

Prysmian Group

HV SYSTEMS



Prysmian HV Systems Product Range 66kV & 132 kV



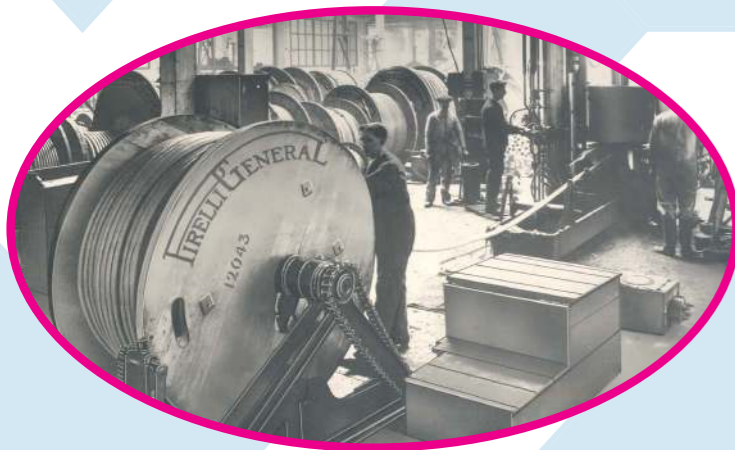
THORNE &
DERRICK
INTERNATIONAL

Thorne & Derrick
+44 (0) 191 410 4292
www.powerandcables.com

ENERGY NETWORK SOLUTIONS

The History of Cables

66kV Copper Conductor XLPE Insulated Cables



Prysmian Cables & Systmes Ltd is part of the worldwide Prysmian group, which was originally founded in 1872 under the Pirelli name. Prysmian has been operating in the UK since 1923 and today is one of the world's leading suppliers of energy & telecommunication solutions.

Today

The Prysmian Group is a leading player in the industry of high technology cables and systems for energy and telecommunication. It has more than 50 production plants in 21 countries and a worldwide network of sales and support offices.

Prysmian Cables & Systems Ltd is located in Bishopstoke in the south of England. We produce energy cables ranging from low voltage (1kV) to high voltage (132kV) along with a range of compatible accessories, as well as fibre optic and telecommunication cables.



Cable Construction

- Conductor > Stranded ($\leq 1000\text{sqmm}$) or Milliken ($> 1000\text{sqmm}$)
- Conductor Screen > Extruded crosslinked semicon
- Insulation > Crosslinked polyethylene (XLPE)
- Insulation Screen > Extruded crosslinked semicon
- Metallic Sheath > Seamless lead alloy
- Outer Sheath > Polyethylene (Fire Performance Alternative) Graphite outer coating

Fault Current	Conductor Size (sqmm)										
	185	240	300	400	500	630	800	1000	1200	1600	2000
Standard Pb Sheath	8kA/1	8.5kA/1	9kA/1	9.5kA/1	10kA/1	10.5kA/1	11.5kA/1	12kA/1	12.5kA/1	13kA/1	14kA/1
21.5 kA/1 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ means designs available
 All designs generally in accordance with IEC60840 - other designs possible
 Designs with either Aluminium Foil Laminate or Welded Aluminium metallic sheath available on request
 Designs up to 40kA/3 seconds possible
 Datasheets available on request

High Voltage

Prysmian has been at the forefront of high voltage cable technology since the early 1920's. We have experience in supplying and installing all types of high voltage cables systems throughout the world. We can support high voltage projects from systems design, through material supply to installation, commissioning and testing. Our extended after sales support is second to none, with 24/7 emergency maintenance, condition based assessments, on site fault location diagnostics, materials qualification, accessories development and approval through our HV laboratory.



Prysmian Plant - Wrexham

66kV Aluminium Conductor XLPE Insulated Cables



Cable Construction

- Conductor > Solid, Stranded or Miliken aluminium conductors
- Conductor Screen > Extruded crosslinked semicon
- Insulation > Crosslinked polyethylene (XLPE)
- Insulation Screen > Extruded crosslinked semicon
- Metallic Sheath > Seamless lead alloy
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Fault Current	Conductor Size									
	240	300	400	500	630	800	1000	1200	1600	2000
Standard Pb Sheath	8.5kA/1	9kA/1	9.5kA/1	10kA/1	10.5kA/1	11.5kA/1	12kA/1	12.5kA/1	13kA/1	14kA/1
21.5 kA/1 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ means designs available

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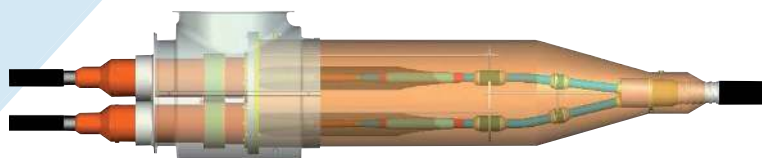
Designs with either Aluminium Foil Laminate or Welded Aluminium metallic sheath available on request

