², and introduces the standards and

procedures for testing of cables exposed to fire and mechanical shock (equipment according to 60331-12).

The test sample provides cable fragment length at least 1500 mm. Bent wire on the U-shaped with a radius equal to the smallest permissible by the manufacturer, is mounted on a metal assay ladder. During the study,

through all the cable wires is passed current with rated voltage and these cables are subjected to fire during 120 min, where fire source is a gas burner set in conformity with standards, as well the mechanical shock of the 5 minutes interval. Result of the test is considered positive if at that time will not be considered a short circuit in the circuit being tested.



IEC 60332-1-2

Tests on electric and optical fibre cables under fire conditions Part 1-2: Test for vertical flame spread for a single insulated wire or cable Procedure for 1 kW pre-mixed flame

IEC 60332-2-1

Tests on electric and optical fibre cables under fire conditions Part 2-1: Test for vertical flame spread for a single small insulated wire or cable. Apparatus

IEC 60332-2-2

Tests on electric and optical fibre cables under fire conditions Part 2-2: Test for vertical flame spread for a single small insulated wire or cable Procedure for diffusion flame

IEC 60332-3-10

Tests on electric and optical fibre cables under fire conditions - Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires or cables Apparatus

IEC 60332-3-21

Tests on Electric Cables Under Fire Conditions - Part 3-21: Test for Vertical Flame Spread of Vertically-Mounted Bunched Wires or Cables - Category A F/R

IEC 60332-3-22

Tests on electric and optical fibre cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A

IEC 60332-3-23

Tests on electric and optical fibre cables under fire conditions - Part 3-23: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category B

IEC 60332-3-24

Tests on electric and optical fibre cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C

IEC 60332-3-25

Tests on electric and optical fibre cables under fire conditions - Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category D

TEST DESCRIPTION

Part 1 (IEC 60332-1)

Flame spread test on single cable

A cable sample provides an isolated section of cable with a length of 600 mm placed in a metal enclosure, open in front. To sample shall be applied at an angle the

source of fire produced by a burner powered by technical propane (95% nominal purity).

The burner should be set at 45 degrees so that the tip of the internal cone of blue flame touches the sample at a distance of 475 mm from the bottom of the upper bracket.

Time of application of the flame depends on the diameter of the tested sample. After completion of the test burner must be removed, and extinguish the flame.

If after removal of the fire source will not be visible charring or other damages on a distance of not less than 50 cm from the bottom edge of the upper clamp, the result of test is therefore considered positive.

Part 3 (IEC 60332-3)

Flame spread test on a bundle of cables

To vertical ladder affixed in adapted chamber is fasten a certain number of cable sections with a length of

3.5 m. The amount of combustible materials for cables and duration of flame application depends on the category the cable has to meet.

Category A

7 litres/m of combustible materials for cables
- the time of application of the flame 40 min

Category B

3.5 litres/m of combustible materials for cables
- the time of application of the flame 40 min

Category C

1.5 litres/m of combustible materials for cables
- the time of application of the flame 20 min

Resistance of the wires bundle arranged vertically to the spread of the flame should be such that after a certain time and stopping the source of ignition, flame was extinguished by itself and the length of charred fragments did not exceed 2.5 m in height measured above the lower edge of the burner.



IEC 61034

Smoke density test



IEC 61034-1

Measurement of Smoke Density of Cables Burning Under Defined Conditions - Part 1: Test Apparatus

IEC 61034-2

Measurement of smoke density of cables burning under defined conditions - Part 2: Test procedure and requirements

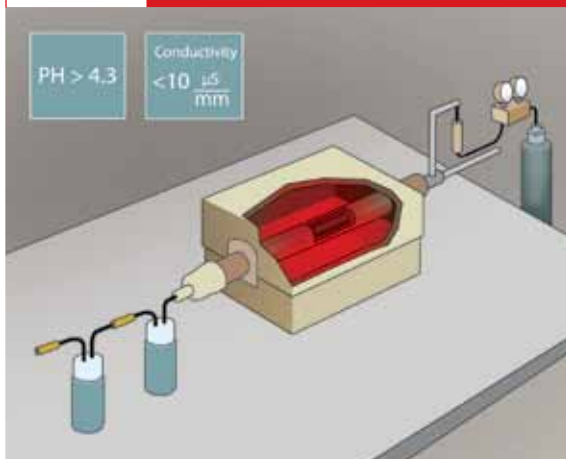
TEST DESCRIPTION

The cable sections are burned in a special cabin in the shape of a cube measuring 3x3x3m with installed on opposite walls the photometric measuring system 100W light source placed at a height of 2.15 m. Photometric measuring system registers the light transmission in the cabin. The result is considered positive if the light translucency after testing is not less than 60%



IEC 60754

Gases emission test



IEC 60754-1

Test on Gases Evolved During Combustion of Materials from Cables - Part 1: Determination of the Amount of Halogen Acid Gas

IEC 60754-2

Test on Gases Evolved During Combustion of Electric Cables, Part 2: Determination of Degree of Acidity of Gases Evolved During the Combustion of Materials Taken from Electric Cables by Measuring pH and Conductivity

TEST DESCRIPTION

Part 1

Small (1 g) fragmented sample is placed in a quartz tube and gradually heated in the tube furnace to 800 ° C and then maintained at this temperature for 20 minutes. Into

the pipe shall be blown an air of a certain flow rate, which, after leaving the tube, is guided to the scrubbers. For aqueous solutions of gases evolved during combustion of the material sample and collected in the scrubbers the halogen acid content is estimated on the basis of analytical method. The test result is considered positive if the acid content is less than 0.5%.

Part 2

The test is performed at least on 1 gram of sample of insulation material and outer coating and any other non-metallic substances in the cable. Furnace is heated to a temperature of 935 ° C min, after which it is placed in a quartz tube with a sample of the material inside. Certain amount of non-metallic substances of cable is burnt in the tube furnace for approximately 30 minutes. The resulting gases are guided by air blow-trough to scrubbers with distilled water. Solutions obtained in this way are measured in respect of acidity (pH) and conductivity. The test result is considered positive if the pH acidity of the solutions is less than 4.3 and the conductivity is not greater than 10 mS/mm.

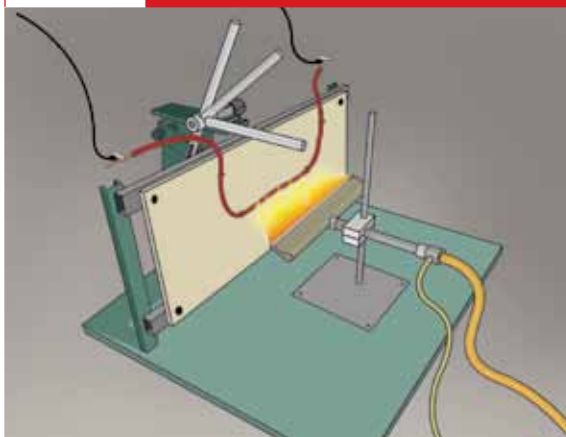
The test apparatus consists of the following devices:

- Place of burning of approximately 170 mm length
- Air flow meter
- Two bottles, to which released gas is drained, including one bottle with two entered electrodes.
- Gas from cylinder synthetic air
- PH Meter
- Conductivity meter

PH

EN-50200

Test for resistance to fire



TEST DESCRIPTION

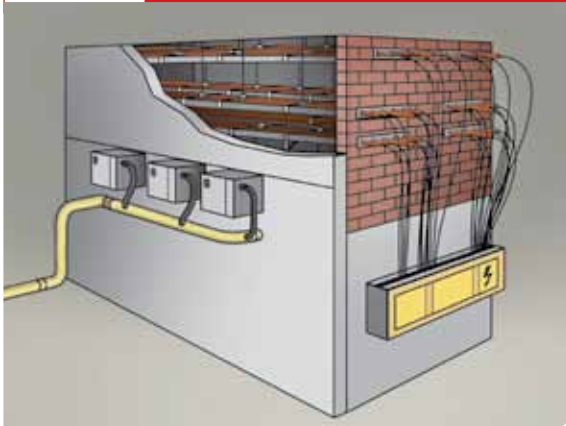
In the adapted chamber is mounted a cable sample with a length of 1200 mm, to which wire cores during the test a nominal value voltage is applied, creating thereby a closed circuit. During the test the cable is subjected to actions of the fire at conventional temperature 842 ° C and mechanical stroke for a specified period of time. The measured time of proper functioning of the cable corresponds to the so-called cable fire resistance class PH, which is also mentioned in the standard PN-B-02851-1 - Fire resistance tests of elements of buildings (Test method for thin wires with an outside diameter not greater than 20 mm).

- PH 15 - 15 min
- PH 30 - 30 min
- PH 60 - 60 min
- PH 90 - 90 min
- PH 120 - 120 min



DIN 4102-12

Cable system integrity test



Maintaining the function of electrical cable during the fire, defined as the concept of cable systems is characterized by the German DIN 4102, part 12.

This is one of the most rigorous criteria for cables that in the best way simulates the actual conditions prevailing during the fire.

The test stand has dimensions 2m/3m/2.5 (width/length/height) and meets the standard DIN 4102-2.

The minimum length of the sample should be 3 m.

Classes of functions maintenance according to DIN 4102-12

E30 - cable system function maintenance in case of fire for 30 minutes

E60 - cable system function maintenance in case of fire for 60 minutes

E90 - cable system function maintenance in case of fire for 90 minutes

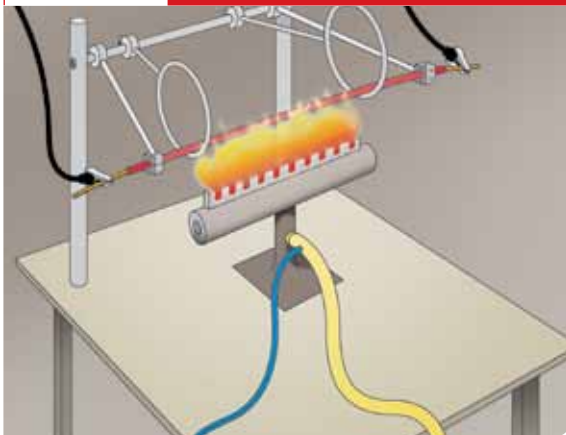
TEST DESCRIPTION

The test conditions described in this standard shall be considered as the most rigorous as it was yet discussed, but on the other hand, as most closely related to real fire conditions. The standard defines testing the functionality of so-called cable set, which consists of a group set of power cables, telecommunications, data transfer, etc. to be installed in real conditions, fixed to the provided to apply support structure consisting of channels, ladders, items to hang, handles, etc. Cables attached to this structure are powered by their work voltage, and when testing can arise neither short-circuit of insulation nor break the continuity of any wire core. The classification of cable set as a whole to one of three classes determines the duration of the cables operation in temperature provided at test conditions: Class E30 - 30 minutes at 820 °C, the class E60 - 60 minutes at 870 °C, the class E90 - 90 minutes at 980 °C. It is worth noting that duration of the cable operation under test is determined not only by design and selection of used cable materials, but also and often primarily, the construction and selection of supporting structure materials, which is subject to deformation in high temperatures, and these deformations in turn tighten the cables attached to the structure.



BS 6387

Category C



1. Fire resistance test is a test in which the cable is exposed to the fire of a strictly defined temperature in a specific time. The study provides the basis for four categories:

Category A

the cable sample is burned at a temperature of 650 °C for 3 hours

Category B

the cable sample is burned at a temperature of 750 °C for 3 hours

Category C

cable sample is burned at 950 °C for 3 hours

Category S

cable sample is burned at 950 °C for 20 minutes

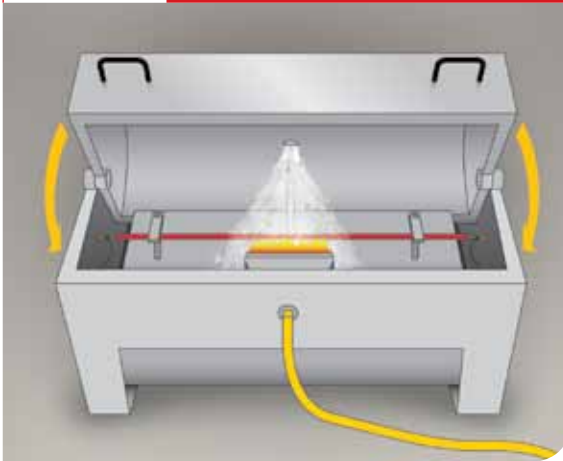
TEST DESCRIPTION

Cables test according to standard BS 6387 is carried out in three stages:

1. Fire resistance test cat. C
2. Testing for fire and water resistance cat. W
3. Testing for fire resistance and mechanical stroke cat. Z



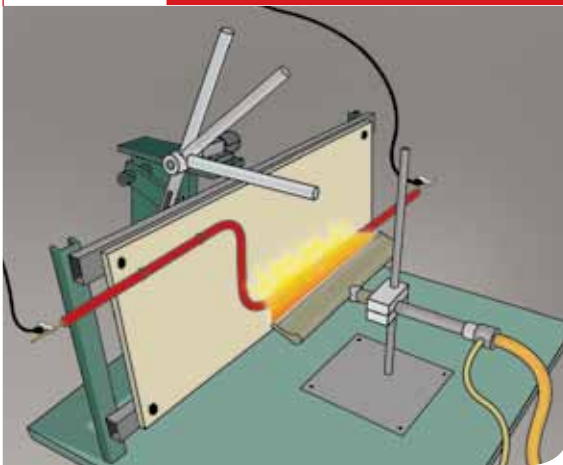
BS 6387 Category W



2. Testing for resistance to fire and water - Category W - is a study in which the cable is exposed to a fire at a temperature of 650 °C for 15 minutes and then for another 15 minutes to fire with water that is poured over the area around the cable.



BS 6387 Category Z



3. Testing for resistance to fire and mechanical stroke - a study in which the cable is exposed to a fire at a specified temperature with a mechanical stroke. The test takes 15 minutes. The test provides a basis to distinguish three categories:

Category X - the cable sample is burned at a temperature of 650 °C and subjected to mechanical shock

Category Y - cable sample is burned at a temperature of 750 °C and subjected to mechanical shock

Category Z - cable sample is burned at 950 °C and subjected to mechanical shock

F2

BS 7846 Category test

Fire and mechanical test in which the cable is exposed to the fire of a strictly defined temperature and impact of metal bar in a specific period of time.

TEST DESCRIPTION

Cable test according to BS 7846 standard is carried out by two stages:

1. Fire test, by exposing cable sample to direct fire
2. Impact test, by exposing cable sample to direct hit by metal bar.

F120

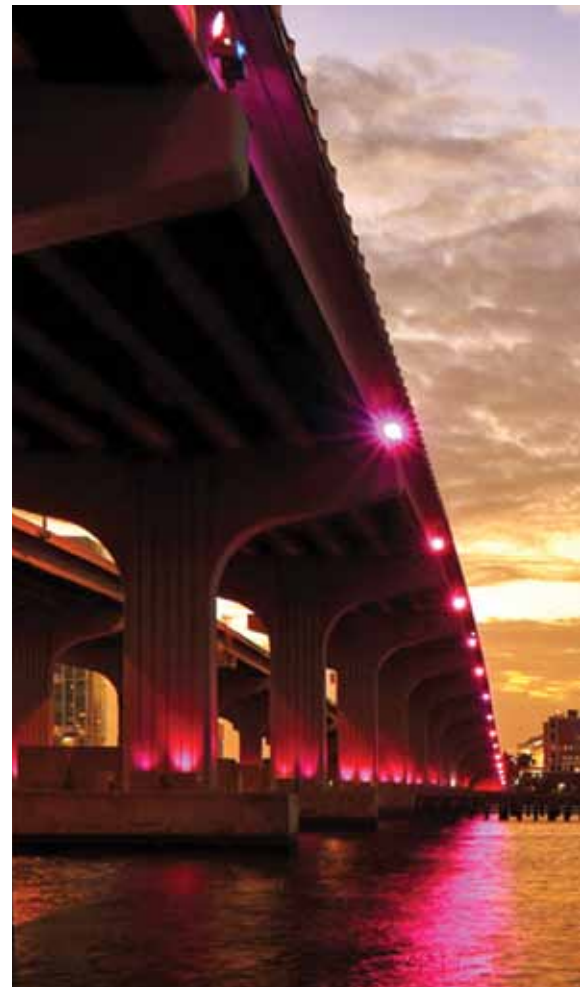
BS 8491 Category test

Fire, water and mechanical test in which the cable is exposed to the fire of a strictly defined temperature, impact of metal bar and impact of water, all in a specific time. The test is passed, when cable after 120 minutes is still working.

TEST DESCRIPTION

Cable test according to BS 8491 standard is carried out in three stages:

1. Fire test, by exposing cable sample to direct fire for 120 min
2. Impact test, by exposing cable sample to direct hit by metal bar,
3. Water test, by exposing cable sample to direct hit by defined amount of water



Safe way for energy



FLAME-X⁹⁵⁰

CHAPTER 1

FFLAME-X 950 (N)HXH FE180/E30 0,6/1 kV	014	FLAME-X 950 SERIES 1	050
FLAME-X 950 (N)HXH FE180/E90 0,6/1 kV	018	FLAME-X 950 SERIES 2	052
FLAME-X 950 NHXH FE180/E30 0,6/1 kV	022	FLAME-X 950 SERIES 2e	054
FLAME-X 950 NHXH FE180/E90 0,6/1 kV	026	FLAME-X 950 SERIES 3	056
FLAME-X 950 (N)HXCH FE180/E30 0,6/1 kV	030	FLAME-X 950 SERIES 4	058
FLAME-X 950 (N)HXCH FE180/E90 0,6/1 kV	034	FLAME-X 950 SERIES 6	061
FLAME-X 950 (N)2XH FE180 0,6/1 kV	038	FLAME-X 950 FR Flex 3013 0,6/1 kV	066
FLAME-X 950 (N)2XCH FE180 0,6/1 kV	040	FLAME-X 950 HDGs, HLGs, HLgGs,	
FLAME-X 950 NHXCH FE180/E30 0,6/1 kV	042	HDGsekwf, HLGsekwf, HLgGsekwf 300/500V	071
FLAME-X 950 NHXCH FE180/E90 0,6/1 kV	045		

Fire Resistant, Flame Retardant, Halogen Free, Low Smoke Cables and Wires

Cables are manufactured with the use of halogen-free materials. These materials exhibit better fire performance, have improved resistance to flame propagation and can extinguish flame spread through the cable.

Application:

Halogen-free cables are used for applications in public buildings, where fire would present a significant hazard to human life as a result of emission of toxic gasses and dense smoke hampering the evacuation or when the losses caused by the corrosive acid gasses would be higher than other damage caused by fire.

Locations of increased fire safety requirements, where large agglomeration of people and cultural or material goods of high value are present: schools, hospitals, shopping centers, airports, hotels, supermarkets, underground tunnels, multi-storey buildings, stations of underground railways, underground garages, sports and show halls, stadiums, cinemas, theatres, museums, office buildings, educational centers, industrial complexes.

Tested and approved by:

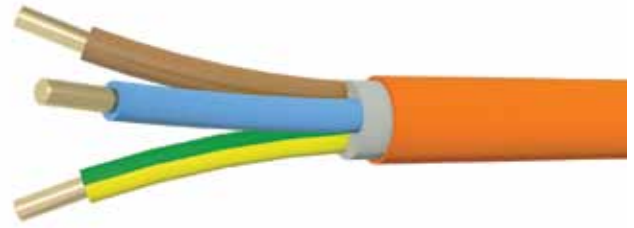
VDE (Verband der Elektrotechnik)
BASEC (British Approvals Service For Cables)
LPCB (Loss Prevention Certification Board)
CNBOP (Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej)
BBJ (Biuro Badawcze ds. Jakości) - Znak Bezpieczeństwa „B”

In order to improve product identification, TF Kable is adopting new name for FLAME-X 950 products. Table below depicts the amendment:

Old name	New name
Flame-X 950 Single	Flame-X 950 SERIES 1
Flame-X 950 Standard	Flame-X 950 SERIES 2
Flame-X 950 Enhanced	Flame-X 950 SERIES 2e
Flame-X 950 Unarmoured	Flame-X 950 SERIES 3
Flame-X 950 Power	Flame-X 950 SERIES 4
Flame-X 950 Power Evolution	Flame-X 950 SERIES 6

TF Kable reserves the right to use both names in transitional period.

Halogen-free low
smoke fire resistant
security power cables



FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E30:	DIN 4102-12 (30 min.)
Flame propagation:	DIN EN 60332-3-22, VDE 0482-332-3-22, IEC 60332-3-22
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) according to EN 60228
Insulation:	special cross-linked halogen-free fire resistant silicone compound
Inner covering:	special flame-retardant and halogen-free compound
Sheath:	thermoplastic halogen-free compound type HM4 according to DIN VDE 0276-604
Colour of sheath:	orange

CHARACTERISTIC

Core identification:	according to DIN VDE 0293-308, HD 308 S2 or EN 50334
-----------------------------	--

	(N)HXH-O FE180/E30	(N)HXH-J FE180/E30
	without protective conductor	with protective conductor
1-core:	black	green-yellow
2-core:	blue, brown	—
3-core:	brown, black, grey	green-yellow, blue, brown
3 core*:	blue, brown, black	—
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
4-core*:	—	green-yellow, blue, brown, black
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
more 5-core:	black with numbering	green-yellow, others cores black with numbering

*For certain applications only.

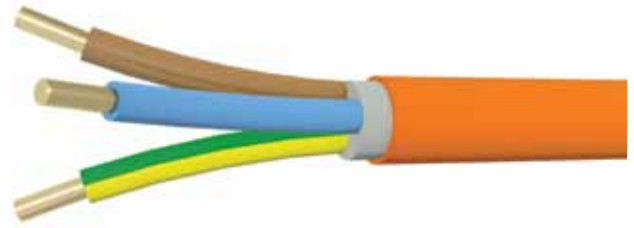
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15D - for single core cable; 12D - for multicore cable (D - overall cable diameter)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ²
Application:	Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
1	x	1,5RE	6,2	55	12,1
1	x	2,5RE	6,5	66	7,41
1	x	4RE	7	84	4,61
1	x	6RE	7,5	106	3,08
1	x	10RE	8,3	149	1,83
1	x	16RE	9,4	213	1,15
1	x	16RM	9,8	222	1,15
1	x	25RM	11,5	326	0,727
1	x	35RM	12,6	424	0,524
1	x	50RM	14,3	561	0,387
1	x	70RM	15,6	761	0,268
1	x	95RM	18,2	1042	0,193
1	x	120RM	19,6	1278	0,153
1	x	150RM	21,8	1573	0,124
1	x	185RM	23,9	1951	0,0991
1	x	240RM	27	2519	0,0754
1	x	300RM	29,4	3128	0,0601
2	x	1,5RE	11,1	175	12,1
2	x	2,5RE	11,9	211	7,41
2	x	4RE	12,8	260	4,61
2	x	6RE	13,8	321	3,08
2	x	10RE	15,4	437	1,83
2	x	16RE	18,2	643	1,15
2	x	16RM	19	682	0,727
2	x	25RM	22,4	989	12,1
3	x	1,5RE	11,6	196	12,1
3	x	2,5RE	12,5	242	7,41
3	x	4RE	13,4	304	4,61
3	x	6RE	14,5	382	3,08
3	x	10RE	16,2	532	1,83
3	x	16RE	19,1	788	1,15
3	x	16RM	20	831	1,15
3	x	25RM	23,7	1219	0,727
3	x	35RM	26	1567	0,524
3	x	50RM	29,6	2072	0,387
3	x	70RM	33,3	2830	0,268
3	x	95RM	38,6	3846	0,193
3	x	120RM	41,8	4692	0,153
3	x	150RM	46,6	5791	0,124
3	x	185RM	51,1	7138	0,0991
3	x	240RM	60,6	9495	0,0754
3	x	25RMC+16RMC	24,9	1395	0,727 / 1,15
3	x	35RMC+16RMC	26,8	1753	0,524 / 1,15
3	x	50RMC+25RMC	31,1	2375	0,387 / 0,727
3	x	70RMC+35RMC	34,8	3219	0,268 / 0,524

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
3	x	95RMC+50RMC	40,5	4393	0,193 / 0,387
3	x	120RMC+70RMC	44,2	5466	0,153 / 0,268
3	x	150RMC+70RMC	48,1	6541	0,124 / 0,268
3	x	185RMC+95RMC	53,4	8172	0,0991 / 0,193
3	x	240RMC+120RMC	60,3	10542	0,0754 / 0,153
4	x	1,5RE	12,5	228	12,1
4	x	2,5RE	13,4	283	7,41
4	x	4RE	14,5	362	4,61
4	x	6RE	15,7	460	3,08
4	x	10RE	17,6	649	1,83
4	x	16RE	20,8	967	1,15
4	x	16RM	21,8	1016	1,15
4	x	25RM	25,9	1500	0,727
4	x	35RM	28,5	1957	0,524
4	x	50RM	33,2	2651	0,387
4	x	70RM	36,8	3581	0,268
4	x	95RM	42,7	4873	0,193
4	x	120RM	46,7	6009	0,153
4	x	150RM	51,8	7378	0,124
4	x	185RM	57,2	9170	0,0991
4	x	240RM	64,6	11810	0,0754
5	x	1,5RE	13,5	269	12,1
5	x	2,5RE	14,5	337	7,41
5	x	4RE	15,7	433	4,61
5	x	6RE	17,1	556	3,08
5	x	10RE	19,2	790	1,83
5	x	16RE	22,6	1176	1,83
5	x	16RM	23,8	1238	1,15
5	x	25RM	28,4	1838	0,727
5	x	35RM	31,4	2397	0,524
5	x	50RM	36,8	3265	0,387
5	x	70RM	40,6	4394	0,268
5	x	95RM	47,6	6040	0,193
5	x	120RM	51,5	7384	0,153
5	x	150RM	57,9	9170	0,124
5	x	185RM	63,4	11308	0,0991
5	x	240RM	71,6	14568	0,0754
7	x	1,5RE	14,5	320	12,1
7	x	2,5RE	15,6	408	7,41
7	x	4RE	17	534	4,61
7	x	4RM	17,9	570	4,61
7	x	6RE	18,5	693	3,08
10	x	1,5RE	17,8	444	12,1
10	x	1,5RM	18,6	472	12,1

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
10	x	2,5RE	19,4	572	7,41
10	x	2,5RM	20,4	610	7,41
12	x	1,5RE	18,4	492	12,1
12	x	1,5RM	19,2	521	12,1
12	x	2,5RE	19,9	636	7,41
12	x	2,5RM	21	679	7,41
14	x	1,5RE	19,2	546	12,1
14	x	1,5RM	20,1	579	12,1
14	x	2,5RE	20,9	713	7,41
14	x	2,5RM	22	759	7,41
16	x	1,5RE	20,2	610	12,1
16	x	1,5RM	21,1	647	12,1
16	x	2,5RE	22	799	7,41
16	x	2,5RM	23,2	851	7,41
19	x	1,5RE	21,2	684	12,1
19	x	1,5RM	22,2	725	12,1
19	x	2,5RE	23,1	903	7,41
19	x	2,5RM	24,4	961	7,41
20	x	1,5RE	22,2	752	12,1
20	x	1,5RM	23,3	800	12,1
24	x	1,5RE	24,6	853	12,1
24	x	1,5RM	25,8	906	12,1
24	x	2,5RE	26,8	1129	7,41
24	x	2,5RM	28,3	1203	7,41
30	x	1,5RE	26	1001	12,1
30	x	1,5RM	27,2	1061	12,1
30	x	2,5RE	28,6	1351	7,41
30	x	2,5RM	30,2	1437	7,41
37	x	1,5RE	28,1	1197	12,1
37	x	1,5RM	29,5	1270	12,1

Halogen-free low
smoke fire resistant
security power cables



FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E90:	DIN 4102-12 (90 min.)
Flame propagation:	DIN EN 60332-3-22, VDE 0482-332-3-22, IEC 60332-3-22
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) according to EN 60228
Insulation:	special fire resistant cross-linked compound
Inner covering:	special flame-retardant and halogen-free compound
Sheath:	thermoplastic halogen-free compound type HM4 according to HD 604 S1
Colour of sheath:	orange

CHARACTERISTIC

Core identification: according to HD 308 S2 or EN 50334

	(N)HXH-O FE180/E90	(N)HXH-J FE180/E90
	without protective conductor	with protective conductor
1-core:	black	green-yellow
2-core:	blue, brown	—
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
more 5-core:	black with numbering	green-yellow, others cores black with numbering

Maximum conductor operating temperature: +90°C

Lowest ambient temperature for fixed installation: -40°C

Lowest installation temperature: -15°C

Maximum short-circuit conductor temperature: +250°C

Minimum bending radius: 15D - for single core cable; 12D - for multicore cable (D - overall cable diameter)

Maximum permissible tensile stress with cable grip for Cu-conductor: 50 N/mm²

Application: Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.

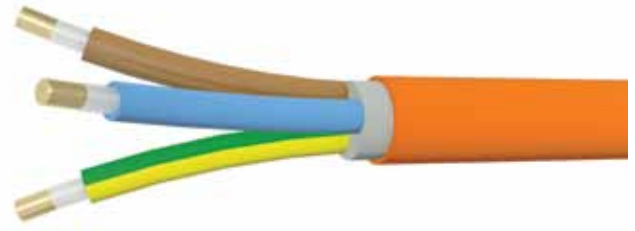
Standard packing: 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
1	x	1,5RE	6,4	57	12,1
1	x	2,5RE	6,7	69	7,41
1	x	4RE	7,2	87	4,61
1	x	6RE	7,7	110	3,08
1	x	10RE	8,5	153	1,83
1	x	16 RE	9,6	217	1,15
1	x	16RM	10	226	1,15
1	x	25RM	11,7	331	0,727
1	x	35RM	12,8	430	0,524
1	x	50RM	14,5	567	0,387
1	x	70RM	15,8	768	0,268
1	x	95RM	18,6	1058	0,193
1	x	120RM	20	1294	0,153
1	x	150RM	22,2	1591	0,124
1	x	185RM	24,3	1971	0,0991
1	x	240RM	27,4	2541	0,0754
1	x	300RM	29,8	3152	0,0601
2	x	1,5RE	11,5	186	12,1
2	x	2,5RE	12,3	223	7,41
2	x	2,5RM	12,8	238	7,41
2	x	4RE	13,2	273	4,61
2	x	6RE	14,2	335	3,08
2	x	10RE	15,8	453	1,83
2	x	16RE	18,6	661	1,15
2	x	16RM	19,4	701	1,15
2	x	25RM	22,8	1011	0,727
3	x	1,5RE	12,1	209	12,1
3	x	2,5RE	12,9	254	7,41
3	x	4RE	13,9	318	4,61
3	x	6RE	14,9	397	3,08
3	x	10RE	16,6	548	1,83
3	x	16RE	19,6	809	1,15
3	x	16RM	20,5	853	1,15
3	x	25RM	24,1	1242	0,727
3	x	35RM	26,4	1593	0,524
3	x	50RM	30,1	2103	0,387
3	x	70RM	33,8	2865	0,268
3	x	95RM	39,5	3926	0,193
3	x	120RM	42,7	4778	0,153
3	x	150RM	47,5	5887	0,124
3	x	185RM	52	7244	0,0991
3	x	240RM	59	9381	0,0754
3	x	25RM+16RM	25,4	1423	0,727 / 1,15
3	x	35RM+16RM	27,3	1784	0,524 / 1,15
3	x	50RM+25RM	31,6	2411	0,387 / 0,727

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
3	x	70RM+35RM	35,3	3258	0,268 / 0,524
3	x	95RM+50RM	41,3	4478	0,193 / 0,387
3	x	120RM+70RM	45,1	5561	0,153 / 0,268
3	x	150RM+70RM	49	6645	0,124 / 0,268
3	x	185RM+95RM	54,3	8292	0,0991 / 0,193
3	x	240RM+120RM	61,2	10678	0,0754 / 0,153
4	x	1,5RE	13	242	12,1
4	x	2,5RE	13,9	298	7,41
4	x	4RE	15	378	4,61
4	x	6RE	16,2	477	3,08
4	x	10RE	18,1	669	1,83
4	x	16RE	21,3	990	1,15
4	x	16RM	22,3	1040	1,15
4	x	25RM	26,4	1529	0,727
4	x	35RM	28,9	1988	0,524
4	x	50RM	33,6	2687	0,387
4	x	70RM	37,3	3621	0,268
4	x	95RM	43,7	4970	0,193
4	x	120RM	47,6	6112	0,153
4	x	150RM	52,8	7494	0,124
4	x	185RM	58,2	9298	0,0991
4	x	240RM	65,6	11954	0,0754
4	x	35RM+16RM	30,2	2217	0,524/1,15
4	x	50RM+25RM	35,6	3051	0,387/0,727
4	x	70RM+35RM	39,3	4081	0,268/0,524
4	x	150RM+70RM	55,1	8395	0,124/0,268
5	x	1,5RE	14	286	12,1
5	x	2,5RE	15	355	7,41
5	x	4RE	16,3	454	4,61
5	x	6RE	17,6	576	3,08
5	x	10RE	19,7	814	1,83
5	x	16RE	23,2	1204	1,83
5	x	16RM	24,3	1266	1,15
5	x	25RM	28,9	1872	0,727
5	x	35RM	31,9	2435	0,524
5	x	50RM	37,3	3309	0,387
5	x	70RM	41,2	4446	0,268
5	x	95RM	48,6	6153	0,193
5	x	120RM	52,6	7511	0,153
5	x	150RM	59	9312	0,124
5	x	185RM	64,5	11464	0,0991
5	x	240RM	72,7	14743	0,0754
7	x	1,5RE	15,1	340	12,1
7	x	2,5RE	16,2	429	7,41

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
7	x	4RE	17,6	557	4,61
7	x	4RM	18,5	594	4,61
10	x	1,5RE	18,6	473	12,1
10	x	1,5RM	19,4	502	12,1
10	x	2,5RE	20,2	603	7,41
10	x	2,5RM	21,2	642	7,41
12	x	1,5RE	19,2	523	12,1
12	x	1,5RM	20	554	12,1
12	x	2,5RE	20,8	671	7,41
12	x	2,5RM	21,8	714	7,41
14	x	1,5RE	20,1	581	12,1
14	x	1,5RM	21	616	12,1
14	x	2,5RE	21,8	750	7,41
14	x	2,5RM	22,9	798	7,41
16	x	1,5RE	21,1	648	12,1
16	x	1,5RM	22,1	688	12,1
16	x	2,5RE	22,9	841	7,41
16	x	2,5RM	24,1	895	7,41
19	x	1,5RE	22,2	727	12,1
19	x	1,5RM	23,2	770	12,1
19	x	2,5RE	24,1	949	7,41
19	x	2,5RM	25,4	1010	7,41
20	x	1,5RE	23,3	801	12,1
20	x	1,5RM	24,3	851	12,1
24	x	1,5RE	25,8	908	12,1
24	x	1,5RM	27	963	12,1
24	x	2,5RE	28	1189	7,41
24	x	2,5RM	29,5	1265	7,41
30	x	1,5RE	27,2	1064	12,1
30	x	1,5RM	28,5	1128	12,1
30	x	2,5RE	29,9	1421	7,41
30	x	2,5RM	31,5	1511	7,41
37	x	1,5RE	29,5	1273	12,1
37	x	1,5RM	30,9	1349	12,1

Halogen-free low
smoke fire resistant
security power cables



FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E30:	DIN 4102-12 (30 min.)
Flame propagation:	DIN EN 60332-3-22, VDE 0482-332-3-22, IEC 60332-3-22
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) according to EN 60228
Primary insulation:	a suitable wrapping of mica tape with a glass cloth
Insulation:	special fire resistant cross-linked compound
Inner covering:	special flame-retardant and halogen-free compound
Sheath:	thermoplastic halogen-free compound type HM4 according to HD 604 S1

CHARACTERISTIC

Colour of sheath:	orange
Core identification:	according to HD 308 S2

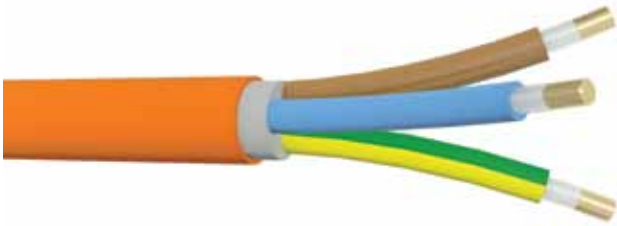
	NHXH-O FE180/E30	NHXH-J FE180/E30
	without protective conductor	with protective conductor
1-core:	black	green-yellow
2-core:	blue, brown	—
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
more 5-core:	black with numbering	green-yellow, others cores black with numbering

Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15D - for single core cable; 12D - for multicore cable (D - overall cable diameter)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ²
Application:	Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
1	x	1,5RE	7,1	68	12,1
1	x	2,5RE	7,5	81	7,41
1	x	4RE	8	99	4,61
1	x	6RE	8,5	122	3,08
1	x	10RE	9,2	165	1,83
1	x	16RE	10,1	225	1,15
1	x	16RM	10,6	233	1,15
1	x	25RM	12,4	342	0,727
1	x	35RM	13,4	439	0,524
1	x	50RM	15,1	579	0,387
1	x	70RM	16,5	781	0,268
1	x	95RM	19,1	1064	0,193
1	x	120RM	20,5	1302	0,153
1	x	150RM	22,7	1599	0,124
1	x	185RM	24,8	1978	0,0991
1	x	240RM	27,9	2550	0,0754
1	x	300RM	30,3	3161	0,0601
2	x	1,5RE	14,2	276	12,1
2	x	2,5RE	15	318	7,41
2	x	4RE	15,9	375	4,61
2	x	6RE	16,9	443	3,08
2	x	10RE	18,5	572	1,83
2	x	16RE	20,3	743	1,15
2	x	16RM	21,1	782	1,15
2	x	25RM	24,7	1117	0,727
3	x	1,5RE	14,9	304	12,1
3	x	2,5RE	15,7	355	7,41
3	x	2,5RM	16,3	373	7,41
3	x	4RE	16,7	425	4,61
3	x	4RM	17,4	449	4,61
3	x	6RE	17,8	512	3,08
3	x	10RE	19,5	674	1,83
3	x	16RE	21,4	894	1,15
3	x	16RM	22,3	936	1,15
3	x	25RM	26,2	1352	0,727
3	x	35RM	28,5	1710	0,524
3	x	50RM	32,1	2237	0,387
3	x	70RM	35,9	3020	0,268
3	x	95RM	41,2	4061	0,193
3	x	120RM	44,4	4926	0,153
3	x	150RM	49,4	6077	0,124
3	x	185RM	53,9	7448	0,0991
3	x	240RM	63,4	9816	0,0754
3	x	25RM/16RM	27,6	1540	0,725/1,15
3	x	35RM/16RM	29,5	1910	0,524/1,16
3	x	50RM/25RM	33,9	2564	0,387/0,725

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
3	x	70RM/35RM	37,6	3429	0,268/0,524
3	x	95RM/50RM	43,3	4632	0,193/0,387
3	x	120RM/70RM	47,3	5761	0,153/0,268
3	x	150RM/70RM	51,2	6859	0,124/0,268
3	x	185RM/95RM	56,5	8518	0,0991/0,193
3	x	240RM/120RM	63,4	10937	0,0754/0,153
4	x	1,5RE	16	349	12,1
4	x	2,5RE	16,9	411	7,41
4	x	4RE	18,1	499	4,61
4	x	6RE	19,2	604	3,08
4	x	10RE	21,1	808	1,83
4	x	16RE	23,3	1087	1,15
4	x	16RM	24,3	1134	1,15
4	x	25RM	28,7	1652	0,727
4	x	35RM	31,2	2121	0,524
4	x	50RM	36,1	2862	0,387
4	x	70RM	39,7	3801	0,268
4	x	70RM+35RM	42,1	4303	0,268/0,524
4	x	95RM	45,6	5124	0,193
4	x	120RM	49,7	6312	0,153
4	x	150RM	54,9	7712	0,124
4	x	185RM	60,3	9535	0,0991
4	x	240RM	67,7	12224	0,0754
5	x	1,5RE	17,3	409	12,1
5	x	2,5RE	18,3	485	7,41
5	x	4RE	19,5	591	4,61
5	x	6RE	20,9	725	3,08
5	x	6RM	21,3	173	3,08
5	x	10RE	23	976	1,83
5	x	16RE	25,4	1320	1,15
5	x	16RM	26,6	1379	1,15
5	x	25RM	31,4	2019	0,727
5	x	35RM	34,5	2593	0,524
5	x	50RM	39,9	3500	0,387
5	x	70RM	43,8	4657	0,268
5	x	95RM	51	6368	0,193
5	x	120RM	54,9	7744	0,153
5	x	150RM	61,3	9571	0,124
5	x	185RM	66,8	11741	0,0991
5	x	240RM	75	15059	0,0754
7	x	1,5RE	18,6	478	12,1
7	x	2,5RE	19,7	575	7,41
7	x	4RE	21,1	713	4,61
7	x	4RM	22	748	4,61
10	x	1,5RE	22,9	661	12,1
10	x	1,5RM	23,7	692	12,1
10	x	2,5RE	24,4	801	7,41

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
10	x	2,5RM	25,4	841	7,41
12	x	1,5RE	23,5	721	12,1
12	x	1,5RM	24,4	754	12,1
12	x	2,5RE	25,1	881	7,41
12	x	2,5RM	26,2	924	7,41
14	x	1,5RE	24,7	797	12,1
14	x	1,5RM	25,6	832	12,1
14	x	2,5RE	26,3	978	7,41
14	x	2,5RM	27,4	1024	7,41
16	x	1,5RE	25,9	885	12,1
16	x	1,5RM	26,8	924	12,1
16	x	2,5RE	27,7	1092	7,41
16	x	2,5RM	28,9	1144	7,41
19	x	1,5RE	27,2	984	12,1
19	x	1,5RM	28,2	1026	12,1
19	x	2,5RE	29,1	1221	7,41
19	x	2,5RM	30,4	1278	7,41
20	x	1,5RE	28,5	1088	12,1
20	x	1,5RM	29,6	1139	12,1
24	x	1,5RE	31,5	1224	12,1
24	x	1,5RM	32,7	1278	12,1
24	x	2,5RE	33,8	1525	7,41
24	x	2,5RM	35,3	1596	7,41
30	x	1,5RE	33,3	1419	12,1
30	x	1,5RM	34,6	1481	12,1
30	x	2,5RE	35,9	1800	7,41
30	x	2,5RM	37,5	1882	7,41
37	x	1,5RE	36	1683	12,1
37	x	1,5RM	37,4	1754	12,1



**Halogen-free low
smoke fire resistant
security power cables**

FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E90:	DIN 4102-12 (90 min.)
Flame propagation:	DIN EN 60332-3-22 VDE 0482-332-3-22, IEC 60332-3-22
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) according to EN 60228
Primary insulation:	a suitable wrapping of mica tape with a glass cloth
Insulation:	special fire resistant cross-linked compound
Inner covering:	special flame-retardant and halogen-free compound
Sheath:	thermoplastic halogen-free compound type HM4 according to HD 604 S1
Colour of sheath:	orange

CHARACTERISTIC

Core identification: according to HD 308 S2

	NHXX-O FE180/E90	NHXX-J FE180/E90
	without protective conductor	with protective conductor
1-core:	black	green-yellow
2-core:	blue, brown	—
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
more 5-core:	black with numbering	green-yellow, others cores black with numbering

Maximum conductor operating temperature: +90°C

Lowest ambient temperature for fixed installation: -40°C

Lowest installation temperature: -15°C

Maximum short-circuit conductor temperature: +250°C

Minimum bending radius: 15D - for single core cable; 12D - for multicore cable (D - overall cable diameter)

Maximum permissible tensile stress with cable grip for Cu-conductor: 50 N/mm²

Application: Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.

