

TECRÜBEMİZ

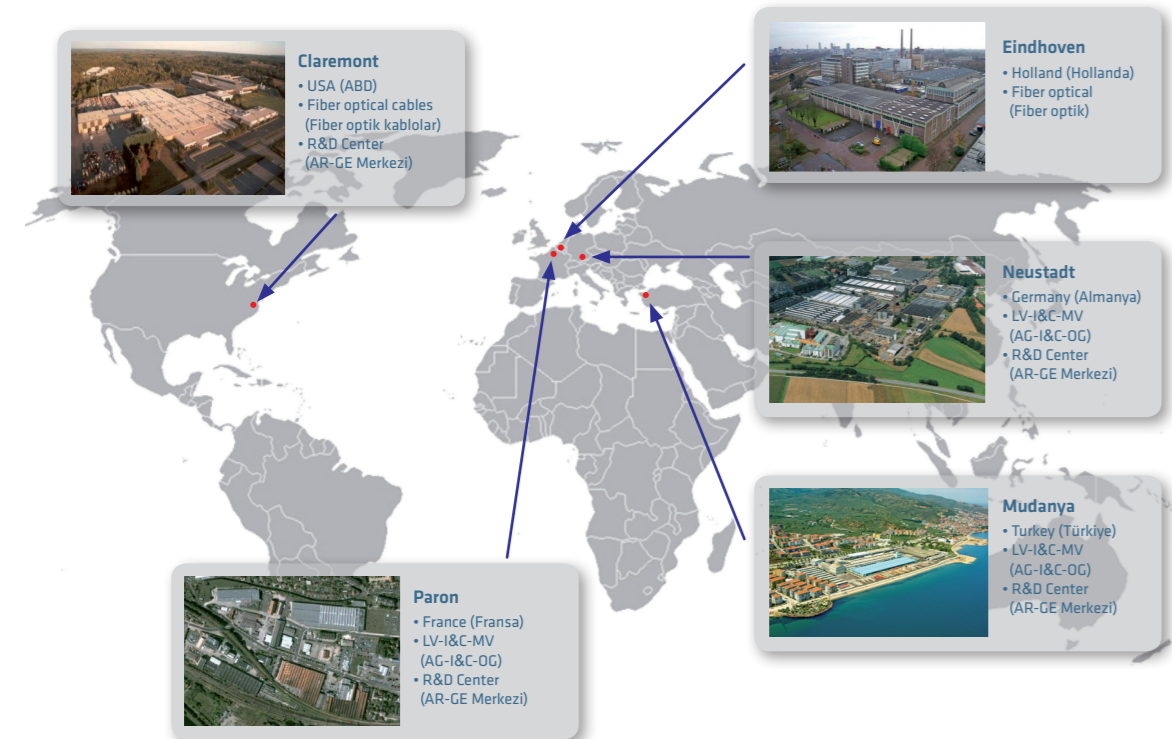
Prysmian Group, 40 yılı aşkın süredir dünyanın her bölgesinde nükleer kabloların üretimini ve tasarımını yapmaktadır. Prysmian, Fransa, Almanya, Hollanda, Amerika ve Türkiye'de nükleer alanında çalışmalar gerçekleştiren Ar&Ge merkezlerine sahiptir. Her bir laboratuvar, farklı reaktör tiplerinin nükleer protokölüne uygun olacak şekilde nükleer kablo kategorilerine ayrılmıştır.

Prysmian Group Türkiye'nin Mudanya'da yer alan kablo fabrikası ve yanma laboratuvarı, TS EN ISO 17025 belgesine sahip olup TÜRKAK tarafından akredite edilmiştir ve SAFENUC® ticari markalı kablolarının tasarlanması ve geliştirilmesi konusunda eşsiz bir uzmanlık sunmaktadır.

Prysmian uzmanlığının son başarısı olan bu kablo markası, 1E Güvenliksiz veya K3 sınıfı nükleer çevreler için geçerli, güvenilir ve kanıtlanmış bir teknik uzmanlık sunmaktadır. Bu ürün IEC 60216 standardına göre hızlandırılmış bir yaşlanma geçirdi ve bu süreçte 90°C'de izolasyonu, 70°C'de dış kılıfı 60 yıla kadar sürekli işletme ömrü için en uygun koşulları sağladı.

SAFENUC® nükleer kablosu, IEC 60754-1 /2, IEC 60684-2 ve IEC 61034-1/2 standartlarına uygun olarak halojeniz ve düşük duman yoğunluğudur. Bu kablo, alev geciktirme (Fire Retardant) testi olan IEC 60332-3-22 Cat A ve toksiklik testi NES 713'den başarıyla geçmiştir. Ayrıca, REACH ve ROHS uyumludur.

Bureau Veritas Türkiye ile işbirliği içerisinde üretilen SAFENUC® kablosunun harici tip test raporu, ilgili herkesin ulaşımına açıktır. SAFENUC® bugün VVER ve ATMEA reaktörlerinde 1E Güvenliksiz Bölge tipi kabloların en zorlu şartlarını sağlayabilen, Türkiye'de üretilen bir üründür. Kablolar, Türkiye'de ilk kez TAEK sertifikası alan Mudanya fabrikasında üretilmektedir.



OUR EXPERIENCE

Prysmian started designing and producing nuclear cables all around the world more than 40 years ago. Prysmian boast R&D centers dedicated to nuclear development in France, Germany, Netherland, USA and Turkey. Each laboratory is dedicated to a set category of nuclear cables, suitable to nuclear protocol of different reactor types.

Prysmian Group Turkey cable and fire laboratory situated in the Prysmian factory of Mudanya has been qualified for TS EN ISO 17025 and accredited by TÜRKAK offer a unique expertise in the conception and development of SAFENUC® brand cables.