Standard packing: 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
1	x	1,5RE	7,1	68	12,1
1	x	2,5RE	7,5	81	7,41
1	x	4RE	8	99	4,61
1	x	6RE	8,5	122	3,08
1	x	10RE	9,2	165	1,83
1	x	16RE	10,1	225	1,15
1	x	16RM	10,6	233	1,15
1	x	25RM	12,4	342	0,727
1	x	35RM	13,4	439	0,524
1	x	50RM	15,1	579	0,387
1	x	70RM	16,5	781	0,268
1	x	95RM	19,1	1064	0,193
1	x	120RM	20,5	1302	0,153
1	x	150RM	22,7	1599	0,124
1	x	185RM	24,8	1978	0,0991
1	x	240RM	27,9	2550	0,0754
1	x	300RM	30,3	3161	0,0601
2	x	1,5RE	14,2	276	12,1
2	x	2,5RE	15	318	7,41
2	x	4RE	15,9	375	4,61
2	x	6RE	16,9	443	3,08
2	x	10RE	18,5	572	1,83
2	x	16RE	20,3	743	1,15
2	x	16RM	21,1	782	1,15
2	x	25RM	24,7	1117	0,727
3	x	1,5RE	14,9	304	12,1
3	x	2,5RE	15,7	355	7,41
3	x	2,5RM	16,3	373	7,41
3	x	4RE	16,7	425	4,61
3	x	4RM	17,4	449	4,61
3	x	6RE	17,8	512	3,08
3	x	10RE	19,5	674	1,83
3	x	16RE	21,4	894	1,15
3	x	16RM	22,3	936	1,15
3	x	25RM	26,2	1352	0,727
3	x	35RM	28,5	1710	0,524
3	x	50RM	32,1	2237	0,387
3	x	70RM	35,9	3020	0,268
3	x	95RM	41,2	4061	0,193
3	x	120RM	44,4	4926	0,153
3	x	150RM	49,4	6077	0,124
3	x	185RM	53,9	7448	0,0991
3	x	240RM	63,4	9816	0,0754
3	x	25RM/16RM	27,6	1540	0,725/1,15
3	x	35RM/16RM	29,5	1910	0,524/1,16
3	x	50RM/25RM	33,9	2564	0,387/0,725

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
3	x	70RM/35RM	37,6	3429	0,268/0,524
3	x	95RM/50RM	43,3	4632	0,193/0,387
3	x	120RM/70RM	47,3	5761	0,153/0,268
3	x	150RM/70RM	51,2	6859	0,124/0,268
3	x	185RM/95RM	56,5	8518	0,0991/0,193
3	x	240RM/120RM	63,4	10937	0,0754/0,153
4	x	1,5RE	16	349	12,1
4	x	2,5RE	16,9	411	7,41
4	x	4RE	18,1	499	4,61
4	x	6RE	19,2	604	3,08
4	x	10RE	21,1	808	1,83
4	x	16RE	23,3	1087	1,15
4	x	16RM	24,3	1134	1,15
4	x	25RM	28,7	1652	0,727
4	x	35RM	31,2	2121	0,524
4	x	50RM	36,1	2862	0,387
4	x	70RM	39,7	3801	0,268
4	x	70RM+35RM	42,1	4303	0,268/0,524
4	x	95RM	45,6	5124	0,193
4	x	120RM	49,7	6312	0,153
4	x	150RM	54,9	7712	0,124
4	x	185RM	60,3	9535	0,0991
4	x	240RM	67,7	12224	0,0754
5	x	1,5RE	17,3	409	12,1
5	x	2,5RE	18,3	485	7,41
5	x	4RE	19,5	591	4,61
5	x	6RE	20,9	725	3,08
5	x	6RM	21,3	173	3,08
5	x	10RE	23	976	1,83
5	x	16RE	25,4	1320	1,15
5	x	16RM	26,6	1379	1,15
5	x	25RM	31,4	2019	0,727
5	x	35RM	34,5	2593	0,524
5	x	50RM	39,9	3500	0,387
5	x	70RM	43,8	4657	0,268
5	x	95RM	51	6368	0,193
5	x	120RM	54,9	7744	0,153
5	x	150RM	61,3	9571	0,124
5	x	185RM	66,8	11741	0,0991
5	x	240RM	75	15059	0,0754
7	x	1,5RE	18,6	478	12,1
7	x	2,5RE	19,7	575	7,41
7	x	4RE	21,1	713	4,61
7	x	4RM	22	748	4,61
10	x	1,5RE	22,9	661	12,1
10	x	1,5RM	23,7	692	12,1
10	x	2,5RE	24,4	801	7,41

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
10	x	2,5RM	25,4	841	7,41
12	x	1,5RE	23,5	721	12,1
12	x	1,5RM	24,4	754	12,1
12	x	2,5RE	25,1	881	7,41
12	x	2,5RM	26,2	924	7,41
14	x	1,5RE	24,7	797	12,1
14	x	1,5RM	25,6	832	12,1
14	x	2,5RE	26,3	978	7,41
14	x	2,5RM	27,4	1024	7,41
16	x	1,5RE	25,9	885	12,1
16	x	1,5RM	26,8	924	12,1
16	x	2,5RE	27,7	1092	7,41
16	x	2,5RM	28,9	1144	7,41
19	x	1,5RE	27,2	984	12,1
19	x	1,5RM	28,2	1026	12,1
19	x	2,5RE	29,1	1221	7,41
19	x	2,5RM	30,4	1278	7,41
20	x	1,5RE	28,5	1088	12,1
20	x	1,5RM	29,6	1139	12,1
24	x	1,5RE	31,5	1224	12,1
24	x	1,5RM	32,7	1278	12,1
24	x	2,5RE	33,8	1525	7,41
24	x	2,5RM	35,3	1596	7,41
30	x	1,5RE	33,3	1419	12,1
30	x	1,5RM	34,6	1481	12,1
30	x	2,5RE	35,9	1800	7,41
30	x	2,5RM	37,5	1882	7,41
37	x	1,5RE	36	1683	12,1
37	x	1,5RM	37,4	1754	12,1

Halogen-free low smoke fire resistant security power cables with copper concentric conductor



FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E30:	DIN 4102-12 (30 min.)
Flame propagation:	DIN EN 60332-3-22, VDE 0482-332-3-22, IEC 60332-3-22
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) according to EN 60228
Insulation:	special fire resistant cross-linked compound
Inner covering:	special flame-retardant and halogen-free compound
Concentric conductor:	inner layer - round copper wires, outer layer - copper tape
Separator:	tape
Sheath:	thermoplastic halogen-free compound type HM4 according to DIN VDE 0276-604

CHARACTERISTIC

Colour of sheath:	orange
Core identification:	according to HD 308 S2 or EN 50334
2-core:	blue, brown
3-core:	brown, black, grey
3 core:*	blue, brown, black
4-core:	blue, brown, black, grey
≥ 7-core:	black with numbering
*For certain applications only.	
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15D - for single core cable; 12D - for multicore cable (D - overall cable diameter)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ² , (total cross-section of the conductors, any screen not included)
Application:	Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.
Standard packing:	500 m or 1000m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
2	x	1,5RE/1,5	13,4	250	12,1/12,1
2	x	1,5RM/1,5	13,8	261	12,1/12,1
2	x	2,5RE/1,5	14,2	288	7,41/7,41
2	x	2,5RM/1,5	14,7	305	7,41/7,41
2	x	4RE/4	15,5	363	4,61/4,61
2	x	6RE/6	16,8	446	3,08/3,08
2	x	10RE/10	18,5	606	1,83/1,83
2	x	16RE/16	20,8	831	1,15/1,15
2	x	16RM/16	21,6	871	1,15/1,15
2	x	25RM/16	25,0	1133	0,727/1,15
3	x	1,5RE/1,5	13,9	272	12,1/12,1
3	x	1,5RM/1,5	14,4	287	12,1/12,1
3	x	2,5RE/2,5	14,8	322	7,41/7,41
3	x	2,5RM/2,5	15,3	340	7,41/7,41
3	x	4RE/4	16,1	409	4,61/4,61
3	x	6RE/6	17,5	510	3,08/3,08
3	x	10RE/10	19,3	702	1,83/1,83
3	x	16RE/16	21,7	978	1,15/1,15
3	x	16RM/16	22,6	1022	1,15/1,15
3	x	25RM/16	26,3	1371	0,727/1,15
3	x	35RM/16	28,6	1713	0,524/1,15
3	x	50RM/25	32,4	2309	0,387/0,727
3	x	70RM/35	36,0	3139	0,268/0,524
3	x	95RM/50	41,5	4287	0,193/0,387
3	x	120RM/70	45,4	5322	0,153/0,268
3	x	150RM/70	50,4	6422	0,124/0,268
3	x	185RM/95	54,9	7970	0,0991/0,193
3	x	240RM/120	62,9	10311	0,0754/0,153
4	x	1,5RE/1,5	14,8	308	12,1/12,1
4	x	1,5RM/1,5	15,3	324	12,1/12,1
4	x	2,5RE/2,5	15,7	368	7,41/7,41
4	x	2,5RM/2,5	16,3	388	7,41/7,41
4	x	4RE/4	17,2	471	4,61/4,61
4	x	6RE/6	18,7	593	3,08/3,08
4	x	10RE/10	20,7	826	1,83/1,83
4	x	16RE/16	23,4	1159	1,15/1,15
4	x	16RM/16	24,4	1210	1,15/1,15
4	x	25RM/16	28,5	1654	0,727/1,15
4	x	35RM/16	31,1	2106	0,524/1,15
4	x	50RM/25	36,0	2890	0,387/0,727
4	x	70RM/35	39,5	3894	0,268/0,524
4	x	95RM/50	45,6	5322	0,193/0,387
4	x	120RM/70	50,3	6645	0,153/0,268
4	x	150RM/70	55,6	8022	0,124/0,268
4	x	185RM/95	61,0	10008	0,0991/0,193
4	x	240RM/120	69,3	12874	0,0754/0,153
5	x	1,5RE/1,5	15,8	354	12,1/12,1
5	x	1,5RM/1,5	16,3	371	12,1/12,1
5	x	2,5RE/2,5	16,8	425	7,41/7,41
5	x	2,5RM/2,5	17,5	451	7,41/7,41
5	x	4RE/4	18,4	548	4,61/4,61
5	x	6RE/6	20,1	693	3,08/3,08
5	x	10RE/10	22,3	974	1,83/1,83

Number and cross-sectional area of conductor		Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²		mm	kg/km	Ω/km
5	x 16RE/16	25,2	1368	1,15/1,15
5	x 16RM/16	26,4	1432	1,15/1,15
5	x 25RM/16	31,0	1993	0,727/1,15
5	x 35RM/16	34	2549	0,524/1,15
5	x 50RM/25	39,4	3489	0,387/0,727
5	x 70RM/35	43,3	4709	0,268/0,524
5	x 95RM/50	50,5	6491	0,193/0,387
5	x 120RM/70	55,3	8050	0,153/0,268
5	x 150RM/70	61,7	9814	0,124/0,268
5	x 185RM/95	67,0	12122	0,0991/0,193
5	x 240RM/120	76,3	15640	0,0754/0,153
6	x 1,5RM/2,5	16,8	399	12,1/7,41
6	x 2,5RM/2,5	18,7	514	7,41/7,41
7	x 1,5RE/2,5	16,8	408	12,1/7,41
7	x 2,5RE/2,5	17,9	501	7,41/7,41
7	x 2,5RM/2,5	18,7	530	7,41/7,41
7	x 4RE/4	19,7	653	4,61/4,61
7	x 4RM/4	20,6	693	4,61/4,61
8	x 2,5RE/4	18,2	477	12,1/7,41
8	x 2,5RM/4	19,2	579	7,41/4,61
10	x 1,5RE/2,5	20,1	546	12,1/7,41
10	x 1,5RM/2,5	20,9	577	12,1/7,41
10	x 2,5RE/4	22,0	705	7,41/4,61
10	x 2,5RM/4	23,0	747	7,41/4,61
12	x 1,5RE/2,5	20,7	596	12,1/7,41
12	x 1,5RM/2,5	21,5	636	12,1/7,41
12	x 2,5RE/4	22,5	771	7,41/4,61
12	x 2,5RM/4	23,6	819	7,41/4,61
14	x 1,5RE/2,5	21,5	660	12,1/7,41
14	x 1,5RM/2,5	22,4	698	12,1/7,41
14	x 2,5RE/6	23,6	864	7,41/3,08
14	x 2,5RM/6	24,7	912	7,41/3,08
16	x 1,5RE/4	22,8	746	12,1/4,61
16	x 1,5RM/4	23,7	787	12,1/4,61
16	x 2,5RE/6	24,7	952	7,41/3,08
16	x 2,5RM/6	25,9	1010	7,41/3,08
19	x 1,5RE/4	23,8	822	12,1/4,61
19	x 1,5RM/4	24,8	868	12,1/4,61
19	x 2,5RE/6	25,8	1061	7,41/3,08
19	x 2,5RM/6	27,1	1125	7,41/3,08
20	x 1,5RE/6	24,9	906	12,1/3,08
20	x 1,5RM/6	26,0	959	12,1/3,08
20	x 2,5RM/10	28,6	1264	7,41/1,83
24	x 1,5RE/6	27,3	1018	12,1/3,08
24	x 1,5RM/6	28,5	1076	12,1/3,08
24	x 2,5RE/10	30,1	1358	7,41/1,83

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
24	x	2,5RM/10	31,6	1438	7,41/1,83
27	x	1,5RM/6	29,0	1151	12,1/3,08
27	x	2,5RM/10	32,3	1547	7,41/1,83
30	x	1,5RE/6	28,7	1172	12,1/3,08
30	x	1,5RM/6	29,9	1237	12,1/3,08
30	x	2,5RE/10	31,7	1574	7,41/1,83
30	x	2,5RM/10	32,9	1673	7,41/1,83
37	x	1,5RE/10	31,2	1418	12,1/1,83
37	x	1,5RM/10	32,2	1503	12,1/1,83
37	x	2,5RM/10	35,8	2011	7,41/1,83



Halogen-free low smoke fire resistant security power cables with copper concentric conductor

FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E90:	DIN 4102-12 (90 min.)
Flame propagation:	DIN EN 60332-3-22, VDE 0482-332-3-22, IEC 60332-3-22
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) according to EN 60228
Insulation:	special fire resistant cross-linked compound
Inner covering:	special flame-retardant and halogen-free compound
Concentric conductor:	inner layer - round copper wires, outer layer - copper tape
Separator:	tape
Sheath:	thermoplastic halogen-free compound type HM4 according to DIN VDE 0276-604

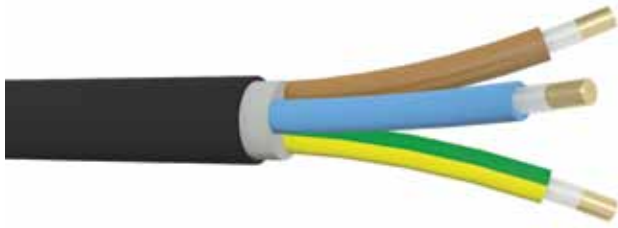
CHARACTERISTIC

Colour of sheath:	orange
Core identification:	according to HD 308 S2 or EN 50334
2-core:	blue, brown
3-core:	brown, black, grey
3 core*:	blue, brown, black
4-core:	blue, brown, black, grey
5-core:	blue, brown, black, grey, black
≥ 7-core:	black with numbering
*For certain applications only.	
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15D - for single core cable; 12D - for multicore cable (D - overall cable diameter)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ² , (total cross-section in mm ² of the conductors (any screen not included))
Application:	Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
2	x	1,5RE/1,5	13,8	261	12,1/12,1
2	x	2,5RE//2,5	14,6	302	7,41/7,41
2	x	4RE/4	15,9	378	4,61/4,61
2	x	6RE/6	17,2	462	3,08/3,08
2	x	10RE/10	18,9	623	1,83/1,83
2	x	16RE/16	21,2	850	1,15/1,15
2	x	16RM/16	22,0	891	1,15/1,15
2	x	25RM/16	25,4	1154	0,727/1,15
3	x	1,5RE/1,5	14,4	287	12,1/12,1
3	x	2,5RE/2,5	15,2	336	7,41/7,41
3	x	4RE/4	16,6	425	4,61/4,61
3	x	6RE/6	17,9	526	3,08/3,08
3	x	10RE/10	19,7	720	1,83/1,83
3	x	16RE/16	22,2	999	1,15/1,15
3	x	16RM/16	23,1	1044	1,15/1,15
3	x	25RM/16	26,7	1393	0,727/1,15
3	x	35RM/16	29,0	1739	0,524/1,15
3	x	50RM/25	32,9	2339	0,387/0,727
3	x	70RM/35	36,5	3172	0,268/0,524
3	x	95RM/50	42,4	4364	0,193/0,387
3	x	120RM/70	46,3	5404	0,153/0,268
3	x	150RM/70	51,3	6513	0,124/0,268
3	x	185RM/95	55,8	8071	0,0991/0,193
3	x	240RM/120	63,7	10423	0,0754/0,153
4	x	1,5RE/1,5	15,3	325	12,1/12,1
4	x	2,5RE/2,5	16,2	384	7,41/7,41
4	x	4RE/4	17,7	489	4,61/4,61
4	x	6RE/6	19,2	611	3,08/3,08
4	x	10RE/10	21,2	848	1,83/1,83
4	x	16RE/16	23,9	1183	1,15/1,15
4	x	16RM/16	24,9	1232	1,15/1,15
4	x	25RM/16	29,0	1682	0,727/1,15
4	x	35RM/16	31,5	2136	0,524/1,15
4	x	50RM/25	36,4	2924	0,387/0,727
4	x	70RM/35	40,0	3933	0,268/0,524
4	x	95RM/50	46,6	5415	0,193/0,387
4	x	120RM/70	51,2	6744	0,153/0,268
4	x	150RM/70	56,6	8135	0,124/0,268
4	x	185RM/95	62,0	10132	0,0991/0,193
4	x	240RM/120	70,3	13013	0,0754/0,153
5	x	1,5RE/1,5	16,3	371	12,1/12,1
5	x	2,5RE/2,5	17,3	445	7,41/7,41
5	x	4RE/4	19,0	570	4,61/4,61
5	x	6RE/6	20,6	716	3,08/3,08
5	x	10RE/10	22,8	1000	1,83/1,83
5	x	16RE/10	25,8	1397	1,15/1,15

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
5	x	16RM/16	26,9	1461	1,15/1,15
5	x	25RM/16	31,5	2026	0,727/1,15
5	x	35RM/16	33,9	2581	0,524/1,15
5	x	50RM/25	39,9	3531	0,387/0,727
5	x	70RM/35	43,9	4760	0,268/0,524
5	x	95RM/50	51,5	6600	0,193/0,387
5	x	120RM/70	56,4	8174	0,153/0,268
5	x	150RM/70	62,8	9953	0,124/0,268
5	x	185RM/95	68,1	12273	0,0991/0,193
5	x	240RM/120	77,4	15810	0,0754/0,153
7	x	1,5RE/2,5	17,4	431	12,1/7,41
7	x	2,5RE/2,5	18,5	523	7,41/7,41
7	x	4RE/4	20,3	679	4,61/4,61
7	x	4RM/4	21,2	720	4,61/4,61
10	x	1,5RE/2,5	20,9	578	12,1/7,41
10	x	1,5RM/2,5	21,7	617	12,1/7,41
10	x	2,5RE/4	22,8	739	7,41/4,61
10	x	2,5RM/4	23,8	781	7,41/4,61
12	x	1,5RE/2,5	21,5	637	12,1/7,41
12	x	1,5RM/2,5	22,3	672	12,1/7,41
12	x	2,5RE/4	23,4	810	7,41/4,61
12	x	2,5RM/4	24,4	854	7,41/4,61
14	x	1,5RE/2,5	22,4	699	12,1/7,41
14	x	1,5RM/2,5	23,3	738	12,1/7,41
14	x	2,5RE/6	24,5	903	7,41/3,08
14	x	2,5RM/6	25,6	955	7,41/3,08
16	x	1,5RE/4	23,7	789	12,1/4,61
16	x	1,5RM/4	24,7	830	12,1/4,61
16	x	2,5RE/6	25,6	998	7,41/3,08
16	x	2,5RM/6	26,8	1057	7,41/3,08
19	x	1,5RE/4	24,8	870	12,1/4,61
19	x	1,5RM/4	25,8	917	12,1/4,61
19	x	2,5RE/6	26,8	1112	7,41/3,08
19	x	2,5RM/6	28,1	1178	7,41/3,08
20	x	1,5RE/6	26,0	960	12,1/3,08
20	x	1,5RM/6	27,0	1014	12,1/3,08
24	x	1,5RE/6	28,5	1078	12,1/3,08
24	x	1,5RM/6	29,7	1138	12,1/3,08
24	x	2,5RE/10	31,3	1423	7,41/1,83
24	x	2,5RM/10	32,4	1513	7,41/1,83

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
30	x	1,5RE/6	29,9	1240	12,1/3,08
30	x	1,5RM/6	31,2	1310	12,1/3,08
30	x	2,5RE/10	32,6	1655	7,41/1,83
30	x	2,5RM/10	34,2	1752	7,41/1,83
37	x	1,5RE/10	32,2	1506	12,1/1,83
37	x	1,5RM/10	33,6	1588	12,1/1,83



**Halogen-free low
smoke fire resistant
security power cables**

FIRE PERFORMANCE

Flame retardant:	IEC 60332-3-24 Category C
Smoke density:	IEC 61034-2
Gases evolved during combustion:	IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/cm
Insulation integrity under flame propagation:	IEC 60331-21

CONSTRUCTION

Conductors:	bare annealed copper conductor, solid circular class 1 or stranded circular or shaped class 2 acc. to EN 60228
Primary insulation:	a suitable wrapping of mica tape with a glass cloth
Insulation:	cross-linked polyethylene
Inner covering:	special flame-retardant and halogen-free compound
Sheath:	thermoplastic halogen - free compound type ST ₈ acc. to IEC 60502-1

CHARACTERISTIC

Colour of sheath:	Black (available also in Orange)
Core identification:	HD 308 S2

	without protective conductor-0	with protective conductor-J
1-core	black	green-yellow
2-core	blue, brown	-
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
7 and more:	numbering	green-yellow, other cores with numbering

Maximum conductor operating temperature: +90°C

Lowest ambient temperature for fixed installation: -40°C

Lowest installation temperature: -5°C

Maximum short-circuit conductor temperature: +250°C

Minimum bending radius: 12 x D (D is the overall diameter of the cable)

Maximum permissible tensile stress with cable grip for Cu-conductor: 50 N/mm²

Application: Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.

Standard length cable packing: 500 or 1000m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cable	Maximum conductor resistance at 20oC
n x mm ²	mm	mm	mm	kg/km	Ω/km
1x1,5RE	0,7	1,8	7,3	70	12,1
1x2,5RE	0,7	1,8	7,7	82	7,41
1x4RE	0,7	1,8	8,2	101	4,61
2x1,5RE	0,7	1,8	13,0	231	12,1
2x2,5RE	0,7	1,8	13,8	271	7,41
2x4RE	0,7	1,8	14,7	324	4,61
2x6RE	0,7	1,8	15,7	388	3,08
3x1,5RE	0,7	1,8	13,6	253	12,1
3x2,5RE	0,7	1,8	14,4	300	7,41
3x4RE	0,7	1,8	15,4	366	4,61
3x6RE	0,7	1,8	16,5	448	3,08
3x10RE	0,7	1,8	18,2	603	1,83
3x16RE	0,7	1,8	20,1	815	1,15
4x1,5RE	0,7	1,8	14,6	289	12,1
4x2,5RE	0,7	1,8	15,5	346	7,41
4x4RE	0,7	1,8	16,6	428	4,61
4x10RE	0,7	1,8	19,7	724	1,83
4x16RE	0,7	1,8	21,9	992	1,15
5x1,5RE	0,7	1,8	15,6	331	12,1
5x2,5RE	0,7	1,8	16,7	402	7,41
5x4RE	0,7	1,8	17,9	501	4,61
5x6RE	0,7	1,8	19,2	624	3,08
5x10RE	0,7	1,8	21,4	864	1,83
5x16RE	0,7	1,8	23,8	1192	1,15
10x1,5RE	0,7	1,8	20,6	477	12,1

Halogen-free low
smoke fire resistant
security power cables



FIRE PERFORMANCE

Flame retardant:	IEC 60332-3-24 Category C
Smoke density:	IEC 61034-2: light transmittance values > 70%
Gases evolved during combustion:	IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm
Insulation integrity under flame propagation:	IEC 60331-21

CONSTRUCTION

Conductors:	bare annealed copper conductor, solid circular class 1 or stranded circular or shaped class 2 acc. to EN 60228
Primary insulation:	a suitable wrapping of mica tape with a glass cloth
Insulation:	cross-linked polyethylene
Inner covering:	special flame-retardant and halogen-free compound
Sheath:	thermoplastic halogen - free compound type ST8 acc. to IEC 60502-1

CHARACTERISTIC

Colour of sheath:	Black (Orange available on request)
Core identification:	HD 308 S2
2-core:	blue, brown
4-core:	blue, brown, black, grey
7 and more:	numbering
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-5°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	12 x D (D is the overall diameter of the cable)
Application:	Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.
Standard packing:	500 or 1000m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
2	x	1,5RE/1,5	0,7	1,8	14,2	266	12,1/12,1
2	x	2,5RE/2,5	0,7	1,8	15,0	305	7,41/7,41
2	x	4RE/4	0,7	1,8	16,3	379	4,61/4,61
2	x	6RE/6	0,7	1,8	17,6	463	3,08/3,08
3	x	1,5RE/1,5	0,7	1,8	14,8	288	12,1/12,1
3	x	2,5RE/2,5	0,7	1,8	15,6	335	7,41/7,41
3	x	4RE/4	0,7	1,8	17,0	422	4,61/4,61
3	x	6RE/6	0,7	1,8	18,4	523	3,08/3,08
3	x	10RE/10	0,7	1,8	20,2	715	1,83/1,83
3	x	16RE/16	0,7	1,8	24,2	1003	1,15/1,15
4	x	1,5RE/1,5	0,7	1,8	15,8	323	12,1/12,1
4	x	2,5RE/2,5	0,7	1,8	16,7	381	7,41/7,41
4	x	4RE/4	0,7	1,8	18,2	484	4,61/4,61
4	x	10RE/10	0,7	1,8	21,7	837	1,83/1,83
4	x	16RE/16	0,7	1,8	24,4	1167	1,15/1,15
5	x	1,5RE/1,5	0,7	1,8	16,8	365	12,1/12,1
5	x	2,5RE/2,5	0,7	1,8	17,9	437	7,41/7,41
5	x	4RE/4	0,7	1,8	19,5	558	4,61/4,61
5	x	6RE/6	0,7	1,8	21,1	700	3,08/3,08
5	x	10RE/10	0,7	1,8	25,0	992	1,83/1,83
5	x	16RE/16	0,7	1,8	26,3	1369	1,15/1,15
10	x	1,5RE/2,5	0,7	1,8	21,7	572	12,1/7,41

Halogen-free low smoke fire resistant security power cables with copper concentric conductor



FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E30:	DIN VDE 4102-12 (30 min.)
Flame propagation:	DIN EN 60332-3-22, VDE 0482-332-3-22, IEC 60332-3-22
Smoke density:	DIN VDE 0472-1034-2, IEC 61034-2
Gases evolved during combustion:	VDE 0482-267-2-2, DIN EN 50267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) acc. to EN 60228
Primary insulation:	a suitable wrapping of mica tape with a glass cloth
Insulation:	special cross-linked compound
Inner covering:	special flame-retardant and halogen-free compound
Concentric conductor:	inner layer - round copper wires, outer layer - copper tape
Separator:	tape
Sheath:	thermoplastic halogen-free compound type HM4 acc. to DIN VDE 0276-604

CHARACTERISTIC

Colour of sheath:	orange
Core identification:	acc. to HD 308 S2
2-core:	blue, brown
3-core:	brown, black, grey
3 core-*	blue, brown, black
4-core:	blue, brown, black, grey
5-core:	blue, brown, black, grey, black
≥ 7-core:	black with numbering
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15 x D - for single core cable; 12 x D - for multicore cable (D is the overall diameter of the cable)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ² , calculated for the nominal sum of cross-sections of the inner conductors; the cross-section of the concentric conductors not be considered.
Application:	Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

*For certain applications only.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
2	x	1,5RE/1,5	15,3	312	12,1/12,1
2	x	2,5RE/2,5	16,1	354	7,41/7,41
2	x	4RE/4	17,4	432	4,61/4,61
2	x	6RE/6	18,7	521	3,08/3,08
2	x	10RE/10	20,4	685	1,83/1,83
2	x	16RE/16	22,7	919	1,15/1,15
2	x	16RM/16	23,5	963	1,15/1,15
2	x	25RM/16	27,1	1242	0,727/1,15
3	x	1,5RE/1,5	16,0	340	12,1/12,1
3	x	2,5RE/2,5	16,8	391	7,41/7,41
3	x	4RE/4	18,2	484	4,61/4,61
3	x	6RE/6	19,6	588	3,08/3,08
3	x	10RE/10	21,4	789	1,83/1,83
3	x	16RE/16	23,8	1072	1,15/1,15
3	x	16RM/16	24,7	1120	1,15/1,15
3	x	25RM/16	28,6	1488	0,727/1,15
3	x	35RM/16	30,9	1841	0,524/1,15
3	x	50RM/25	34,7	2453	0,387/0,727
3	x	70RM/35	38,4	3306	0,268/0,524
3	x	95RM/50	43,9	4479	0,193/0,387
3	x	120RM/70	47,8	5527	0,153/0,268
3	x	150RM/70	52,8	6650	0,124/0,268
3	x	185RM/95	57,3	8219	0,0991/0,193
3	x	240RM/120	65,3	10592	0,0754/0,153
4	x	1,5RE/1,5	17,1	386	12,1/12,1
4	x	2,5RE/2,5	18,0	448	7,41/7,41
4	x	4RE/4	19,6	557	4,61/4,61
4	x	6RE/6	21,0	682	3,08/3,08
4	x	10RE/10	23,0	924	1,83/1,83
4	x	16RE/16	25,7	1263	1,15/1,15
4	x	16RM/16	26,7	1318	1,15/1,15
4	x	25RM/16	31,1	1791	0,727/1,15
4	x	35RM/16	33,6	2257	0,524/1,15
4	x	50RM/25	38,5	3064	0,387/0,727
4	x	50RM/35	38,8	3178	0,387/0,524
4	x	70RM/35	42,2	4093	0,268/0,524
4	x	95RM/50	48,3	5552	0,193/0,387
4	x	120RM/70	52,9	6893	0,153/0,268
4	x	150RM/70	58,3	8298	0,124/0,268
4	x	185RM/95	63,7	10312	0,0991/0,193
4	x	240RM/120	72,0	13214	0,0754/0,153
5	x	1,5RE/1,5	18,4	447	12,1/12,1
5	x	2,5RE/2,5	19,4	523	7,41/7,41
5	x	4RE/4	21,0	651	4,61/4,61
5	x	6RE/6	22,7	804	3,08/3,08
5	x	10RE/10	24,9	1091	1,83/1,83
5	x	16RE/16	27,8	1498	1,15/1,15
5	x	16RM/16	29,0	1566	1,15/1,15
5	x	25RM/16	33,8	2160	0,727/1,15
5	x	35RM/16	36,3	2728	0,524/1,15
5	x	50RM/25	42,3	3701	0,387/0,727
5	x	70RM/35	46,3	4952	0,268/0,524
5	x	95RM/50	53,5	6770	0,193/0,387

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
5	x	120RM/70	58,3	8354	0,153/0,268
5	x	150RM/70	64,7	10154	0,124/0,268
5	x	185RM/95	70,0	12491	0,0994/0,193
5	x	240RM/120	79,3	16054	0,0754/0,153
7	x	1,5RE/2,5	19,7	516	12,1/7,41
7	x	2,5RE/2,5	20,8	613	7,41/7,41
7	x	4RE/4	22,5	777	4,61/4,61
7	x	4RM/4	23,4	821	4,61/4,61
10	x	1,5RE/2,5	24,0	707	12,1/7,41
10	x	1,5RM/2,5	24,8	742	12,1/7,41
10	x	2,5RE/4	25,8	865	7,41/4,61
10	x	2,5RM/4	26,8	913	7,41/4,61
12	x	1,5RE/2,5	24,6	767	12,1/7,41
12	x	1,5RM/2,5	25,5	806	12,1/7,41
12	x	2,5RE/4	26,5	946	7,41/4,61
12	x	2,5RM/4	27,6	998	7,41/4,61
14	x	1,5RE/2,5	25,8	844	12,1/7,41
14	x	1,5RM/2,5	26,7	886	12,1/7,41
14	x	2,5RE/6	27,8	1055	7,41/3,08
14	x	2,5RM/6	28,9	1112	7,41/3,08
16	x	1,5RE/4	27,3	950	12,1/4,61
16	x	1,5RM/4	28,2	997	12,1/4,61
16	x	2,5RE/6	29,2	1170	7,41/3,08
16	x	2,5RM/6	30,4	1235	7,41/3,08
19	x	1,5RE/4	28,6	1050	12,1/4,61
19	x	1,5RM/4	29,6	1102	12,1/4,61
19	x	2,5RE/6	30,6	1301	7,41/3,08
19	x	2,5RM/6	31,9	1373	7,41/3,08
20	x	1,5RE/6	30,0	1167	12,1/3,08
20	x	1,5RM/6	31,1	1228	12,1/3,08
24	x	1,5RE/6	33,0	1305	12,1/3,08
24	x	1,5RM/6	34,2	1371	12,1/3,08
24	x	2,5RE/10	35,5	1671	7,41/1,83
24	x	2,5RM/10	37,0	1762	7,41/1,83
30	x	1,5RE/6	34,8	1502	12,1/3,08
30	x	1,5RM/6	36,1	1578	12,1/3,08
30	x	2,5RE/10	37,4	1931	7,41/1,83
30	x	2,5RM/10	39,0	2036	7,41/1,83
37	x	1,5RE/10	37,5	1814	12,1/1,83
37	x	1,5RM/10	38,9	1904	12,1/1,83



Halogen-free, low smoke, fire resistant security power cables with copper concentric conductor

FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 min.), IEC 60331-21
System integrity E90:	DIN VDE 4102-12 (90 min.)
Flame propagation:	DIN EN 60332-3-22, VDE 0482-332-3-22, IEC 60332-3 -22
Smoke density:	DIN VDE 0472-1034-2, IEC 61034-2
Gases evolved during combustion:	VDE 0482-267-2-2, DIN EN 50267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare copper conductor, circular solid class 1 (RE) or stranded circular or circular compacted class 2 (RM) acc. to EN 60228
Primary insulation:	A suitable wrapping of mica tape with a glass cloth
Insulation:	special cross-linked compound
Inner covering:	special flame-retardant and halogen-free compound
Concentric conductor:	inner layer - round copper wires, outer layer - copper tape
Separator:	tape
Sheath:	thermoplastic halogen-free compound type HM4 acc. to DIN VDE 0276-604

CHARACTERISTIC

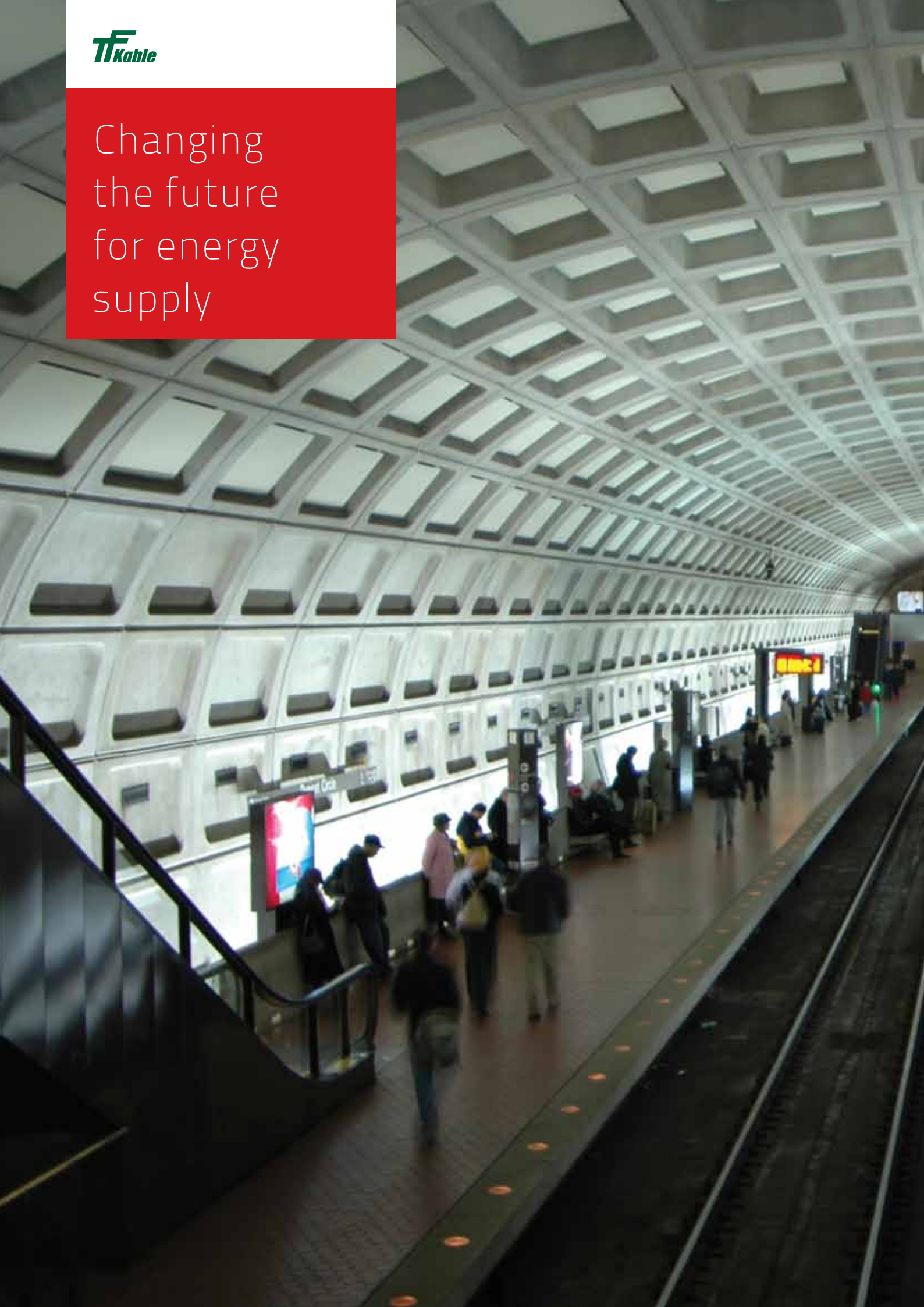
Colour of sheath:	orange
Core identification:	acc. to HD 308 S2
2-core:	blue, brown
3-core:	brown, black, grey
3 core*:	blue, brown, black
4-core:	blue, brown, black, grey
5-core:	blue, brown, black, grey, black
≥ 7-core:	black with numbering
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15 x D - for single core cable; 12 x D - for multicore cable (D is the overall diameter of the cable)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ² , calculated for the nominal sum of cross-sections of the inner conductors; the cross-section of the concentric conductors not be considered.
Application:	Fire resistant security cables for installation everywhere where high safety requirements have a special significance e.g., in industrial complexes, power stations, public buildings, hotels, underground railway systems, hospitals etc.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

*For certain applications only.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
2	x	1,5RE/1,5	15,3	312	12,1/12,1
2	x	2,5RE/2,5	16,1	354	7,41/7,41
2	x	4RE/4	17,4	432	4,61/4,61
2	x	6RE/6	18,7	521	3,08/3,08
2	x	10RE/10	20,4	685	1,83/1,83
2	x	16RE/16	22,7	919	1,15/1,15
2	x	16RM/16	23,5	963	1,15/1,15
2	x	25RM/16	27,1	1242	0,727/1,15
3	x	1,5RE/1,5	16,0	340	12,1/12,1
3	x	2,5RE/2,5	16,8	391	7,41/7,41
3	x	4RE/4	18,2	484	4,61/4,61
3	x	6RE/6	19,6	588	3,08/3,08
3	x	10RE/10	21,4	789	1,83/1,83
3	x	16RE/16	23,8	1072	1,15/1,15
3	x	16RM/16	24,7	1120	1,15/1,15
3	x	25RM/16	28,6	1488	0,727/1,15
3	x	35RM/16	30,9	1841	0,524/1,15
3	x	50RM/25	34,7	2453	0,387/0,727
3	x	70RM/35	38,4	3306	0,268/0,524
3	x	95RM/50	43,9	4479	0,193/0,387
3	x	120RM/70	47,8	5527	0,153/0,268
3	x	150RM/70	52,8	6650	0,124/0,268
3	x	185RM/95	57,3	8219	0,0991/0,193
3	x	240RM/120	65,3	10592	0,0754/0,153
4	x	1,5RE/1,5	17,1	386	12,1/12,1
4	x	2,5RE/2,5	18,0	448	7,41/7,41
4	x	4RE/4	19,6	557	4,61/4,61
4	x	6RE/6	21,0	682	3,08/3,08
4	x	10RE/10	23,0	924	1,83/1,83
4	x	16RE/16	25,7	1263	1,15/1,15
4	x	16RM/16	26,7	1318	1,15/1,15
4	x	25RM/16	31,1	1791	0,727/1,15
4	x	35RM/16	33,6	2257	0,524/1,15
4	x	50RM/25	38,5	3064	0,387/0,727
4	x	50RM/35	38,8	3178	0,387/0,524
4	x	70RM/35	42,2	4093	0,268/0,524
4	x	95RM/50	48,3	5552	0,193/0,387
4	x	120RM/70	52,9	6893	0,153/0,268
4	x	150RM/70	58,3	8298	0,124/0,268
4	x	185RM/95	63,7	10312	0,0991/0,193
4	x	240RM/120	72,0	13214	0,0754/0,153
5	x	1,5RE/1,5	18,4	447	12,1/12,1
5	x	2,5RE/2,5	19,4	523	7,41/7,41
5	x	4RE/4	21,0	651	4,61/4,61
5	x	6RE/6	22,7	804	3,08/3,08
5	x	10RE/10	24,9	1091	1,83/1,83
5	x	16RE/16	27,8	1498	1,15/1,15
5	x	16RM/16	29,0	1566	1,15/1,15
5	x	25RM/16	33,8	2160	0,727/1,15
5	x	35RM/16	36,3	2728	0,524/1,15
5	x	50RM/25	42,3	3701	0,387/0,727
5	x	70RM/35	46,3	4952	0,268/0,524
5	x	95RM/50	53,5	6770	0,193/0,387

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	kg/km	Ω/km
5	x	120RM/70	58,3	8354	0,153/0,268
5	x	150RM/70	64,7	10154	0,124/0,268
5	x	185RM/95	70,0	12491	0,0994/0,193
5	x	240RM/120	79,3	16054	0,0754/0,153
7	x	1,5RE/2,5	19,7	516	12,1/7,41
7	x	2,5RE/2,5	20,8	613	7,41/7,41
7	x	4RE/4	22,5	777	4,61/4,61
7	x	4RM/4	23,4	821	4,61/4,61
10	x	1,5RE/2,5	24,0	707	12,1/7,41
10	x	1,5RM/2,5	24,8	742	12,1/7,41
10	x	2,5RE/4	25,8	865	7,41/4,61
10	x	2,5RM/4	26,8	913	7,41/4,61
12	x	1,5RE/2,5	24,6	767	12,1/7,41
12	x	1,5RM/2,5	25,5	806	12,1/7,41
12	x	2,5RE/4	26,5	946	7,41/4,61
12	x	2,5RM/4	27,6	998	7,41/4,61
14	x	1,5RE/2,5	25,8	844	12,1/7,41
14	x	1,5RM/2,5	26,7	886	12,1/7,41
14	x	2,5RE/6	27,8	1055	7,41/3,08
14	x	2,5RM/6	28,9	1112	7,41/3,08
16	x	1,5RE/4	27,3	950	12,1/4,61
16	x	1,5RM/4	28,2	997	12,1/4,61
16	x	2,5RE/6	29,2	1170	7,41/3,08
16	x	2,5RM/6	30,4	1235	7,41/3,08
19	x	1,5RE/4	28,6	1050	12,1/4,61
19	x	1,5RM/4	29,6	1102	12,1/4,61
19	x	2,5RE/6	30,6	1301	7,41/3,08
19	x	2,5RM/6	31,9	1373	7,41/3,08
20	x	1,5RE/6	30,0	1167	12,1/3,08
20	x	1,5RM/6	31,1	1228	12,1/3,08
24	x	1,5RE/6	33,0	1305	12,1/3,08
24	x	1,5RM/6	34,2	1371	12,1/3,08
24	x	2,5RE/10	35,5	1671	7,41/1,83
24	x	2,5RM/10	37,0	1762	7,41/1,83
30	x	1,5RE/6	34,8	1502	12,1/3,08
30	x	1,5RM/6	36,1	1578	12,1/3,08
30	x	2,5RE/10	37,4	1931	7,41/1,83
30	x	2,5RM/10	39,0	2036	7,41/1,83
37	x	1,5RE/10	37,5	1814	12,1/1,83
37	x	1,5RM/10	38,9	1904	12,1/1,83

Changing
the future
for energy
supply





Single core non-sheathed fire resistant cable having low emission of smoke and corrosive gases when affected by fire



FIRE PERFORMANCE

Fire resistance:	IEC 60331-21, tested 90 min. at 950°C and BS 6387 category C, W, Z
Flame propagation:	EN 60332-1-2
Smoke emission:	EN 61034-2
Corrosive and acid gas emission:	BS EN 60754-1, HCl content < 0,5 % BS EN 60754-2, pH ≥ 4,3 conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	circular or compacted circular, stranded, annealed copper conductor, class 2 according to BS EN 60228
Primary insulation:	a suitable wrapping of mica tape with a glass cloth
Insulation:	special thermosetting LSOH compound of EIS type according to BS EN 50363-5

CHARACTERISTIC

Core identification:	green/yellow, blue, black, brown, grey, red, yellow. Other colours are available on special request.
Maximum conductor operating temperature:	+90°C
Lowest installation temperature:	-5°C
Maximum short-circuit conductor temperature:	+250°C
Application:	for use in fixed installations, where cable is protected by conduit or trunking. Fire resistant cables intended to provide circuit integrity in case of fire.
Standard packing:	100 m in coils or on spools, or 500 m on drums. Other forms of packing and delivery are available on request.

Nominal cross-sectional area of conductor	Radial thickness of insulation	Approximate overall diameter	Approximate net weight	Maximum resistance of conductor at temperature 20°C
mm ²	mm	mm	kg/km	Ω/km
1,5	0,7	3,90	25,3	12,1
2,5	0,8	4,60	38	7,41
4	0,8	5,10	53	4,61
6	0,8	5,40	71	3,08
10	1,0	6,70	116	1,83
16	1,0	7,80	173	1,15
25	1,2	9,60	270	0,727
35	1,2	10,60	361	0,524
50	1,4	12,30	490	0,387
70	1,4	13,70	683	0,268
95	1,6	16,10	942	0,193
120	1,6	17,50	1171	0,153
150	1,8	19,50	1445	0,124
185	2,0	21,40	1800	0,0991

Nominal cross-sectional area of conductor	Radial thickness of insulation	Approximate overall diameter	Approximate net weight	Maximum resistance of conductor at temperature 20°C
mm ²	mm	mm	kg/km	Ω/km
240	2,2	24,3	2338	0,0754
300	2,4	26,50	2918	0,0601
400	2,6	29,60	3766	0,0470
500	2,8	33,20	4810	0,0366

Nominal cross-sectional area of conductor	Short circuit current ratings (1 sec)	Current Rating*Two cables, single phase AC or DC	Current Rating*Three or four cables, three phase AC	Voltage Drop** Two cables DC	Voltage Drop** Two cables, single phase AC	Voltage Drop** Three or four cables, three phase A.C
mm ²	Amps	Amps	Amps	mV/A/m	mV/A/m	mV/A/m
1,5	210	22	19	31	31	27
2,5	350	30	26	19	19	16
4	570	40	35	12	12	10
6	850	51	45	7,9	7,9	6,8
10	1400	71	63	4,7	4,7	4,0
16	2200	95	85	2,9	2,9	2,5
25	3600	126	111	1,85	1,90	1,65
35	5000	156	138	1,35	1,35	1,15
50	6800	189	168	0,99	1,05	0,90
70	9800	240	214	0,68	0,75	0,65
95	13600	290	259	0,49	0,58	0,50
120	17200	336	299	0,39	0,48	0,42
150	21100	375	328	0,32	0,43	0,37
185	26500	426	370	0,25	0,37	0,32
240	34900	500	433	0,190	0,33	0,29
300	43700	573	493	0,155	0,31	0,27
400	55900	683	584	0,120	0,29	0,25
500	70600	783	666	0,093	0,28	0,24

* Installation reference method 3 (enclosed in conduit on a wall or in trunking etc.) as per BS 7671, Appendix 4. Conductor operating temperature 90°C, ambient temperature 30°C.

** Installation reference methods 3 and 4 (enclosed in conduit, etc. in or on a wall) as per BS 7671, Appendix 4. Conductor operating temperature 90°C, ambient temperature 30°C.



Standard level fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire

FIRE PERFORMANCE

Fire resistance:	BS 6387 Category C, W, Z BS EN 50200 Class PH30 (resistance to fire, with mechanical shock and with water: 30 min) BS 5839-1:2002 Clause 26.2d PH 30 Standard fire resistant cable
Flame propagation:	BS EN 60332-1-2 and BS EN 60332-3-22
Smoke emission:	BS EN 61034-2
Gases evolved during combustion:	BS EN 60754-1, HCl content < 0,5 % BS EN 60754-2, pH ≥ 4,3 conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	plain annealed copper solid class 1 (for 1 - 2,5 mm ²) and stranded class 2 (for 4 mm ²) according to BS EN 60228
Uninsulated circuit protective conductor:	tinned annealed copper of the same nominal cross-sectional area and of the same class as the insulated conductors
Drain wire	tinned annealed copper wires class 2 acc. to BS EN 60228 (for cables with 7, 12, 19-cores)
Insulation:	special cross-linked heat resistant compound according to BS EN 50363.1
Optional binder:	non hygroscopic halogen free tape
Screen:	aluminium/polyester laminated tape and uninsulated circuit protective conductor
Outer sheath:	thermoplastic zero halogen low smoke compound according to BS 7655-6.1

CHARACTERISTIC

Colour of sheath:	red or white (other colours are permissible when agreed with the manufacturer)
Core identification:	2 core + ECC: brown, blue 3 core + ECC: brown, blue, grey 4 core + ECC: blue, brown, black, grey 7, 12, 19 – core + Drain wire: numbering or for identification by colour: in each layer: brown (starting core), black (reference core)
Maximum conductor operating temperature:	+70°C
Lowest temperature ambient for fixed installation:	-30°C
Lowest installation temperature:	0°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	6D (D - is the overall cable diameter)
Application:	Standard level fire resistance cables in accordance with recommendations of BS 5839-1:2002 clause 26.2. Tested and approved by BASEC and LPCB. For use in Installations emergency lighting and evacuation systems, fire and smoke detection systems air-conditioning and alarm systems, automatic elevator doors, computer control rooms, emergency evacuation communicators.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Conductor class	Nominal cross-sectional area of protective conductor ECC	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	Maximum ECC conductor resistance at 20°C
n x mm ²				mm ²	mm	kg/km	Ω/km	Ω/km
2	x	1RE+ECC	1	1	6,9	65	18,1	18,2
2	x	1,5RE+ECC	1	1,5	7,8	86	12,1	12,2
2	x	2,5RE+ECC	1	2,5	9,2	126	7,41	7,56
2	x	4RM+ECC	2	4	10,9	187	4,61	4,70
3	x	1RE+ECC	1	1	7,3	81	18,1	18,2
3	x	1,5RE+ECC	1	1,5	8,3	108	12,1	12,2
3	x	2,5RE+ECC	1	2,5	9,7	160	7,41	7,56
3	x	4RM+ECC	2	4	11,6	239	4,61	4,70
4	x	1RE+ECC	1	1	8,2	102	18,1	18,2
4	x	1,5RE+ECC	1	1,5	9,5	138	12,1	12,2
4	x	2,5RE+ECC	1	2,5	11,5	205	7,41	7,56
4	x	4RM+ECC	2	4	14,6	310	4,61	4,70
7	x	1RE	1	0,5	10,4	150	18,1	36,7
7	x	1,5RE	1	0,5	12,0	207	12,1	36,7
7	x	2,5RE	1	0,5	13,9	300	7,41	36,7
12	x	1,5RE	1	0,5	15,5	333	12,1	36,7
12	x	2,5RE	1	0,5	18,3	496	7,41	36,7
19	x	1,5RE	1	0,5	18,1	496	12,1	36,7



Enhanced grade fire resistant cables having low emission of smoke and corrosive gases when affected by fire

FIRE PERFORMANCE

Fire resistance:	Complies with the PH 120 ENHANCED fire resistant cable described in Clause 26.2 of BS 5839-1:2002 BS 6387 Category C,W,Z BS EN 50200 Class PH 120 BS 8434-2 duration 120 min (60 min for the fire 930°C and impact and 60 min for the fire 930°C, impact and water)
Flame propagation:	BS EN 60332-1-2 and BS EN 60332-3-22
Smoke emission:	BS EN 61034-2
Gases evolved during combustion:	BS EN 60754-1, HCl content < 0,5 % BS EN 60754-2, pH ≥ 4,3 conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	plain annealed copper solid class 1 (for 1 - 2,5 mm ²) and stranded class 2 (for 4 mm ²) according to BS EN 60228
Primary insulation:	fire resistant mica tape with a glass cloth
Uninsulated circuit protective conductor:	tinned annealed copper of the same nominal cross-sectional area and of the same class as the insulated conductors
Insulation:	glass impregnated mica tape and special cross-linked heat resistant compound type E12 according to BS EN 50363.1
Optional binder:	non hygroscopic halogen free tape
Screen:	aluminium/polyester laminated tape and uninsulated circuit protective conductor
Outer sheath:	thermoplastic zero halogen low smoke compound type LTS 3 according to BS 7655-6.1

CHARACTERISTIC

Colour of sheath:	red or white (other colours are available on special request)
Core identification:	2 core + ECC: brown, blue 3 core + ECC: brown, blue, grey 4 core + ECC: blue, brown, black, grey
Maximum conductor operating temperature:	+70°C
Lowest temperature ambient for fixed installation:	-30°C
Lowest installation temperature:	0°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	6D (D - overall cable diameter)
Application:	for use in Installations emergency lighting and evacuation systems, fire and smoke detection systems air-conditioning and alarm systems, automatic elevator doors, computer control rooms, emergency evacuation communicators. Recommended for systems, in particular building types, in which cables might need to operate correctly during a fire for periods in excess of those normally required for single phase evacuation of a building. Cables meeting the enhanced requirement should be used in buildings greater than 30 m in height, or with four or more evacuation zones, or for example hospitals, where there are progressive horizontal evacuation arrangements, or where a risk assessment identifies a possible need.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Conductor class	Nominal cross-sectional area of protective conductor ECC	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	Maximum ECC conductor resistance at 20°C
n x mm ²				mm ²	mm	kg/km	Ω/km	Ω/km
2	x	1RE+ECC	1	1	8,1	77	18,1	18,2
2	x	1,5RE+ECC	1	1,5	9,0	99	12,1	12,2
2	x	2,5RE+ECC	1	2,5	10,4	142	7,41	7,56
2	x	4RM+ECC	2	4	12,1	202	4,61	4,70
3	x	1RE+ECC	1	1	8,6	96	18,1	18,2
3	x	1,5RE+ECC	1	1,5	9,6	126	12,1	12,2
3	x	2,5RE+ECC	1	2,5	11,0	180	7,41	7,56
3	x	4RM+ECC	2	4	12,9	258	4,61	4,70
4	x	1RE+ECC	1	1	9,5	121	18,1	18,2
4	x	1,5RE+ECC	1	1,5	10,8	159	12,1	12,2
4	x	2,5RE+ECC	1	2,5	12,8	230	7,41	7,56
4	x	4RE+ECC	2	4	15,9	333	4,61	4,70



Fire resistant security power cable having low emission of smoke and corrosive gases when affected by fire

FIRE PERFORMANCE

Fire resistance:	BS 7846 Category F2 BS 6387 Category C, W, Z
Flame propagation:	BS EN 60332-1-2 and BS EN 60332-3-24
Smoke density:	BS EN 61034-2
Corrosive and acid gases emission:	BS EN 60754-1, HCl content < 0,5% BS EN 60754-2, pH ≥ 4,3 & conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	circular, circular compacted or shaped, stranded, annealed copper conductor, class 2 acc. to BS EN 60228
Primary insulation	a suitable wrapping of mica tape with a glass cloth
Insulation:	cross-linked polyethylene (XLPE) of GP8 type acc. to BS 7655-1.3
Bedding:	special low smoke zero halogen filling compound (only 2, 3, 4 cores)
Outer sheath:	thermoplastic LSOH compound of LTS1 type acc. to BS 7655-6.1

CHARACTERISTIC

Nominal voltage	0,6/1 kV		
Colour of sheath:	black (other colours available on special request)		
Core identification:	1-core	with green-yellow green-yellow	without green-yellow black
	2-core	-	brown, blue
	3-core	green-yellow, blue, brown	brown, black, grey
	4-core	green-yellow, brown, black, grey	blue, brown, black, grey
Maximum conductor operating temperature:	+90°C		
Lowest installation temperature	-5°C		
Maximum short-circuit conductor temperature:	+250°C		
Minimum bending radius:	6D - for cables with circular copper conductors and 8D - for cables with shaped copper conductors; (D - overall cable diameter)		
Application:	Fire resistant cables for use in fixed installations in industrial areas, public buildings (as for example power plants, hospitals, shopping centres, theatres) and similar applications where maintenance of power supply during a fire is required for a defined period of time.		
Standard packing:	500 or 1000m on drums. Other forms of packing and delivery are available on request		

¹⁾ Category C, W, Z for cables up to and including 500mm².

²⁾ BS EN 60754-1 & BS EN 60754-2 standards replace BS EN 50267-2-1

Number and CSA of conductor		Nominal thickness of insulation	Nominal thickness of bedding	Nominal thickness of outer sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²		mm	mm	mm	mm	kg/km	Ω/km
1	x 1RM	0,7	-	1,4	6,4	49	18,1
1	x 1,5RM	0,7	-	1,4	6,7	56	12,1
1	x 2,5RM	0,7	-	1,4	7,2	70	7,41
1	x 4RM	0,7	-	1,4	7,7	87	4,61
1	x 6RM	0,7	-	1,4	8,0	107	3,08
1	x 10RM	0,7	-	1,5	9,1	154	1,83
1	x 16RM	0,7	-	1,5	10,2	216	1,15
1	x 25RM	0,9	-	1,6	12,2	325	0,727
1	x 35RM	0,9	-	1,7	13,4	426	0,524
1	x 50RM	0,9	-	1,8	15,1	563	0,387
1	x 70RM	1,1	-	1,9	16,9	777	0,268
1	x 95RM	1,1	-	2,0	19,1	1042	0,193
1	x 120RM	1,2	-	2,1	20,9	1294	0,153
1	x 150RM	1,4	-	2,2	23,1	1586	0,124
1	x 185RM	1,6	-	2,4	25,4	1971	0,0991
1	x 240RM	1,7	-	2,6	28,3	2527	0,0754
1	x 300RM	1,8	-	2,6	30,5	3120	0,0601
1	x 400RM	2	-	2,8	34,0	4013	0,0470
1	x 500RM	2,2	-	3,0	38,0	5109	0,0366
1	x 630RM	2,4	-	3,2	43,0	6477	0,0283
1	x 800RM	2,6	-	3,4	48,1	8163	0,0221
1	x 1000RM	2,8	-	3,6	52,0	10100	0,0176
2	x 1RM	0,7	0,8	1,4	11,7	176	18,1
2	x 1,5RM	0,7	0,8	1,4	12,2	199	182
2	x 2,5RM	0,7	0,8	1,4	13,1	238	240
2	x 4RM	0,7	0,8	1,4	14,1	292	295
2	x 6RM	0,7	0,8	1,4	14,9	348	350
2	x 10RM	0,7	0,8	1,5	16,9	481	483
2	x 16RM	0,7	0,8	1,5	18,9	652	654
3	x 1RM	0,7	0,8	1,4	12,2	191	18,1
3	x 1,5RM	0,7	0,8	1,4	12,8	218	12,1
3	x 2,5RM	0,7	0,8	1,4	13,8	267	7,41
3	x 4RM	0,7	0,8	1,4	14,9	333	4,61
3	x 6RM	0,7	0,8	1,4	15,7	404	3,08
3	x 10RM	0,7	0,8	1,5	17,8	571	1,83
3	x 16RM	0,7	0,8	1,6	20,2	800	1,15
4	x 1RM	0,7	0,8	1,4	13,2	218	18,1
4	x 1,5RM	0,7	0,8	1,4	13,9	251	12,1
4	x 2,5RM	0,7	0,8	1,4	14,9	309	7,41
4	x 4RM	0,7	0,8	1,4	16,2	392	4,61
4	x 6RM	0,7	0,8	1,5	17,2	490	3,08
4	x 10RM	0,7	0,8	1,5	19,4	690	1,83
4	x 16RM	0,7	0,8	1,6	22,1	976	1,15



Armoured fire resistant electric power cable having low emission of smoke and corrosive gases when affected by fire

FIRE PERFORMANCE

Fire resistance:	Category F2 according to BS 7846, BS 6387 – Category C,W, Z
Flame propagation:	BS EN 60332-1-2, BS EN 60332-3-22
Low smoke emission:	BS EN 61034-2
Low corrosive and acid gas emission:	BS EN 60754-1, HCl content < 0,5% BS EN 60754-2, pH ≥ 4,3 & conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

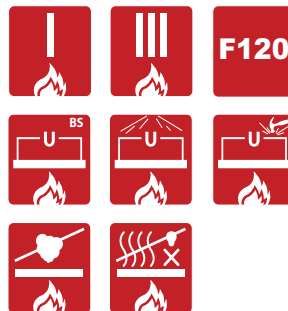
Conductors:	circular, circular compacted or shaped, stranded, annealed copper conductor, class 2 according to BS EN 60228
Primary insulation:	a suitable wrapping of mica tape with a glass cloth
Insulation:	cross-linked polyethylene (XLPE) of GP8 type according to BS 7655-1.3
Bedding:	LSOH (special low smoke zero halogen compound)
Armour:	single layer of galvanized steel wires applied helically over the bedding
Outer sheath:	thermosetting LSOH compound of LTS1 type according to BS 7655-6.1

CHARACTERISTIC

Colour of the sheath:	black. Other colours are available on special request.
Core identification:	
2-core:	brown, blue
3-core:	brown, black, grey
4-core:	blue, brown, black, grey
Maximum conductor operating temperature:	+90°C
Lowest installation temperature:	0°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	6D for cables with circular copper conductors and 8D for cables with shaped copper conductors; D – overall cable diameter
Application:	for use in fixed installations in industrial areas, public buildings (as for example power plants, hospitals, shopping centres, theatres) and similar applications where maintenance of power supply during a fire is required for a defined period of time.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and CSA of conductor			Nominal thickness of insulation	Nominal thickness of outer sheath	Nominal diameter of armour wires	Approx. overall diameter	Approx. net weight of cables	Maximum conductor resistance at 20°C	Current rating single phase AC or DC		Voltage Drop DC	Voltage Drop single phase AC
									Clipped direct ⁴⁾	Free Air ⁴⁾		
n x mm ²	mm	mm	mm	mm	kg/km	Ω/km	Amp	Amp	mV/A/m	mV/A/m		
2 x 1,5RM	0,6	1,3	0,9	12,8	346	12,1	27	29	31,0	31,0		
2 x 2,5RM	0,7	1,4	0,9	14,3	420	7,41	36	39	19,0	19,0		
2 x 4RM	0,7	1,4	0,9	15,3	491	4,61	49	52	12,0	12,0		
2 x 6RM	0,7	1,4	0,9	16,1	554	3,08	62	66	7,9	7,9		
2 x 10RM	0,7	1,5	0,9	18,1	712	1,83	85	90	4,7	4,7		
2 x 16RM	0,7	1,5	1,25	20,8	1032	1,15	110	115	2,9	2,9		
2 x 25RM	0,9	1,6	1,25	24,8	1421	0,727	146	152	1,85	1,90		
2 x 25SM	0,9	1,6	1,25	20,8	1097	0,727	146	152	1,85	1,90		
2 x 35RM	0,9	1,7	1,6	28,2	1944	0,524	180	188	1,35	1,35		
2 x 35SM	0,9	1,7	1,6	23,5	1494	0,524	180	188	1,35	1,35		
2 x 50SM	1,0	1,8	1,6	25,7	1830	0,387	219	228	0,98	1,00		
2 x 70SM	1,1	1,9	1,6	28,7	2370	0,268	279	291	0,67	0,69		
2 x 95SM	1,1	2,0	2,0	32,6	3239	0,193	338	354	0,49	0,52		
2 x 120SM	1,2	2,1	2,0	35,1	3823	0,153	392	410	0,39	0,42		
2 x 150SM	1,4	2,2	2,0	38,1	4534	0,124	451	472	0,31	0,35		
2 x 185SM	1,6	2,4	2,5	42,9	5856	0,0991	515	539	0,25	0,29		
2 x 240SM	1,7	2,5	2,5	46,7	7155	0,0754	607	636	0,195	0,24		
2 x 300SM	1,8	2,6	2,5	50,7	8555	0,0601	698	732	0,155	0,21		
3 x 1,5RM	0,6	1,3	0,9	13,4	377	12,1	210	23	25	27,0		
3 x 2,5RM	0,7	1,4	0,9	15	465	7,41	350	31	33	16,0		
3 x 4RM	0,7	1,4	0,9	16,1	544	4,61	570	42	44	10,0		
3 x 6RM	0,7	1,4	0,9	16,9	628	3,08	850	53	56	6,8		
3 x 10RM	0,7	1,5	1,25	19,7	944	1,83	1400	73	78	4,0		
3 x 16RM	0,7	1,6	1,25	22,1	1215	1,15	2200	94	99	2,5		
3 x 25RM	0,9	1,7	1,6	27,5	1887	0,727	3600	124	131	1,65		
3 x 25SM	0,9	1,7	1,6	25	1637	0,727	5000	124	131	1,65		
3 x 35RM	0,9	1,8	1,6	30	2314	0,524	6800	154	162	1,15		
3 x 35SM	0,9	1,8	1,6	27,4	2025	0,524	9800	154	162	1,15		
3 x 50SM	1,0	1,8	1,6	29,8	2472	0,387	13600	187	197	0,87		
3 x 70SM	1,1	1,9	1,6	33,5	3237	0,268	17200	238	251	0,60		
3 x 95SM	1,1	2,1	2,0	38	4434	0,193	21100	289	304	0,45		
3 x 120SM	1,2	2,2	2,0	41,1	5287	0,153	26500	335	353	0,37		
3 x 150SM	1,4	2,3	2,5	46,5	6768	0,124	34900	386	406	0,30		
3 x 185SM	1,6	2,4	2,5	50,4	8094	0,0991	43700	441	463	0,26		
3 x 240SM	1,7	2,6	2,5	55,4	10053	0,0754	55900	520	546	0,21		
3 x 300SM	1,8	2,7	2,5	60,2	11949	0,0601	70600	599	628	0,185		
4 x 1,5RM	0,6	1,3	0,9	14,4	422	12,1	210	23	25	27,0		
4 x 2,5RM	0,7	1,4	0,9	16,1	522	7,41	350	31	33	16,0		
4 x 4RM	0,7	1,4	0,9	17,4	628	4,61	570	42	44	10,0		
4 x 6RM	0,7	1,5	1,25	19,1	848	3,08	850	53	56	6,8		
4 x 10RM	0,7	1,5	1,25	21,3	1091	1,83	1400	73	78	4,0		
4 x 16RM	0,7	1,6	1,25	24	1440	1,15	2200	94	99	2,5		
4 x 25SM	0,9	1,7	1,6	29,9	2240	0,727	3600	124	131	1,65		
4 x 25RM	0,9	1,7	1,6	27,7	2028	0,727	5000	124	131	1,65		
4 x 35SM	0,9	1,8	1,6	32,6	2769	0,524	6800	154	162	1,15		
4 x 35RM	0,9	1,8	1,6	30,3	2491	0,524	9800	154	162	1,15		
4 x 50SM	1,0	1,9	1,6	33,3	3111	0,387	13600	187	197	0,87		
4 x 70SM	1,1	2,1	2,0	38,9	4418	0,268	17200	238	251	0,60		
4 x 95SM	1,1	2,2	2,0	42,6	5607	0,193	21100	289	304	0,45		
4 x 120SM	1,2	2,3	2,5	47,9	7216	0,153	26500	335	353	0,37		
4 x 150SM	1,4	2,4	2,5	51,9	8559	0,124	34900	386	406	0,30		

Number and CSA of conductor		Nominal thickness of insulation	Nominal thickness of outer sheath	Nominal diameter of armour wires	Approx. overall diameter	Approx. net weight of cables	Maximum conductor resistance at 20°C	Current rating single phase AC or DC		Voltage Drop DC	Voltage Drop single phase AC
								Clipped direct ⁴⁾	Free Air ⁴⁾		
n	x mm ²	mm	mm	mm	mm	kg/km	Ω/km	Amp	Amp	mV/A/m	mV/A/m
4	x 185SM	1,6	2,6	2,5	56,6	10275	0,0991	43700	441	463	0,26
4	x 240SM	1,7	2,7	2,5	62,4	12855	0,0754	55900	520	546	0,21
4	x 300SM	1,8	2,9	2,5	67,4	15307	0,0601	70600	599	628	0,185
4	x 35+25	0,9/0,9	1,9	1,6	35,7	3180	0,524/0,727	-	-	-	-
4	x 50+25	1,0/0,9	2,0	2,0	40,3	4226	0,387/0,727	-	-	-	-
4	x 70+35	1,1/1,0	2,2	2,0	44,7	5431	0,268/0,524	-	-	-	-
4	x 95+50	1,1/1,0	2,3	2,0	49,9	6940	0,193/0,268	-	-	-	-



Armoured fire resistant electric power and control cable having low emission of smoke and corrosive gases when affected by fire

FIRE PERFORMANCE

Fire resistance:	BS 7846 Category F120 BS 6387 Category C, W, Z
Flame propagation:	BS EN 60332-1-2 and BS EN 60332-3-24
Smoke density:	BS EN 61034-2
Corrosive and acid gases emission:	BS EN 60754-1, HCl content < 0,5% BS EN 60754-2, pH ≥ 4,3 & conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	circular, circular compacted or shaped, stranded, annealed copper conductor, class 2 acc. to BS EN 60228
Primary insulation	fire resistant mica tape with a glass cloth
Insulation:	cross-linked polyethylene (XLPE) of GP8 type acc. to BS 7655-1.3
Cable core:	insulated conductors twisted together wrapped in fire resistance tape (optional also by polyester film)
Bedding:	thermoplastic zero halogen low smoke compound (LSOH) wrapped in fire resistant tape
Armour	galvanized steel wires applied helically (optional polyester film over the armour)
Outer sheath:	thermoplastic zero halogen low smoke compound of LTS1 type acc. to BS 7655-6.1

CHARACTERISTIC

Colour of sheath:	black (other colours available on special request)	
Core identification:	2-core	brown, blue
	3-core	brown, black, grey
	4-core	blue, brown, black, grey
	5-core	green and yellow, blue, brown, black, grey
Maximum conductor operating temperature:	+90°C	
Lowest installation temperature:	0°C	
Minimum operating temperature after installation without movement:	-40°C	
Maximum short-circuit conductor temperature:	+250°C	
Minimum bending radius:	6D - for cables with circular copper conductors and 8D - for cables with shaped copper conductors; (D - overall cable diameter)	
Application:	Fire resistant armoured cables for use in fixed installations in industrial areas, public buildings (as for example power plants, hospitals, shopping centres, theatres) and similar applications where maintenance of power supply during a fire is required for a defined period of time.	
Standard packing:	500 or 1000m on drums. Other forms of packing and delivery are available on request	

¹⁾ Category C, W, Z for cables up to and including 95mm². Category C for cables above and including 120mm².