This cable brand is the last achievement of the Prysmian expertise, offers a viable, reliable and proven technical solution for Nuclear environments safety classified: type 1E Non Safety or K3 class. It has undergone an accelerated aging in compliance to standard IEC 60216 and has proved optimal conditions up to 60 years of continuous operating life of insulation at temperature of 90°C and outer jacket at 70°C.

The SAFENUC® Cables are halogen free and low smoke complying with IEC 60754-1 /2, IEC 60684-2 and IEC 61034-1/2 standards. It has been successfully tested to Fire Retardant test IEC 60332-3-22 Cat A and Toxicity Test NES 713. The SAFENUC® Cables are also compliant to REACH and ROHS.

An external type test report of SAFENUC® generated in cooperation with Bureau Veritas Turkey is available for consultation to whomever might be interested. SAFENUC® is today a made in Turkey product able to meet the harshest requirements of 1E Non Safety type cables in reactor types like VVER or ATMEA. The cables are manufactured in the factory of Mudanya which is the first facility in Turkey of achieving TAEK certification.

Prysmian Group

Prysmian Group

SAFENUC®
INNOVATIVE CABLING SOLUTIONS FOR NUCLEAR BUSINESS
SIENOPYR XA | AFUMEX TECNUC

KÜRESEL ALTYAPILARI ZORLU PROJELERE BAĞLIYORUZ LINKING GLOBAL INFRASTRUCTURE TO CRITICAL OPERATIONS

NÜKLEER KABLODA KANITLANMIŞ UZMANLIK RECOGNISED EXPERTISE IN NUCLEAR CABLES



Türk Prysmian Kablo ve Sistemleri A.Ş.

Merkez
Ömerbey Mah. Bursa Asfaltı Cad.
No:51 16941 Mudanya - Bursa
T 0224 270 30 00
F 0224 270 30 30
tpks@prysmiangroup.com

Şube
Haktan İş Merkezi No:39 K:2
34427 Setüstü Kabataş - İstanbul
T 0212 393 77 00
F 0212 393 77 62
tpks@prysmiangroup.com

www.prysmiangroup.com.tr

PRYSMIAN
Draka

PRYSMIAN
Draka

KISACA TÜRK PRYSMIAN KABLO VE SİSTEMLERİ A.Ş.

Türk Prysmian Kablo ve Sistemleri A.Ş.; 2011 yılında Prysmian ve Draka arasında gerçekleşen birleşmeyi takiben, bugün dünya çapında enerji ve telekomünikasyon kabloları sektöründe lider olan Prysmian Group'un Türkiye operasyonudur. Firmanın merkezi, 1964 yılından bu yana Mudanya'da (Bursa) yer almaktadır ve toplam 180.000 m²'lik açık alan (79.000 m² kapalı alan) üzerinde faaliyet göstermektedir. Firma, Prysmian Group bünyesinde, aynı anda enerji ve haberleşme kabloları üretimi yapabilen 15 tesisten biri olarak öne çıkmaktadır. 220 kV'a kadar tüm enerji kabloları, 3.600 çifte kadar bakır iletkenli haberleşme kabloları, fiber optik kablolar, demiryolu sinyalizasyon kabloları, stüdyo broadcast kabloları ve özel kablolar ürün yelpazesi içinde yer almaktadır. Bugün, Mudanya fabrikasında 22.000 farklı kablo üretimi yapılabilmektedir. Bunun yanı sıra Türk Prysmian, kablo ve sistemleri için "Anahtar Teslimi" projeler yaparak tüm müşterilerine eşsiz ve üstün hizmetler vermeye devam etmektedir.

NÜKLEER AĞI

Prysmian Group Türkiye, günümüz itibarıyla Türkiye pazarına nükleer güvenlik alanında 1E güvenlik sınıfı alanındaki tüm uygulamaları kapsayan, küresel bir nükleer kablo portföyü sunabilmektedir. Prysmian Group Türkiye, birleşik bilgi ağı ve Grup içerisindeki tecrübesi sayesinde, Türkiye pazarına kardeş firmaları olan Prysmian Kabel und Systems GMBH'den SIENOPYR XA ve Fransa'daki Prysmian Cables et Systemes France'dan AFUMEX TECNUC nükleer kablolarını sunmaktadır.

Her iki ticari marka, Prysmian Group Türkiye'nin ticari markası olan SAFENUC ile aynı referans standartlarına sahip düşük duman yoğunluklu, halojenden arındırılmış kablolar sunmaktadır.

Prysmian'ın tüm nükleer santral kabloları reaktörün nükleer çevre protokolüne uygun olarak dizayn edilmiş ve test edilmiştir. (Atomenergoproekt (RAOS) VVER reaktör tipi ve Mitsubishi-Framatome konsorsiyum ATMEA tipi)

- SIENOPYR XA ve SAFENUC nükleer kabloları, FRAMATONE (eski AREVA Gmbh) ISO/IEC 1702 sertifikalı laboratuvarlar tarafından kapsamlı ve başarılı bir şekilde test edilmiştir.
- SIENOPRY XA, 1E sınıfı (tasarım veritabanı ötesi) için VVER tarafından önerilirken; AFUMEX TECNUC, 1E sınıfı (tasarım veritabanı ötesi) için kanıtlandı.
- SEINOPRYS XA, AREVA Gmbh tarafından Finlandiya'da EPR reaktör tipi için de kullanılmıştır.
- AFUMEX TECNUC markası, EDF SEPTAN laboratuvarı tarafından onaylanmıştır ve Flamanville U1 ile Taishan U1-2 EPR reaktörleri içerisindeki kurulumlar için tavsiye edilen nükleer kablo markasıdır.
- AFUMEX TECNUC markası ayrıca ATMEA reaktörleri için 1E sınıfı kablo olarak onaylanmıştır.