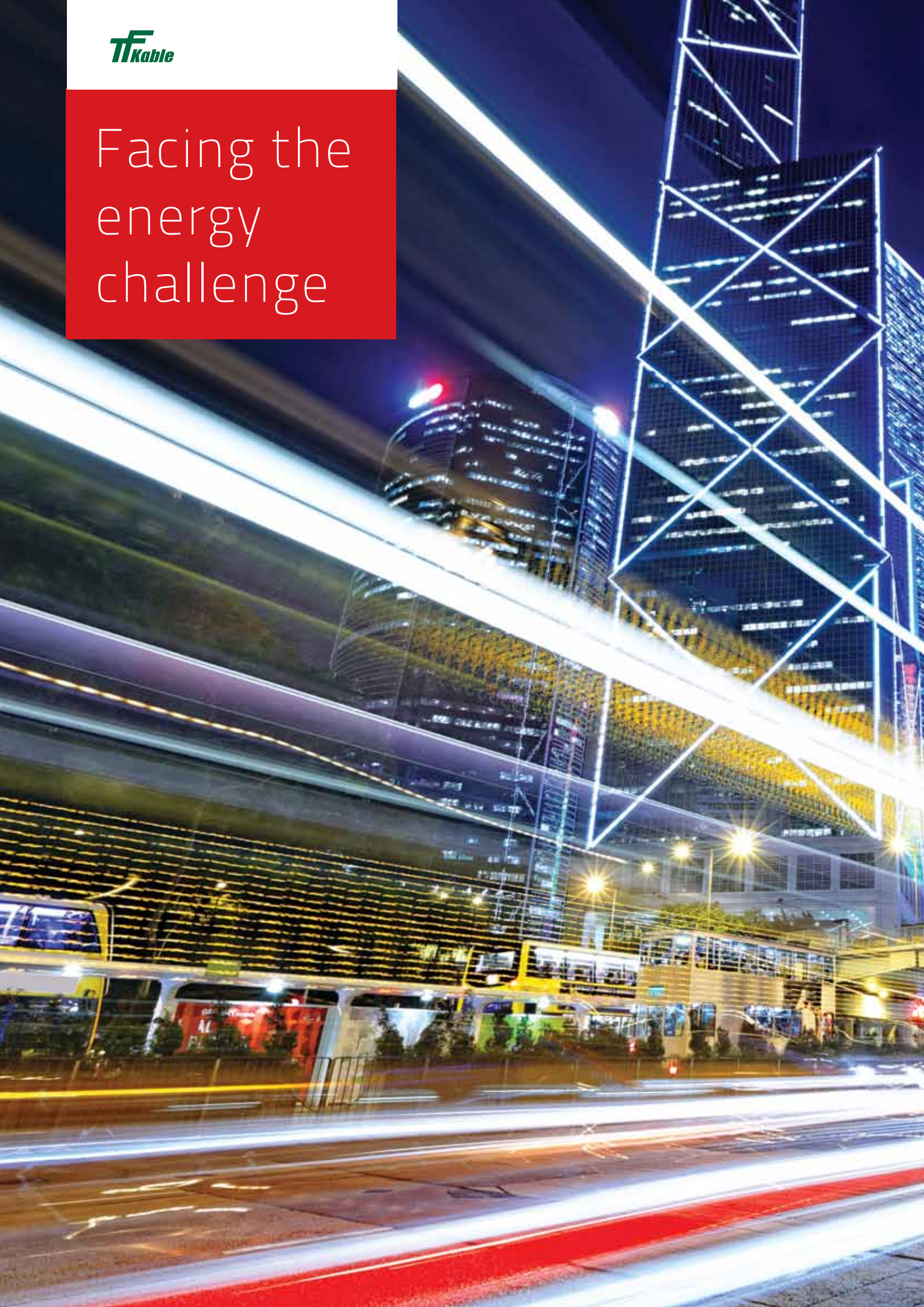
²⁾ BS EN 60754-1 & BS EN 60754-2 standards replace BS EN 50267-2-1

Number and CSA of conductor	Nominal thickness of insulation	Nominal thickness of outer sheath	Nominal diameter of armour wires	Approx. overall diameter	Approx. net weight of cables	Maximum conductor resistance at 20°C	Current rating single phase AC or DC		Voltage Drop DC	Voltage Drop single phase AC
							Clipped direct ⁴⁾	Free Air		
n x mm ²	mm	mm	mm	mm	kg/km	Ω/km	Amp	Amp	mV/A/m	mV/A/m
2 x 1,5 RM	0,6	1,3	0,9	14,9	390	12,1	27	29	31,0	31,0
2 x 2,5 RM	0,7	1,4	0,9	16,4	464	7,41	36	39	19,0	19,0
2 x 4 RM	0,7	1,4	0,9	18,1	625	4,61	49	52	12,0	12,0
2 x 6 RM	0,7	1,4	0,9	18,9	693	3,08	62	66	7,9	7,9
2 x 10 RM	0,7	1,5	0,9	20,2	728	1,83	85	90	4,7	4,7
2 x 16 RM	0,7	1,5	1,25	22,9	1034	1,15	110	115	2,9	2,9
2 x 25 RM	0,9	1,6	1,25	26,4	1427	0,727	146	152	1,85	1,90
2 x 35 RM	0,9	1,7	1,6	29,8	1933	0,524	180	188	1,35	1,35
2 x 50 SM	1,0	1,8	1,6	27,1	1967	0,387	219	228	0,98	1,00
2 x 70 SM	1,1	1,9	1,6	30,1	2505	0,268	279	291	0,67	0,69
2 x 95 SM	1,1	2,0	2,0	34,0	3398	0,193	338	354	0,49	0,52
2 x 120 SM	1,2	2,1	2,0	36,5	4023	0,153	392	410	0,39	0,42
2 x 150 SM	1,4	2,2	2,0	39,5	4727	0,124	451	472	0,31	0,35
2 x 185 SM	1,6	2,4	2,5	44,3	6085	0,0991	515	539	0,25	0,29
2 x 240 SM	1,7	2,5	2,5	48,1	7408	0,0754	607	636	0,195	0,24
2 x 300 SM	1,8	2,6	2,5	52,1	8795	0,0601	698	732	0,155	0,21

Number and CSA of conductor	Nominal thickness of insulation	Nominal thickness of outer sheath	Nominal diameter of armour wires	Approx. overall diameter	Approx. net weight of cables	Maximum conductor resistance at 20°C	Short circuit current rating	Current rating three phase AC		Voltage Drop Three phase AC
								Clipped direct	Free Air	
n x mm ²	mm	mm	mm	mm	kg/km	Ω/km	Amp	Amp	Amp	mV/A/m
3 x 1,5 RM	0,6	1,3	0,9	15,5	430	12,1	210	23	25	27,0
3 x 2,5 RM	0,7	1,4	0,9	17,1	516	7,41	350	31	33	16,0
3 x 4 RM	0,7	1,4	0,9	20,1	703	4,61	570	42	44	10,0
3 x 6 RM	0,7	1,4	0,9	19,7	789	3,08	850	53	56	6,8
3 x 10 RM	0,7	1,5	1,25	21,8	991	1,83	1400	73	78	4,0
3 x 16 RM	0,7	1,6	1,25	24,2	1249	1,15	2200	94	99	2,5
3 x 25 RM	0,9	1,7	1,6	29,1	1934	0,727	3600	124	131	1,65
3 x 35 RM	0,9	1,8	1,6	31,6	2333	0,524	6800	154	162	1,15
3 x 50 SM	1,0	1,8	1,6	31,2	2633	0,387	13600	187	197	0,87
3 x 70 SM	1,1	1,9	1,6	34,9	3340	0,268	17200	238	251	0,60
3 x 95 SM	1,1	2,1	2,0	39,4	4626	0,193	21100	289	304	0,45
3 x 120 SM	1,2	2,2	2,0	42,5	5498	0,153	26500	335	353	0,37
3 x 150 SM	1,4	2,3	2,5	47,9	7018	0,124	34900	386	406	0,30
3 x 185 SM	1,6	2,4	2,5	51,8	8371	0,0991	43700	441	463	0,26
3 x 240 SM	1,7	2,6	2,5	56,8	10323	0,0754	55900	520	546	0,21
3 x 300 SM	1,8	2,7	2,5	61,6	12291	0,0601	70600	599	628	0,185

Number and CSA of conductor	Nominal thickness of insulation	Nominal thickness of outer sheath	Nominal diameter of armour wires	Approx. overall diameter	Approx. net weight of cables	Maximum conductor resistance at 20°C	Short circuit current rating	Current rating three phase AC		Voltage Drop Three phase A
								Clipped direct ⁴⁾	Free Air	
n x mm ²	mm	mm	mm	mm	kg/km	Ω/km	Amp	Amp	Amp	mV/A/m
4 x 1,5 RM	0,6	1,3	0,9	16,5	485	12,1	210	23	25	27,0
4 x 2,5 RM	0,7	1,4	0,9	18,2	584	7,41	350	31	33	16,0
4 x 4 RM	0,7	1,4	0,9	20,2	798	4,61	570	42	44	10,0
4 x 6 RM	0,7	1,5	1,25	21,2	912	3,08	850	53	56	6,8
4 x 10 RM	0,7	1,5	1,25	23,4	1147	1,83	1400	73	78	4,0
4 x 16 RM	0,7	1,6	1,25	26,1	1474	1,15	2200	94	99	2,5
4 x 25 RM	0,9	1,7	1,6	31,5	2265	0,727	3600	124	131	1,65
4 x 35 RM	0,9	1,8	1,6	34,2	2757	0,524	6800	154	162	1,15
4 x 50 SM	1,0	1,9	1,6	34,7	3277	0,387	13600	187	197	0,87
4 x 70 SM	1,1	2,1	2,0	40,3	4615	0,268	17200	238	251	0,60
4 x 95 SM	1,1	2,2	2,0	44,0	5802	0,193	21100	289	304	0,45
4 x 120 SM	1,2	2,3	2,5	49,3	7476	0,153	26500	335	353	0,37
4 x 150 SM	1,4	2,4	2,5	53,3	8805	0,124	34900	386	406	0,30
4 x 185 SM	1,6	2,6	2,5	58,0	10552	0,0991	43700	441	463	0,26
4 x 240 SM	1,7	2,7	2,5	63,8	13172	0,0754	55900	520	546	0,21
4 x 300 SM	1,8	2,9	2,5	68,8	15659	0,0601	70600	599	628	0,185

Facing the energy challenge







**Flexible
fire resistant
power & control
cables**

FIRE PERFORMANCE

Flame retardant:	AS/NZS 1660.5.1; IEC 60332-3-22 Cat. A; IEC 60332-1
Cable circuit integrity:	AS/NZS 1660.5.5; IEC 60331; BS 6387, Cat. C,W,Z
Wiring system circuit integrity:	AS/NZS 3013, Cat. WS52W
Smoke density:	AS/NZS 1660.5.2; IEC 61034-2
Halogen acid gas content:	AS/NZS 1660.5.3, IEC 60754-1
Gases evolved during combustion:	AS/NZS 1660.5.4, IEC 60754-2

CONSTRUCTION

Conductors:	Flexible bare copper wire stranding; class 5 according to IEC 60228 and AS/NZS 1125
Flame Barrier:	Glass mica tape with glass cloth
Insulation:	Cross-linked, halogen-free, flame retardant compound type X-HF-110 acc. to AS/NZS 3808
Sheath:	Flexible, thermoplastic, low smoke, halogen-free compound having reduced flame propagation when exposed to a fire, type HFS-110-TP acc. to AS/NZS 3808

CHARACTERISTIC

Colour of sheath:	Red RAL 3000. Other colours are available on special request.
Core identification:	the colouring for identification may be within the mass not at the surface of the core insulation 1-core: red or green-yellow 2-core: red, white 2-core + earth: red, black, green-yellow 3-core + earth: red, white, blue, green-yellow 4-core + earth: red, white, blue, black, green-yellow 6-core + earth: green-yellow, others cores white with black numbers
Maximum continuous operating temperature:	110°C
Flexibility for easy of installation	
Minimum bending radius:	8D (D – overall cable diameter)
Application:	Mica and cross-linked halogen-free flame retardant insulated and halogen-free thermoplastic compound sheathed flexible, enhanced fire resistant cables for use in installations emergency lighting and evacuation systems, fire and smoke detection systems air-conditioning and alarm systems, automatic elevator doors, computer control rooms, emergency evacuation communicators. Recommended for systems, in particular building types, in which cables might need to operate correctly during a fire for periods in excess of those normally required for single phase evacuation of a building.
Standard length cable packing:	500 or 1000m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor	Nominal thickness of insulation	Approx Diameter over insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Cable combustion heat
n x mm ²	mm	mm	mm	mm	kg/km	kW/km
1x6	0.7	5.4	1.4	8.2	109	0.37
1x10	0.7	6.3	1.4	9.1	153	0.42
1x16	0.7	7.5	1.4	10.3	215	0.49
1x25	0.9	9.1	1.4	11.9	311	0.66
1x35	0.9	9.9	1.4	12.7	403	0.72
1x50	1.0	12.1	1.4	14.9	558	0.91
1x70	1.1	14.1	1.4	16.9	761	1.11
1x95	1.1	16.2	1.5	19.2	983	1.32
1x120	1.2	17.5	1.5	20.5	1222	1.49
1x150	1.4	19.8	1.6	23	1522	1.87
1x185	1.6	22.4	1.7	25.8	1855	2.33
1x240	1.7	24.1	1.7	27.5	2365	2.58
1x300	1.8	27.9	1.8	31.5	2945	3.18
1x400	2	30.3	1.9	34.1	3810	3.73
1x500	2.2	35.3	2	39.3	4811	4.69
1x630	2.4	40.0	2.2	44.4	6366	5.83
2x0.75	0.7	3.5	1.8	10.5	131	0.73
2x1.0	0.7	3.6	1.8	10.7	139	0.75
2x1.5	0.7	3.9	1.8	11.3	160	0.79
2x2.5	0.7	4.3	1.8	12.3	197	0.91
2x4	0.7	4.8	1.8	13.2	241	1.03
3x0.75	0.7	3.5	1.8	11.1	149	0.80
3x1.0	0.7	3.6	1.8	11.2	158	0.82
2x1.5+1.5E	0.7	3.9	1.8	11.2	171	0.82
2x2.5+2.5E	0.7	4.3	1.8	12.3	217	0.95
2x4+2.5E	0.7	4.8	1.8	12.9	257	1.04
2x4+4E	0.7	4.8	1.8	13.3	273	1.07
2x6+2.5E	0.7	5.4	1.8	13.8	312	1.17
2x10+4E	0.7	6.3	1.8	15.4	433	1.41
2x10+10E	0.7	6.3	1.8	16.5	497	1.50
2x16+6E	0.7	7.5	1.8	17.5	605	1.75
2x16+16E	0.7	7.5	1.8	19	706	1.87
2x25+6E	0.9	9.1	1.8	19.9	849	2.37
2x35+10E	0.9	9.9	1.8	21.6	1098	2.66
2x50+16E	1.0	12.1	1.8	25.6	1554	3.61
2x70+25E	1.1	14.1	1.8	29.7	2147	4.71
2x95+25E	1.1	16.2	1.9	32.9	2701	5.75
2x120+35E	1.2	17.5	2	35.4	3362	6.65
2x150+50E	1.4	19.8	2.1	40.5	4263	8.44
2x185+70E	1.6	22.4	2.2	45.9	5326	10.67
2x240+95E	1.7	24.1	2.4	50.2	6745	12.41

Number and cross-sectional area of conductor	Nominal thickness of insulation	Approx Diameter over insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Cable combustion Heat
n x mm ²	mm	mm	mm	mm	kg/km	kW/km
4x0.75	0.7	3.5	1.8	12	173	0.91
4x1.0	0.7	3.6	1.8	12.2	185	0.93
3x1.5+1.5E	0.7	3.9	1.8	12.3	205	0.96
3x2.5+2.5E	0.7	4.3	1.8	13.5	262	1.11
3x4+4E	0.7	4.8	1.8	14.6	333	1.25

Number and cross-sectional area of conductor	Nominal thickness of insulation	Approx Diameter over insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Cable combustion Heat
n x mm ²	mm	mm	mm	mm	kg/km	kW/km
3x6+6E	0.7	5.4	1.8	16	429	1.44
3x10+10E	0.7	6.3	1.8	18.3	618	1.77
3x16+16E	0.7	7.5	1.8	21	884	2.18
3x25+6E	0.9	9.1	1.8	22.8	1121	2.85
3x35+10E	0.9	9.9	1.8	24.7	1459	3.19
3x50+16E	1.0	12.1	1.8	29.4	2063	4.31
3x70+25E	1.1	14.1	1.9	34.2	2867	5.67
3x95+25E	1.1	16.2	2	38.2	3635	6.91
3x120+35E	1.2	17.5	2.1	41.2	4536	8.00
3x150+50E	1.4	19.8	2.3	47	5745	10.25
3x185+70E	1.6	22.4	2.4	53.1	7129	12.93
3x240+95E	1.7	24.1	2.6	57.9	9065	14.98
3x300+120E	1.8	27.9	2.8	66	11423	19.15
4x1.5+1.5E	0.7	3.9	1.8	13.5	243	1.13
4x2.5+2.5E	0.7	4.3	1.8	14.8	310	1.29
4x4+4E	0.7	4.8	1.8	16.1	398	1.48
4x6+6E	0.7	5.4	1.8	17.6	514	1.70
4x10+10E	0.7	6.3	1.8	20.1	746	2.07
4x16+16E	0.7	7.5	1.8	23.2	1073	2.58
4x25+6E	0.9	9.1	1.8	25.7	1407	3.46
4x35+10E	0.9	9.9	1.8	27.8	1836	3.86
4x50+16E	1.0	12.1	1.9	33.4	2612	5.31
4x70+25E	1.1	14.1	2	38.8	3627	6.98
4x95+25E	1.1	16.2	2.1	43.6	4618	8.50
4x120+35E	1.2	17.5	2.3	47.1	5786	9.94
4x150+50E	1.4	19.8	2.4	53.4	7281	12.58
4x185+70E	1.6	22.4	2.6	60.5	9032	16.02
6x1.5+1.5E	0.7	3.9	1.8	14.9	275	1.17
6x2.5+2.5E	0.7	4.3	1.8	16.3	356	1.33
11x1.5+1.5E	0.7	3.9	1.8	19.4	435	1.78
20x1.5+1.5E	0.7	3.9	1.8	23.6	700	2.74

TECHNICAL INFORMATION

SINGLE CORE CABLES

Cross-sectional area of conductor	Inductance	Reactance	Impedance
n x mm ²	mH/km	Ω/km	Ω/km
6	0.309	0.097	4.558
10	0.283	0.089	2.639
16	0.262	0.082	1.673
25	0.252	0.079	1.080
35	0.245	0.077	0.769
50	0.230	0.072	0.538
70	0.221	0.070	0.382
95	0.214	0.067	0.292
120	0.211	0.066	0.232
150	0.210	0.066	0.190
185	0.207	0.065	0.160
240	0.205	0.064	0.128
300	0.199	0.062	0.108

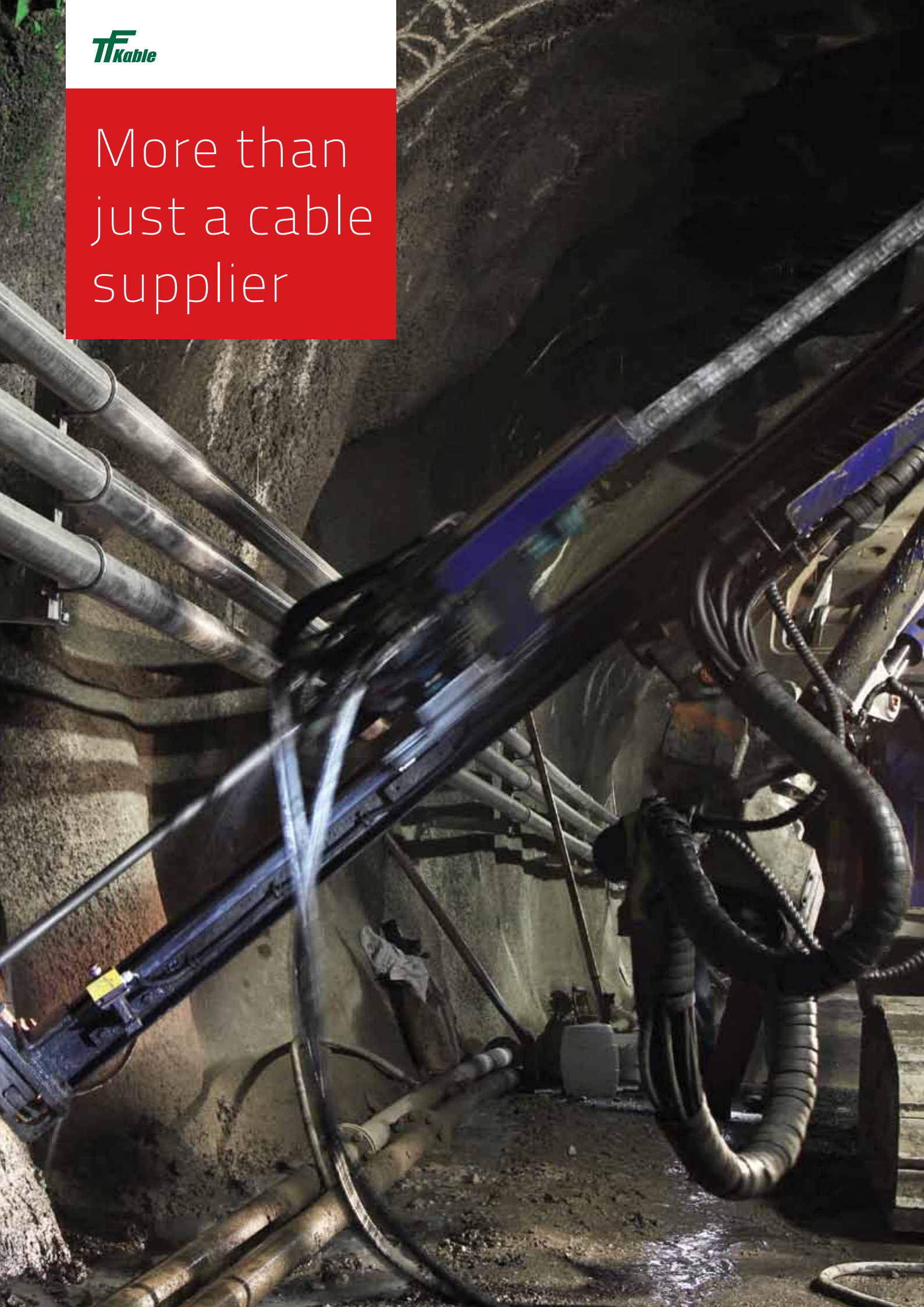
Cross-sectional area of conductor	Inductance	Reactance	Impedance
$n \times \text{mm}^2$	mH/km	Ω/km	Ω/km
400	0.199	0.062	0.092
500	0.195	0.061	0.081
630	0.192	0.060	0.072

MULTICORE CABLES			
Cross-sectional area of conductor	Inductance	Reactance	Impedance
$n \times \text{mm}^2$	mH/km	Ω/km	Ω/km
0.75	0.333	0.104	35.900
1.0	0.324	0.102	26.925
1.5	0.301	0.094	18.365
2.5	0.275	0.086	11.019
4	0.258	0.081	6.835
6	0.242	0.076	4.557
10	0.225	0.071	2.638
16	0.211	0.066	1.672
25	0.210	0.066	1.079
35	0.205	0.064	0.768
50	0.197	0.062	0.537
70	0.193	0.061	0.380
95	0.187	0.059	0.290
120	0.186	0.058	0.230
150	0.185	0.058	0.187
185	0.184	0.058	0.157
240	0.183	0.058	0.125
300	0.180	0.056	0.105

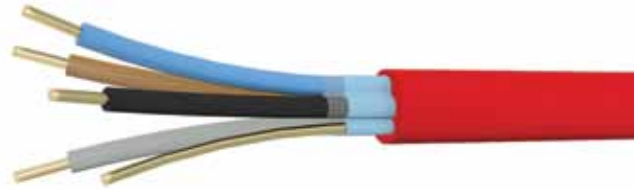
TECHNICAL INFORMATION				
Cross-sectional area of conductor	Conductor Dimensions	Conductor Short Circuit Current Rating (for 5s)	Maximum conductor resistance at	
			20°C	110°C
mm^2	mm	A	Ω/km	Ω/km
0.75	1.10	48	26	35.9
1.0	1.19	64	19.5	26.9
1.5	1.50	96	13.3	18.4
2.5	1.98	160	7.98	11.02
4	2.45	256	4.95	6.83
6	3.03	384	3.30	4.56
10	3.95	640	1.91	2.64
16	5.10	1023	1.21	1.67
25	6.27	1599	0.780	1.08
35	7.00	2238	0.554	0.765
50	9.00	3198	0.386	0.533
70	10.80	4477	0.272	0.376
95	12.90	6075	0.206	0.284
120	13.97	7674	0.161	0.222
150	15.84	9593	0.129	0.178
185	18.06	11831	0.106	0.146
240	19.55	15348	0.0801	0.1106
300	23.22	19185	0.0641	0.0885
400	25.14	25581	0.0486	0.0671
500	29.74	31976	0.0384	0.0530
630	34.08	40289	0.0287	0.0396



More than
just a cable
supplier



Halogen-free low smoke fire resistant cables



FIRE PERFORMANCE

Fire resistance:	IEC 60331: 3h at 750°C EN 50200 – PH 90 (for cables with overall diameter ≤ 20 mm) BS 6387 Category C – resistance to fire: 3 h at 950°C Category W – resistance to fire with water: 15 min at 650°C plus 15 min with water spray Category Z – resistance to fire with mechanical shock: 15 min at 950°C
Flame propagation:	IEC 60332-3-22 Category A, (EN 60332-3-22)
Smoke emission:	IEC 61034-2, BS EN 61034-2:
Gases evolved during combustion:	IEC 60754-1, EN 50267-2-1: < 0,5% acid gas IEC 60754-2, EN 50267-2-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm ⁻¹

TYPE OF FLAME-X 950 CABLES:

HDGs	cable with solid copper conductors (D), special cross-linked silicone compound insulation (Gs) and thermoplastic halogen-free outer sheath (H)
HLGs	cable with stranded copper conductors (L), special cross-linked silicone compound insulation (Gs) and thermoplastic halogen-free outer sheath (H)
HLgGs	cable with stranded flexible copper conductors (Lg), special cross-linked silicone compound insulation (Gs) and thermoplastic halogen-free outer sheath (H)
HDGsekwf	cable with solid copper conductors (D), special cross-linked silicone compound insulation (Gs) and thermoplastic halogen-free outer sheath (H), with electrostatic screen of aluminium/polyester laminated tape (ekwf)
HLGsekwf	cable with stranded copper conductors (L), special cross-linked silicone compound insulation (Gs) and thermoplastic halogen-free outer sheath (H), with electrostatic screen of aluminium/polyester laminated tape (ekwf)
HLgGsekwf	cable with stranded flexible copper conductors (Lg), special cross-linked silicone compound insulation (Gs) and thermoplastic halogen-free outer sheath (H), with electrostatic screen of aluminium/polyester laminated tape (ekwf)

CONSTRUCTION

Conductors:	circular copper class 1 (D), circular stranded copper class 2 (L) or circular flexible stranded copper class 5 (Lg) according to EN 60228
Drain wire:	tinned annealed copper wires class 1 or stranded class 2 according to EN 60228
Insulation:	special cross-linked heat resistant compound type EI2 FR (Gs) according to EN 50363.1
Optional binder:	non hygroscopic halogen free tape
Screen:	aluminium/polyester laminated tape and drain wire (ekwf)
Outer sheath:	thermoplastic zero halogen low smoke compound (H) according to ZN-TF-208

CHARACTERISTIC

Colour of sheath:	red
Core identification:	≤ 5 core: according to HD 308 S2

CHARACTERISTIC

	without protective conductor	with protective conductor
≥ 7 core:	in each layer: brown (starting core), blue (reference core), other cores natural	in outer layer: green-yellow, blue (reference core), others cores shall be natural, in other layers: brown (starting core), blue (reference core), other cores natural
Maximum conductor operating temperature:	+90°C	
Lowest temperature ambient for fixed installation:	-25°C	
Lowest installation temperature:	-10°C	
Maximum short-circuit conductor temperature:	+250°C	
Minimum bending radius:	6 D (D is the overall diameter of the cable)	
Application:	Installations emergency lighting and evacuation systems, fire and smoke detection systems air-conditioning and alarm systems, automatic elevator doors, computer control rooms, offshore and marine emergency systems, emergency evacuation communicators.	
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.	

Number and cross-sectional area of conductor			Approximate overall diameter			Approximate net weight of cables		
			HDGs	HLGs	HLgGs	HDGs	HLGs	HLgGs
n x mm ²			mm			kg/km		
2	x	1	6,4	6,9	6,8	50	54	52
2	x	1,5	7,5	8,1	8,0	69	75	72
2	x	2,5	8,9	9,6	9,6	100	109	105
2	x	4	9,8	10,6	10,5	133	144	137
3	x	1	6,8	7,3	7,2	64	70	67
3	x	1,5	7,9	8,6	8,5	90	98	93
3	x	2,5	9,4	10,1	10,1	132	143	137
3	x	4	10,6	11,5	11,3	185	200	189
4	x	1	7,6	8,2	8,0	83	91	86
4	x	1,5	8,9	9,6	9,4	117	127	120
4	x	2,5	10,5	11,3	11,3	171	186	178
4	x	4	11,6	12,6	12,4	235	254	239
5	x	1	8,6	9,3	9,1	109	119	113
5	x	1,5	9,8	10,6	10,4	147	160	152
5	x	2,5	11,6	12,5	12,5	216	235	225
5	x	4	12,8	13,9	13,7	297	321	303
7	x	1	9,3	10,1	9,8	135	148	140
7	x	1,5	10,8	11,7	11,5	190	206	195
7	x	2,5	12,6	13,6	13,6	274	298	284
10	x	1	11,8	12,8	12,5	192	211	199
10	x	1,5	13,6	14,8	14,5	263	287	270
10	x	2,5	16,5	17,9	17,9	407	441	421
12	x	1	12,1	13,2	12,9	220	241	228
12	x	1,5	14,0	15,3	15,0	303	331	311
12	x	2,5	17,0	18,5	18,4	470	510	486
16	x	1	13,4	14,6	14,2	282	310	292
16	x	1,5	16,1	17,5	17,2	415	453	427

Number and cross-sectional area of conductor			Approximate overall diameter			Approximate net weight of cables		
			HDGs	HLGs	HLgGs	HDGs	HLGs	HLgGs
n x mm ²			mm			kg/km		
16	x	2,5	19,4	21,1	21,0	635	690	659
20	x	1	15,4	16,8	16,3	361	395	373
20	x	1,5	18,4	20,0	19,6	524	571	539
20	x	2,5	21,4	23,3	23,2	765	830	791
24	x	1	17,0	18,6	18,1	424	466	439
24	x	1,5	20,3	22,1	21,7	618	673	634
24	x	2,5	24,4	26,5	26,4	939	1019	972
30	x	1	18,6	20,2	19,7	535	587	553
30	x	1,5	21,4	23,4	23,0	742	808	760
30	x	2,5	25,8	28,0	27,9	1132	1228	1168
37	x	1	19,9	21,7	21,2	638	699	659
37	x	1,5	23,7	25,8	25,3	922	1004	945
37	x	2,5	27,7	30,2	30,1	1360	1476	1402

Number and cross-sectional area of conductor			Approximate overall diameter			Approximate net weight of cables		
			HDGsekwf	HLGsekwf	HLgGsekwf	HDGsekwf	HLGsekwf	HLgGsekwf
n x mm ²			mm			kg/km		
2	x	1	7,1	7,4	7,3	65	68	65
2	x	1,5	8,2	8,6	8,5	90	94	89
2	x	2,5	9,6	10,1	10,1	130	137	131
2	x	4	10,5	11,1	11,0	177	186	176
3	x	1	7,5	7,9	7,7	81	85	81
3	x	1,5	8,7	9,1	9,0	113	118	112
3	x	2,5	10,1	10,7	10,7	165	174	166
3	x	4	11,3	12,0	11,9	232	244	230
4	x	1	8,5	9,0	8,7	103	109	103
4	x	1,5	9,9	10,6	10,4	143	152	143
4	x	2,5	11,9	12,8	12,8	211	224	214
4	x	4	13,6	14,8	14,6	291	310	291
5	x	1	10,4	10,8	10,6	132	139	129
5	x	1,5	11,6	12,1	12,0	171	181	169
5	x	2,5	13,4	14,0	14,0	244	258	245
5	x	4	14,6	15,4	15,3	326	346	323
7	x	1	11,2	11,7	11,4	161	169	158
7	x	1,5	12,7	13,3	13,1	219	230	215
7	x	2,5	14,5	15,2	15,2	306	324	306
10	x	1	14,0	14,6	14,3	226	238	222
10	x	1,5	15,8	16,6	16,3	300	316	296
10	x	2,5	18,7	19,7	19,7	450	476	453
12	x	1	14,4	15,0	14,7	257	271	253
12	x	1,5	16,3	17,1	16,8	344	363	340
12	x	2,5	19,3	20,3	20,3	518	548	521

Number and cross-sectional area of conductor			Approximate overall diameter			Approximate net weight of cables		
			HDGsekwf	HLGsekwf	HLgGsekwf	HDGsekwf	HLGsekwf	HLgGsekwf
n x mm ²			mm			kg/km		
16	x	1	15,8	16,6	16,2	327	346	324
16	x	1,5	18,5	19,5	19,2	468	495	465
16	x	2,5	21,8	23,0	23,0	698	740	705
20	x	1	18,0	18,8	18,4	416	439	412
20	x	1,5	21,0	22,0	21,7	589	622	585
20	x	2,5	24,0	25,4	25,3	838	887	844
24	x	1	19,8	20,8	20,3	488	515	483
24	x	1,5	23,1	24,3	23,9	692	730	687
24	x	2,5	27,2	28,7	28,6	1027	1087	1036
30	x	1	21,5	22,5	22,0	612	646	608
30	x	1,5	24,4	25,6	25,3	828	874	822
30	x	2,5	28,7	30,3	30,2	1233	1306	1243
37	x	1	23,0	24,1	23,6	727	768	722
37	x	1,5	26,8	28,2	27,7	1027	1084	1021
37	x	2,5	30,8	32,6	32,5	1479	1566	1489

We bring
the energy



FLAMEBLOCKER

CHAPTER 2

FlameBlocker N2XH 0,6/1 kV	077	FlameBlocker CU/XLPE/LSOH/AWA/LSOH	
FlameBlocker N2XCH 0,6/1 kV	082	FlameBlocker CU/XLPE/LSOH/SWA/LSOH 0,6/1kV	106
FlameBlocker NHXMH 300/500V	085	FlameBlocker MMJ HF 450/750 V	110
FlameBlocker (N)HXMH(St) 300/500V	087	FlameBlocker EQQ LIGHT 300/500 V	112
FlameBlocker H07Z-U, H07Z-R, H07Z-K 450/750V	090	FlameBlocker EXQ LIGHT 300/500 V	114
FlameBlocker H07Z1-U, H07Z1-R, H07Z1-K 450/750V	092	FlameBlocker EXQJ/XCMK-HF 0,6/1 kV	116
FlameBlocker H07ZZ-F 450/750V	094	FlameBlocker EXLQ 450/750	118
FlameBlocker H05Z1Z1-F 300/500V	097	FlameBlocker FXQJ 0,6/1 kV	120
FlameBlocker UK REF. 6181B 450/750V	099	FlameBlocker AXQJ 0,6/1 kV	122
FlameBlocker UK REF. 6181 XB XLPE/LSF 0,6/1 kV	101	FlameBlocker NSHXAFÖU 1,8/3 kV	125
FlameBlocker UK REF. 624(*)B 300/500V	102	FlameBlocker NSHXAFÖU POWER CABLE 3,6/6 kV	127
FlameBlocker UK REF. 318(*)B 300/500V	104		

Flame Retardant, Low Fire Hazard, Halogen Free, Low Smoke Cables and Wires

Cables are manufactured with the use of halogen-free materials. These materials exhibit better fire performance, have improved resistance to flame propagation and can extinguish flame spread through the cable.

Application:

Halogen-free cables are used for applications in public buildings, where fire would present a significant hazard to human life as a result of emission of toxic gasses and dense smoke hampering the evacuation or when the losses caused by the corrosive acid gasses would be higher than other damage caused by fire.

Locations of increased fire safety requirements, where large agglomeration of people and cultural or material goods of high value are present: schools, hospitals, shopping centers, airports, hotels, supermarkets, underground tunnels, multi-storey buildings, stations of underground railways, underground garages, sports and show halls, stadiums, cinemas, theatres, museums, office buildings, educational centers, industrial complexes.

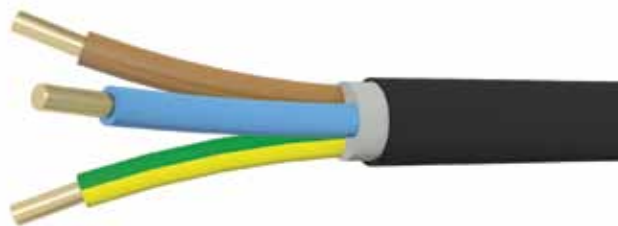
Tested and approved by:

VDE (Verband der Elektrotechnik)
BASEC (British Approvals Service For Cables)
BBJ (Biuro Badawcze ds. Jakości) - Znak Bezpieczeństwa „B”
GOST (Госстандарт)

FLAMEBLOCKER N2XH 0,6/1 kV

DIN VDE 0276-604 and DIN VDE 0276-627

Halogen-free low smoke power cables



FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-3-24, VDE 0482-332-3-24, IEC 60332-3-24
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare annealed copper conductor, circular solid class 1 (RE) or circular or circular compacted stranded class 2 (RM) or stranded sector - shaped conductor class 2 (SM) according to EN 60228
Insulation:	cross-linked polyethylene type 2X11 according to DIN VDE 0276-604
Inner covering:	special flame-retardant and halogen-free compound
Sheath:	thermoplastic halogen - free compound type HM4 according to DIN VDE 0276-604

CHARACTERISTIC

Colour of sheath:	black, blue, green
Core identification:	according to HD 308 S2 or EN 50334

	N2XH-0 without protective conductor	N2XH-J with protective conductor
1-core:	black	green-yellow
2-core:	blue, brown	—
3-core:	brown, black, grey	green-yellow, blue, brown
3 core:*	blue, brown, black	—
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
4-core:*	—	green-yellow, blue, brown, black
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
more 5-core:	black with numbering	green-yellow, others cores black with numbering

*For certain applications only

Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-5°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15D - for single core cable; 12D - for multicore cables (D - overall cable diameter)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ²

Application: for the supply of electrical energy, particularly for installations where fire and emissions of smoke and toxic fumes create a potential threat. Not suitable for use in ground and water.