Yukarıda belirtilen protokollere uygunluğu kanıtlayan kapsamlı tip test raporları, seçilen kullanıcılara danışmak için kullanılabilir.

ÇEVRE VE İNSAN SAĞLIĞI

Prysmian Group'un nükleer santrallerde kullanılan bu üç kablo markası (SAFENUC, AFUMEX TECNUC ve SIENOPRY XA), REACH ve ROHS uyumludur. REACH uygunluğu ile ilgili detaylar (tescil değerlendirmeli, kimyasalların yetkilendirilmesi) <https://echa.europa.eu/it/regulations/reach/registration/registration-statistics> adresinde yer almaktadır ve ROHS ile ilgili detaylar (Zararlı Maddelerin Kısıtlanması Direktifi) <http://www.rohsguide.com> adresinde yer almaktadır.



NUCLEAR NETWORK

TURK Prysmian is today able to offer to the Turkish market a global portfolio of Nuclear cables covering all applications also in 1E Class safety area therefore inside the Nuclear containment. Thanks to a consolidated Network and experience inside the Group, Turk Prysmian deliver into the Turkish markets SIENOPYR XA cable brand from sister company Prysmian Kabel und Systems GMBH and AFUMEX TECNUX cables from Prysmian cables et Systemes France.

Both cable brands fit perfectly with SAFENUC brand of Turk Prysmian by offering full Low Smoke Halogen Free cables with same reference standards.

All Prysmian cables for Nuclear plants have been designed and tested in accordance to the Nuclear environment protocol of the reactor types programmed in Turkey (VVER Reactor type by Atomenergoproekt (RAOS) and ATMEA type by Mitsubishi-Framatome consortium).

- SIENOPYR XA and AFUMEX TECNUC cables have been comprehensively and successfully tested by FRAMATOME (former AREVA Gmbh) ISO/IEC 1702 certified laboratories
- SIENOPYR XA has been proven to 1E Class BDBA (Beyond design Base Accident) VVER recommended environment while AFUMEX TECNUC proven to 1E Class DBA (Design Base Accident).
- The SIENOPYR XA has also been employed for EPR Reactor type in Finland by AREVA Gmbh
- The AFUMEX TECNUC brand is indeed certified by the SEPTEN Laboratories of EDF and recommended cable brand for installations inside Flamanville U.1 and Taishan U.1-2 EPR Reactors.
- The AFUMEX TECNUC brand is also approved like 1E class cable for ATMEA reactors.

Comprehensive type test reports proving compliance to above mentioned protocols are available for consultation to selected Users.

RESPECT OF ENVIRONMENT AND HUMAN HEALTH

All three brands of Prysmian cables for Nuclear plants (SAFENUC, AFUMEX TECNUC and SIENOPYR XA) are REACH and ROHS compliant . Details about REACH compliancy (Registration Evaluation, Authorization of Chemicals are set in: <https://echa.europa.eu/it/regulations/reach/registration/registration-statistics> and details about ROHS (Restriction of Hazardous Substances Directive) are set in <http://www.rohsguide.com>.



TÜRK PRYSMIAN KABLO VE SİSTEMLERİ A.Ş. AT A GLANCE

Türk Prysmian Kablo ve Sistemleri A.Ş. is Turkish operation of Prysmian Group, worldwide leading company in energy and telecommunication cables industry following the merge realized between Prysmian and Draka, in 2011. The company is headquartered in Mudanya (Bursa) since 1964 and carries out its activities in a total area of 180.000 m² (covered area: 79.000 m²). The company stands out in Prysmian Group as one of the 15 plants that can simultaneously produce energy and telecom cables. All the energy cables up to 220 kV, copper conductor communication cables up to 3.600 pairs, optical fiber cables, railway-signaling cables, studio broadcast cables and special cables are in the company's product range. Today Mudanya factory can produce 22.000 different cables. Besides all these, Türk Prysmian performs "Turn Key" projects for cables and systems, and provides all its customers unique and superior services.

KABLO ve SİSTEM KAPSAMI

OG Kabloları:

•3,6/6 (7,2) kV; 6/10 (12) kV ; 8,7/15 (17,5) kV; 12/20 (24) ;18/30(36) kV; 20,3/35 (42) kV K1, K2, K3 LSOH 6 kV K3 PVC

• Class 2 veya Class 5 bakır veya alüminyum iletken – zırlı/zırlızsız veya ekranlı/zırlı
• Kablo setleri
• Talep üzerine farklı gerilim seviyelerine uygun üretim

AG Kabloları:

• 0,6/1(1,2) kV
• Class 2 veya Class 5 bakır veya alüminyum, K1, K2, K3 LSOH, PVC K3 zırlı/zırlızsız veya ekranlı

Kontrol Kabloları:

• 250 V (sadece "thermi-pointage" kullanımı için) / 300/500 V
• 1000 V (isteğe bağlı)
• Class 2 veya Class 5 çıplak bakır iletken (isteğe bağlı kalaylı)
• Bakır tel örgülü genel ekran/ekransız
• Zırlı veya zırlızsız
• K1 K2 K3 LSOH
• K3 PVC

Ölçüm Kabloları:

• 250 V (sadece "thermi-pointage" kullanımı için; Class 2 iletken)
• 300/500 V
• Class 5 veya class 2 çıplak bakır iletken (isteğe bağlı olarak kalaylı)
• Her damar üzerinde bakır tel örgülü ekran/ekransız
• Bakır tel örgülü genel ekran
• Zırlı veya zırlızsız
• K1 K2 K3 LSOH
• K3 PVC

Kompanzasyon Kabloları:

• Class B iletken
• KC, KCB, KCA, vs.
• Her damar üzerinde bakır tel örgülü ekran/ekransız
• Bakır tel örgülü genel ekran
• Zırlı veya zırlızsız
• K1, K2, K3 LSOH
• K3 PVC