Standard packing: 500 m or 1000m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
1	x	1,5RE	0,7	1,2	5,2	40	12,1
1	x	1,5RM	0,7	1,2	5,4	42	12,1
1	x	2,5RE	0,7	1,2	5,5	51	7,41
1	x	2,5RM	0,7	1,2	5,8	54	7,41
1	x	4RE	0,7	1,2	6,0	67	4,61
1	x	4RM	0,7	1,2	6,3	71	4,61
1	x	6RE	0,7	1,2	6,5	88	3,08
1	x	6RM	0,7	1,2	6,7	90	3,08
1	x	10RE	0,7	1,2	7,3	128	1,83
1	x	10RM	0,7	1,2	7,6	132	1,83
1	x	16RE	0,7	1,2	8,2	185	1,15
1	x	16RM	0,7	1,2	8,6	191	1,15
1	x	25RM	0,9	1,2	10,3	291	0,727
1	x	35RM	0,9	1,2	11,4	385	0,524
1	x	50RM	1,0	1,2	12,9	509	0,387
1	x	70RM	1,1	1,2	14,4	709	0,268
1	x	95RM	1,1	1,3	16,6	966	0,193
1	x	120RM	1,2	1,3	18,2	1201	0,153
1	x	150RM	1,4	1,3	20,2	1474	0,124
1	x	185RM	1,6	1,4	22,3	1837	0,0991
1	x	240RM	1,7	1,4	25,0	2365	0,0754
1	x	300RM	1,8	1,5	27,2	2946	0,0601
1	x	400RM	2,0	1,5	31,2	3797	0,0470
1	x	500RM	2,2	1,6	34,9	4874	0,0366
2	x	1,5RE	0,7	1,2	8,9	118	12,1
2	x	1,5RM	0,7	1,2	9,3	127	12,1
2	x	2,5RE	0,7	1,2	9,7	150	7,41
2	x	2,5RM	0,7	1,2	10,2	161	7,41
2	x	4RE	0,7	1,2	10,6	194	4,61
2	x	4RM	0,7	1,2	11,2	210	4,61
2	x	6RE	0,7	1,2	11,6	249	3,08
2	x	6RM	0,7	1,2	11,9	259	3,08
2	x	10RE	0,7	1,2	13,2	356	1,83
2	x	10RM	0,7	1,2	13,8	375	1,83
2	x	16RE	0,7	1,3	15,2	510	1,15
2	x	16RM	0,7	1,3	16,0	541	1,15
3	x	1,5RE	0,7	1,2	9,3	135	12,1
3	x	1,5RM	0,7	1,2	9,8	144	12,1
3	x	2,5RE	0,7	1,2	10,2	175	7,41
3	x	2,5RM	0,7	1,2	10,7	186	7,41
3	x	4RE	0,7	1,2	11,2	231	4,61
3	x	4RM	0,7	1,2	11,8	248	4,61
3	x	6RE	0,7	1,2	12,2	302	3,08
3	x	6RM	0,7	1,2	12,6	313	3,08
3	x	10RE	0,7	1,2	13,9	441	1,83

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
3	x	10RM	0,7	1,2	14,6	462	1,83
3	x	16RE	0,7	1,3	16,1	643	1,15
3	x	16RM	0,7	1,3	17,0	677	1,15
3	x	25RM	0,9	1,3	21,2	1070	0,727
3	x	35RM	0,9	1,4	23,7	1412	0,524
3	x	35SM	0,9	1,4	21,4	1250	0,524
3	x	50SM	1,0	1,5	23,9	1647	0,387
3	x	70SM	1,1	1,5	27,9	2324	0,268
3	x	95SM	1,1	1,6	31,0	3114	0,193
3	x	120SM	1,2	1,7	34,1	3874	0,153
3	x	150SM	1,4	1,7	38,0	4782	0,124
3	x	185SM	1,6	1,8	42,0	5926	0,0991
3	x	240SM	1,7	1,9	47,1	7706	0,0754
3	x	25RM/16RE	0,9 / 0,7	1,4	22,2	1231	0,727 / 1,15
3	x	35SM/16RE	0,9 / 0,7	1,4	24,0	1438	0,524 / 1,15
3	x	50SM/25RM	1,0 / 0,9	1,5	27,0	1937	0,387 / 0,727
3	x	70SM/35SM	1,1 / 0,9	1,5	30,2	2693	0,268 / 0,524
3	x	95SM/50SM	1,1 / 1,0	1,6	33,8	3616	0,193 / 0,387
3	x	120SM/70SM	1,2 / 1,4	1,7	37,0	4569	0,153 / 0,268
3	x	150SM/70SM	1,4 / 1,4	1,8	41,6	5510	0,124 / 0,268
3	x	185SM/95SM	1,6 / 1,1	1,9	45,6	6897	0,0991 / 0,193
3	x	240SM/120SM	1,7 / 1,2	2,0	51,4	8931	0,0754 / 0,153
4	x	1,5RE	0,7	1,2	10,1	158	12,1
4	x	1,5RM	0,7	1,2	10,5	167	12,1
4	x	2,5RE	0,7	1,2	11,0	207	7,41
4	x	2,5RM	0,7	1,2	11,6	221	7,41
4	x	4RE	0,7	1,2	12,1	279	4,61
4	x	4RM	0,7	1,2	12,8	297	4,61
4	x	6RE	0,7	1,2	13,3	368	3,08
4	x	6RM	0,7	1,2	13,7	381	3,08
4	x	10RE	0,7	1,3	15,4	553	1,83
4	x	10RM	0,7	1,3	16,1	576	1,83
4	x	16RE	0,7	1,3	17,6	801	1,15
4	x	16RM	0,7	1,3	18,6	839	1,15
4	x	25RM	0,9	1,4	23,5	1340	0,727
4	x	35RM	0,9	1,4	26,0	1770	0,524
4	x	35SM	0,9	1,4	24,0	1619	0,524
4	x	50SM	1,0	1,5	27,0	2144	0,387
4	x	70SM	1,1	1,6	31,6	3038	0,268
4	x	95SM	1,1	1,7	35,2	4083	0,193
4	x	120SM	1,2	1,7	39,1	5092	0,153
4	x	150SM	1,4	1,8	43,2	6264	0,124
4	x	185SM	1,6	1,9	47,6	7763	0,0991
4	x	240SM	1,7	2,0	53,5	10106	0,0754

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
5	x	1,5RE	0,7	1,2	10,9	186	12,1
5	x	1,5RM	0,7	1,2	11,4	197	12,1
5	x	2,5RE	0,7	1,2	11,9	246	7,41
5	x	2,5RM	0,7	1,2	12,6	263	7,41
5	x	4RE	0,7	1,2	13,1	333	4,61
5	x	4RM	0,7	1,2	14,0	356	4,61
5	x	6RE	0,7	1,2	14,4	443	3,08
5	x	6RM	0,7	1,2	14,9	458	3,08
5	x	10RE	0,7	1,3	16,8	670	1,83
5	x	10RM	0,7	1,3	17,6	697	1,83
5	x	16RE	0,7	1,3	19,2	975	1,15
5	x	16RM	0,7	1,3	20,3	1021	1,15
7	x	1,5RE	0,7	1,2	11,7	226	12,1
7	x	1,5RM	0,7	1,2	12,3	239	12,1
7	x	2,5RE	0,7	1,2	12,8	304	7,41
7	x	2,5RM	0,7	1,2	13,6	324	7,41
7	x	4RE	0,7	1,2	14,2	420	4,61
9	x	1,5RE	0,7	1,2	13,6	290	12,1
9	x	1,5RM	0,7	1,2	14,4	308	12,1
10	x	1,5RE	0,7	1,2	14,4	314	12,1
10	x	1,5RM	0,7	1,2	15,2	334	12,1
10	x	2,5RE	0,7	1,3	16,2	436	7,41
10	x	2,5RM	0,7	1,3	17,2	464	7,41
10	x	4RE	0,7	1,3	18,0	603	4,61
12	x	1,5RE	0,7	1,2	14,9	350	12,1
12	x	1,5RM	0,7	1,2	15,7	371	12,1
12	x	2,5RE	0,7	1,3	16,6	488	7,41
12	x	2,5RM	0,7	1,3	17,7	519	7,41
12	x	4RE	0,7	1,3	18,6	682	4,61
14	x	1,5RE	0,7	1,3	15,8	398	12,1
14	x	1,5RM	0,7	1,3	16,7	421	12,1
14	x	2,5RE	0,7	1,3	17,5	549	7,41
14	x	2,5RM	0,7	1,3	18,6	582	7,41
14	x	4RE	0,7	1,3	19,5	771	4,61
15	x	2,5RE	0,7	1,3	18,4	598	7,41
16	x	1,5RE	0,7	1,3	16,6	443	12,1
16	x	1,5RM	0,7	1,3	17,5	469	12,1
16	x	2,5RE	0,7	1,4	18,4	615	7,41
17	x	4RE	0,7	1,4	21,8	945	4,61

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
19	x	1,5RE	0,7	1,3	17,4	501	12,1
19	x	1,5RM	0,7	1,3	18,4	529	12,1
19	x	2,5RE	0,7	1,3	19,3	700	7,41
19	x	2,5RM	0,7	1,3	20,6	741	7,41
19	x	4RE	0,7	1,4	21,8	1003	4,61
20	x	2,5RE	0,7	1,4	20,4	754	7,41
24	x	1,5RE	0,7	1,4	20,4	635	12,1
24	x	1,5RM	0,7	1,4	21,6	672	12,1
24	x	2,5RE	0,7	1,4	22,6	887	7,41
24	x	2,5RM	0,7	1,4	24,1	940	7,41
30	x	1,5RE	0,7	1,4	21,5	747	12,1
30	x	2,5RE	0,7	1,4	23,9	1055	7,41
37	x	1,5RE	0,7	1,4	23,1	886	12,1
40	x	1,5RE	0,7	1,4	23,9	947	12,1
40	x	2,5RE	0,7	1,5	26,9	1362	7,41

FLAMEB LOCKER N2XCH 0,6/1 kV

DIN VDE 0276-604, DIN VDE 0276-627



Halogen-free low smoke power cables with copper concentric conductor

FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-3-24, VDE 0482-332-3-24, IEC 60332-3-24
Smoke density:	DIN EN 61034-2, VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, VDE 0482-267-2-2, IEC 60754-2: pH \geq 4,3; conductivity \leq 10 μ S/mm

CONSTRUCTION

Conductors:	bare annealed copper conductor, circular solid class 1 (RE) or circular or circular compacted stranded class 2 (RM) or stranded sector - shaped conductor class 2 (SM) according to EN 60228
Insulation:	cross-linked polyethylene XLPE type 2X11 according to DIN VDE 0276-604
Inner covering:	special flame-retardant and halogen-free compound
Concentric conductor:	inner layer - round copper wires, outer layer - copper tape
Separator:	tape
Sheath:	thermoplastic halogen - free compound type HM4 according to DIN VDE 0276-604

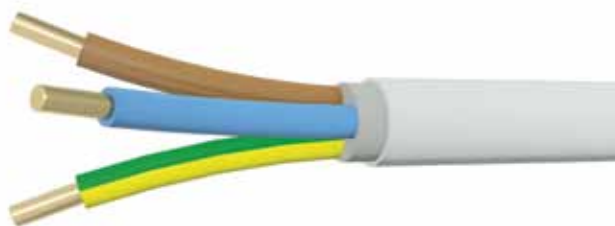
CHARACTERISTIC

Colour of sheath:	black
Core identification:	according to HD 308 S2 or EN 50334
2-core:	blue, brown
3-core:	brown, black, grey
3 core:*	blue, brown, black
4-core:	blue, brown, black, grey
\geq 7-core:	black with numbering
*For certain applications only.	
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-5°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	15D - for single core cable; 12D - for multicore cable (D - overall cable diameter)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ²
Application:	for the supply of electrical energy, especially for installations where fire and emissions of smoke and toxic fumes create a potential threat. The concentric conductor with a traverse spiral of copper serves as a screen and can be used as PE or PEN conductor. Not suitable for use in water.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
2	x	1,5RE/1,5	0,7	1,2	10,4	156	12,1/12,1
2	x	2,5RE/2,5	0,7	1,2	11,2	196	7,41/7,41
2	x	4RE/4	0,7	1,2	12,5	261	4,61/4,61
2	x	6RE/6	0,7	1,2	13,8	335	3,08/3,08
2	x	10RE/10	0,7	1,2	15,5	480	1,83/1,83
2	x	16RE/16	0,7	1,3	18	697	1,15/1,15
2	x	25RMC/16	0,9	1,3	22	982	0,727/1,15
3	x	1,5RE/1,5	0,7	1,2	10,8	173	12,1/12,1
3	x	2,5RE/2,5	0,7	1,2	11,6	220	7,41/7,41
3	x	4RE/4	0,7	1,2	13	298	4,61/4,61
3	x	6RE/6	0,7	1,2	14,4	389	3,08/3,08
3	x	10RE/10	0,7	1,2	16,2	567	1,83/1,83
3	x	16RE/16	0,7	1,3	18,8	832	1,15/1,15
3	x	25RMC/16	0,9	1,4	23,4	1212	0,727/1,15
3	x	35RMC/16	0,9	1,4	25,6	1534	0,524/1,15
3	x	50SM/25	1	1,5	26,1	1872	0,367/0,727
3	x	70SM/35	1,1	1,5	30	2625	0,268/0,524
3	x	95SM/50	1,1	1,6	33	3537	0,193/0,387
3	x	120SM/70	1,2	1,7	36,8	4490	0,153/0,268
3	x	150SM/70	1,4	1,8	41,2	5412	0,124/0,268
3	x	185SM/95	1,6	1,9	45,1	6764	0,0991/0,193
3	x	240SM/120	1,7	2	51	8756	0,0754/0,153
4	x	1,5RE/1,5	0,7	1,2	11,5	197	12,1/12,1
4	x	2,5RE/2,5	0,7	1,2	12,4	254	7,41/7,41
4	x	4RE/4	0,7	1,2	13,9	347	4,61/4,61
4	x	6RE/6	0,7	1,2	15,4	456	3,08/3,08
4	x	10RE/10	0,7	1,3	17,6	680	1,83/1,83
4	x	16RE/16	0,7	1,3	20,3	991	1,15/1,15
4	x	16RMC/16	0,7	1,3	20,8	1025	1,15/1,15
4	x	25RMC/16	0,9	1,4	25,4	1468	0,727/1,15
4	x	35RMC/16	0,9	1,5	28,1	1902	0,524/1,15
4	x	35SM/16	0,9	1,5	25,7	1759	0,524/1,15
4	x	50SM/25	1	1,5	29,1	2358	0,367/0,727
4	x	70SM/35	1,1	1,6	33,6	3327	0,268/0,524
4	x	95SM/50	1,1	1,7	37,2	4493	0,193/0,387
4	x	120SM/70	1,2	1,8	42,2	5730	0,153/0,268
4	x	150SM/70	1,4	1,9	46,3	6881	0,124/0,268
4	x	185SM/95	1,6	2	50,7	8588	0,0991/0,193
4	x	240SM/120	1,7	2,1	57,3	11133	0,0754/0,153
5	x	1,5RE/1,5	0,7	1,2	12,3	233	12,1/12,1
5	x	2,5RE/2,5	0,7	1,2	13,3	294	7,41/7,41
5	x	4RE/4	0,7	1,2	15	403	4,61/4,61
5	x	6RE/6	0,7	1,3	16,8	541	3,08/3,08
5	x	10RE/10	0,7	1,3	19	798	1,83/1,83

Number and cross-sectional area of conductor		Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C	
n x mm ²		mm	mm	mm	kg/km	Ω/km	
5	x	16RE/16	0,7	1,4	22,1	1179	1,15/1,15
5	x	25RMC/16	0,9	1,4	27,5	1755	0,727/1,15
5	x	35RMC/16	0,9	1,5	30,5	2279	0,524/1,15
5	x	50RMC/25	1	1,6	35,8	3116	0,387/0,727
5	x	70SM/35	1,1	1,7	35,9	4004	0,268/0,524
5	x	95SM/50	1,1	1,8	40,8	5469	0,193/0,387
5	x	120SM/70	1,2	1,9	45,4	6902	0,153/0,268
5	x	150SM/70	1,4	2	50,4	8339	0,124/0,268
5	x	185SM/95	1,6	2,1	55,3	10420	0,0991/0,193
5	x	240SM/120	1,7	2,2	61,9	13466	0,0754/0,153
7	x	1,5RE/2,5	0,7	1,2	13,1	273	12,1/7,41
7	x	2,5RE/2,5	0,7	1,2	14,2	353	7,41/7,41
7	x	4RE/4	0,7	1,2	16	490	4,61/4,61
10	x	1,5RE/2,5	0,7	1,3	15,9	371	12,1/7,41
10	x	2,5RE/4	0,7	1,3	16,7	392	12,1/7,41
10	x	4RE/6	0,7	1,3	17,9	508	7,41/4,61
12	x	1,5RE/2,5	0,7	1,3	16,3	406	12,1/7,41
12	x	2,5RE/4	0,7	1,3	18,3	560	7,41/4,61
12	x	4RE/6	0,7	1,3	20,5	774	4,61/3,08
14	x	1,5RE/2,5	0,7	1,3	17	448	12,1/7,41
14	x	2,5RE/4	0,7	1,3	19,1	621	7,41/4,61
14	x	4RE/6	0,7	1,4	21,6	873	4,61/3,08
15	x	1,5RE/2,5	0,7	1,3	17,8	483	12,1/7,41
16	x	1,5RE/4	0,7	1,3	18,2	514	12,1/4,61
16	x	2,5RE/6	0,7	1,3	20,3	705	7,41/3,08
19	x	1,5RE/4	0,7	1,3	19	571	12,1/4,61
19	x	2,5RE/6	0,7	1,3	21,2	790	7,41/3,08
19	x	4RE/10	0,7	1,4	23,8	1134	4,61/1,83
24	x	1,5RE/6	0,7	1,4	21,9	723	12,1/3,08
24	x	2,5RE/10	0,7	1,4	24,5	1016	7,41/1,83
30	x	1,5RE/6	0,7	1,4	23	835	12,1/3,08
30	x	2,5RE/10	0,7	1,4	25,8	1184	7,41/1,83
40	x	1,5RE/10	0,7	1,4	25,6	1075	12,1/1,83
40	x	2,5RE/10	0,7	1,5	28,5	1494	7,41/1,83

Halogen-free light sheathed cables with improved fire behaviour



FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-3-24, VDE 0482-332-3-24, IEC 60332-3-24
Smoke density:	DIN EN 61034-2, DIN VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, DIN VDE 0482-267-2-2, IEC 60754-2: pH \geq 4,3; conductivity \leq 10 μ S/mm

CONSTRUCTION

Conductors:	solid or stranded plain copper according to DIN EN 60228
Insulation:	cross-linked polyethylene XLPE type 2X11 according to DIN VDE 0276-604
Filling:	halogen-free not vulcanized rubber compound
Sheath:	special halogen-free thermoplastic compound type HM2 according to DIN VDE 0250-214

CHARACTERISTIC

Core identification:

	with protective conductor NHXMH-J	without protective conductor NHXMH-O
single-core	green/yellow	black
twin	---	blue, brown
3-core	green/yellow, brown, grey	brown, black, grey
4-core	green/yellow, brown, black, grey	blue, brown, black, grey
5-core	green/yellow, blue, brown, black, grey	blue, brown, black, grey, black
7-core	other cores black with white numbering	black with white numbering

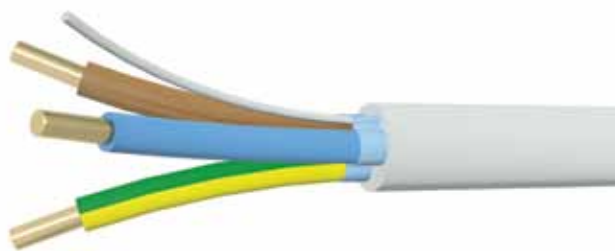
Maximum conductor operating temperature:	+70°C
Lowest ambient temperature for fixed installation:	-30°C
Lowest installation temperature:	-5°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	for single core cables: 10D, for multi-core cables: 6D; (D – overall cable diameter)
Application:	Installation cables for industrial complexes, public buildings, hotels, airports, hospitals or industrial plants with high concentration of people and/or property. Usable in the open, in dry, damp and wet environments in the open and concealed, as well as in masonry and in concrete, not suitable for imbedding in solidified – or compressed – concrete.
Standard packing:	100 m coils or 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight	Maximum conductor resistance at 20°C	Caloric load
n x mm ²			mm	mm	mm	kg/km	Ω/km	kWh/m
1	x	1,5	0,5	1,4	5,1	40	12,1	0,33
1	x	2,5	0,5	1,4	5,4	51	7,41	0,36
1	x	4	0,6	1,4	6,0	68	4,61	0,42
1	x	6	0,6	1,4	6,5	88	3,08	0,44
1	x	10	0,7	1,4	7,5	132	1,83	0,53
1	x	16	0,7	1,4	8,6	191	1,15	0,64
2	x	1,5	0,5	1,4	7,7	94	12,1	0,36
2	x	2,5	0,5	1,4	8,5	123	7,41	0,42
2	x	4	0,6	1,4	9,8	173	4,61	0,56
2	x	6	0,6	1,4	10,8	226	3,08	0,64
2	x	10	0,7	1,6	13,3	357	1,83	0,97
2	x	16	0,7	1,6	16,0	539	1,15	1,3
2	x	25	0,9	1,6	19,4	814	0,727	1,8
2	x	35	0,9	1,8	22,1	1093	0,524	2,3
3	x	1,5	0,5	1,4	8,1	109	12,1	0,42
3	x	2,5	0,5	1,4	8,9	146	7,41	0,47
3	x	4	0,6	1,4	10,3	209	4,61	0,61
3	x	6	0,6	1,6	11,8	289	3,08	0,78
3	x	10	0,7	1,6	14,0	443	1,83	1,1
3	x	16	0,7	1,6	17,0	674	1,15	1,5
3	x	25	0,9	1,8	21,0	1045	0,727	2,1
3	x	35	0,9	1,8	23,7	1399	0,524	2,5
4	x	1,5	0,5	1,4	8,7	129	12,1	0,47
4	x	2,5	0,5	1,4	9,6	176	7,41	0,56
4	x	4	0,6	1,6	11,6	265	4,61	0,78
4	x	6	0,6	1,6	12,8	353	3,08	0,94
4	x	10	0,7	1,6	15,3	547	1,83	1,3
4	x	16	0,7	1,6	18,6	837	1,15	1,8
4	x	25	0,9	1,8	23,3	1312	0,727	2,6
4	x	35	0,9	1,8	26,0	1754	0,524	3,1
5	x	1,5	0,5	1,4	9,4	153	12,1	0,56
5	x	2,5	0,5	1,4	10,4	209	7,41	0,64
5	x	4	0,6	1,6	12,6	317	4,61	0,98
5	x	6	0,6	1,6	13,9	426	3,08	1,1
5	x	10	0,7	1,6	16,8	668	1,83	1,5
5	x	16	0,7	1,8	20,7	1039	1,15	2,2
5	x	25	0,9	1,8	25,5	1600	0,727	3,1
5	x	35	0,9	1,8	28,6	2132	0,524	3,7
7	x	1,5	0,5	1,4	10,1	188	12,1	0,64
7	x	2,5	0,5	1,6	11,6	274	7,41	0,81

FLAMEBLOCKER (N)HXMH(St) 300/500V

Based on DIN VDE 0250-214, DIN VDE 0250-209/2

Halogen-free
sheathed screened
cables with improved
fire behaviour



FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-3-24, VDE 0482-332-3-24, IEC 60332-3-24
Smoke density:	DIN EN 61034-2, DIN VDE 0482-1034-2, IEC 61034-2
Gases evolved during combustion:	DIN EN 50267-2-2, DIN VDE 0482-267-2-2, IEC 60754-2: pH \geq 4,3; conductivity \leq 10 μ S/mm

CONSTRUCTION

Conductors:	solid or stranded plain copper according to DIN EN 60228
Insulation:	cross-linked polyethylene XLPE type 2X11 according to DIN VDE 0276-604
Screen:	coated aluminium foil
Drain wire:	solid tinned copper wire
Sheath:	special halogen-free thermoplastic compound type HM2 according to DIN VDE 0250-214

CHARACTERISTIC

Core identification:	according to DIN VDE 0293-308 (HD 308 S2)
----------------------	---

twin	blue, brown
3-core	green/yellow, blue, brown
4-core	green/yellow, brown, black, grey
5-core	green/yellow, blue, brown, black, grey
7-core	green/yellow, other cores black with white numbering

Maximum conductor operating temperature:	+70°C
--	-------

Lowest ambient temperature for fixed installation:	-30°C
--	-------

Lowest installation temperature:	-5°C
----------------------------------	------

Maximum short-circuit conductor temperature:	+250°C
--	--------

Minimum bending radius:	10D (D – overall cable diameter)
-------------------------	----------------------------------

Application:	Installation cables for industrial complexes, public buildings, hotels, airports, hospitals or industrial plants with high concentration of people or property. Usable in the open, in dry, damp and wet environments in the open and concealed, as well as in masonry and in concrete.
--------------	---

Standard packing:	100 m in coils or 500 m on drums. Other forms of packing and delivery are available on request.
-------------------	---

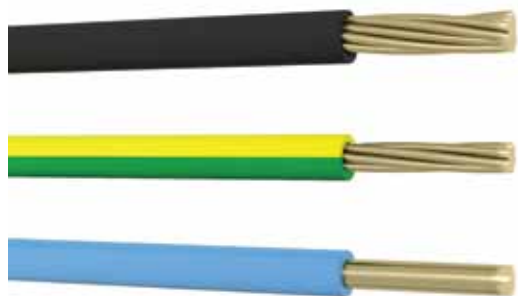
Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
2	x	1,5/1,5	0,6	1,4	8,0	107	12,1 / 12,2
2	x	2,5/1,5	0,6	1,4	8,8	135	7,41 / 12,2
2	x	4 /1,5	0,6	1,4	9,7	175	4,61 / 12,2
2	x	6 /1,5	0,6	1,4	10,7	225	3,08 / 12,2
3	x	1,5/1,5	0,6	1,4	8,5	124	12,1 / 12,2
3	x	2,5/1,5	0,6	1,4	9,2	159	7,41 / 12,2
3	x	4 /1,5	0,6	1,4	10,2	212	4,61 / 12,2
3	x	6 /1,5	0,6	1,6	11,7	289	3,08 / 12,2
4	x	1,5/1,5	0,6	1,4	9,4	146	12,1 / 12,2
4	x	2,5/1,5	0,6	1,4	10,1	191	7,41 / 12,2
4	x	4 /1,5	0,6	1,4	11,1	258	4,61 / 12,2
4	x	6 /1,5	0,6	1,6	12,7	355	3,08 / 12,2
5	x	1,5/1,5	0,6	1,4	10,2	170	12,1 / 12,2
5	x	2,5/1,5	0,6	1,4	11,1	226	7,41 / 12,2
5	x	4 /1,5	0,6	1,6	12,5	319	4,61 / 12,2
5	x	6 /1,5	0,6	1,6	13,8	425	3,08 / 12,2
7	x	1,5/1,5	0,6	1,4	11,0	204	12,1 / 12,2
7	x	2,5/1,5	0,6	1,6	12,4	293	7,41 / 12,2

Power
the future



FLAMEB LOCKER H07Z-U, H07Z-R, H07Z-K 450/750V

EN 50525-3-41



Single core
non-sheathed cables
with low emission of
smoke and corrosive
gases

FIRE PERFORMANCE

Flame propagation:	EN 60332-1-2 (IEC 60332-1), 60332-3-24
Smoke emission:	EN 61034-2 (IEC 61034-2)
Corrosive and acid gas emission of insulation:	EN 50267-2-2 (IEC 60754-2): pH ≥ 4,3; Conductivity: ≤ 10 μS/mm

CONSTRUCTION

Conductor:	annealed copper, class 1 solid (H07Z-U), class 2 stranded (H07Z-R) or class 5 flexible (H07Z-K) according to EN 60228
Insulation:	special thermosetting, low smoke, zero halogen compound type EI5, according to EN 50363-5

CHARACTERISTIC

Colour of insulation:	green/yellow, black, blue, brown, grey, orange, pink, red, white or other colours.
-----------------------	--

Minimum bending radius:

For cable diameter D (mm)

	D ≤ 8	8 < D ≤ 12	12 < D ≤ 20	D > 20
Normal use	4 D	5 D	6 D	6 D
Careful bending at termination	2 D	3 D	4 D	4 D

Maximum conductor operating temperature:	+90°C
--	-------

Lowest ambient temperature for fixed installation (static):	-40°C
---	-------

Lowest installation temperature (flexing):	-5°C
--	------

Maximum short-circuit temperature:	+250°C
------------------------------------	--------

Test voltage 50Hz:	2500V
--------------------	-------

Application: when low emission of smoke and corrosive gases is required in case of burning. Intended for installation in surface mounted or embedded conduits, or similar closed systems. Suitable for fixed protected installation in, or on, lighting and control gear for voltages up to 1000 V AC or, up to 750V DC to earth.

Standard packing: 100 m in coils or on spools, or 500 m on drums. Other forms of packing and delivery are available on request.

H07Z-U 450/750V

Nominal cross-sectional area of conductor	Radial thickness of insulation	Approximate overall diameter	Approximate net weight	Maximum resistance of conductor at temperature 20°C
mm ²	mm	mm	kg/km	Ω/km
1,5	0,7	2,8	20	12,1
2,5	0,8	3,3	30	7,41
4	0,8	3,8	45	4,61
6	0,8	4,3	63	3,08
10	1,0	5,5	105	1,83

H07Z-R 450/750V				
Nominal cross-sectional area of conductor	Radial thickness of insulation	Approximate overall diameter	Approximate net weight	Maximum resistance of conductor at temperature 20°C
mm ²	mm	mm	kg/km	Ω/km
1,5	0,7	3,0	21	12,1
2,5	0,8	3,6	32	7,41
4	0,8	4,1	48	4,61
6	0,8	4,5	65	3,08
10	1,0	5,8	109	1,83
16	1,0	6,8	165	1,15
25	1,2	8,5	259	0,727
35	1,2	9,6	350	0,524
50	1,4	11,3	476	0,387
70	1,4	12,6	668	0,268
95	1,6	15,0	925	0,193
120	1,6	16,4	1151	0,153
150	1,8	18,4	1424	0,124
185	2,0	20,3	1778	0,0991
240	2,2	23,2	2312	0,0754
300	2,4	25,4	2892	0,0601
400	2,6	29,4	3747	0,0470
500*	2,8	32,1	4775	0,0366
630*	2,8	36,3	6039	0,0283

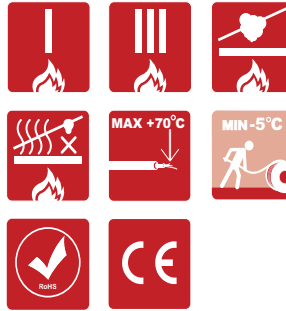
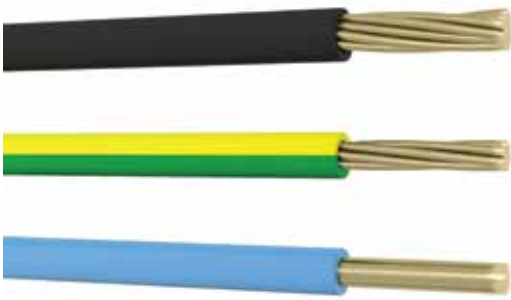
*In BS 7211

H07Z-K 450/750V				
Nominal cross-sectional area of conductor	Radial thickness of insulation	Approximate overall diameter	Approximate net weight	Maximum resistance of conductor at temperature 20°C
mm ²	mm	mm	kg/km	Ω/km
1,5	0,7	2,9	19	13,3
2,5	0,8	3,6	30	7,98
4	0,8	4,1	44	4,95
6	0,8	4,6	62	3,30
10	1,0	6,0	105	1,91
16	1,0	7,1	159	1,21
25	1,2	8,7	245	0,780
35	1,2	9,8	340	0,554
50	1,4	11,8	479	0,386
70	1,4	13,6	664	0,272
95	1,6	16,1	879	0,206
120	1,6	17,2	1104	0,161
150	1,8	19,4	1380	0,129
185	2,0	22,1	1685	0,106
240	2,2	24,0	2196	0,0801
300*	2,4	28,0	2751	0,0641
400*	2,6	30,3	3587	0,0486

*Type 072-K

FLAMEB LOCKER H07Z1-U, H07Z1-R, H07Z1-K 450/750V

EN 50525-3-31



Single core
non-sheathed cables
with low emission of
smoke and corrosive
gases

FIRE PERFORMANCE

Flame propagation:	Type 1 acc. to EN 60332-1-2 Type 2 acc. to EN 60332-3-24
Smoke emission:	EN 61034-2
Corrosive and acid gas emission of insulation:	EN 50267-2-2: pH \geq 4,3; Conductivity: \leq 10 μ S/mm EN 50267-2-1: HCl \leq 0,5%

CONSTRUCTION

Conductor:	annealed copper conductor acc. to EN 60228: class 1 solid -H07Z1-U, class 2 stranded H07Z1-R, class 5 flexible H07Z1-K
Insulation:	special thermoplastic low smoke zero halogen compound type T17 acc. to EN 50363-7

CHARACTERISTIC

Colour of insulation:	green/yellow, black, blue, brown, grey, orange, pink, red, turquoise, violet, white			
Minimum bending radius:	For cable diameter D (mm)			
	D \leq 8	8 < D \leq 12	12 < D \leq 20	D > 20
Normal use	4 D	5 D	6 D	6 D
Careful bending at termination	2 D	3 D	4 D	4 D
Maximum conductor operating temperature:	+70°C			
Lowest ambient temperature for fixed installation (static):	-30°C			
Lowest installation temperature (flexing):	-5°C			
Maximum short-circuit temperature:	+250°C			
Test voltage 50Hz:	2500V			
Application:	single core, non-sheathed cables are suitable particularly for situations in which low emission of smoke and corrosive gases is required in the case of burning. H07Z1-U, R, K cables are intended for installation in surface mounted or embedded conduits, or similar closed systems. Suitable for fixed or protected installation in, or on, lighting and control gear for voltages up to 1000V a.c. or, up to 750V d.c. to earth.			
Standard packing:	50 m or 100 m in rings or on spools, or 500 m on drums. Other forms of packing and delivery are available on request.			

H07Z1-U 450/750V

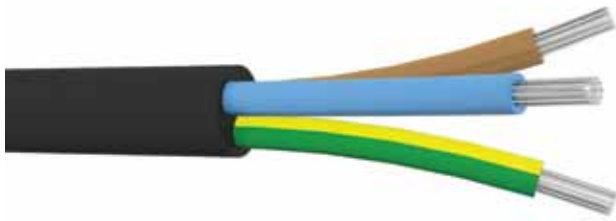
Nominal cross-sectional area of conductor	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	Minimum insulation resistance at temperature 20°C
mm ²	mm	kg/km	Ω /km	M Ω /km
1,5	2,8	20	12,1	0,011
2,5	3,3	31	7,41	0,010
4	3,8	46	4,61	0,0087
6	4,3	65	3,08	0,0074
10	5,5	107	1,83	0,0072

H07Z1-R 450/750V				
Nominal cross-sectional area of conductor	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	Minimum insulation resistance at temperature 20°C
mm ²	mm	kg/km	Ω/km	MΩ/km
1,5	3,0	22	12,1	0,010
2,5	3,6	33	7,41	0,0099
4	4,1	49	4,61	0,0082
6	4,5	67	3,08	0,0070
10	5,8	111	1,83	0,0067
16	6,8	168	1,15	0,0056
25	8,5	263	0,727	0,0053
35	9,6	355	0,524	0,0046
50	11,3	482	0,387	0,0046
70	12,6	767	0,268	0,0040
95	15,0	936	0,193	0,0039
120	16,4	1163	0,153	0,0035
150	18,4	1438	0,124	0,0035
185	20,3	1796	0,0991	0,0035
240	23,2	2335	0,0754	0,0034
300	25,4	2886	0,0601	0,0033
400	28,5	3729	0,0470	0,0031
500	32,1	4768	0,0366	0,0030
630	36,3	6030	0,0283	0,0027

H07Z1-K 450/750V				
Nominal cross-sectional area of conductor	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	Minimum insulation resistance at temperature 20°C
mm ²	mm	kg/km	Ω/km	MΩ/km
1,5	2,9	20	13,3	0,010
2,5	3,6	31	7,98	0,0095
4	4,1	45	4,95	0,0078
6	4,6	64	3,30	0,0068
10	6,0	108	1,91	0,0065
16	7,1	163	1,21	0,0053
25	8,7	249	0,780	0,0050
35	9,4	337	0,554	0,0043
50	11,8	486	0,386	0,0042
70	13,6	673	0,272	0,0036
95	16,1	891	0,206	0,0036
120	17,2	1116	0,161	0,0032
150	19,4	1396	0,129	0,0032
185	22,1	1705	0,106	0,0032
240	24,0	2219	0,0801	0,0031

FLAMEB LOCKER H07ZZ-F 450/750V

EN 50525-3-21



Single and multicore flexible cables, cross-linked halogen-free compound insulated and sheathed, with low smoke and corrosive gases emission

FIRE PERFORMANCE

Flame propagation:	EN-60332-1-2, EN 60332-3-24, IEC 60332-3-24
Smoke emission:	EN 61034-2, IEC 61034-2
Corrosive and acid gas emission of insulation:	EN 50267-2-2, IEC 60754-2: pH ≥ 4,3; Conductivity: ≤ 10 μS/mm

CONSTRUCTION

Conductors:	tinned annealed copper conductor flexible class 5 according to EN 60228
Insulation:	cross-linked halogen free compound type E18 according to EN 50363-5
Sheath:	cross-linked halogen free compound type EM8 according to EN 50363-6

CHARACTERISTIC

Colour of sheath:	Black
Core identification:	according to HD 308 S2
Single core twin:	green-yellow or black blue and brown
3- core:	green-yellow, blue, brown
4- core:	green-yellow, brown, black, grey
5- core:	green-yellow, blue, brown, black, grey
> 5 core:	green-yellow, other cores black with white numbering

Maximum conductor operating temperature: +70°C

Lowest ambient temperature for fixed installation: -5°C

Maximum short-circuit conductor temperature: +250°C

Test voltage 50Hz: 2500V

Pulling strength: not exceed 15 N/mm²

Minimum bending radius: **For cable diameter D (mm)**

	D ≤ 8	8 < D ≤ 12	12 < D ≤ 20	D > 20
Normal use	4 D	5 D	6 D	6 D
Careful bending at termination	2 D	3 D	4 D	4 D

Application: For indoor and temporary outdoors usage, particularly for situations in which low emission of smoke and corrosive gases is required in case of burning. Use up to 1000V AC is permitted for fixed, protected installation in appliances and also for motor connections of hoisting motors and the like.

Standard packing: 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor		Maximum diameter of wires	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight	Maximum conductor resistance at temperature 20°C
n x mm ²		mm	mm	mm	mm	kg/km	Ω/km
1	x 16	0,41	1,2	1,9	11,4	247	1,24
1	x 25	0,41	1,4	2,0	13,2	353	0,795
1	x 35	0,41	1,4	2,2	14,4	462	0,565
1	x 50	0,41	1,6	2,4	17,1	648	0,393
1	x 70	0,51	1,6	2,6	19,3	870	0,277
1	x 95	0,51	1,8	2,8	22,2	1135	0,210
1	x 120	0,51	1,8	3,0	23,7	1395	0,164
1	x 150	0,51	2,0	3,2	26,3	1726	0,132
1	x 185	0,51	2,2	3,4	29,4	2098	0,108
1	x 240	0,51	2,4	3,5	31,5	2652	0,0817
1	x 300	0,51	2,6	3,6	35,7	3290	0,0654
1	x 400	0,51	2,8	3,8	38,4	4199	0,0495
1	x 500	0,61	3,0	4,0	43,8	5278	0,0391
2	x 1	0,21	0,8	1,3	8,2	89	20,0
2	x 1,5	0,26	0,8	1,5	9,2	114	13,7
2	x 2,5	0,26	0,9	1,7	11,0	166	8,21
2	x 4	0,31	1,0	1,8	12,5	226	5,09
2	x 6	0,31	1,0	2,0	14,1	297	3,39
2	x 10	0,41	1,2	3,1	19,1	535	1,95
2	x 16	0,41	1,2	3,3	21,8	732	1,24
2	x 25	0,41	1,4	3,6	25,6	1044	0,795
3	x 1	0,21	0,8	1,4	8,8	107	20,0
3	x 1,5	0,26	0,8	1,6	9,9	138	13,7
3	x 2,5	0,26	0,9	1,8	11,7	201	8,21
3	x 4	0,31	1,0	1,9	13,4	276	5,09
3	x 6	0,31	1,0	2,1	15,0	366	3,39
3	x 10	0,41	1,2	3,3	20,5	660	1,95
3	x 16	0,41	1,2	3,5	23,4	912	1,24
3	x 25	0,41	1,4	3,8	27,4	1308	0,795
3	x 35	0,41	1,4	4,1	29,5	1662	0,565
3	x 50	0,41	1,6	4,5	35,5	2363	0,393
3	x 70	0,51	1,6	4,8	40,0	3137	0,277
3	x 95	0,51	1,8	5,3	46,4	4144	0,210
3	x 120	0,51	1,8	5,6	49,3	5006	0,164
3	x 150	0,51	2,0	6,0	55,0	6214	0,132
3	x 185	0,51	2,2	6,4	61,4	7596	0,108
3	x 240	0,51	2,4	7,1	66,9	9617	0,0817

Number and cross-sectional area of conductor		Maximum diameter of wires	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight	Maximum conductor resistance at temperature 20°C
n x mm ²		mm	mm	mm	mm	kg/km	Ω/km
4	x 1	0,21	0,8	1,5	9,7	131	20,0
4	x 1,5	0,26	0,8	1,7	10,9	169	13,7
4	x 2,5	0,26	0,9	1,9	12,9	247	8,21
4	x 4	0,31	1,0	2,0	14,7	340	5,09
4	x 6	0,31	1,0	2,3	16,7	459	3,39
4	x 10	0,41	1,2	3,4	22,4	805	1,95
4	x 16	0,41	1,2	3,6	25,6	1132	1,24
4	x 25	0,41	1,4	4,1	30,4	1659	0,795
4	x 35	0,41	1,4	4,4	32,7	2113	0,565
4	x 50	0,41	1,6	4,8	39,3	3001	0,393
4	x 70	0,51	1,6	5,2	44,5	4011	0,277
4	x 95	0,51	1,8	5,9	51,9	5333	0,210
4	x 120	0,51	1,8	6,0	54,7	6402	0,164
4	x 150	0,51	2,0	6,5	61,2	7969	0,132
4	x 185	0,51	2,2	7,0	68,5	9756	0,108
5	x 1	0,21	0,8	1,6	10,7	162	20,0
5	x 1,5	0,26	0,8	1,8	12,0	209	13,7
5	x 2,5	0,26	0,9	2,0	14,2	304	8,21
5	x 4	0,31	1,0	2,2	16,4	427	5,09
5	x 6	0,31	1,0	2,5	18,6	574	3,39
5	x 10	0,41	1,2	3,6	24,6	994	1,95
5	x 16	0,41	1,2	3,9	28,3	1398	1,24
5	x 25	0,41	1,4	4,4	33,6	2045	0,795
5	x 35*	0,41	1,4	4,6	36,0	2589	0,565
5	x 50*	0,41	1,6	5,2	43,6	3717	0,393
6	x 1,5	0,26	0,8	2,5	14,3	286	13,7
6	x 2,5	0,26	0,9	2,7	16,7	407	8,21
6	x 4	0,31	1,0	2,9	19,2	561	5,09
12	x 1,5	0,26	0,8	2,9	18,7	480	13,7
12	x 2,5	0,26	0,9	3,1	21,9	688	8,21
12	x 4	0,31	1,0	3,5	25,5	977	5,09
18	x 1,5	0,26	0,8	3,2	21,9	681	13,7
18	x 2,5	0,26	0,9	3,5	25,9	992	8,21
18	x 4	0,31	1,0	3,9	30,1	1407	5,09
24	x 1,5	0,26	0,8	3,5	25,6	884	13,7
24	x 2,5	0,26	0,9	3,9	30,5	1299	8,21
36	x 1,5	0,26	0,8	3,8	29,3	1233	13,7
36	x 2,5	0,26	0,9	4,3	35,1	1833	8,21

Halogen-free
thermoplastic
insulated
and sheathed flexible
cords



FIRE PERFORMANCE

Flame propagation:	EN 60332-1-2 (IEC 60332-1)
Smoke emission:	EN 61034-2 (IEC 61034-2)
Gases evolved during combustion:	EN 50267-2-1 (IEC 60754-1): < 0,5% acid gas EN 50267-2-2 (IEC 60754-2): pH ≥ 4,3; conductivity ≤ 10 μS/mm The product is conformed with the RoHS Directive 2002/95/CE, Low-Voltage Directive 2006/95/EC.

CONSTRUCTION

Conductors:	annealed copper conductor flexible class 5 acc. to EN 60228
Insulation:	thermoplastic halogen-free compound type Tl6 acc. to EN 50363-7
Sheath:	thermoplastic halogen-free compound type TM7 acc. to EN 50363-7

CHARACTERISTIC

Color of sheath:	white
Core identification:	HD 308 S2
twin core:	blue and brown
3-core:	green/yellow, blue, brown
4-core:	green/yellow, brown, black, grey
5-core:	green/yellow, blue, brown, black, grey
Test voltage 50Hz:	2000V
Maximum conductor operating temperature:	+ 60°C
Lowest installation temperature:	+5°C
Maximum short-circuit conductor temperature:	+150°C
Minimum bending radius:	7,5 x D, D – overall diameter of cable
Application:	These cables having low emission of smoke and corrosive gases when exposed to fire. These cables are intended for the connection of domestic appliances to the fixed supply, in domestic premises, kitchens, offices, for household appliances.
Standard length cable packing:	100 m in coils or 500 m on drums. Other forms of packing and delivery are available on request.

Number and nominal cross-sectional area of conductors	Maximum diameter of wires in conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C
n x mm ²	mm	mm	mm	mm	kg/km	Ω/km
2 x 0,75	0,21	0,6	0,8	6,2	58	26,0
2 x 1	0,21	0,6	0,8	6,4	64	19,5
2 x 1,5	0,26	0,7	0,8	7,4	87	13,3
2 x 2,5	0,26	0,8	1,0	9,2	136	7,98
2 x 4	0,31	0,8	1,1	10,3	182	4,95
3 x 0,75	0,21	0,6	0,8	6,6	68	26,0
3 x 1	0,21	0,6	0,8	6,7	76	19,5
3 x 1,5	0,26	0,7	0,9	8,0	109	13,3
3 x 2,5	0,26	0,8	1,1	9,9	168	7,98
3 x 4	0,31	0,8	1,2	11,1	228	4,95
4 x 0,75	0,21	0,6	0,8	6,2	58	26,0
4 x 1	0,21	0,6	0,8	6,4	64	19,5
4 x 1,5	0,26	0,7	0,8	7,4	87	13,3
4 x 2,5	0,26	0,8	1,0	9,2	136	7,98
4 x 4	0,31	0,8	1,1	10,3	182	4,95
5 x 0,75	0,21	0,6	0,8	6,6	68	26,0
5 x 1	0,21	0,6	0,8	6,7	76	19,5
5 x 1,5	0,26	0,7	0,9	8,0	109	13,3
5 x 2,5	0,26	0,8	1,1	9,9	168	7,98
5 x 4	0,31	0,8	1,2	11,1	228	4,95

Thermosetting insulated, single-core, sheathed cable 450/750V



FIRE PERFORMANCE

Flame propagation:	BS EN 60332-1-2, BS EN 60332-3-24
Smoke emission:	BS EN 61034-2
Corrosive and acid gas emission:	BS EN 50267-2-1; HCL < 0,5 %

CONSTRUCTION

Conductor:	annealed copper, solid class 1 or stranded conductor class 2 according to BS EN 60228
Insulation:	halogen-free thermosetting compound type E15 according to BS EN 50363-5
Colour of insulation:	brown and blue
Sheath:	halogen-free thermoplastic compound type LTS4 according to BS 7655-6.1
Colour of sheath:	white, grey, or other agreed

CHARACTERISTIC

Maximum conductor operating temperature:	+90°C
Lowest installation temperature:	0°C
Maximum short-circuit conductor temperature:	+250°C
Test voltage 50Hz:	2500V
Minimum bending radius:	6D; (D- overall cable diameter)
Application:	for fixed installation in dry or damp areas for domestic and light industrial wiring. Particularly for situations in which low emission of smoke and corrosive gases is required in case of burning. These cables are not intended to provide circuit integrity in case of fire.
Standard packing:	100 m on spools or 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductors		Class of conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum resistance of conductor at 20°C
n x mm ²			mm	mm	mm	kg/km	mm ²
1	x 1	1	0,7	0,8	4,1	27	18,1
1	x 1	2	0,7	0,8	4,3	28	18,1
1	x 1,5	1	0,7	0,8	4,4	33	12,1
1	x 1,5	2	0,7	0,8	4,6	35	12,1
1	x 2,5	1	0,7	0,8	4,7	44	7,41
1	x 2,5	2	0,7	0,8	5,0	47	7,41
1	x 4	1	0,7	0,8	5,2	60	4,61
1	x 4	2	0,7	0,9	5,7	66	4,61
1	x 6	1	0,7	0,9	5,9	82	3,08
1	x 6	2	0,7	0,9	6,1	85	3,08
1	x 10	2	0,7	0,9	7,0	127	1,83
1	x 16	2	0,7	0,9	8,0	186	1,15
1	x 25	2	0,9	1,0	9,9	290	0,727
1	x 35	2	0,9	1,1	11,2	389	0,524

Double insulated
surface wiring cable



FIRE PERFORMANCE

Flame propagation:	BS EN 60332-1-2
Smoke emission:	BS EN 61034-2
Corrosive and acid gas emission:	BS EN 50267-2-1; HCl < 0,5 %

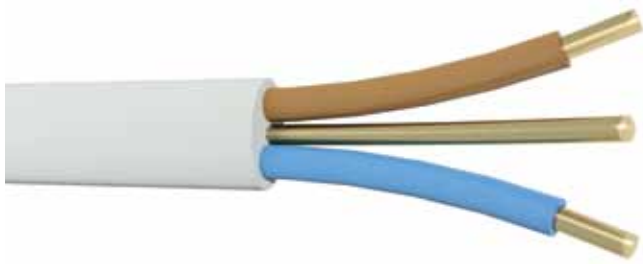
CONSTRUCTION

Conductor:	plain annealed copper stranded circular or circular compacted conductor class 2 according to BS EN 60228
Insulation:	XLPE compound type GP8 according to BS 7655-1.3
Sheath:	halogen-free thermoplastic compound type LTS1 according to BS 7655-6.1

CHARACTERISTIC

Colour of sheath:	Black
Colour of insulation:	brown or blue
Maximum conductor operating temperature:	+90°C
Lowest installation temperature:	-30°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	6D; D - overall cable diameter
Application:	for fixed installation in dry or damp areas for domestic and light industrial wiring. Particularly for situations in which low emission of smoke and corrosive gases is required in case of burning. These cables are not intended to provide circuit integrity in case of fire.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductors	Class of conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum resistance of conductor at 20°C
n x mm ²		mm	mm	mm	kg/km	mm ²
1 x 50	2	1,0	1,4	13,3	518	0,387
1 x 70	2	1,1	1,4	14,8	719	0,268
1 x 95	2	1,1	1,5	17,0	978	0,193
1 x 120	2	1,2	1,5	18,6	1214	0,153
1 x 150	2	1,4	1,6	20,8	1498	0,124
1 x 185	2	1,6	1,6	22,7	1853	0,0991
1 x 240	2	1,7	1,7	25,6	2394	0,0754
1 x 300	2	1,8	1,8	27,8	2978	0,0601
1 x 400	2	2,0	1,9	32,0	3852	0,0470
1 x 500	2	2,2	2,0	34,9	4896	0,0366
1 x 630	2	2,4	2,2	39,9	6235	0,0283



Thermosetting insulated and LSOH sheathed flat cable with circuit protective conductor (CPC), low smoke halogen free

FIRE PERFORMANCE

Flame retardant:	BS EN 60332-1-2, BS EN 60332-3-24
Smoke emission:	EN 61034-2
Corrosive and acid gas emission of insulation:	EN 50267-2-1; HCL < 0,5 %

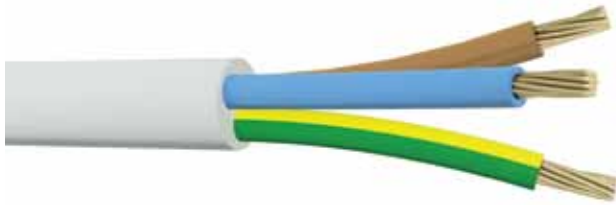
CONSTRUCTION

Conductor:	annealed copper, solid class 1 (RE) or stranded conductor class 2 (RM) acc. to BS EN 60228
Insulation:	thermosetting compound XLPE type GP8 acc. to BS 7655-1.3
Sheath	LSOH compound type LTS2 acc. to BS 7655-6.1

CHARACTERISTIC

Colour of sheath:	white or other on special request
Core identification:	single core: brown or blue twin core: brown and blue, or for 2 x 1,0 and 2 x 1,5 cables, brown and brown 3-core: brown, black (centre core) and grey
Minimum bending radius:	6 x D, D - overall diameter
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-30°C
Lowest installation temperature:	-5°C
Maximum short-circuit temperature:	+250°C
Test voltage:	2000V
Application:	for fixed installation in dry or damp premises. Suitable for installation in walls, on a wall or ceiling, or embedded in plaster. Particularly for situations in which low emission of smoke and corrosive gases is required in the case of burning. These cable are not intended to provide circuit integrity in case of fire.
Standard packing:	100 m in coils or 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductors		Number of wires in conductor	Nominal thickness of insulation	Nominal thickness of sheath	Cross-sectional area of protective conductor	Approximate overall dimensions		Approximate net weight of cables	Maximum conductor resistance at temperature 20°C
n	x mm ²	n	mm	mm	mm ²	mm		kg/km	Ω/km
1	x 1 RE	1	0,7	0,9	1RE	4,3	x 5,7	42	18,1/18,1
1	x 1,5 RE	1	0,7	0,9	1RE	4,6	x 5,7	48	12,1/18,1
2	x 1 RE	1	0,7	0,9	1RE	4,3	x 7,9	64	18,1/18,1
2	x 1 RM	7	0,7	0,9	1RE	4,5	x 8,3	66	18,1/18,1
2	x 1,5 RE	1	0,7	0,9	1RE	4,6	x 8,4	76	12,1/18,1
2	x 1,5 RM	7	0,7	0,9	1RE	4,8	x 8,8	80	12,1/18,1
2	x 2,5 RE	1	0,7	1,0	1,5RE	5,1	x 9,6	107	7,41/12,1
2	x 2,5 RM	7	0,7	1,0	1,5RE	5,4	x 10,1	113	7,41/12,1
2	x 4 RM	7	0,7	1,0	1,5RE	5,9	x 11,2	148	4,61/12,1
2	x 6 RM	7	0,7	1,1	2,5RE	6,5	x 12,5	202	3,08/7,41
2	x 10 RM	7	0,7	1,2	4RM	7,6	x 15,3	313	1,83/4,61
2	x 16 RM	7	0,7	1,3	6RM	8,8	x 17,9	464	1,15/3,08
3	x 1 RE	1	0,7	0,9	1RE	4,3	x 10,4	85	18,1/18,1
3	x 1,5 RE	1	0,7	0,9	1RE	4,6	x 11,2	103	12,1/18,1
3	x 2,5 RE	1	0,7	1,0	1,5RE	5,1	x 12,8	141	7,41/12,1
3	x 4 RM	7	0,7	1,0	1,5RE	5,9	x 15,1	206	4,61/12,1
3	x 6 RM	7	0,7	1,1	2,5RE	6,5	x 16,8	281	3,08/7,41
3	x 10 RM	7	0,7	1,2	4RM	7,6	x 20,5	347	1,83/4,61
3	x 16 RM	7	0,7	1,3	6RM	8,8	x 24,1	651	1,15/3,08



**LSOH insulated
and sheathed
flexible cords**

FIRE PERFORMANCE

Flame propagation:	BS EN 60332-1-2 (IEC 60332-1-2)
Smoke density:	BS EN 61034-2 (IEC 61034-2)
Gases evolved during combustion:	BS EN 50267-2-1 (IEC 60754-1): HCL ≤ 0,5 % BS EN 50267-2-2 (IEC 60754-2): pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductor:	annealed copper, class 5 flexible conductor according to BS EN 60228
Insulation:	special thermoplastic compound LSOH (Low Smoke Zero Halogen)
Sheath:	special thermoplastic compound LSOH (Low Smoke Zero Halogen)

CHARACTERISTIC

Colour of sheath:	White
Colour of insulation:	according to HD 308 S2
twin core:	blue and brown
3-core:	green/yellow, blue, brown
4-core:	green/yellow, brown, black, grey
5-core:	green/yellow, blue, brown, black, grey
Maximum conductor operating temperature:	+60°C
Lowest ambient temperature for fixed installation:	-30°C
Lowest installation temperature:	-5°C
Maximum short-circuit conductor temperature:	+150°C
Test voltage 50Hz:	2000V
Minimum bending radius:	6 x cable diameter
Application:	In domestic premises, kitchens, and offices; for household appliances, including in damp premises; for medium duties (e.g. washing machines, spin dryers, and refrigerators). Particularly for situations in which low emission of smoke and corrosive gases is required in case of burning.
Standard packing:	100 m on spools or 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Maximum diameter of wires in conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C
n	x	mm ²	mm	mm	mm	mm	kg/km	Ω/km
2	x	0,75	0,21	0,6	0,8	6,2	58	26,0
2	x	1	0,21	0,6	0,8	6,4	64	19,5
2	x	1,5	0,26	0,7	0,8	7,4	87	13,3
2	x	2,5	0,26	0,8	1,0	9,2	136	7,98
2	x	4	0,31	0,8	1,1	10,3	182	4,95
3	x	0,75	0,21	0,6	0,8	6,6	68	26,0
3	x	1	0,21	0,6	0,8	6,7	76	19,5
3	x	1,5	0,26	0,7	0,9	8,0	109	13,3
3	x	2,5	0,26	0,8	1,1	9,9	168	7,98
3	x	4	0,31	0,8	1,2	11,1	228	4,95
4	x	0,75	0,21	0,6	0,8	7,2	81	26,0
4	x	1	0,21	0,6	0,9	7,6	96	19,5
4	x	1,5	0,26	0,7	1,0	9,0	136	13,3
4	x	2,5	0,26	0,8	1,1	10,8	204	7,98
4	x	4	0,31	0,8	1,2	12,2	279	4,95
5	x	0,75	0,21	0,6	0,9	8,0	103	26,0
5	x	1	0,21	0,6	0,9	8,4	120	19,5
5	x	1,5	0,26	0,7	1,1	10,1	172	13,3
5	x	2,5	0,26	0,8	1,2	12,1	256	7,98
5	x	4	0,31	0,8	1,4	13,7	355	4,95



**XLPE insulated,
LSOH sheathed,
round wire armoured
cables**

FIRE PERFORMANCE

Flame propagation:	BS EN 60332-1-2 and BS EN 60332-3-24 Category C
Smoke emission:	BS EN 61034-2
Corrosive and acid gas emission:	BS EN 50267-2-1, HCL ≤ 0,5%

CONSTRUCTION

Conductors:	annealed copper conductor, circular, circular compacted or shaped stranded class 2 according to BS EN 60228
Insulation:	cross-linked polyethylene XLPE type GP8 according to BS 7655-1.3
Bedding:	LSOH (special low smoke zero halogen compound)
Armour:	for single-core cables - single layer of aluminium wires applied spirally over the bedding (AWA) for two or more cores cables – single layer of galvanized steel wires applied spirally over the bedding (SWA)
Outer sheath:	black LSOH compound type LTS1 according to BS 7655-6.1

CHARACTERISTIC

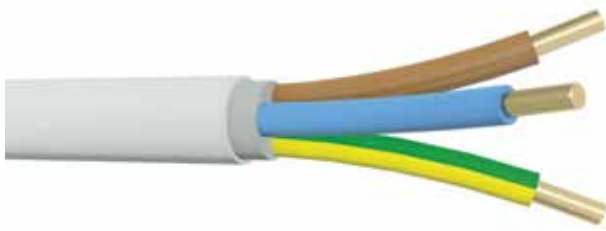
Core identification:	
1-core:	brown or blue
2-core:	brown, blue
3-core:	brown, black, grey
4-core:	blue, brown, black, grey
5-core	green/yellow, blue, brown, black, grey
auxiliary cables	white with black numbering
Maximum conductor operating temperature:	+90°C
Lowest installation temperature:	0°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	6D for cables with circular copper conductors and 8D for cables with shaped copper conductors; D – overall cable diameter
Application:	For use in fixed installations in industrial areas, buildings and similar applications.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Thickness of extruded bedding	Nominal aluminium armour wire diameter	Nominal thickness of outer sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C	Maximum armour resistance at 20°C
n x mm ²			mm	mm	mm	mm	mm	kg/km	Ω/km	Ω/km
1	x	150	1,4	1,0	1,6	1,7	25,6	1847	0,124	0,42
1	x	185	1,6	1,0	1,6	1,8	27,7	2246	0,0991	0,38
1	x	240	1,7	1,0	1,6	1,8	30,4	2817	0,0754	0,34
1	x	300	1,8	1,0	1,6	1,9	32,6	3435	0,0601	0,31
1	x	400	2,0	1,2	2,0	2,0	39,0	4479	0,0470	0,22
1	x	500	2,2	1,2	2,0	2,1	42,9	5593	0,0366	0,20
2	x	1,5	0,6	0,8	0,9	1,3	11,1	252	12,1	10,2
2	x	2,5	0,7	0,8	0,9	1,4	12,6	311	7,41	8,8
2	x	4	0,7	0,8	0,9	1,4	13,6	370	4,61	7,9
2	x	6	0,7	0,8	0,9	1,4	14,3	433	3,08	7,0
2	x	10	0,7	0,8	0,9	1,5	16,4	558	1,83	6,0
2	x	16	0,7	0,8	1,25	1,5	19,1	833	1,15	3,7
2	x	25	0,9	0,8	1,25	1,6	22,7	1134	0,727	3,7
2	x	35	0,9	1,0	1,6	1,7	26,1	1593	0,524	2,6
3	x	1,5	0,6	0,8	0,9	1,3	11,5	278	12,1	9,5
3	x	2,5	0,7	0,8	0,9	1,4	13,1	354	7,41	8,2
3	x	4	0,7	0,8	0,9	1,4	14,2	428	4,61	7,5
3	x	6	0,7	0,8	0,9	1,4	15,4	516	3,08	6,7
3	x	10	0,7	0,8	1,25	1,5	17,9	780	1,83	4,0
3	x	16	0,7	0,8	1,25	1,6	20,3	1023	1,15	3,5
3	x	25	0,9	1,0	1,6	1,7	25,2	1612	0,727	2,5
3	x	35 ¹⁾	0,9	1,0	1,6	1,8	27,7	1997	0,524	2,3
3	x	35 ²⁾	0,9	1,0	1,6	1,8	26,2	1939	0,524	2,3
3	x	50	1,0	1,0	1,6	1,8	28,8	2402	0,387	2,0
3	x	70	1,1	1,0	1,6	1,9	32,8	3158	0,268	1,8
3	x	95	1,1	1,2	2,0	2,1	37,5	4355	0,193	1,3
3	x	120	1,2	1,2	2,0	2,2	40,7	5222	0,153	1,2
3	x	150	1,4	1,4	2,5	2,3	46,3	6709	0,124	0,78
3	x	185	1,6	1,4	2,5	2,4	50,4	8029	0,0991	0,71
3	x	240	1,7	1,4	2,5	2,6	55,7	9990	0,0754	0,63
4	x	1,5	0,6	0,8	0,9	1,3	12,3	318	12,1	8,8
4	x	2,5	0,7	0,8	0,9	1,4	14,0	405	7,41	7,7
4	x	4	0,7	0,8	0,9	1,4	15,2	495	4,61	6,8
4	x	6	0,7	0,8	1,25	1,5	17,5	719	3,08	4,3
4	x	10	0,7	0,8	1,25	1,5	19,2	920	1,83	3,7
4	x	16	0,7	0,8	1,25	1,6	21,9	1230	1,15	3,1
4	x	25	0,9	1,0	1,6	1,7	27,3	1942	0,727	2,3
4	x	35 ¹⁾	0,9	1,0	1,6	1,8	30,0	2419	0,524	2,0
4	x	35 ²⁾	0,9	1,0	1,6	1,8	29,7	2411	0,524	2,0
4	x	50	1,0	1,0	1,6	1,9	32,9	3028	0,387	1,8
4	x	70	1,1	1,2	2,0	2,1	38,9	4347	0,268	1,2
4	x	95	1,1	1,2	2,0	2,2	43,1	5539	0,193	1,1
4	x	120	1,2	1,4	2,5	2,3	48,5	7183	0,153	0,76
4	x	150	1,4	1,4	2,5	2,4	52,9	8523	0,124	0,68

Number and cross-sectional area of conductor			Nominal thickness of insulation	Thickness of extruded bedding	Nominal aluminium armour wire diameter	Nominal thickness of outer sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C	Maximum armour resistance at 20°C
n x mm ²			mm	mm	mm	mm	mm	kg/km	Ω/km	Ω/km
4	x	185	1,6	1,4	2,5	2,6	57,9	10274	0,0991	0,61
4	x	240	1,7	1,6	2,5	2,7	64,5	12902	0,0754	0,54
5	x	1,5	0,6	0,8	0,9	1,4	13,2	359	12,1	8,2
5	x	2,5	0,7	0,8	0,9	1,4	14,9	457	7,41	6,8
5	x	4	0,7	0,8	0,9	1,5	16,6	577	4,61	6,2
5	x	6	0,7	0,8	1,25	1,5	18,8	823	3,08	3,9
5	x	10	0,7	0,8	1,25	1,6	20,9	1081	1,83	3,4
5	x	16	0,7	1,0	1,6	1,7	24,9	1645	1,15	2,2
7	x	1,5	0,6	0,8	0,9	1,4	14,1	417	12,1	7,5
7	x	2,5	0,7	0,8	0,9	1,4	16,0	544	7,41	6,3
7	x	4	0,7	0,8	1,25	1,5	18,4	800	4,61	4,0
12	x	1,5	0,6	0,8	1,25	1,5	18,2	711	12,1	4,0
12	x	2,5	0,7	0,8	1,25	1,6	21,0	932	7,41	3,5
12	x	4	0,7	1,0	1,6	1,6	24,2	1364	4,61	2,3
19	x	1,5	0,6	0,8	1,25	1,6	20,7	916	12,1	3,5
19	x	2,5	0,7	1,0	1,6	1,7	25,1	1423	7,41	2,3
19	x	4	0,7	1,0	1,6	1,7	27,8	1810	4,61	2,0
27	x	1,5	0,6	1,0	1,6	1,7	25,2	1366	12,1	2,3
27	x	2,5	0,7	1,0	1,6	1,8	29,3	1838	7,41	1,9
37	x	1,5	0,6	1,0	1,6	1,7	27,5	1648	12,1	2,0
37	x	2,5	0,7	1,2	1,6	1,8	32,1	2232	7,41	1,7
48	X	1,5	0,6	1,0	1,6	1,8	30,9	1991	12,1	1,8
48	X	2,5	0,7	1,2	2,0	2,0	37,6	3065	7,41	1,2

Environmental
health
& safety





Halogen-free light sheathed cables with improved fire behaviour

FIRE PERFORMANCE

Flame propagation:	EN 60332-3-23, IEC 60332-3-23
Smoke density:	EN 61034-2, IEC 61034-2
Gases evolved during combustion:	EN 50267-2-1, IEC 60754-1: HCL ≤ 0,5% EN 50267-2-2, IEC 60754-2: pH ≥ 3,5; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	plain annealed solid copper class 1 for 1,5 and 2,5 mm ² , stranded copper class 2 for 6 and 10 mm ² according to EN 60228, IEC 60228
Insulation:	special halogen-free thermoplastic polyolefin compound
Filling:	halogen-free filling compound
Sheath:	special halogen-free thermoplastic polyolefin compound

CHARACTERISTIC

Colour of sheath:	white
--------------------------	-------

Core identification HD 308 S2

	with protective conductor (S)	without protective conductor (N)
twin	-	blue, brown
3-core	green/yellow, blue, brown	brown, black, grey
4-core	green/yellow, brown, black, grey	blue, brown, black, grey
5-core	green/yellow, blue, brown, black, grey	blue, brown, black, grey, black

Maximum conductor operating temperature:	+70°C
Lowest recommended temperature during laying:	-15°C
Maximum short-circuit conductor temperature:	+160°C
Minimum bending radius:	10D; D(overall cable diameter)

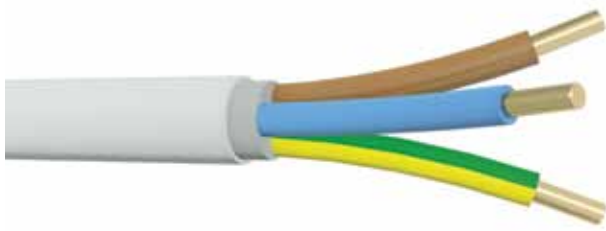
Application: Installation cables for industrial complexes, public buildings, hotels, airports, hospitals or industrial plants with high concentration of people and/or property. The cable is halogen free and it features low density of smoke and toxic fumes in case of fire. Usable in the open, in dry, damp and wet environments in the open and concealed, as well as in masonry and in concrete. Not suitable for use in ground and water, for imbedding in solidified – or compressed – concrete.

Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.
--------------------------	---

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
2	x	1,5	0,7	1,5	9,5	139	12,1
2	x	2,5	0,8	1,5	10,6	182	7,41
2	x	6	0,8	1,5	12,6	293	3,08
2	x	10	1,0	1,5	15,2	444	1,83
3	x	1,5	0,7	1,5	9,9	158	12,1
3	x	2,5	0,8	1,5	11,1	212	7,41
3	x	6	0,8	1,5	13,6	364	3,08
3	x	10	1,0	1,5	16,1	546	1,83
4	x	1,5	0,7	1,5	10,6	185	12,1
4	x	2,5	0,8	1,5	11,7	242	7,41
4	x	6	0,8	1,5	14,6	436	3,08
4	x	10	1,0	1,5	18,1	692	1,83
5	x	1,5	0,7	1,5	11,1	210	12,1
5	x	2,5	0,8	1,5	12,6	290	7,41
5	x	6	0,8	1,5	16,1	537	3,08
5	x	10	1,0	1,7	20,1	860	1,83

FLAMEB LOCKER EQQ LIGHT 300/500 V

Based on SS 424 02 19-3, HD 604-5D



Halogen-free light sheathed cables with improved fire behaviour

FIRE PERFORMANCE

Flame propagation:	EN 60332-1-2, IEC 60332-1-2
Smoke density:	EN 61034-2, IEC 61034-2
Gases evolved during combustion:	EN 50267-2-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductor:	bare copper conductor, circular solid class 1 according to EN 60228, IEC 60228
Insulation:	thermoplastic halogen-free compound
Inner covering:	special halogen-free filling compound
Sheath:	thermoplastic halogen-free compound

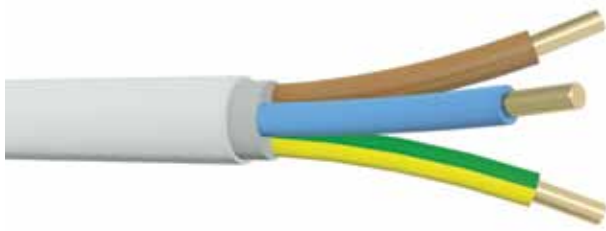
CHARACTERISTIC

Colour of sheath:	White
Core identification:	according to HD 308 S2
2-core:	blue, brown
3-core:	green/yellow, blue, brown
4-core:	green/yellow, brown, black, grey
5-core:	green/yellow, blue, brown, black, grey
Maximum conductor operating temperature:	+70°C
Lowest ambient temperature for fixed installation:	-30°C
Maximum short-circuit conductor temperature:	+160°C
Test voltage 50Hz:	2000V
Minimum bending radius:	6D - (D - overall cable diameter)
Application:	Installation cables for industrial complexes, public buildings, hotels, airports, hospitals or industrial plants with high concentration of people and/or property. Cables may be laid in rooms and areas where dark smoke and corrosive fumes can give damage in case of a fire.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km
2	x	1,5	0,7	1,2	8,5	116	12,1
2	x	2,5	0,8	1,2	9,7	158	7,41
3	G	1,5	0,7	1,2	8,9	135	12,1
3	G	2,5	0,8	1,2	10,2	187	7,41
4	G	1,5	0,7	1,2	9,7	161	12,1
4	G	2,5	0,8	1,2	11,1	224	7,41
5	G	1,5	0,7	1,2	10,5	192	12,1
5	G	2,5	0,8	1,2	12,0	270	7,41

FLAMEB LOCKER EXQ LIGHT 300/500 V

Based on SS 424 02 19-3, ZN-TF-219



Halogen-free light sheathed cables with improved fire behaviour

FIRE PERFORMANCE

Flame retardant:	IEC 60332-1-2, IEC 60332-3-24 (SS 4241475 F4C), IEC 60332-3-23 (SS 4241475 F4B)
Smoke density:	EN 61034-2, IEC 61034-2
Gases evolved during combustion:	IEC 60754-1, IEC 60754-2, EN 50267-2-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	annealed copper solid class 1 acc. to EN 60228
Insulation:	cross-linked polyethylene XLPE
Inner covering:	halogen-free not vulcanized rubber compound
Sheath:	special halogen-free thermoplastic compound

CHARACTERISTIC

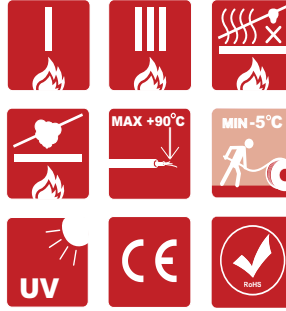
Colour of sheath:	White
Core identification:	<ul style="list-style-type: none"> 1-core: green-yellow 2-core: blue, brown 3-core: green-yellow, blue, brown 4-core: green-yellow, brown, black, grey 4-core*: green/yellow, blue, brown, black 5-core: green-yellow, blue, brown, black, grey 7-core: green-yellow, other cores black with numbering
Maximum conductor operating temperature:	+70°C
Lowest ambient temperature for fixed installation:	-30°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Test voltage 50Hz:	2000V
Minimum bending radius:	
Normal use:	8xD
Careful bending at termination:	4xD, D-overall diameter
Max. permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ²
Application:	Installation cables for industrial complexes, public buildings, hotels, airports, hospitals or industrial plants with high concentration of people and/or property. Usable in the open, in dry, damp and wet environments in the open and concealed, as well as in masonry and in concrete, not suitable for imbedding in solidified – or compressed – concrete.
Standard packing:	100 m coils or 500 m on drums. Other forms of packing and delivery are available on request.

* For certain applications only

Number and cross-sectional area of conductor	Minimum number of wires in conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C	Minimum insulation resistance at 70°C
n x mm ²	n	mm	mm	mm	kg/km	Ω/km	MΩ. km
1G2,5	1	0,5	1,2	5,1	47	7,41	0,007
2x1,5	1	0,5	1,2	7,7	68	12,1	0,008
3G1,5	1	0,5	1,2	8,1	109	12,1	0,008
3G2,5	1	0,5	1,2	8,9	146	7,41	0,007
4G1,5	1	0,5	1,2	8,7	130	12,1	0,008
4G2,5	1	0,5	1,2	9,6	176	7,41	0,007
5G1,5	1	0,5	1,2	9,4	153	12,1	0,008
5G2,5	1	0,5	1,2	10,4	210	7,41	0,007
7G1,5	1	0,5	1,2	10,1	189	12,1	0,008

FLAMEB LOCKER EXQ/XCMK-HF 0,6/1 kV

Based on SS 424 14 18, HD 603 S1 Part 5P; HD 604-A3 5-I, IEC 60502-1



Halogen-free low
smoke power cables
with copper
concentric conductor

FIRE PERFORMANCE

Flame propagation:	EN 60332-3-24, IEC 60332-3-24 (SS 4241475 F4C)
Smoke density:	EN 61034-2, IEC 61034-2
Gases evolved during combustion:	EN 50267-2, IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare annealed copper conductor, circular solid class 1 according to EN 60228
Insulation:	cross-linked polyethylene XLPE type DIX3
Inner covering:	special flame-retardant and halogen-free compound
Concentric conductor:	inner layer - round copper wires, outer layer - copper tape
Separator:	tape
Sheath:	thermoplastic halogen - free polyolefin compound

CHARACTERISTIC

Colour of sheath:	black
Core identification:	according to HD 308 S2
2-core:	blue, brown
3-core:	brown, black, grey
4-core:	blue, brown, black, grey

The materials used in manufactures are cadmium - free and contain no silicone.

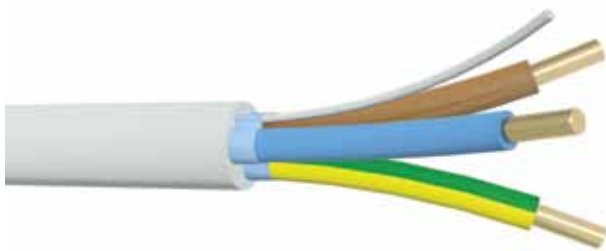
Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-30°C
Lowest installation temperature:	-5°C
Maximum short-circuit conductor temperature:	+250°C
Minimum bending radius:	12D - for multicore cable (D - overall cable diameter)
Maximum permissible tensile stress with cable grip for Cu-conductor:	50 N/mm ² (total cross-section of the conductors, any screen not included)
Application:	for the supply of electrical energy, especially for installations where fire and emissions of smoke and toxic fumes create a potential threat.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C
n x mm ²			mm	kg/km	Ω/km
2	x	1,5/1,5	11,6	188	12,1/12,1
2	x	2,5/2,5	12,4	230	7,41/7,41
2	x	4/4	13,7	299	4,61/4,61
2	x	6/6	15,0	377	3,08/3,08
2	x	10/10	16,7	527	1,83/1,83
3	x	1,5/1,5*	12,0	206	12,1/12,1
3	x	2,5/2,5	12,8	256	7,41/7,41
3	x	4	14,2	338	4,61/4,61
3	x	6	15,6	433	3,08/3,08
3	x	10	17,4	616	1,83/1,83
4	x	1,5/1,5*	12,7	232	12,1/12,1
4	x	2,5/2,5	13,6	292	7,41/7,41
4	x	4/4	15,1	389	4,61/4,61
4	x	6/6	16,6	503	3,08/3,08
4	x	10/10	18,6	724	1,83/1,83
5	x	10RE/10**	20,0	845	1,83/1,83

*based on norm SS 424 14 18, HD 603 S1 Part 5P
** based on norm SS 424 14 18, HD 603 S1 Part 5P and HD 604-A3 S1

FLAMEB LOCKER EXLQ 450/750 V

Based on SS 424 02 19-6



XLPE insulated, Al and halogen free sheathed electric cables

FIRE PERFORMANCE

Flame retardant:	IEC 60332-1-2, IEC 60332-3-24 (SS 4241475 F4C), IEC 60332-3-23 (SS 4241475 F4B)
Smoke density:	EN 61034-2, IEC 61034-2
Gases evolved during combustion:	IEC 60754-1, IEC 60754-2, EN 50267-2-2: pH \geq 4,3; conductivity \leq 10 μ S/mm

CONSTRUCTION

Conductors:	annealed copper solid class 1 acc. to EN 60228
Insulation:	cross-linked polyethylene XLPE
Drain wire	1mm ² tinned copper stranded conductor (Class 2) RE acc to EN 60228 applied longitudinally under Al tape
Screen	aluminium laminated tape and drain wire
Sheath:	special halogen-free thermoplastic compound

CHARACTERISTIC

Colour of sheath:	White
Core identification:	3-core: green-yellow, blue, brown 4-core: green-yellow, brown, black, grey 5-core: green-yellow, blue, brown, black, grey
Maximum conductor operating temperature:	+70°C
Lowest ambient temperature for fixed installation:	-30°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C
Test voltage 50Hz:	2000V
Minimum bending radius:	8xD, D-overall diameter
Application:	Recommended for indoor and outdoor applications. The cable is UV-resistant, may be installed in pipes, ducts, within or under the plaster. Especially recommended for applications where low smoke emission and low level of corrosive gases is required in the case of fire. The cable screen applied in the form aluminium /polyester laminate tape together with tinned copper drain wire gives the cable good elasticity and mechanical strength as well as protects the cable against the influence of electromagnetic field. The materials used for production of the cable are environmentally friendly, the cable does not contain PVC and chloroprene compounds.
Standard packing:	100 m coils or 500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor	Minimum number of wires in conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at 20°C
n x mm²	n	mm	mm	mm	kg/km	Ω/km
3G1,5	1	0,7	1,2	8,7	116	12,1
3G2,5	1	0,7	1,2	9,5	150	7,41
4G1,5	1	0,7	1,2	9,4	139	12,1
4G2,5	1	0,7	1,2	10,3	181	7,41
5G1,5	1	0,7	1,2	10,2	164	12,1
5G2,5	1	0,7	1,2	11,2	218	7,41

FLAMEB LOCKER FXQJ 0,6/1 kV

Based on SS 424 14 18, HD 603-5P



XLPE insulated cables with concentric conductor and LSOH sheath

FIRE PERFORMANCE

Flame propagation:	EN 60332-3-24, IEC 60332-3-24
Smoke density:	EN 61034-2, IEC 61034-2
Gases evolved during combustion:	EN 50267-2-2, IEC 60754-2: pH \geq 4,3; conductivity \leq 10 μ S/mm

CONSTRUCTION

Conductor:	copper circular compacted stranded conductor class 2 (RM) or stranded sector – shaped conductor class 2 (SM) according to EN 60228
Insulation:	XLPE compound type DIX3
Cable core:	Insulated conductors are twisted together with eventually central filler
Inner covering:	tape
Concentric conductor:	copper wires and copper tape helically wound overlapped by polyester tape
Outer sheath:	thermoplastic halogen – free polyolefin compound

CHARACTERISTIC

Colour of sheath:	black
Core identification:	according to HD 308.S2
3-core:	brown, black, grey
4-core:	blue, brown, black, grey

The materials used are cadmium-free and contain no silicone

Maximum conductor operating temperature:	+90°C
Maximum short-circuit conductor temperature:	+250°C
Test voltage of complete cable:	3,5 kV AC 50Hz, 5 min.
Minimum bending radius:	12D for multi conductor cables; D – overall cable diameter
Maximum permissible pulling force by cable stocking or by pulling-head:	50 N/mm ²
Application:	for the supply of electrical energy where fire and emissions of smoke and toxic fumes create a potential threat.
Standard packing:	500 m or 1000 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Thickness of outer sheath	Approximate overall diameter	Approximate weight of cables	Maximum conductor resistance at 20°C	Maximum concentric conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km	Ω/km
3	x	16 RMC / 16	0,7	1,8	20,7	780	1,150	1,150
3	x	25 RMC / 16	0,9	1,8	24,3	1080	0,727	1,150
3	x	35 RMC / 16	0,9	1,8	26,6	1360	0,524	1,150
3	x	50 SM / 25	1,4	1,9	26,1	1795	0,387	0,727
3	x	70 SM / 35	1,1	2,0	30,2	2520	0,268	0,524
3	x	95 SM / 50	1,6	2,2	33,5	3405	0,193	0,387
3	x	150 SM / 70	1,8	2,4	40,6	5145	0,124	0,268
3	x	240 SM / 120	2,2	2,8	48,9	8310	0,0754	0,153
4	x	16 RMC / 16	0,7	1,8	22,3	950	1,150	1,150
4	x	25 RMC / 16	0,9	1,8	26,4	1330	0,727	1,150
4	x	35 RMC / 16	0,9	1,8	28,9	1715	0,524	1,150
4	x	50 SM / 25	1,4	2,0	29,4	2290	0,387	0,727
4	x	70 SM / 35	1,4	2,1	33,9	3215	0,268	0,727
4	x	95 SM / 50	1,6	2,3	37,7	4350	0,193	0,387
4	x	120 SM / 70	1,6	2,4	41,9	5500	0,153	0,268
4	x	150 SM / 70	1,8	2,6	45,8	6600	0,124	0,268
4	x	185 SM / 95	2,0	2,7	50,0	8250	0,0991	0,193
4	x	240 SM / 120	2,2	2,9	55,3	10655	0,0754	0,153

FLAMEB LOCKER AXQJ 0,6/1 kV

Based on SS 424 14 18, HD603-5P



XLPE insulated cables with concentric conductor and LSOH sheath

FIRE PERFORMANCE

Flame propagation:	EN 60332-3-24, IEC 60332-3-24
Smoke density:	EN 61034-2, IEC 61034-2
Gases evolved during combustion:	EN 50267, IEC 60754-2: pH \geq 4,3; conductivity \leq 10 μ S/mm

CONSTRUCTION

Conductor:	aluminium circular compacted stranded conductor class 2 (RM) or stranded sector – shaped conductor class 2 (SM) according to EN 60228
Insulation:	XLPE compound type DIX3
Cable core:	insulated conductors are twisted together with eventually central filler overlapped by polyester tape
Inner covering:	tape
Concentric conductor:	copper wires and copper tape helically wounded overlapped by polyester tape
Outer sheath:	thermoplastic halogen – free polyolefin compound

CHARACTERISTIC

Colour of sheath:	black
Core identification:	according to HD 308.S2
4-core:	blue, brown, black, grey
The materials used in manufactures are cadmium - free and contain no silicone.	
Maximum conductor operating temperature: :	+90°C
Maximum short-circuit conductor temperature:	+250°C
Test voltage of complete cable:	3,5 kV AC 50Hz , 5 min.
Minimum bending radius:	12D; D – overall cable diameter
Maximum permissible pulling force by cable stocking or by pulling-head:	30 N/mm ²

Application: for the supply of electrical energy, especially for installations where fire and emissions of smoke and toxic fumes create a potential threat.