Tesisat Kabloları:

• 300/500 V ve 0.6/1 kV LSOH C2 C1 kablolar
• 300/500 V LSOH C3 kablolar
• Class 2 veya Class 5 çıplak bakır iletken

Koaksiyel Kablolar:

• Ekstra yüksek dayanımlı K2 LSOH "nötron ölçüm kabloları"
• Koaksiyel çubuk kablolar

Koaksiyel Kablolar:

• Video K2 LSOH kablolar
Telekom Kabloları:
• Genel ya da her damar üzerinde ekranlı çok çiftli kablolar
• 1 çiftten 112 çifte kadar (0,6; 0,8; 0,9 mm)
• Zırlı veya zırlızsız LSOH (CST uzatmalı)

Açık Su Tankı Soğutma Sistemleri

• Class 5 bakır iletken K2 0.6/1 kV

GEX System :

• İkaz dinamosu 3 kV
• İzolasyon ölçümü 2 kV

AG CERT tipi kablolar:

• 0.6/1 (1,2) kV
• Class 2 bakır iletken K3 LSOH

• Ekstra yüksek dayanımlı çıplak bakır iletken, koruge ekran (HN35534)

Güvenlik Kabloları:

• Ölçüm kabloları EN 50200/50362 K2
• AG kablolar 0,6/1(1.2) kV SECURIFEU, zırlı, CR1C1 LSOH
• AG ve kontrol kabloları 300/500V CR1 C1 LSOH K3
• PTS telekom kabloları CR1 C1 LSOH K2 K3
• Kontrol kablosu EN50200 & EN50362 K3 K2

Çapraz Bağlı Kablolar:

• Özel bakır veya kompanzasyon iletken tip SCA 226

ATEX Ölçüm Kabloları:

• 300/500 V açık mavî kılıf
• Class 5 çıplak bakır iletken (kalaylı bakır iletkenle de yapılabilir)
• Her damar üzerinde ekranlı/ekransız
• Genel ekranlı zırlı/zırlızsız
• K1 K2 K3 LSOH K3 PVC

Çubuk Kablolar:

• Ölçüm kabloları ve AG LSOH K1 K2 K3
• 2P+2T ; 4+2 ; 1Q+8

Ölçüm Kabloları:

• Mikro modül 250 V
• 0,22 ; 0,34 mm² (LSOH C1 mikro kablolar)

Kompanzasyon Kabloları:

• Yüksek sıcaklık dayanımı
• Tip KC LSOH C1

Ölçüm ve Kontrol Kabloları:

• Mikro temas, pozisyonlama sistemleri vs. için 500 V Class 5 kalaylı çıplak bakır iletken
• LSOH C1

Fiber Optik Kablolar:

• Single mod, multi LSOH C1

Data Kabloları:

• LSOH

Ölçüm Kabloları:

• Mikro koaksiyel – 1 mm² LSOH C1

Vinç Kabloları:

• LSOH C1

Umumi Aydınlatma Kabloları:

• SENOREP/LUMIREP tipi

Orta Gerilim Güç Besleme Kabloları:

• NFC 33-226/S35G

Nükleer Denizaltı Kabloları:

• Tek/çok iletkenli enerji kabloları: bükülgen, halojenden arındırılmış, düşük akustik yayılım, alev iletmezlik, yangına dayanıklı
• Çok iletkenli ve çok çiftli kablolar: kontrol ve sinyal kablosu, bükülgen, halojenden arındırılmış, düşük akustik yayılım, yangına dayanıklı
• Tekli koaksiyel ve çok çiftli ethernet kabloları: bükülgen, halojenden arındırılmış, düşük akustik yayılım, yangına dayanıklı
• Denizaltı dış bağlantı kabloları: 90/120 bar basınç dayanımı, 45 bar/suya kadar boyuna su sızdırmazlık, düşük akustik yayılım

MV cables:

•3,6/6 (7,2) kV; 6/10 (12) kV ; 8,7/15 (17,5) kV; 12/20 (24) ;18/30(36) kV; 20,3/35 (42) kV K1, K2, K3 LSOH 6 kV K3 PVC

• Class 2 or 5 copper or aluminum - armored or unarmored or Screened / Armored
• Pre equipped length (strap)
• Other voltage on request

LV cables:

• 0,6/1(1,2) kV
• Class 2 or 5 copper or aluminum, K1, K2, K3 LSOH, PVC K3
• Armored or unarmored

Control cables:

• 250 V (only for " thermi-pointage" using) / 300/500 V
• Notwithstanding 1000 V
• Bare copper conductor class 2 or 5 (notwithstanding tinned bare copper)
• Global bare copper wire braid screened or unscreened
• Armored or unarmored
• K1 K2 K3 LSOH
• K3 PVC

Measurement cables:

• 250 V (only for " thermi-pointage" using ; conductor class 2)
• 300/500 V
• Bare copper conductor class 5 (notwithstanding tinned bare copper)
• Individual bare copper wire braid screened or not
• Global bare copper wire braid screened
• K1 K2 K3 LSOH
• K3 PVC

Compensation cables:

• Conductor classe B
• KC pair, KCB, KCA, etc.
• Individual bare copper wire braid screened or not
• Global bare copper wire braid screened
• Armored or unarmored
• K1, K2, K3 LSOH
• K3 PVC

Wiring cables:

• 300/500 V and 0.6/1 kV LSOH C2 C1 wires
• 300/500 V LSOH C3 wires
• Bare copper conductor class 2 or 5

Coaxial cables:

• Extra high immunity K2 LSOH "neutron measurement cable"
• Coaxial rod cable

Coaxial cables:

• Video surveillance K2 LSOH cables

Telecom cables:

• Global or individual screen multipair cables
• 1 pair to 112 pairs (0,6 ; 0,8 ; 0,9 mm)
• Armored or unarmored LSOH (CST extension)

Open water tank cooling system:

- Class 5 Cu conductor K2 0.6/1 kV

GEX System:

- Exitation alternator 3 kV
- Insulation measurement 2 Kv

LV cables type CERT:

• 0.6/1 (1,2) kV
• Copper conductor class 2 K3 LSOH
• High immunity bare copper corrugated screened (HN35534)

Safety cables:

• Measurement cables EN 50200/ 50362 K2
• LV cables 0,6/1(1.2) kV SECURIFEU, armored, CR1C1 LSOH
• LV and control cables 300/500 V CR1 C1 LSOH K3
• PTS telecom cables CR1 C1 LSOH K2 K3
• Control cable EN50200 & EN50362 K3 K2

Cross link cables:

• Special copper or compensation wiring type SCA 226 ATEX measurement cables 300/500 V light blue sheath
• Bare copper conductor class 5 (notwithstanding tinned bare copper)
• Individual screened or not
• General screened Armored or unarmored
• K1 K2 K3 LSOH K3 PVC

Rod cables:

• Measurement and LV LSOH K1 K2 ou K3
• 2P+2T; 4+2; 1Q+8

Measurement cables:

• Micro module 250 V
• 0,22; 0,34 mm² (LSOH C1micro cables)

Compensation cables:

• High temperature
• Type KC LSOH C1

Measurement and control cables:

• 500 V tinned bare copper class 5 for micro contact, position system, etc
• LSOH C1

FO cables:

• Single-mode and multi-mode LSOH C1

Data cables:

• LSOH

Measurement cables:

• micro coaxial – 1 mm² LSOH C1

Crane cables:

• LSOH C1

Public lighting cables:

• SENOREP / LUMIREP type

Medium voltage power supply cables:

• NFC 33-226/S35G

Cables for nuclear submarines:

• Single and multiconductor power cables: flexible, halogen-free, acoustic discretion, fire proof, fire resistant
• Multi conductor and multi pair cables: for control and signaling, flexible, halogen-free, acoustic discretion, fire proof
• Single coaxial and multi pair Ethernet cables: flexible, halogen-free, acoustic discretion, fire proof
• External submarine connecting cables: pressure withstand capacity 90/120 bars, longitudinal tightness 45 bars/water, acoustic discretion



SIENOPYR XA (N)HXSCHXOE 0.6/1 kV

LOCA proofed, halogen-free, screened, flexible cables with improved characteristics in the case of fire
Suitable for Use in the Containment of Nuclear Power Plants

Type designation	(N)HXSCHXOE-O/J 0.6/1kV
Standards	Based on IEC 60502-1; DIN VDE 0250-812; DIN VDE 0266 clause 5
Approval	AREVA test report D02-ARV-01-085-283 (LOCA test) and internal type testing; VDE in preparation
Application	For flexible use and fixed installation in power plants, hospitals, theatres, serving to connect electrical equipment and machinery; especially for EMC-FC requirements (pulsed voltage) or EMC-sensitive signals. The cables are intended for use in dry, damp and wet rooms and also for outdoor locations. They are suitable for medium mechanical stress. The cables are suitable for the long time use in the containment of nuclear power plants also under harsh environmental conditions, e.g. during loss of coolant accidents.

Design Data

Conductor	Soft annealed copper, plain or tinned, flexible class 5 in accordance with IEC 60228
Insulation	Cross linked polyolefin, compound HX11 in accordance with DIN VDE 0266 respectively EPR in accordance with IEC 60502-1
Core identification	DIN VDE 0293-308 (HD 308 S2), respectively DIN EN 50334
Inner covering	Cross linked EVA
Cable screen	Braid of tinned copper wires (optical coverage > 80%)
Outer sheath	Cross linked EVA, compound HXM1 in accordance with DIN VDE 0266 respectively ST8 in accordance with IEC 60502-1
Cable Marking (example)	2020 ◊SIENOPYR XA (N)HXSCHXOE-J 3x2,5 0,6/1KV VDE 0250 1005m ##CODE##
	Consisting of: <ul style="list-style-type: none"> ○ year of production ○ sign for production plant ○ trademark ○ type short designation with sign for PE conductor ○ number of cores and nominal cross section ○ rated voltage ○ standard / approval ○ meter marking ○ 8 digit production code for tracing back

General Technical Data

Electrical properties	Rated a.c. voltage	$U_0/U(U_m)$	0.6/1 (1.2) kV	
	Maximum permissible operation voltage of plant and power system			
	- Single-phase and three-phase a.c. operation			
	Line-Earth / Line-Line		0.7/1.2 kV	
	- d.c. operation			
	Line-Earth / Line-Line		0.9/1.8 kV	
	a.c. test voltage (test duration)		4 kV (5 min)	
	Current-carrying capacity			
	The values given in the table Technical Data are valid for a single cable in permanent operation with d.c. or a.c. with 50 up to 60 Hz at 30 °C ambient temperature *), installed free in air. The values are converted from DIN VDE 0298-4.			
Thermal properties	Maximum permissible operating temperature at conductor (> 60a without accidental conditions)		90 °C	
	Maximum permissible short circuit temperature at conductor (the values in the table refer to a duration of 1s **)		250 °C (max. 5 s)	
	Minimum permissible temperatures			
	- installation		-25 °C	
	- stationary / fixed		-40 °C	
Mechanical properties	Permissible pulling force	max.	15 N/mm ²	
	Minimum permissible bending radii (D = outer diameter of cable)		D ≤ 12mm	D > 12mm
		flexible use	min. 4 D	5 D
	fixed installed	min. 3 D	4 D	
Stability against external influences	Oil resistance	EN (IEC) 60811-404		
	Acid and alkaline resistance	EN (IEC) 60811-404		
	Water absorption	EN (IEC) 60811-402		
	Ozone resistance	EN (IEC) 50305		
	UV irradiation resistance	EN ISO 4892-2		
	Reaction to fire			
	- Flame propagation, single cable	EN (IEC) 60332-1-2		
- Flame propagation, bunched cables (category A, B, C)	EN (IEC) 60332-3-22 -23 -24			
- Smoke emission, light transmittance ≥ 60 %	EN (IEC) 61034-2			
- Tests for corrosive and acid gas emission and fluorine pH ≥ 4.3; conductivity ≤ 2.5 µS/mm	EN (IEC) 60754-2			