Standard packing: 500 m or 1000 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Thickness of outer sheath	Approximate overall diameter	Approximate weight of cables	Maximum conductor resistance at 20°C	Maximum concentric conductor resistance at 20°C
n x mm ²			mm	mm	mm	kg/km	Ω/km	Ω/km
4	x	50 SM / 15	1,0	2,0	29,3	1060	0,641	1,20
4	x	70 SM / 21	1,1	2,1	33,5	1440	0,443	0,868
4	x	95 SM / 29	1,1	2,3	37,7	1900	0,320	0,641
4	x	150 SM / 41	1,4	2,6	45,9	2830	0,206	0,443
4	x	185 SM / 57	1,6	2,7	50,3	3530	0,164	0,320
4	x	240 SM / 72	1,7	2,9	56,5	4480	0,125	0,253

Quality
makes
priority



Single conductor
rubber insulated
and sheathed flexible
power cables



FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-1-2
Smoke emission:	DIN EN 61034-2
Corrosive and acid gas emission:	DIN EN 50267-2-2, pH \geq 4,3; conductivity \leq 100 μ S/cm

CONSTRUCTION

Conductors:	annealed tinned copper conductor class 5 according to IEC 60228
Separator:	semi-conducting tape under insulation
Insulation:	EPR thermosetting compound type 3GI3 according to DIN VDE 0207-20
Outer sheath:	halogen free thermosetting compound type HM3 according to DIN VDE 0207-24

CHARACTERISTIC

Colour of outer sheath:	black
Features:	oil resisting, chemicals, flame retardant and weather resistant
Tests:	DIN VDE 0250
Temperature range:	for flexible use: -25 up to 90°C, for fixed installation: -40 up to 90°C
Minimum bending radius:	for flexible use: 10D, for fixed installation: 6D; (D – overall cable diameter)
Application:	for use in electrical installations at working voltages up to 1,8/3 kV, where low smoke in case of burning is required.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor			Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter		Approximate net weight of cables	Voltage drop	Current-Carrying Capacity at 30°C in air**
					Approx.	Max.			
mm ²			mm	mm	mm		kg/kg	mV/(Am)	A
1	x	1,5	1,3	0,8	5,7	7,0	47	30,26	30
1	x	2,5	1,3	0,8	6,2	7,5	60	18,13	41
1	x	4	1,3	0,8	6,7	9,0	77	11,24	55
1	x	6	1,3	0,8	7,2	9,5	98	7,49	70
1	x	10	1,5	0,8	8,6	11,0	149	4,31	98
1	x	16	1,5	0,8	10,7	13,0	222	2,74	132
1	x	25	1,8	1,0	12,9	15,0	333	1,76	176
1	x	35	1,8	1,0	13,6	16,5	425	1,26	218
1	x	50	1,8	1,0	15,6	18,0	576	0,88	276
1	x	70	1,8	1,0	17,2	20,5	770	0,63	347
1	x	95	2,2	1,0	19,0	24,0	1002	0,49	416
1	x	120	2,2	1,0	21,5	26,0	1255	0,39	488
1	x	150	2,2	1,2	23,4	28,0	1553	0,33	566
1	x	185	2,4	1,2	24,5	31,0	1853	0,28	644
1	x	240	2,6	1,2	28,9	34,5	2409	0,23	775
1	x	300	2,8	1,2	29,9	38,0	2938	0,21	898
1	x	500*	3,4	1,6	39,8	46,0	4908	0,16	1250

* - based on Standard,

** - Tab.15 DIN VDE 0298-4:2003. For Rother temperature use Tab. 17 Column 7. Conductor operating temperature 90°C

FLAMEBLOCKER NSHXAFÖU POWER CABLE 3,6/6 kV

DIN VDE 0250 Part 606

Single conductor
rubber insulated
and sheathed flexible
power cables



FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-1-2
Smoke emission:	DIN EN 61034-2
Corrosive and acid gas emission:	DIN EN 50267-2-2, pH \geq 4,3; conductivity \leq 100 μ S/cm

CONSTRUCTION

Conductors:	annealed tinned copper conductor class 5 according to IEC 60228
Separator:	semi-conducting tape under insulation
Insulation:	EPR thermosetting compound type 3GI3 according to DIN VDE 0207-20
Outer sheath:	halogen free thermosetting compound type HM3 according to DIN VDE 0207-24

CHARACTERISTIC

Colour of outer sheath:	black
Features:	oil resisting, chemicals, flame retardant and weather resistant
Tests:	DIN VDE 0250
Temperature range:	for flexible use: -25 up to 90°C, for fixed installation: -40 up to 90°C
Minimum bending radius:	for flexible use: 10D, for fixed installation: 6D; (D – overall cable diameter)
Application:	for use in electrical installations at working voltages up to 3.6/6 kV, where low smoke in case of burning is required.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number and cross-sectional area of conductor	Nominal thickness of insulation	Nominal Thickness of sheath	Overall diameter		Approximate net weight of cables	Maximum conductor resistance at 20°C	Current-Carrying Capacity at 30°C in air**
			Approx.	Max			
mm ²	mm	mm	mm		kg/kg	Ω/km	A
1 x 1.5	2,6	0,8	8,3	10,5	88	13,7	32
1 x 2.5	2,6	0,8	8,8	11,5	103	8,21	43
1 x 4	2,6	0,8	9,7	12,0	130	5,09	56
1 x 6	2,6	0,8	10,2	13,0	155	3,39	71
1 x 10	2,6	0,8	11,6	14,5	215	1,95	99
1 x 16	2,6	1,0	12,7	15,5	283	1,24	133
1 x 25	2,9	1,0	14,5	17,5	393	0,795	174
1 x 35	2,9	1,0	15,2	19,0	489	0,565	215
1 x 50	2,9	1,0	17,2	21,0	651	0,393	270
1 x 70	2,9	1,0	19,0	23,0	856	0,277	338
1 x 95	3,2	1,0	21,7	26,5	1109	0,210	403
1 x 120	3,2	1,0	23,2	28,5	1369	0,164	473
1 x 150	3,2	1,2	25,0	30,5	1652	0,132	546
1 x 185	3,2	1,2	27,3	33,0	1965	0,108	622
1 x 240*	3,2	1,2	29,6	34,0	2526	0,0817	-

*Based on Standard

**Tab. 15 DIN VDE 0298-4:2003. For other temperature use Tab. 17 Column 7.

Incessant
communication



CHAPTER 3

FLAME-X 950 JE-H(St)H...Bd FE180/E90	131
FlameBlocker JE-H(St)H...Bd	133
FlameBlocker J-H(St)H...Bd	135
FlameBlocker LiHH, LiHCH	137

Fire Resistant, Flame Retardant, Halogen Free, Low Smoke Data Cables

Cables are manufactured with the use of halogen-free materials. These materials exhibit better fire performance, have improved resistance to flame propagation and can extinguish flame spread through the cable. Cables have low emission of smoke and corrosive gases when affected by fire.

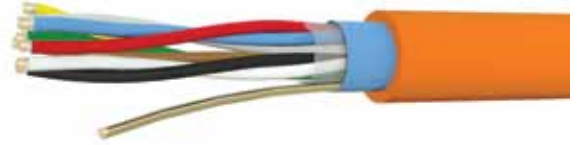
Application:

Cables are used for the telephone transmission, measurement and control technology. Installed in locations of increased fire safety requirements, where large agglomeration of people and cultural or material goods of high value are present: schools, hospitals, shopping centers, airports, hotels, supermarkets, underground tunnels, multi-storey buildings, stations of underground railways, underground garages, sports and show halls, stadiums, cinemas, theatres, museums, office buildings, educational centers, industrial complexes.

Tested and approved by:

VDE (Verband der Elektrotechnik)

Halogen-free low smoke fire resistant wiring cables for telecommunication and data processing systems



FIRE PERFORMANCE

Insulation integrity FE 180:	DIN VDE 0472-814 (800°C, 180 minutes), IEC 60331
System integrity E90:	DIN 4102-12 (90 min.)
Flame propagation:	DIN EN 60332-3-24, VDE 0482-332-3-24
Smoke density:	VDE 0482-1034-2, DIN EN 61034-2, IEC 61034-2
Gases evolved during combustion:	VDE 0482-267-2-2, DIN EN 50267-2-2, IEC 60754-2: pH ≥ 3,5; conductivity ≤ 10 μS/mm

CONSTRUCTION

Conductors:	bare solid copper conductor 0,8 mm
Insulation:	special core insulation with mica tape and halogen-free cross-linked compound according to EN 50290-2-26 (70°C)
Pair:	two cores twisted to pair and each 4 pairs consist to unit
Separator:	polyester tape
Screen:	aluminium/polyester laminated tape and solid copper drain wire
Drain wire:	solid tinned annealed copper wire 0,8 mm
Sheath:	thermoplastic halogen-free, flame retardant compound according to EN 50290-2-27 (70°C)

CHARACTERISTIC

Colour of sheath:	grey, orange or red		
Identification of pairs:	Pair no.	a-wire	b-wire
	1	blue	red
	2	grey	yellow
	3	green	brown
	4	white	black

Two-pair cables shall be cabled in quad formation and colour coded: blue, yellow, red, grey

Operating voltage:	peak voltage max. 225V (not for purposes of high current and power installation)
Loop resistance:	maximum 73,2 Ω/km
Insulation resistance at temperature 20oC:	minimum 100 MΩ x km
Mutual capacitance:	maximum 120 nF/km at 800 Hz (this values may be extended at 20% with a make-up up to 4 pairs)
Capacitance unbalance:	maximum 200 pF/100 m at 800 Hz (20% of the values, but one value up to 400 pF is allowed)
Test voltage 50 Hz:	core/core – 500V; core/screen – 2000V
Temperature range:	flexing:: - 5°C to + 50°C, fixed installation- 30°C to + 70°C
Minimum bending radius:	6D (D - overall cable diameter)

Application:

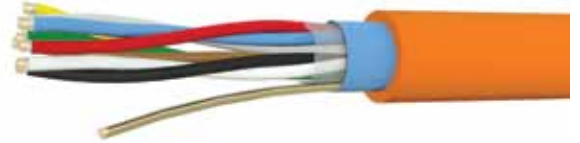
Fire resistant, halogen-free static screened installation cables for telecommunication purpose. The static screen prevents strong interference impulse. Suitable for fixed installation everywhere, where in case of fire human life and material assets are to be protected, e.g. in industrial complexes, public buildings, hotels, airports, underground railway networks, hospitals. Not for purposes of high current and power installation.

Standard packing:

500 m on drums. Other forms of packing and delivery are available on request.

Number pairs and diameter of conductor	Approximate overall diameter	Approximate net weight of cable
n x 2 x mm	mm	kg/km
1 x 2 x 0,8	7,5	65
2 x 2 x 0,8	8,0	87
4 x 2 x 0,8	11,7	148

Halogen-free low smoke installation cables for telecommunication and data processing systems



FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-3-24, VDE 0482-332-3-24 (IEC 60332-3-24 Category C)
Smoke density:	VDE 0482-1034-2, DIN EN 61034-2 (IEC 61034-2)
Gases evolved during combustion:	VDE 0482-267-2-2, DIN EN 50267-2-2 (IEC 60754-2: pH ≥ 3,5; conductivity ≤ 10 µS/mm)

CONSTRUCTION

Conductors:	bare solid copper conductor 0,6 and 0,8 mm
Insulation:	special halogen-free compound according to DIN EN 50290-2-26
Unit:	core twisted to pairs, 4 pairs consist to unit, units stranded to layers
Separator:	polyester tape
Screen:	aluminium/polyester laminated tape and solid copper drain wire
Drain wire:	solid tinned annealed copper wire 0,6 or 0,8 mm
Sheath:	thermoplastic halogen-free, flame retardant compound according to DIN EN 50290-27

CHARACTERISTIC

Colour of sheath:	grey, orange or red		
Identification of pairs:	Pair no.	a-wire	b-wire
	Loop 1	blue	red
	Loop 2	grey	yellow
	Loop 3	green	brown
	Loop 4	white	black
Binding tapes:	binding tapes with numerical marking of unit		
Identification two-pair cable:	two-pair cables shall be cabled in quad formation and colour coded: blue, yellow, red, grey		
	Pair no.	a-wire	b-wire
	Loop 1	blue	red
	Loop 2	grey	yellow
Loop resistance:	maximum 130 Ω/km at 0,6 mm 73,2 Ω/km at 0,8 mm		
Mutual capacitance:	max. 120 nF/km at 800 Hz (this values may be extended at 20% with a make-up up to 4 pairs)		
Capacitance unbalance:	max. 200 pF/100 m at 800 Hz (20% of the values, but one value up to 400 pF is allowed)		
Mutual capacitance:	max. 120 nF/km at 800 Hz		
Capacitance unbalance:	max. 200 pF/100 m at 800 Hz		

FLAMEB LOCKER JE-H(St)H ... Bd

Based on DIN VDE 0815

Operating voltage (peak voltage)	225V (not for purposes of high current and power installations)
Temperature range:	
flexing::	- 5°C to + 50°C
fixed installation	- 30°C to + 70°C
Minimum bending radius:	6D (D - overall cable diameter)
Application:	for signal transmission. The cables are preferably used for indoor telecommunication installation in dry and damp places, but also in the open for fixed installation on outer walls of buildings.
Standard packing:	500 m on drums. Other forms of packing and delivery are available on request.

Number pairs and diameter of conductor	Approximate overall diameter	Approximate net weight of cable	Number pairs and diameter of conductor	Approximate overall diameter	Approximate net weight of cable
n x 2 x mm	mm	kg/km	n x 2 x mm	mm	kg/km
2 x 2 x 0,6	5,5	44	2 x 2 x 0,8	6,5	62
4 x 2 x 0,6	6,6	65	4 x 2 x 0,8	8,1	95
8 x 2 x 0,6	8,3	101	8 x 2 x 0,8	10,4	156
12 x 2 x 0,6	9,6	135	12 x 2 x 0,8	12,2	214
16 x 2 x 0,6	10,5	167	16 x 2 x 0,8	13,9	283
20 x 2 x 0,6	11,5	199	20 x 2 x 0,8	15,2	340
24 x 2 x 0,6	12,3	231	24 x 2 x 0,8	16,3	396
28 x 2 x 0,6	13,2	273	28 x 2 x 0,8	17,0	448
32 x 2 x 0,6	13,9	304	32 x 2 x 0,8	18,4	521
36 x 2 x 0,6	14,6	335	36 x 2 x 0,8	19,3	576
40 x 2 x 0,6	15,2	366	40 x 2 x 0,8	20,1	630
44 x 2 x 0,6	15,8	396	44 x 2 x 0,8	20,9	684
48 x 2 x 0,6	16,4	426	48 x 2 x 0,8	21,7	737
52 x 2 x 0,6	16,9	456	52 x 2 x 0,8	22,5	791
56 x 2 x 0,6	17,4	486	56 x 2 x 0,8	23,2	844
60 x 2 x 0,6	17,9	517	60 x 2 x 0,8	24,3	924
64 x 2 x 0,6	18,8	566	64 x 2 x 0,8	25,0	978
68 x 2 x 0,6	19,3	595	68 x 2 x 0,8	25,6	1032
72 x 2 x 0,6	19,8	626	72 x 2 x 0,8	26,2	1085
76 x 2 x 0,6	20,2	655	76 x 2 x 0,8	26,9	1138
80 x 2 x 0,6	20,6	685	80 x 2 x 0,8	27,5	1191

FLAMEBLOCKER J-H(St)H ...Bd

Based on DIN VDE 0815



Halogen-free low smoke installation cables for telecommunication and data processing systems

FIRE PERFORMANCE

Flame propagation:	DIN EN 60332-3-24, VDE 0482-332-3-24 (IEC 60332-3-24 Category C)
Smoke density:	VDE 0482-1034-2, DIN EN 61034-2 (IEC 61034-2)
Gases evolved during combustion:	VDE 0482-267-2-2, DIN EN 50267-2-2(IEC 60754-2: pH ≥ 3,5; conductivity ≤ 10 µS/mm)

CONSTRUCTION

Conductors:	bare solid copper conductor 0,6 and 0,8 mm
Insulation:	special halogen-free compound according to DIN EN 50290-2-26
Unit:	core twisted in quads and quads are stranded to units
Separator:	polyester tape
Screen:	aluminium/polyester laminated tape and solid copper drain wire
Drain wire:	solid tinned annealed copper wire 0,6 or 0,8 mm
Sheath:	thermoplastic halogen-free, flame retardant compound according to DIN EN 50290-27

CHARACTERISTIC

Colour of sheath:	grey, orange or red
Colour code:	Quad no.
	Quad 1: basic colour of all cores red
	Quad 2: basic colour of all cores green
	Quad 3: basic colour of all cores grey
	Quad 4: basic colour of all cores yellow
	Quad 5: basic colour of all cores white
	The insulation of single cores are marked with black rings – according to DIN VDE 0815
	The marker of units are identified with a red plastic tape helix, the others units with white or uncoloured plastic tape.
Loop resistance:	maximum 130 Ω/km at 0,6 mm, 73,2 Ω/km at 0,8 mm
Insulation resistance at temperature 20oC:	minimum 100 MΩ x km
Mutual capacitance:	maximum 120 nF/km1) at 800 Hz
Capacitance unbalance:	K1 maximum 300 pF/100 m 2) at 800 Hz K9 – K12 maximum 100 pF/100 m 3) at 800 Hz
Operating voltage (peak voltage):	300V (not for purposes of high current and power installations)
Temperature range:	flexing: - 5°C to + 50°C; fixed installation- 30°C to + 70°C
Minimum bending radius:	6D (D - overall cable diameter)

FLAMEB LOCKER J-H(St)H ...Bd

Based on DIN VDE 0815

Application:

for signal transmission. The halogen-free installation cables with improved characteristics and produce no corrosive gases in case of fire are preferably used for indoor telecommunication installation in dry and damp places, but also in the open for fixed installation on outer walls of buildings.

Standard packing:

500 m on drums. Other forms of packing and delivery are available on request.

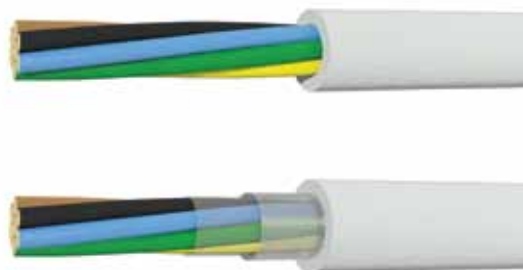
¹⁾ This value may be extended by 20% with make-up to 4 pairs

²⁾ 20% of the values, but one value up to 500 pF is allowed

³⁾ 10% of the values, but four values up to 300 pF are allowed

Number pairs and diameter of conductor	Approximate overall diameter	Approximate net weight of cable	Number pairs and diameter of conductor	Approximate overall diameter	Approximate net weight of cable
n x 2 x mm	mm	kg/km	n x 2 x mm	mm	kg/km
2 x 2 x 0,6	6,8	61	2 x 2 x 0,8	7,7	81
4 x 2 x 0,6	8,2	87	4 x 2 x 0,8	10,3	129
6 x 2 x 0,6	9,1	109	6 x 2 x 0,8	10,8	160
10 x 2 x 0,6	10,6	151	10 x 2 x 0,8	13,0	230
20 x 2 x 0,6	13,5	249	20 x 2 x 0,8	16,9	393
30 x 2 x 0,6	15,8	342	30 x 2 x 0,8	20,4	571
40 x 2 x 0,6	17,7	432	40 x 2 x 0,8	22,9	726
50 x 2 x 0,6	19,8	538	50 x 2 x 0,8	25,6	900
60 x 2 x 0,6	21,4	625	60 x 2 x 0,8	27,6	1051
80 x 2 x 0,6	24,1	797	80 x 2 x 0,8	31,6	1381
100 x 2 x 0,6	26,9	993	100 x 2 x 0,8	34,8	1678

Flexible halogen-free signal and control cable for electronics



FIRE PERFORMANCE

Flame propagation:	EN 60332-1-2 (IEC 60332-1)
Smoke emission:	EN 61034-2 (IEC 61034-2)
Gases evolved during combustion:	EN 50267-2-1 (IEC 60754-1): < 0,5% acid gas EN 50267-2-2 (IEC 60754-2): pH ≥ 4,3; conductivity ≤ 10 μS/mm

CONSTRUCTION

LiHH	flexible, halogen-free insulated and sheathed, colour coded cables in multicore construction
LiHCH	flexible, halogen-free insulated, and sheathed colour coded cables in multicore construction, with collective screen
Conductor:	bare copper, fine wire conductors, bunch stranded
Insulation:	thermoplastic halogen-free compound type HI2
Assembly:	core twisted concentrically, LiHCH assembly foil taped
Screen:	tinned copper braid (only in LiHCH cables)
Sheath:	thermoplastic halogen-free compound type HM2

CHARACTERISTIC

Colour of sheath:	grey (RAL 7032)
Colour code:	1 to 10 cores – colour identification acc. to DIN 47100, 11 to 34 cores – insulation of the conductor gives the second colour extruded on the basic colour as a form of longitudinal stripes (according to special customer requirements - colour ring placed every 10 mm)

No of core	Colour	No of core	Colour	No of core	Colour	No of core	Colour	No of core	Colour
1	white	8	red	15	white-yellow	22	brown - blue	29	pink - green
2	brown	9	black	16	yellow - brown	23	white - red	30	yellow - pink
3	green	10	violet	17	white - grey	24	brown - red	31	green - blue
4	yellow	11	grey - pink	18	grey - brown	25	white - black	32	yellow - blue
5	grey	12	red - blue	19	white - pink	26	brown - black	33	green - red
6	pink	13	white - green	20	pink - brown	27	grey - green	34	yellow - red
7	blue	14	brown - green	21	white - blue	28	yellow - grey		

Peak working voltage:	500V (not for power purposes)
Inductance:	~0,7 mH /km
Mutual capacitance:	core – core ~ 120 nF/km, core – screen ~ 155 nF/km
Insulation resistance:	~ 200 MΩ x km

Maximum conductor resistance at temperature 20°C:

0,25 mm² (14 x 0,15 mm) ~ 80 Ω/km

0,50 mm² (16 x 0,20 mm) ~ 39 Ω/km

1 mm² (32 x 0,20 mm) ~ 19,5 Ω/km

0,34 mm² (7 x 0,25 mm) ~ 57,5 Ω/km

0,75 mm² (24 x 0,20 mm) ~ 26 Ω/km

1,5 mm² (30 x 0,25 mm) ~ 13,3 Ω/km

Test voltage 50Hz:

1200V

Lowest ambient temperature for fixed installation:

-30°C to +80°C

Lowest installation temperature:

-5°C

Minimum bending radius:

LiHH 7,5 x D, LiHCH 10 x D ; D – overall cable diameter

Application:

LiHH cables are data transmission cables also used in control and signal lines in electronics for computer systems, electronic control and regulating gear, office machinery, scales, etc.

LiHCH cables are used in the electronics of computer systems, electronics control and regulating gear, office machinery, scales and anywhere where screened cables of the smallest dimensions are necessary.

These cables having low emission of smoke and corrosive gases when exposed to fire.

Number of cores and conductor size	Thickness of insulation	LiHH			LiHCH			Number of cores and conductor size	Thickness of insulation	LiHH			LiHCH		
		Thickness of sheath	Approximate overall diameter	Size of screen wire	Thickness of sheath	Approximate overall diameter	Thickness of sheath			Approximate overall diameter	Thickness of sheath	Approximate overall diameter	Size of screen wire	Thickness of sheath	Approximate overall diameter
n x mm ²	mm	mm	mm	mm	mm	mm	n x mm ²	mm	mm	mm	mm	mm	mm	mm	
2 x 0,25	0,3	0,6	3,7	0,15	0,8	4,9	12 x 0,5	0,4	0,7	8,6	0,15	1,0	10,0		
2 x 0,34	0,3	0,6	3,9	0,15	0,8	5,1	12 x 0,75	0,4	0,7	9,7	0,15	1,0	11,1		
2 x 0,5	0,4	0,6	4,7	0,15	0,8	5,9	12 x 1	0,4	0,7	10,3	0,15	1,0	11,7		
2 x 0,75	0,4	0,6	5,2	0,15	0,8	6,4	12 x 1,5	0,5	0,8	12,4	0,20	1,0	13,9		
2 x 1	0,4	0,6	5,5	0,15	0,8	6,7									
2 x 1,5	0,5	0,6	6,4	0,15	1,0	8,0	14 x 0,5	0,4	0,7	9,1	0,15	1,0	10,5		
							14 x 0,75	0,4	0,7	10,2	0,15	1,0	11,6		
3 x 0,5	0,4	0,6	4,9	0,15	0,8	6,2	14 x 1	0,4	0,7	10,8	0,15	1,0	12,3		
3 x 0,75	0,4	0,6	5,5	0,15	0,8	6,7	14 x 1,5	0,5	0,8	13,1	0,20	1,0	14,5		
3 x 1	0,4	0,6	5,8	0,15	0,8	7,0									
3 x 1,5	0,5	0,6	6,8	0,15	1,0	8,4	16 x 0,5	0,4	0,7	9,6	0,15	1,0	11,0		
							16 x 0,75	0,4	0,7	10,8	0,15	1,0	12,2		
4 x 0,5	0,4	0,6	5,4	0,15	0,8	6,6	16 x 1	0,4	0,8	11,7	0,20	1,0	13,1		
4 x 0,75	0,4	0,6	6,0	0,15	0,8	7,2	16 x 1,5	0,5	0,8	13,8	0,20	1,2	15,7		
4 x 1	0,4	0,6	6,4	0,15	0,8	7,6									
4 x 1,5	0,5	0,7	7,7	0,15	1,0	9,1	18 x 0,5	0,4	0,7	10,1	0,15	1,0	11,5		
							18 x 0,75	0,4	0,8	11,6	0,20	1,0	13,0		
5 x 0,5	0,4	0,6	5,9	0,15	0,8	7,1	18 x 1	0,4	0,8	12,3	0,20	1,0	13,7		
5 x 0,75	0,4	0,6	6,6	0,15	1,0	8,2	18 x 1,5	0,5	1,0	15,0	0,20	1,2	16,5		
5 x 1	0,4	0,6	7,0	0,15	1,0	8,6									
5 x 1,5	0,5	0,7	8,4	0,15	1,0	9,8	20 x 0,5	0,4	0,7	10,6	0,15	1,0	12,0		
							20 x 0,75	0,4	0,8	12,2	0,20	1,0	13,6		
6 x 0,5	0,4	0,6	6,4	0,15	1,0	8,0	20 x 1	0,4	0,8	12,9	0,20	1,0	14,4		
6 x 0,75	0,4	0,7	7,4	0,15	1,0	8,8	20 x 1,5	0,5	1,0	15,8	0,20	1,2	17,2		
6 x 1	0,4	0,7	7,8	0,15	1,0	9,2									
6 x 1,5	0,5	0,7	9,2	0,15	1,0	10,6	25 x 0,5	0,4	0,8	12,3	0,20	1,0	13,8		
							25 x 0,75	0,4	0,8	13,9	0,20	1,2	15,8		
7 x 0,5	0,4	0,6	6,4	0,15	1,0	8,0	25 x 1	0,4	1,0	15,2	0,20	1,2	16,6		
7 x 0,75	0,4	0,7	7,4	0,15	1,0	8,8	25 x 1,5	0,5	1,2	18,4	0,20	1,4	19,9		
7 x 1	0,4	0,7	7,8	0,15	1,0	9,2									
7 x 1,5	0,5	0,7	9,2	0,15	1,0	10,6	34 x 0,5	0,4	0,8	13,8	0,20	1,2	15,6		
							34 x 0,75	0,4	1,0	16,0	0,20	1,4	17,8		
10 x 0,5	0,4	0,7	8,4	0,15	1,0	9,8	34 x 1	0,4	1,0	17,0	0,20	1,4	18,8		
10 x 0,75	0,4	0,7	9,4	0,15	1,0	10,8									
10 x 1	0,4	0,7	10,0	0,15	1,0	11,4									
10 x 1,5	0,5	0,8	12,0	0,20	1,0	13,5									

We bring the
safe energy



CHAPTER 4

FLAME-X 950 NKOGs 0,6/1 kV	141
FLAME-X 950 NKOGsekw 0,6/1 kV	144
FlameBlocker NKOXs 0,6/1 kV	147
FlameBlocker NKOXsekw 0,6/1 kV	151

Offshore/Marine Cables

Cables are manufactured with use of XLPE or special cross-linked HF S compound. All materials are halogen free, low smoke and have improved resistance for flame propagation. Selected types can also maintain its circuit integrity.

Application:

For fixed installations in all areas and open decks on ships

Tested and approved by:

ABS – American Bureau of Shipping
DNV – Det Norske Veritas
GL – Germanischer Lloyd AG
RINA – Rules for the Approval of Manufacturers of Materials
LR – Lloyd's Register
BV – Bureau Veritas
PRS – Polish Ships Register
RMRS – Russian Maritime Register of Shipping
ClassNK – Nippon Kaiji Kyokai (ship classification society)

Halogen-free fire resistant shipboard power cables



FIRE PERFORMANCE

Fire resistant:	IEC 60331-21: for cable diameters ≤ 20 mm; IEC 60331-31: for cable diameters > 20 mm
Flame retardant:	IEC 60332-1-2, IEC 60332-3-22 Category A
Smoke emission:	IEC 61034-1, IEC 61034-2 min. 60%
Gases evolved during combustion:	IEC 60754-1: < 0,5% HCl and HBr IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	circular or circular compacted stranded bare or tinned copper class 2 acc. to IEC 60228
Insulation:	special cross-linked compound S 95 acc. to IEC 60092-360
Inner covering:	special flame-retardant, halogen-free compound for cables up to 16 mm ² , tape bedding and special flame-retardant, halogen-free compound for cables 25 mm ² and above
Outer sheath:	thermoplastic halogen-free compound type SHF1 acc. to IEC 60092-360

CHARACTERISTIC

Colour of sheath:	orange	
Core identification:	NKOGs	NKOGs with protective conductor
1-core:	not specified	green-yellow
2-core:	black, blue	—
3-core:	black, blue, brown	green-yellow, black, blue
4-core:	blue, brown, black, grey	green-yellow, black, blue, brown
5-core:	black, blue, brown, black, black	green-yellow, black, blue, brown, black
more 5-core:	in each layer: brown (starting core), blue (reference core), other cores natural	in outer layer: green-yellow, blue (reference core), others cores shall be natural, in other layers: brown (starting core), blue (reference core), other cores natural
or acc. to HD 308 S2:		
2-core:	blue, brown	-
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
Maximum conductor operating temperature:	+90°C	
Lowest ambient temperature for fixed installation:	-40°C	
Lowest installation temperature:	-15°C	
Maximum short-circuit conductor temperature:	+250°C	
Minimum bending radius:	Overall diameter of cable (D):	Minimum bending radius:
	≤ 25 mm	4 D
	> 25 mm	6 D
Application:	for fixed installations in all areas and open deck in ships.	

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C
n x mm ²			mm	kg.km	Ω/km
1	x	1	5,3	39	18,1
1	x	1,5	5,6	46	12,1
1	x	2,5	6,0	59	7,41
1	x	4	6,7	80	4,61
1	x	6	7,3	103	3,08
1	x	10	8,0	143	1,83
1	x	16	9,0	204	1,15
1	x	25	10,9	311	0,727
1	x	35	12,0	407	0,524
1	x	50	13,9	548	0,387
1	x	70	15,4	755	0,268
1	x	95	17,8	1026	0,193
1	x	120	19,4	1269	0,153
1	x	150	21,6	1564	0,124
1	x	185	23,7	1941	0,0991
1	x	240	26,8	2507	0,0754
1	x	300	29,2	3116	0,0601
2	x	1	9,5	128	18,1
2	x	1,5	10,3	155	12,1
2	x	2,5	11,2	193	7,41
2	x	4	12,2	244	4,61
2	x	6	13,5	315	3,08
2	x	10	15,0	424	1,83
2	x	16	17,2	599	1,15
2	x	25	20,9	769	0,727
2	x	35	23,2	1001	0,524
2	x	50	26,8	1334	0,387
3	x	1	10,0	144	18,1
3	x	1,5	10,9	176	12,1
3	x	2,5	11,8	222	7,41
3	x	4	13,1	294	4,61
3	x	6	14,3	377	3,08
3	x	10	16,1	527	1,83
3	x	16	18,2	743	1,15
3	x	25	22,4	1033	0,727
3	x	35	24,9	1355	0,524
3	x	50	28,7	1811	0,387
3	x	70	32,2	2492	0,268
3	x	95	37,5	3400	0,193
3	x	120	40,8	4169	0,153
3	x	150	45,8	5170	0,124
3	x	185	50,3	6397	0,0991
3	x	240	57,0	8254	0,0754
4	x	1	11,1	174	18,1
4	x	1,5	11,8	207	12,1
4	x	2,5	12,8	264	7,41
4	x	4	14,3	353	4,61
4	x	6	15,6	456	3,08
4	x	10	17,6	646	1,83
4	x	16	20,2	929	1,15
4	x	25	24,8	1319	0,727
4	x	35	27,6	1735	0,524
4	x	50	32,1	2343	0,387

Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C
n x mm ²			mm	kg.km	Ω/km
4	x	70	35,7	3212	0,268
4	x	95	41,8	4400	0,193
4	x	120	45,7	5436	0,153
4	x	150	51,0	6697	0,124
4	x	185	56,0	8295	0,0991
4	x	240	63,6	10735	0,0754
5	x	1	12,0	207	18,1
5	x	1,5	12,8	247	12,1
5	x	2,5	14,2	326	7,41
5	x	4	15,6	428	4,61
5	x	6	17,3	564	3,08
5	x	10	19,4	798	1,83
5	x	16	22,4	1153	1,15
5	x	25	27,3	1641	0,727
5	x	35	30,5	2179	0,524
5	x	50	35,7	2965	0,387
5	x	70	39,5	4037	0,268
7	x	1	13,2	253	18,1
7	x	1,5	14,1	306	12,1
7	x	2,5	15,4	398	7,41
10	x	1	16,7	363	18,1
10	x	1,5	17,8	439	12,1
10	x	2,5	19,8	583	7,41
12	x	1	17,2	400	18,1
12	x	1,5	18,4	487	12,1
12	x	2,5	20,4	650	7,41
14	x	1,5	19,5	552	12,1
16	x	1	19,2	506	18,1
16	x	1,5	20,5	618	12,1
16	x	2,5	22,8	831	7,41
19	x	1	20,2	566	18,1
19	x	1,5	21,8	706	12,1
19	x	2,5	24,0	940	7,41
20	x	1	21,1	604	18,1
20	x	1,5	22,9	754	12,1
20	x	2,5	25,3	1014	7,41
24	x	1	23,6	717	18,1
24	x	1,5	25,6	896	12,1
24	x	2,5	28,3	1205	7,41
30	x	1	25,2	850	18,1
30	x	1,5	27,2	1063	12,1
30	x	2,5	30,2	1440	7,41
37	x	1	27,1	1001	18,1
37	x	1,5	29,3	1258	12,1
37	x	2,5	32,9	1746	7,41



Halogen-free fire resistant shipboard power cables with screen

FIRE PERFORMANCE

Fire resistant:	IEC 60331-21: for cable diameters ≤ 20 mm; IEC 60331-31: for cable diameters > 20 mm
Flame retardant:	IEC 60332-1-2, IEC 60332-3-22 Category A
Smoke emission:	IEC 61034-1, IEC 61034-2 min. 60%
Gases evolved during combustion:	IEC 60754-1: < 0,5% HCl and HBr IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	circular or circular compacted stranded bare or tinned copper class 2 acc. to IEC 60228
Insulation:	special cross-linked compound S 95 acc. to IEC 60092-360
Inner covering:	special flame-retardant, halogen-free compound for cables up to 16 mm ² , tape bedding and special flame-retardant, halogen-free compound for cables 25 mm ² and above
Screen:	copper wire braiding
Outer sheath:	thermoplastic halogen-free polyolefin compound type SHF1 acc. to IEC 60092-360

CHARACTERISTIC

Colour of sheath:	orange	
Core identification:	NKOGsekw	NKOGsekw with protective conductor
1-core:	not specified	green-yellow
2-core:	black, blue	—
3-core:	black, blue, brown	green-yellow, black, blue
4-core:	blue, brown, black, grey	green-yellow, black, blue, brown
5-core:	black, blue, brown, black, black	green-yellow, black, blue, brown, black
more 5-core:	in each layer: brown (starting core), blue (reference core), other cores natural	in outer layer: green-yellow, blue (reference core), others cores shall be natural, in other layers: brown (starting core), blue (reference core), other cores natural
or acc. to HD 308 S2		
2-core:	blue, brown	-
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey
Maximum conductor operating temperature:	+90°C	
Lowest ambient temperature for fixed installation:	-40°C	
Lowest installation temperature:	-15°C	
Maximum short-circuit conductor temperature:	+250°C	
Minimum bending radius:	6 x D (D is the overall diameter of the cable)	
Application:	for fixed installations in all areas and open deck in ships.	