*) For other ambient temperatures, the current-carrying capacities must be converted with the following factors:

°C	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
f	1.15	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71	0.65	0.58	0.50	0.41

**) Permissible short-circuit currents I_{thz} for other break times t_k up to 5 s are calculated using the formula

$$I_{thz} = I_{thr} \sqrt{\frac{1s}{t_k}}$$



Änderungen vorbehalten
Subject to change
without prior notice

PRYSMIAN Kabel und Systeme GmbH
Alt Moabit 91 D
D-10559 Berlin

PG TSS / BO
Doc.: 07DS900
Rev.: 0.4draft / 2020-06
Seite / page 2/7

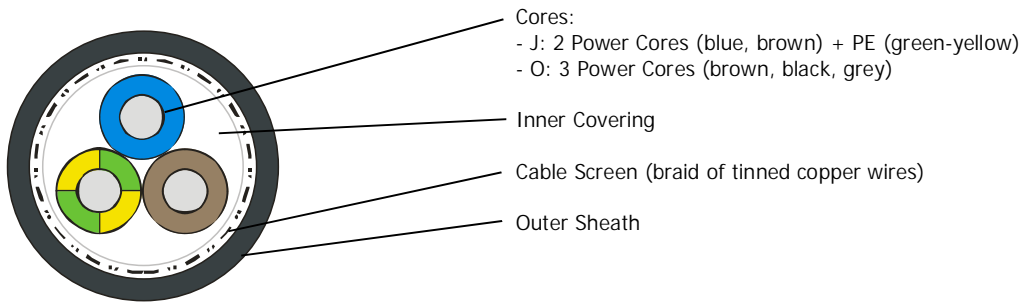
Power Cables

LOCA – K1

Technical Details

3-Core Cables

(N)HXSCHXOE-O/J



Picture is informative only and not in scale

Number of cores and nominal cross-sectional area mm ²	PRYSMIAN part no. 1)	Conductor diameter appr. mm	Outer diameter of cable appr. mm	Bending radius		Weight of cable net 1000 m appr. kg	Current-carrying capacity 2) at 30°C A	Permissible short-circuit current (1 s) kA	Permissible pulling force max. N
				fixed installed min. mm	free moving min. mm				

SIENOPYR XA (N)HXSCHXOE-O/J 3 x 0.6/1 kV

black

3 x 1.5	5DL8 420-a	1.5					24	0.21	68
3 x 2.5	5DL8 421-a	1.9	15	60	75	350	32	0.36	113
3 x 4	5DL8 422-a	2.4	17	68	85	470	43	0.57	180
3 x 6	5DL8 423-a	2.9	18	72	90	580	56	0.86	270
3 x 10	5DL8 424-a	3.9					78	1.43	450
3 x 16	5DL8 425-a	5.4					104	2.29	720
3 x 25	5DL8 126-a	6.3					138	3.58	1125
3 x 35	5DL8 427-a	7.4					171	5.00	1575
3 x 50	5DL8 428-a	8.9					213	7.15	2250
3 x 70	5DL8 429-a	10.6					263	10.01	3150
3 x 95	5DL8 430-a	12.1					317	13.59	4275
3 x 120	5DL8 431-a	14.2					371	17.16	5400
3 x 150	5DL8 432-a	16.1					425	21.45	6750
3 x 185	5DL8 433-a	17.9					485	26.46	8325
3 x 240	5DL8 434-a	20.3					576	34.32	10800

- 1) -J: a=0 (plain conductors)
 -O: a=1 (plain conductors)
 -J: a=5 (tinned conductors)
 -O: a=6 (tinned conductors)

- 2) two or three cores loaded

Prysmian
Group

Änderungen vorbehalten
 Subject to change
 without prior notice

PRYSMIAN Kabel und Systeme GmbH
 Alt Moabit 91 D
 D-10559 Berlin

PRYSMIAN
Draka

General Cable

PG TSS / BO
 Doc.: 07DS900
 Rev.: 0.4draft / 2020-06
 Seite / page 3/7

LOCA-PROOFED CABLES QUALIFIED FOR NUCLEAR POWER PLANTS

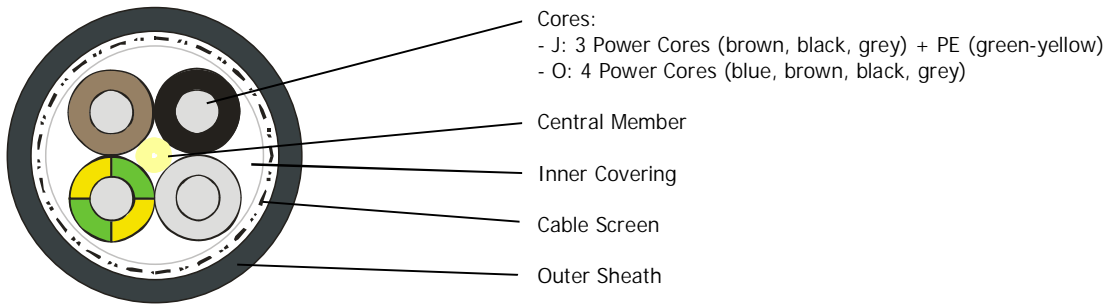
Power Cables

LOCA – K1

Technical Data

4-Core Cables

(N)HXSCHXOE-O/J



Picture is informative only and not in scale

Number of cores and nominal cross-sectional area mm ²	PRYSMIAN part no. 1)	Conductor diameter appr. mm	Outer diameter of cable appr. mm	Bending radius		Weight of cable net 1000 m appr. kg	Current-carrying capacity 2) at 30°C A	Permissible short-circuit current (1 s) kA	Permissible pulling force max. N
				fixed installed min. mm	free moving min. mm				

SIENOPYR XA (N)HXSCHXOE-O/J 4 x 0.6/1 kV

black

4 x 0.5	5DL8 437-a	0.9	13.5	54	68	250	12	0.07	30
4 x 0.75	5DL8 438-a	1.1	14	56	70	290	14	0.11	45
4 x 1	5DL8 439-a	1.2	15	60	75	330	16	0.14	60
4 x 1.5	5DL8 440-a	1.5	15.5	62	78	350	24	0.21	90
4 x 2.5	5DL8 441-a	1.9	17	68	85	480	32	0.36	150
4 x 4	5DL8 442-a	2.4	18	72	90	550	43	0.57	240
4 x 6	5DL8 443-a	2.9	20	80	100	670	56	0.86	360
4 x 10	5DL8 444-a	3.9					78	1.43	600
4 x 16	5DL8 445-a	5.4					104	2.29	960
4 x 25	5DL8 446-a	6.3					138	3.58	1500
4 x 35	5DL8 447-a	7.4					171	5.00	2100
4 x 50	5DL8 448-a	8.9					213	7.15	3000
4 x 70	5BL8 449-a	10.6					263	10.01	4200
4 x 95	5BL8 450-a	12.1					317	13.59	5700
4 x 120	5BL8 451-a	14.2					371	17.16	7200
4 x 150	5BL8 452-a	16.1					425	21.45	9000
4 x 185	5DL8 453-a	17.9					485	26.46	11100
4 x 240	5BL8 454-a	20.3					576	34.32	14400

- 1) -J: a=0 (plain conductors)
 -O: a=1 (plain conductors)
 -J: a=5 (tinned conductors)
 -O: a=6 (tinned conductors)

2) three cores loaded

Prysmian
Group

Änderungen vorbehalten
 Subject to change
 without prior notice

PRYSMIAN Kabel und Systeme GmbH
 Alt Moabit 91 D
 D-10559 Berlin

PRYSMIAN
Draka

General Cable

PG TSS / BO
 Doc.: 07DS900
 Rev.: 0.4draft / 2020-06
 Seite / page 4/7

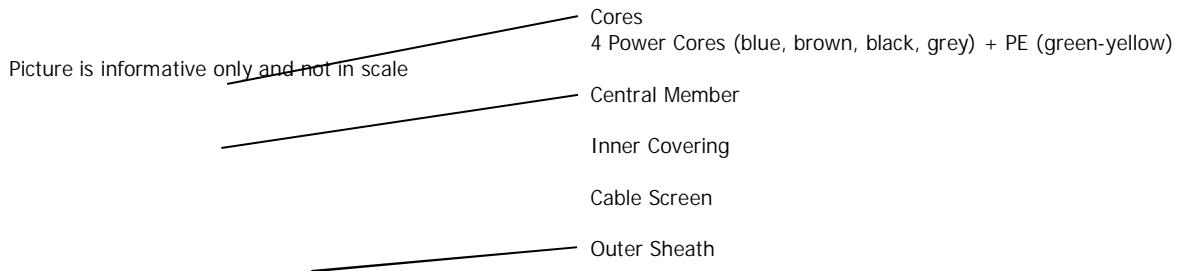
Power Cables

LOCA – K1

Technical Data

5-Core Cables

(N)HXSCHXOE-J



Number of cores and nominal cross-sectional area mm ²	PRYSMIAN part no. 1)	Conductor diameter appr. mm	Outer diameter of cable appr. mm	Bending radius		Weight of cable net 1000 m appr. kg	Current-carrying capacity 2) at 30°C A	Permissible short-circuit current (1 s) kA	Permissible pulling force max. N
				fixed installed min. mm	free moving min. mm				

SIENOPYR XA (N)HXSCHXOE-J 5 x 0.6/1 kV

black

5 x 0.5	5DL8 457-a	0.9	15.5	62	78	350	12	0.07	37
5 x 0.75	5DL8 458-a	1.1					14	0.11	56
5 x 1	5DL8 459-a	1.2					16	0.14	75
5 x 1.5	5DL8 460-a	1.5					18	0.21	113
5 x 2.5	5DL8 461-a	1.9					24	0.36	188
5 x 4	5DL8 462-a	2.4					32	0.57	300
5 x 6	5DL8 463-a	2.9					42	0.86	450
5 x 10	5DL8 464-a	3.9					58	1.43	750
5 x 16	5DL8 465-a	5.4					78	2.29	1200
5 x 25	5DL8 466-a	6.3					103	3.58	1875
5 x 35	5DL8 467-a	7.4					128	5.0	2625
5 x 50	5DL8 468-a	8.9					160	7.15	3750

- 1) -J: a=0 (plain conductors)
-J: a=5 (tinned conductors)