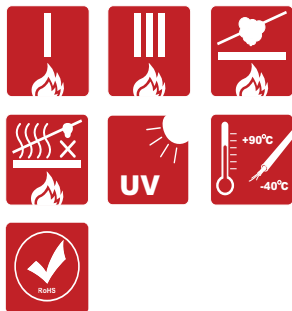
Number and cross-sectional area of conductor			Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C
n x mm ²			mm	kg.km	Ω/km
1	x	1	6,9	82	18,1
1	x	1,5	7,4	98	12,1
1	x	2,5	7,8	112	7,41
1	x	4	8,3	136	4,61
1	x	6	8,9	160	3,08
1	x	10	9,6	208	1,83
1	x	16	10,8	281	1,15
1	x	25	12,5	403	0,727
1	x	35	14,2	556	0,524
1	x	50	16,1	721	0,387
1	x	70	17,4	924	0,268
1	x	95	20,0	1227	0,193
1	x	120	21,6	1494	0,153
1	x	150	23,6	1801	0,124
1	x	185	25,7	2220	0,0991
1	x	240	28,8	2793	0,0754
1	x	300	31,2	3435	0,0601
2	x	1	10,3	174	18,1
2	x	1,5	10,9	199	12,1
2	x	2,5	12,0	240	7,41
2	x	4	13,0	300	4,61
2	x	6	14,7	416	3,08
2	x	10	16,2	539	1,83
2	x	16	18,4	724	1,15
2	x	25	22,1	937	0,727
2	x	35	24,4	1187	0,524
2	x	50	28,2	1570	0,387
3	x	1	10,8	190	18,1
3	x	1,5	11,7	227	12,1
3	x	2,5	12,6	283	7,41
3	x	4	14,3	400	4,61
3	x	6	15,5	480	3,08
3	x	10	17,3	646	1,83
3	x	16	19,6	883	1,15
3	x	25	23,6	1219	0,727
3	x	35	26,1	1578	0,524
3	x	50	29,9	2060	0,387
3	x	70	33,4	2766	0,268
3	x	95	39,3	3862	0,193
3	x	120	42,6	4684	0,153
3	x	150	47,4	5665	0,124
3	x	185	51,9	6941	0,0991
3	x	240	58,6	8870	0,0754
4	x	1	11,9	226	18,1
4	x	1,5	12,6	269	12,1
4	x	2,5	13,6	324	7,41
4	x	4	15,5	459	4,61
4	x	6	17,0	586	3,08
4	x	10	18,8	783	1,83
4	x	16	21,4	1079	1,15
4	x	25	26,0	1541	0,727
4	x	35	28,8	1957	0,524
4	x	50	33,3	2617	0,387

4	x	70	37,3	3607	0,268
4	x	95	43,4	4893	0,193
4	x	120	47,3	5930	0,153
4	x	150	52,6	7248	0,124
4	x	185	57,6	8900	0,0991
4	x	240	65,2	11422	0,0754
5	x	1	12,8	269	18,1
5	x	1,5	13,6	308	12,1
5	x	2,5	15,4	433	7,41
5	x	4	17,0	560	4,61
5	x	6	18,5	704	3,08
5	x	10	20,6	953	1,83
5	x	16	23,6	1320	1,15
5	x	25	28,7	1833	0,727
5	x	35	31,7	2375	0,524
5	x	50	37,3	3286	0,387
5	x	70	41,1	4388	0,268
7	x	1	14,4	363	18,1
7	x	1,5	15,3	414	12,1
7	x	2,5	16,6	523	7,41
10	x	1	17,9	506	18,1
10	x	1,5	19,0	580	12,1
10	x	2,5	21,0	739	7,41
12	x	1	18,4	544	18,1
12	x	1,5	19,8	638	12,1
12	x	2,5	21,6	808	7,41
14	x	1,5	20,7	713	12,1
16	x	1	20,4	668	18,1
16	x	1,5	21,7	778	12,1
16	x	2,5	24,0	1007	7,41
19	x	1	21,4	727	18,1
19	x	1,5	23,0	884	12,1
19	x	2,5	25,4	1136	7,41
20	x	1	22,5	792	18,1
20	x	1,5	24,1	930	12,1
20	x	2,5	26,5	1223	7,41
24	x	1	24,8	903	18,1
24	x	1,5	26,8	1107	12,1
24	x	2,5	29,5	1440	7,41
27	x	1	25,5	972	18,1
27	x	1,5	27,3	1180	12,1
27	x	2,5	30,2	1546	7,41
30	x	1	26,4	1064	18,1
30	x	1,5	28,4	1275	12,1
30	x	2,5	31,4	1676	7,41
37	x	1	28,5	1228	18,1
37	x	1,5	30,5	1496	12,1
37	x	2,5	34,1	2006	7,41

FLAMEBLOCKER NKOXS 0,6/1 kV

IEC 60092-353

Halogen- free ship-board power cables with cross-linked polyethylene insulation and halogen-free sheath



FIRE PERFORMANCE

Flame retardant:	IEC 60332-1-2, IEC 60332-3-22 Category A
Smoke emission:	IEC 61034-1, IEC 61034-2 min. 60%
Gases evolved during combustion:	IEC 60754-1: < 0,5% HCl and HBr IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	circular stranded bare or tinned copper class 2 1 to 6mm ² circular compacted stranded bare or tinned copper class 2 10 to 300 mm ² circular stranded bare or tinned copper class 5 sector shaped 35 to 300 mm ² acc. to IEC 60228
Insulation:	≤ 35 mm ² : cross-linked polyethylene XLPE acc. to IEC 60092-360 > 35 mm ² : cross-linked polyolefin compound HF 90 acc. to IEC 60092-360
Inner covering:	special flame-retardant, halogen-free compound for cables up to 16 mm ² , tape bedding and special flame-retardant, halogen-free compound for cables 25 mm ² and above - circular compacted stranded conductor, tape bedding for cables 35mm ² and above - sector shaped conductor
Sheath:	thermoplastic halogen-free polyolefin compound type SHF1 acc. to IEC 60092-360

CHARACTERISTIC

Colour of sheath: grey or black

Core identification:	NKOXS	NKOXS with protective conductor
1-core:	not specified	green-yellow
2-core:	black, blue	—
3-core:	black, blue, brown	green-yellow, black, blue
4-core:	blue, brown, black, grey	green-yellow, black, blue, brown
5 and more:	white with black numbering	green-yellow, others cores white with black numbering

or acc. to HD 308 S2

2-core:	blue, brown	-
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey

Maximum conductor operating temperature: +90°C

Lowest ambient temperature for fixed installation: -40°C

Lowest installation temperature: -15°C

Maximum short-circuit conductor temperature: +250°C

CHARACTERISTIC

Minimum bending radius:

Overall diameter of cable (D)

≤ 25 mm

> 25 mm

Minimum bending radius

4 D

6 D

Application:

For fixed installations in all areas and open deck in ships.

Cables with class 5 conductors are produced on request.

Number and cross-sectional area of conductor	Cables with conductor class 2		Cables with conductor class 5	
	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n x mm ²	mm	kg/km	mm	kg/km
1 x 1	4,7	31	4,6	30
1 x 1,5	5,0	38	4,9	36
1 x 2,5	5,4	49	5,4	47
1 x 4	5,9	65	5,9	62
1 x 6	6,5	87	6,4	82
1 x 10	7,4	130	7,6	127
1 x 16	8,4	188	8,7	184
1 x 25	10,3	290	10,5	277
1 x 35	11,4	384	11,2	365
1 x 50	13,1	530	13,6	536
1 x 70	14,6	735	15,6	736
1 x 95	16,8	997	17,9	956
1 x 120	18,6	1246	19,4	1203
1 x 150	20,6	1529	21,6	1491
1 x 185	22,7	1905	24,5	1823
1 x 240	25,6	2457	26,4	2345
1 x 300	27,8	3050	30,4	2925

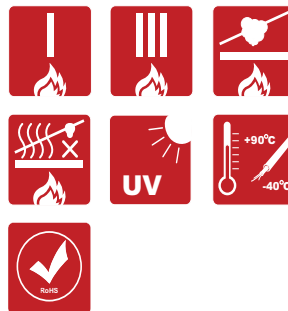
Number and cross-sectional area of conductor	Cables with conductor class 2		Cables with sector shaped		Cables with conductor class 5	
	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n x mm ²	mm	kg/km	mm	kg/km	mm	kg/km
2 x 1	8,3	98	-	-	8,2	95
2 x 1,5	8,9	118	-	-	8,8	113
2 x 2,5	9,8	151	-	-	9,8	148
2 x 4	11,0	204	-	-	10,9	195
2 x 6	12,1	264	-	-	12,1	253
2 x 10	13,8	374	-	-	14,1	374
2 x 16	16,0	540	-	-	16,6	544
2 x 25	18,7	658	-	-	19,0	634
2 x 35	21,0	876	-	-	20,7	837
2 x 50	24,2	1205	-	-	25,3	1232
3 x 1	8,8	111	-	-	8,6	106
3 x 1,5	9,4	135	-	-	9,2	128
3 x 2,5	10,5	181	-	-	10,5	176
3 x 4	11,6	242	-	-	11,5	230
3 x 6	12,8	319	-	-	12,7	303
3 x 10	14,6	462	-	-	14,9	457
3 x 16	17,0	677	-	-	17,6	673
3 x 25	19,9	891	-	-	20,3	853
3 x 35	22,4	1195	19,6	1114	22,1	1139
3 x 50	26,0	1664	22,3	1550	27,2	1693
3 x 70	29,5	2323	26,0	2186	31,7	2346
3 x 95	33,9	3145	29,1	2953	36,4	3048
3 x 120	37,9	3948	32,5	3717	39,7	3844

Number and cross-sectional area of conductor	Cables with conductor class 2		Cables with sector shaped		Cables with conductor class 5	
	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n x mm ²	mm	kg/km	mm	kg/km	mm	kg/km
3 x 150	42,5	4875	36,4	4593	44,8	4796
3 x 185	47,0	6084	40,6	5736	50,8	5901
3 x 240	53,2	7859	45,5	7452	54,8	7551
4 x 1	9,4	130	-	-	9,3	124
4 x 1,5	10,3	164	-	-	10,2	157
4 x 2,5	11,4	218	-	-	11,4	210
4 x 4	12,6	294	-	-	12,5	279
4 x 6	14,2	398	-	-	14,1	378
4 x 10	16,1	580	-	-	16,5	572
4 x 16	18,8	855	-	-	19,5	847
4 x 25	22,2	1158	-	-	22,6	1108
4 x 35	24,9	1560	22,4	1488	24,5	1484
4 x 50	28,9	2172	25,6	2076	30,3	2205
4 x 70	32,9	3036	29,7	2921	35,3	3063
4 x 95	38,0	4135	33,5	3970	40,8	4005
4 x 120	42,1	5168	37,5	4976	44,1	5018
4 x 150	47,5	6410	41,8	6160	50,0	6293
4 x 185	52,5	7992	46,4	7687	56,7	7733
4 x 240	59,4	10322	52,1	9995	61,2	9910
5 x 1	10,4	157	-	-	10,2	150
5 x 1,5	11,2	194	-	-	11,0	184
5 x 2,5	12,4	259	-	-	12,3	249
5 x 4	14,0	359	-	-	13,8	340
5 x 6	15,5	479	-	-	15,4	454
5 x 10	17,6	703	-	-	18,0	691
5 x 16	20,5	1039	-	-	21,4	1030
5 x 25	24,6	1447	-	-	25,1	1384
5 x 35	27,7	1948	-	-	27,3	1858
5 x 50	32,1	2714	27,7	2608	33,6	2758
5 x 70	36,7	3811	32,2	3680	39,4	3851
6 x 1,5	12,1	226	-	-	11,9	214
6 x 2,5	13,6	310	-	-	13,5	298
7 x 1	11,2	186	-	-	11,0	178
7 x 1,5	12,1	233	-	-	11,9	221
7 x 2,5	13,6	323	-	-	13,5	309
8 x 1,5	13,0	264	-	-	12,8	250
9 x 1,5	13,9	304	-	-	13,7	288
10 x 1	14,1	267	-	-	13,8	254
10 x 1,5	15,2	333	-	-	15,0	317
10 x 2,5	17,2	464	-	-	17,1	444
12 x 1	14,5	293	-	-	14,2	279
12 x 1,5	15,7	370	-	-	15,4	350
12 x 2,5	17,7	519	-	-	17,6	496
14 x 1,5	16,7	423	-	-	16,4	400
16 x 1	16,1	370	-	-	15,8	351

Number and cross-sectional area of conductor			Cables with conductor class 2		Cables with sector shaped		Cables with conductor class 5	
			Overall diameter	Net weight of cables	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n	x	mm ²	mm	kg/km	mm	kg/km	mm	kg/km
16	x	1,5	17,5	471	-	-	17,2	444
16	x	2,5	19,7	662	-	-	19,7	633
19	x	1	17,0	414	-	-	16,6	392
19	x	1,5	18,4	529	-	-	18,1	499
19	x	2,5	20,8	751	-	-	20,7	715
20	x	1	17,8	456	-	-	17,3	431
20	x	1,5	19,5	591	-	-	19,2	559
20	x	2,5	22,0	833	-	-	21,9	796
24	x	1	19,8	524	-	-	19,3	496
24	x	1,5	21,8	682	-	-	21,4	643
24	x	2,5	24,3	951	-	-	24,3	907
27	x	1	20,2	564	-	-	19,7	534
27	x	1,5	22,2	738	-	-	21,8	694
27	x	2,5	25,1	1048	-	-	25,0	997
30	x	1	20,9	611	-	-	20,4	579
30	x	1,5	23,0	801	-	-	22,6	754
30	x	2,5	25,9	1142	-	-	25,9	1086
37	x	1	22,7	729	-	-	22,1	689
37	x	1,5	24,9	958	-	-	24,5	901
37	x	2,5	28,1	1370	-	-	28,1	1302

FLAMEBLOCKER NKOXSekw 0,6/1 kV

IEC 60092-353



Halogen-free ship-board power cables with cross-linked polyethylene insulation and halogen-free sheath, with screen

FIRE PERFORMANCE

Flame retardant:	IEC 60332-1-2, IEC 60332-3-22 Category A
Smoke emission:	IEC 61034-1, IEC 61034-2 min. 60%
Gases evolved during combustion:	IEC 60754-1: < 0,5% HCl and HBr IEC 60754-2: pH ≥ 4,3; conductivity ≤ 10 μSmm ⁻¹

CONSTRUCTION

Conductors:	circular stranded bare or tinned copper class 2 1 to 6mm ² circular compacted stranded bare or tinned copper class 2 10 to 300 mm ² circular stranded bare or tinned copper class 5 sector shaped 35 to 300 mm ² acc. to IEC 60228
Insulation:	≤ 35 mm ² : cross-linked polyethylene XLPE acc. to IEC 60092-360 > 35 mm ² : cross-linked polyolefin compound HF 90 acc. to IEC 60092-360
Inner covering:	special flame-retardant, halogen-free compound for cables up to 16 mm ² , tape bedding and special flame-retardant, halogen-free compound for cables 25 mm ² and above - circular compacted stranded conductor, tape bedding for cables 35mm ² and above - sector shaped conductor
Screen (armour):	copper wire braiding
Sheath:	thermoplastic halogen-free polyolefin compound type SHF1 acc. to IEC 60092-360

CHARACTERISTIC

Colour of sheath:	grey or black	
Core identification:	NKOXSekw	NKOXSekw with protective conductor
1-core:	not specified	green-yellow
2-core:	black, blue	—
3-core:	black, blue, brown	green-yellow, black, blue
4-core:	blue, brown, black, grey	green-yellow, black, blue, brown
5 and more:	white with black numbering	green-yellow, others cores white with black numbering

or acc. to HD 308 S2

2-core:	blue, brown	-
3-core:	brown, black, grey	green-yellow, blue, brown
4-core:	blue, brown, black, grey	green-yellow, brown, black, grey
5-core:	blue, brown, black, grey, black	green-yellow, blue, brown, black, grey

Maximum conductor operating temperature:	+90°C
Lowest ambient temperature for fixed installation:	-40°C
Lowest installation temperature:	-15°C
Maximum short-circuit conductor temperature:	+250°C

CHARACTERISTIC

Minimum bending radius:

Overall diameter of cable (D)

≤ 25 mm

> 25 mm

Minimum bending radius

4 D

6 D

Application:

For fixed installations in all areas and open deck in ships.

*Cables with class 5 conductors are produced on request.

Number and cross-sectional area of conductor	Cables with conductor class 2		Cables with conductor class 5	
	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n x mm ²	mm	kg/km	mm	kg/km
1 x 1	6,3	64	6,2	63
1 x 1,5	6,6	76	6,5	74
1 x 2,5	7,0	88	7,0	87
1 x 4	7,7	115	7,7	111
1 x 6	8,3	137	8,2	132
1 x 10	9,0	183	9,2	181
1 x 16	10,2	254	10,5	250
1 x 25	11,9	364	12,1	351
1 x 35	13,6	503	13,4	484
1 x 50	15,3	664	15,8	671
1 x 70	17,0	880	18,0	900
1 x 95	19,2	1165	20,3	1143
1 x 120	20,8	1425	21,6	1384
1 x 150	23,0	1740	24,0	1704
1 x 185	25,1	2146	26,9	2069
1 x 240	28,0	2705	28,8	2621
1 x 300	30,2	3330	32,8	3236

Number and cross-sectional area of conductor	Cables with conductor class 2		Cables with sector shaped		Cables with conductor class 5	
	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n x mm ²	mm	kg/km	mm	kg/km	mm	kg/km
2 x 1	9,1	131	-	-	9,0	127
2 x 1,5	9,7	154	-	-	9,6	145
2 x 2,5	10,8	191	-	-	10,8	187
2 x 4	11,8	241	-	-	11,7	233
2 x 6	13,5	345	-	-	13,5	335
2 x 10	15,0	462	-	-	15,3	461
2 x 16	17,2	638	-	-	17,8	640
2 x 25	20,9	844	-	-	21,2	821
2 x 35	23,2	1085	-	-	22,9	1045
2 x 50	26,6	1447	-	-	27,7	1477
3 x 1	9,6	144	-	-	9,4	139
3 x 1,5	10,4	176	-	-	10,2	170
3 x 2,5	11,3	222	-	-	11,3	216
3 x 4	12,4	287	-	-	12,3	276
3 x 6	14,2	402	-	-	14,1	387
3 x 10	16,0	560	-	-	16,3	553
3 x 16	18,2	778	-	-	18,8	772
3 x 25	22,3	1105	-	-	22,7	1069
3 x 35	24,8	1442	21,0	1264	24,5	1360
3 x 50	28,4	1933	23,7	1708	29,6	1965
3 x 70	32,3	2655	27,6	2382	34,5	2684
3 x 95	37,1	3580	30,7	3175	39,6	3534
3 x 120	41,1	4441	34,5	4056	42,9	4386

Number and cross-sectional area of conductor	Cables with conductor class 2		Cables with sector shaped		Cables with conductor class 5	
	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n x mm ²	mm	kg/km	mm	kg/km	mm	kg/km
3 x 150	45,9	5447	38,4	4977	48,2	5419
3 x 185	50,4	6716	42,6	6165	54,2	6566
3 x 240	56,6	8553	47,5	7926	58,2	8265
4 x 1	10,4	171	-	-	10,3	166
4 x 1,5	11,1	204	-	-	11	197
4 x 2,5	12,2	261	-	-	12,2	253
4 x 4	14,0	377	-	-	13,9	362
4 x 6	15,4	488	-	-	15,3	468
4 x 10	17,3	683	-	-	17,7	673
4 x 16	20,0	966	-	-	20,7	956
4 x 25	24,6	1399	-	-	25,0	1358
4 x 35	27,3	1816	23,8	1641	26,9	1740
4 x 50	31,3	2452	27,0	2238	32,7	2514
4 x 70	36,1	3474	31,3	3115	38,5	3553
4 x 95	41,2	4635	35,5	4270	44,0	4558
4 x 120	45,5	5746	39,5	5312	47,5	5649
4 x 150	50,9	7054	43,8	6529	53,4	6961
4 x 185	55,9	8691	48,4	8084	60,1	8487
4 x 240	62,8	11110	54,1	10383	64,6	10721
5 x 1	11,2	200	-	-	11,0	192
5 x 1,5	12,0	240	-	-	11,8	225
5 x 2,5	13,8	346	-	-	13,7	336
5 x 4	15,2	454	-	-	15,0	436
5 x 6	16,9	580	-	-	16,8	555
5 x 10	19,0	818	-	-	19,4	806
5 x 16	21,9	1167	-	-	22,8	1172
5 x 25	26,8	1690	-	-	27,3	1628
5 x 35	30,1	2237	-	-	29,7	2146
5 x 50	34,7	3042	29,1	2749	36,2	3115
5 x 70	39,7	4288	34,0	3916	42,4	4379
6 x 1,5	13,5	314	-	-	13,3	303
6 x 2,5	14,8	407	-	-	14,7	395
7 x 1	12,0	233	-	-	11,8	220
7 x 1,5	13,5	322	-	-	13,3	310
7 x 2,5	14,8	421	-	-	14,7	407
8 x 1,5	14,2	346	-	-	14,0	333
9 x 1,5	15,3	407	-	-	15,1	391
10 x 1	15,3	364	-	-	15,0	351
10 x 1,5	16,6	437	-	-	16,4	420
10 x 2,5	18,6	582	-	-	18,5	563
12 x 1	15,9	398	-	-	15,6	384
12 x 1,5	17,1	491	-	-	16,8	454
12 x 2,5	19,1	638	-	-	19,0	615
14 x 1,5	17,9	534	-	-	17,6	511
16 x 1	17,3	484	-	-	17,0	449

Number and cross-sectional area of conductor			Cables with conductor class 2		Cables with sector shaped		Cables with conductor class 5	
			Overall diameter	Net weight of cables	Overall diameter	Net weight of cables	Overall diameter	Net weight of cables
n x mm ²			mm	kg/km	mm	kg/km	mm	kg/km
16	x	1,5	18,9	592	-	-	18,6	565
16	x	2,5	20,9	789	-	-	20,9	760
19	x	1	18,2	527	-	-	17,8	506
19	x	1,5	19,8	667	-	-	19,5	620
19	x	2,5	22,2	904	-	-	22,1	868
20	x	1	19,2	562	-	-	18,7	539
20	x	1,5	20,7	701	-	-	20,4	669
20	x	2,5	23,2	951	-	-	23,1	913
24	x	1	21,0	651	-	-	20,5	624
24	x	1,5	23,0	824	-	-	22,6	786
24	x	2,5	25,7	1127	-	-	25,7	1082
27	x	1	21,6	702	-	-	21,1	672
27	x	1,5	23,4	880	-	-	23,0	837
27	x	2,5	26,3	1212	-	-	26,2	1162
30	x	1	22,3	765	-	-	21,8	716
30	x	1,5	24,4	954	-	-	24,0	907
30	x	2,5	27,3	1316	-	-	27,3	1261
37	x	1	23,9	873	-	-	23,3	833
37	x	1,5	26,1	1125	-	-	25,7	1068
37	x	2,5	29,3	1558	-	-	29,3	1490

Quality
takes
priority



DATA MATRIX

Construction

		CONDUCTOR							INSULATION							
		SOLID CLASS 1	STRANDED CLASS 2	STRANDED FLEX CLASS 5	STRANDED FLEX CLASS 6	ANNEALED	PLAIN	TINNED	MICA GLASS TAPE	EN 50363	B57655	DIN VDE 0207	DIN VDE 0276-604	DIN VDE 0266	IEC 60502-1	HD 603
FLAME-X 950	(N)HXH FE180/E30	X	X			X	X							HX11		
FLAME-X 950	(N)HXH FE180/E90	X	X			X	X							HX11		
FLAME-X 950	NHXH FE180/E30	X	X			X	X		X					HX11		
FLAME-X 950	NHXH FE180/E90	X	X			X	X		X					HX11		
FLAME-X 950	(N)HXCH FE180/E30	X	X			X	X							HX11		
FLAME-X 950	(N)HXCH FE180/E90	X	X			X	X							HX11		
FLAME-X 950	NHXCH FE180/E30	X	X			X	X		X					HX11		
FLAME-X 950	NHXCH FE180/E90	X	X			X	X		X					HX11		
FLAME-X 950	Standard	X	X			X	X			E12						
FLAME-X 950	Enhanced	X	X			X	X		X	E12						
FLAME-X 950	Power		X			X	X		X		GP8					
FLAME-X 950	Single		X			X	X		X	E15						
FLAME-X 950	FR Flex 3013			X		X	X	X	X							
FLAME-X 950	CR-1 C1	X	X			X	X			E12						
FLAME-X 950	HDGs	X				X	X			E12						
FLAME-X 950	HLGs		X			X	X			E12						
FLAME-X 950	HLgGs			X		X	X			E12						
FLAME-X 950	HDGsekw	X				X	X			E12						
FLAME-X 950	HLGsekw		X			X	X			E12						
FLAME-X 950	HLgGsekw			X		X	X			E12						
FlameBlocker	N2XH	X	X			X	X						2X11			
FlameBlocker	(N)2XH FE180	X	X			X	X		X				2X11			
FlameBlocker	N2XCH	X	X			X	X						2X11			
FlameBlocker	(N)2XCH FE180	X	X			X	X		X				2X11			
FlameBlocker	NHXMH 300/500V	X	X			X	X						2X11			
FlameBlocker	(N)HXMH(St)	X	X			X	X						2X11			
FlameBlocker	H07Z-K			X		X				E15						
FlameBlocker	H07Z-U	X				X				E15						
FlameBlocker	H07Z-R		X			X				E15						
FlameBlocker	H07ZZ-F			X		X	X	X		E18						
FlameBlocker	H05Z1Z1-F			X		X	X			T16						
FlameBlocker	6181B 450/750V	X	X			X	X			E15						
FlameBlocker	6181XB 600/1000V	X	X			X	X				GP8					
FlameBlocker	624B*	X	X			X	X				GP8					
FlameBlocker	318B*			X		X	X			T16						
FlameBlocker	FR-N1X1G1 0,6/1kV	X	X			X	X								XLPE	
FlameBlocker	Cu/XLPE/LSOH/AWA/LSOH 0,6/1 kV		X			X	X				GP8					
FlameBlocker	Cu/XLPE/LSOH/SWA/LSOH 0,6/1 kV		X			X	X				GP8					
FlameBlocker	FR-N1 X1G1Z4	X	X			X	X								XLPE	
FlameBlocker	MMJ HF 450/750V	X	X			X	X					HI2				
FlameBlocker	EQQ Light 300/500V	X				X	X					HI2				
FlameBlocker	EXQJ 0,6/1 kV	X				X	X									DIX3
FlameBlocker	FXQJ 0,6/1 kV		X			X	X									DIX3
FlameBlocker	AXQJ 0,6/1 kV		X													DIX3
FlameBlocker	NSHXAFÖU 1,8/3 kV			X		X		X				3G13				
FlameBlocker	NSHXAFÖU 3,6/6 kV			X		X		X				3G13				
Flame-X 950	JE-H(St)H ... Bd FE180/E90	X				X	X		X				HI1			
FlameBlocker	JE-H(St)H ... Bd	X				X	X						HI2			
FlameBlocker	J-H(St)H ... Bd	X				X	X						HI2			
FlameBlocker	LiHH			X		X	X						HI2			
FlameBlocker	LiHCH			X		X	X						HI2			
Flame-X 950	NKOGs 1kV		X	X		X	X	X								
Flame-X 950	NKOGsekw 1kV		X	X		X	X	X								
FlameBlocker	NKOXs 1kV		X	X		X	X	X								
FlameBlocker	NKOXsekw 1kV		X	X		X	X	X								

		INSULATION		OUTER SHEATH								MAX TEMP	
		IEC 60092-351	AS/NZS 3808	AS/NZS 3808	EN 50363	BS 7655	ZN-TF-208	DIN VDE 0207	IEC 60502-1	IEC 60092-359	DIN VDE 0276-604	DIN VDE 0250-214	
FLAME-X 950	(N)HXH FE180/E30										HM4		90
FLAME-X 950	(N)HXH FE180/E90										HM4		90
FLAME-X 950	NHXH FE180/E30										HM4		90
FLAME-X 950	NHXH FE180/E90										HM4		90
FLAME-X 950	(N)HXCH FE180/E30										HM4		90
FLAME-X 950	(N)HXCH FE180/E90										HM4		90
FLAME-X 950	NHXCH FE180/E30										HM4		90
FLAME-X 950	NHXCH FE180/E90										HM4		90
FLAME-X 950	Standard					LTS3							90
FLAME-X 950	Enhanced					LTS3							90
FLAME-X 950	Power					LTS1							90
FLAME-X 950	Single												90
FLAME-X 950	FR Flex 3013		X-HF-110	HFS-110-TP									110
FLAME-X 950	CR-1 C1										HM4		90
FLAME-X 950	HDGs						X			SHF1			90
FLAME-X 950	HLGs						X			SHF1			90
FLAME-X 950	HLgGs						X			SHF1			90
FLAME-X 950	HDGsekw						X			SHF1			90
FLAME-X 950	HLGsekw						X			SHF1			90
FLAME-X 950	HLgGsekw						X			SHF1			90
FlameBlocker	N2XH							HM4			HM4		90
FlameBlocker	(N)2XH FE180								ST8				90
FlameBlocker	N2XCH							HM4			HM4		90
FlameBlocker	(N)2XCH FE180								ST8				90
FlameBlocker	NHXMH 300/500V							HM2			HM2		70
FlameBlocker	(N)HXMH(St)							HM2			HM2		70
FlameBlocker	H07Z-K												90
FlameBlocker	H07Z-U												90
FlameBlocker	H07Z-R												90
FlameBlocker	H07ZZ-F				EM8								70
FlameBlocker	H05Z1Z1-F				TM7								70
FlameBlocker	6181B 450/750V					LTS4							90
FlameBlocker	6181XB 600/1000V					LTS1							90
FlameBlocker	624B*					LTS2							90
FlameBlocker	318B*				TM7								60
FlameBlocker	FR-N1X1G1 0,6/1kV								ST8				90
FlameBlocker	Cu/XLPE/LSOH/AWA/LSOH 0,6/1 kV					LTS1							90
FlameBlocker	Cu/XLPE/LSOH/SWA/LSOH 0,6/1 kV					LTS1							90
FlameBlocker	FR-N1 X1G1Z4								ST8				90
FlameBlocker	MMJ HF 450/750V							HM2					70
FlameBlocker	EQQ Light 300/500V							HM2					70
FlameBlocker	EXQJ 0,6/1 kV										HM4		90
FlameBlocker	FXQJ 0,6/1 kV										HM4		90
FlameBlocker	AXQJ 0,6/1 kV										HM4		90
FlameBlocker	NSHXAFÖU 1,8/3 kV							HM3					90
FlameBlocker	NSHXAFÖU 3,6/6 kV							HM3					90
Flame-X 950	JE-H(St)H ... Bd FE180/E90							HM2					70
FlameBlocker	JE-H(St)H ... Bd							HM2					70
FlameBlocker	J-H(St)H ... Bd							HM2					70
FlameBlocker	LiHH							HM2					80
FlameBlocker	LiHCH							HM2					80
Flame-X 950	NKOGs 1kV	HF S 95							SHF1				90
Flame-X 950	NKOGsekw 1kV	HF S 95							SHF1				90
FlameBlocker	NKOXs 1kV	HF XLPE/ HF 90							SHF1				90
FlameBlocker	NKOXsekw 1kV	HF XLPE/ HF 90							SHF1				90

DATA MATRIX

Fire performance

		System Circuit Integrity		Cable Circuit Integrity												Flame Spread (Single)						
		DIN 4102-12	AS/NZS 3013	IEC 60331-21	IEC 60331-23	IEC 60331-25	IEC 60331-31	EN 50200	EN 50362	BS 8434-1	BS 5839	BS 8434-2	BS 6387 CWZ	BS 7846	DIN VDE 0472-814	NFC C 32-070	AS/NZS 1660.5.5.4	UL 2196	IEC 60332-1-2	EN 60332-1-2	VDE 0482-332-1-1	AS/NZS 1660.5.6.3
FLAME-X 950	(N)HXH FE180/E30	X		X											X		X		X	X	X	X
FLAME-X 950	(N)HXH FE180/E90	X		X											X		X		X	X	X	X
FLAME-X 950	NHXH FE180/E30	X		X											X		X		X	X	X	X
FLAME-X 950	NHXH FE180/E90	X		X											X		X		X	X	X	X
FLAME-X 950	(N)HXCH FE180/E30	X		X											X		X		X	X	X	X
FLAME-X 950	(N)HXCH FE180/E90	X		X											X		X		X	X	X	X
FLAME-X 950	NHXCH FE180/E30	X		X											X		X		X	x	x	X
FLAME-X 950	NHXCH FE180/E90	X		X											X		X		X	x	x	X
FLAME-X 950	Standard	X		X				X		X	X	X	X		X				X	X	X	X
FLAME-X 950	Enhanced	X		X				X		X	X	X	X		X				X	X	X	X
FLAME-X 950	Power			X									X	X					X	X	X	X
FLAME-X 950	Single			X									X						X	X	X	X
FLAME-X 950	FR Flex 3013		X	X				X					X		X		X		X	x	x	X
FLAME-X 950	CR-1 C1			X				X								X			X	X	X	X
FLAME-X 950	HDGs			X				X					X		X		X		X	X	X	X
FLAME-X 950	HLGs			X				X					X		X		X		X	X	X	X
FLAME-X 950	HLgGs			X				X					X		X		X		X	X	X	X
FLAME-X 950	HDGsekw			X				X					X		X		X		X	X	X	X
FLAME-X 950	HLGsekw			X				X					X		X		X		X	X	X	X
FLAME-X 950	HLgGsekw			X				X					X		X		X		X	X	X	X
FlameBlocker	N2XH																		X	X	X	X
FlameBlocker	(N)2XH FE180			X											X		X		X	X	X	X
FlameBlocker	N2XCH																		X	X	X	X
FlameBlocker	(N)2XCH FE180			X											X		X		X	X	X	x
FlameBlocker	NHXMH 300/500V																		X	X	X	X
FlameBlocker	(N)HXMH(St)																		X	X	X	X
FlameBlocker	H07Z-K																		X	X	X	X
FlameBlocker	H07Z-U																		X	X	X	X
FlameBlocker	H07Z-R																		X	X	X	X
FlameBlocker	H07ZZ-F																		X	X	X	X
FlameBlocker	H05Z1Z1-F																		X	X	X	X
FlameBlocker	6181B 450/750V																		X	X	X	X
FlameBlocker	6181XB 600/1000V																		X	X	X	X
FlameBlocker	624B*																		X	X	X	X
FlameBlocker	318B*																		X	X	X	X
FlameBlocker	FR-N1X1G1 0,6/1kV																		X	X	X	X
FlameBlocker	Cu/XLPE/LSOH/AWA/LSOH 0,6/1 kV																		X	X	X	X
FlameBlocker	Cu/XLPE/LSOH/SWA/LSOH 0,6/1 kV																		X	X	X	X
FlameBlocker	FR-N1 X1G1Z4																		X	X	X	X
FlameBlocker	MMJ HF 450/750V																		X	X	X	X
FlameBlocker	EQQ Light 300/500V																		X	X	X	X
FlameBlocker	EXQJ 0,6/1 kV																					
FlameBlocker	FXQJ 0,6/1 kV																		X	X	X	X
FlameBlocker	AXQJ 0,6/1 kV																		X	X	X	X
FlameBlocker	NSHXAFÖU 1,8/3 kV																		X	X	X	X
FlameBlocker	NSHXAFÖU 3,6/6 kV																		X	X	X	X
Flame-X 950	JE-H(St)H ... Bd FE180/E90	X			X			X							X		X		X	X	X	X
FlameBlocker	JE-H(St)H ... Bd																		X	X	X	X
FlameBlocker	J-H(St)H ... Bd																		X	X	X	X
FlameBlocker	LiHH																		X	X	X	X
FlameBlocker	LiHCH																		X	X	X	X
Flame-X 950	NKOGs 1kV			X			X	X							X		X		X	X	X	X
Flame-X 950	NKOGsekw 1kV			X			X	X							X		X		X	X	X	X
FlameBlocker	NKOGs 1kV																		X	X	X	X
FlameBlocker	NKOGsekw 1kV																		X	X	X	X

		Flame Spread (Bunched)											Smoke Emission				Corrosive and Acid Gas Emission										
		IEC 60332-3-22	IEC 60332-3-23	IEC 60332-3-24	IEC 60332-3-25	EN 60332-3-22	EN 60332-3-23	EN 60332-3-24	EN 50266-2-5	VDE 0482-332-3-22	VDE 0482-332-3-23	VDE 0482-332-3-24	NF C 32-070	AS/NZS 1660.5.1.4	AS/NZS 1660.5.1.6	IEC 61034-2	EN 61034-2	VDE 0482-1034-2	AS/NZS 1660.5.2	IEC 60754-2-1	IEC 60754-2-2	EN 50267-2-1	EN 50267-2-2	VDE 0482-267-2-1	VDE 0482-267-2-2	AS/NZS 1660.5.3	AS/NZS 1660.5.4
FLAME-X 950	(N)HXH FE180/E30	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	(N)HXH FE180/E90	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	NHXH FE180/E30	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	NHXH FE180/E90	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	(N)HXCH FE180/E30	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	(N)HXCH FE180/E90	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	NHXCH FE180/E30	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	NHXCH FE180/E90	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	Standard	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	Enhanced	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	Power		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	Single														X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	FR Flex 3013	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	CR-1 C1	X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	HDGs	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	HLGs	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	HLgGs	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	HDGsekw	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	HLGsekw	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLAME-X 950	HLGsekw	X		X		X		X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	N2XH		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	(N)2XH FE180		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	N2XCH		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	(N)2XCH FE180		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	NHXMH 300/500V		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	(N)HXMH(St)		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	H07Z-K														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	H07Z-U														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	H07Z-R														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	H07ZZ-F		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	H05Z1Z1-F														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	6181B 450/750V														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	6181XB 600/1000V														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	624B*														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	318B*														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	FR-N1X1G1 0,6/1kV		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	Cu/XLPE/LSOH/AWA/LSOH 0,6/1 kV		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	Cu/XLPE/LSOH/SWA/LSOH 0,6/1 kV		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	FR-N1 X1G1Z4		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	MMJ HF 450/750V		X				X				X				X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	EQQ Light 300/500V														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	EXQJ 0,6/1 kV		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	FXQJ 0,6/1 kV		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	AXQJ 0,6/1 kV		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	NSHXAFÖU 1,8/3 kV														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	NSHXAFÖU 3,6/6 kV														X	X	X	X	X	X	X	X	X	X	X	X	X
Flame-X 950	JE-H(St)H ... Bd FE180/E90		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	JE-H(St)H ... Bd		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	J-H(St)H ... Bd		X				X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	LiHH														X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	LiHCH														X	X	X	X	X	X	X	X	X	X	X	X	X
Flame-X 950	NKOGs 1kV	X	X	X		X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flame-X 950	NKOGsekw 1kV	X	X	X		X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	NKOGs 1kV	X	X	X		X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
FlameBlocker	NKOGsekw 1kV	X	X	X		X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X

PICTOGRAMS

Description of pictograms used in catalogue



Positive result for vertical flame spread test acc. to IEC 60331-1-2



Positive result for vertical flame spread test acc. to IEC 60332-3 (vertically-mounted bunched wires or cables)



No smoke density acc. to IEC 61034



No harmful gases emission acc. to 60754



Pass circuit integrity acc. to IEC



Maintaining the function of electrical cable during the fire, defined as the concept of cable systems acc. to DIN 4102-12 (classes E30, E60 or E90)



Pass circuit integrity acc. to BS 6387 (Category C)



Pass fire and water resistance test acc. to BS 6387 (Category W)



Pass fire resistance and mechanical stroke test acc. to BS 6387 (Category Z)



Pass fire resistance and mechanical stroke test acc. to EN 50200



Pass fire resistance and mechanical stroke test acc. to EN 50200 during minimum 30 minutes



Pass fire resistance and mechanical stroke test acc. to EN 50200 during minimum 120 minutes



Pass fire and mechanical test acc. to BS 7846 (Category F2)



Pass fire, mechanical and water test acc. to BS 8491 during minimum 120 minutes (Category F120)



Minimum and maximum exploitation temperature



Maximum conductor operating temperature



UV resistant

NOTES

All the information contained in this document - including tables, graphics and diagrams - is given in good faith and believed to be correct at the time of publication. The information does not constitute a warranty nor representation for which TELE-FONIKA Kable assumes legal responsibility. TELE-FONIKA Kable reserves rights to introduce changes to the document at any time.

All Rights Reserved – TELE-FONIKA Kable S.A

Edition III



TELE-FONIKA Kable S.A.
Wielicka 114, 30-663 Krakow, Poland
T: (+48) 12 372 7405
export@tfkable.com
www.tfkable.com