- 2) three cores loaded

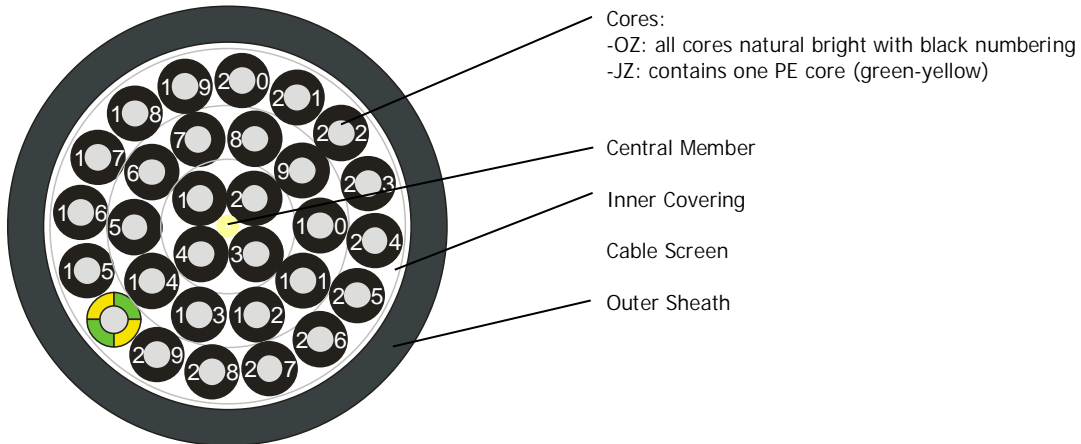
Power Cables

LOCA – K1

Technical Data

Multi-Core Cables

(N)HXSCHXOE-OZ/JZ



Example: 30 - Core Cable -JZ
Picture is informative only and not in scale

Number of cores and nominal cross-sectional area mm ²	PRYSMIAN part no. 1)	Conductor diameter appr. mm	Outer diameter of cable appr. mm	Bending radius		Weight of cable net 1000 m appr. kg	Current-carrying capacity 2) at 30°C A	Permissible short-circuit current (1 s) kA	Permissible pulling force max. N
				several times min. mm	one time min. mm				
SIENOPYR XA (N)HXSCHXOE-OZ/JZ x 0.75 0.6/1 kV black									
7 x 0.75	5DL8 -a	1.1					10.3	0.11	79
8 x 0.75	5DL8 -a	1.1	19	76	95	550	9.5	0.11	90
16 x 0.75	5DL8 -a	1.1	23	92	115	800	7.4	0.11	180
SIENOPYR XA (N)HXSCHXOE-OZ/JZ x 1 0.6/1 kV black									
7 x 1	5DL8 -a	1.2	18	72	90	480	12.3	0.14	105
12 x 1	5DL8 -a	1.2	22	88	110	800	9.9	0.14	180
24 x 1	5DL8 -a	1.2	29	116	145	1350	7.8	0.14	360
SIENOPYR XA (N)HXSCHXOE-OZ/JZ x 1.5 0.6/1 kV black									
7 x 1.5	5DL8 480-a	1.5					15.7	0.21	158
8 x 1.5	5DL8 481-a	1.5					14.5	0.21	180
10 x 1.5	5DL8 -a	1.5					13.3	0.21	225
12 x 1.5	5DL8 -a	1.5					12.6	0.21	270
14 x 1.5	5DL8 484-a	1.5					12.1	0.21	315
16 x 1.5	5DL8 485-a	1.5					11.4	0.21	360
19 x 1.5	5DL8 -a	1.5					10.8	0.21	428
20 x 1.5	5DL8 487-a	1.5					9.7	0.21	450
24 x 1.5	5DL8 -a	1.5					9.9	0.21	540
30 x 1.5	5DL8 -a	1.5					9.2	0.21	675
36 x 1.5	5DL8 -a	1.5					8.5	0.21	810

cont.



Änderungen vorbehalten
Subject to change
without prior notice

PRYSMIAN Kabel und Systeme GmbH
Alt Moabit 91 D
D-10559 Berlin



PG TSS / BO
Doc.: 07DS900
Rev.: 0.4draft / 2020-06
Seite / page 6/7

LOCA-PROOFED CABLES QUALIFIED FOR NUCLEAR POWER PLANTS

Power Cables

LOCA – K1

Number of cores and nominal cross-sectional area mm ²		PRYSMIAN part no. 1)	Conductor diameter appr. mm	Outer diameter of cable appr. mm	Bending radius		Weight of cable net 1000 m appr. kg	Current-carrying capacity 2) at 30°C A	Permissible short-circuit current (1 s) kA	Permissible pulling force max. N
					several times min. mm	one time min. mm				

SIENOPYR XA (N)HXSCHXOE -OZ/JZ x 2.5 0.6/1 kV

black

7 x 2.5		5DL8 500-a	1.9					21	0.36	263
10 x 2.5			1.9							
12 x 2.5			1.9							
14 x 2.5			1.9							
19 x 2.5			1.9							
24 x 2.5			1.9							
30 x 2.5			1.9							
33 x 2.5			1.9							

SIENOPYR XA (N)HXSCHXOE -OZ/JZ 7 x 0.6/1 kV

black

7 x 4		5DL8 515-a	2.4					28	0.57	420
7 x 6		5DL8 517-a	2.9					36	0.86	630
7 x 10		5DL8 518-a	3.9							
7 x 16		5DL8 526-a	5.4							

- 1) -J: a=0 (plain conductors)
 -O: a=1 (plain conductors)
 -J: a=5 (tinned conductors)
 -O: a=6 (tinned conductors)

2) all cores loaded

Other numbers of cores and nom. cross sections are available on request!

Prysmian
Group

Änderungen vorbehalten
 Subject to change
 without prior notice

PRYSMIAN Kabel und Systeme GmbH
 Alt Moabit 91 D
 D-10559 Berlin

PRYSMIAN
Draka

General Cable

PG TSS / BO
 Doc.: 07DS900
 Rev.: 0.4draft / 2020-06
 Seite / page 7/7