Designs up to 40kA/3 seconds possible

Datasheets available on request

Accessory	Reference	Description	Detail	
			Conductor	Size Range
Straight Joint - Uninsulated	SK1431F	Un-Insulated XLPE Straight Joint with Pre-moulded Sleeve	Cu	185 sqmm - 1600 sqmm
			Al	185 sqmm - 1600 sqmm
Straight Joint Insulated	SK1431E	Insulated XLPE Straight Joint with Pre-Moulded Sleeve	Cu	185 sqmm - 1600 sqmm
			Al	185 sqmm - 1600 sqmm
Outdoor Termination	EK1431J	Outdoor Composite Termination designed for all classes of pollution	Cu	185 sqmm - 1600 sqmm
			Al	185 sqmm - 1600 sqmm
SF6 Sealing End	EVG 1072 - 055	SF6 Dry Type Immersed Sealing End for Single Core Extruded Cables	Cu	185 sqmm - 2000 sqmm
			Al	185 sqmm - 2000 sqmm
Single Core Transition Joint	CFTJX - 170	Transition Joint for Single Core Fluid Filled Cable to Single Core XLPE Cable	FF Cable Cu or Al	240 sqmm - 1200 sqmm
			XLPE Cable Cu or Al	240 sqmm - 1200sqmm
Three Core Transition Joint	541048	Transition Joint For Three Core Fluid Filled Cable to Three Single Core XLPE Cables	FF Cable Cu or Al	185 sqmm - 630 sqmm
			XLPE Cable Cu or Al	185 sqmm - 1600 sqmm

Datasheets available on request

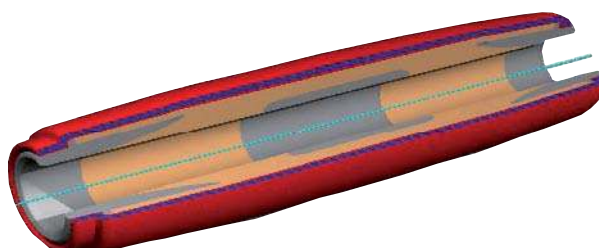


Product Reference	Application	Joint Description
Sectionalised Joints		
GSS 1072 SR	For cables with copper wire metallic screen	No copper case, heat-shrinkable tubes as outer protection
GSS 1072 CR	For cables with laminated foil metallic screen	Copper case, heat-shrinkable tubes as outer protection
GSS 1072 CR	For cables with lead screen	Copper case, heat-shrinkable tubes as outer protection
GSS 1072 CA	For cables with lead screen	Copper case, resin and glass fibre box as outer protection

Continuous Joints		
GSC 1072 SR	For cables with copper wire metallic screen	No copper case, heat-shrinkable tubes as outer protection
GSC 1072 SR/T	For cables with copper wire metallic screen	No copper case, heat-shrinkable tubes as outer protection, grounded device is supplied
GSC 1072 CR	For cables with laminated foil metallic screen	Copper case, heat-shrinkable tubes as outer protection
GSC 1072 CR	For cables with lead screen	Copper case, heat-shrinkable tubes as outer protection
GSC 1072 CA	For cables with lead screen	Copper case, resin and glass fibre box as outer protection

Joint Type	Joint Size	Cable Size range taking (mm)		
		min insulating diameter (*)	max insulating diameter(*)	max outer diameter
Sixtyspeed (GSS, GSC 1072)	1	35	47	56
	2	46.7	62.5	78
	3	60	80	98

(*) Actual diameter after cable insulating surface finishing
Datasheets available on request



132kV Copper Conductor XLPE Insulated Cables



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- Conductor > Stranded (≤ 1000 sqmm) or Milliken (> 1000 sqmm)
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- Insulation > Crosslinked polyethylene (XLPE)
- Insulation Screen > Extruded crosslinked semicon
- Metallic Sheath > Seamless lead alloy with copper wires
> Aluminium foil laminate with copper wires
> Seam welded aluminium
- Outer Sheath > Polyethylene (Fire Performance Alternative) Graphite outer coating

Fault Current	Conductor Size (sqmm)											
	185	240	300	400	500	630	800	1000	1200	1600	2000	
21.5 kA/1 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
25 kA/1 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
31.5 kA/1 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
25 kA/3 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
31.5 kA/3 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
40 kA/3 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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132kV Aluminium Conductor XLPE Insulated Cables



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Fault Current	Conductor Size (sqmm)									
	240	300	400	500	630	800	1000	1200	1600	2000
21.5 kA/1 sec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
25 kA/1 sec		✓	✓	✓	✓	✓	✓	✓	✓	✓
31.5 kA/1 sec			✓	✓	✓	✓	✓	✓	✓	✓
25 kA/3 sec				✓	✓	✓	✓	✓	✓	✓
31.5 kA/3 sec					✓	✓	✓	✓	✓	✓
40 kA/3 sec						✓	✓	✓	✓	✓

✓ means designs available

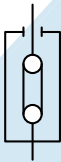
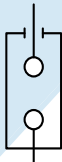
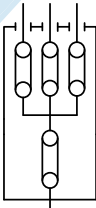
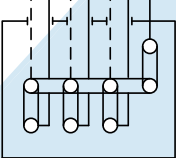
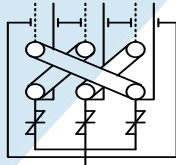
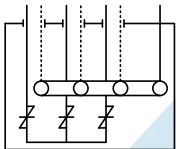
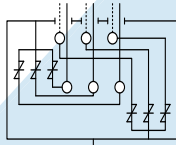
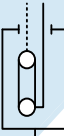
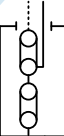
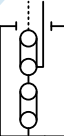
All designs generally in accordance with IEC60840 - other designs possible

Datasheets available on request

Accessory	Reference	Description	Detail	
			Conductor	Size Range
Straight Joint - Uninsulated	SL1431K	Un-Insulated XLPE Straight Joint with Pre-moulded Sleeve	Cu	185 sqmm - 1600 sqmm
			Al	185 sqmm - 1600 sqmm
Straight Joint Insulated	SL1431J	Insulated XLPE Straight Joint with Pre-Moulded Sleeve	Cu	185 sqmm - 1600 sqmm
			Al	185 sqmm - 1600 sqmm
Outdoor Termination	EL1431S	Outdoor Composite Termination designed for all classes of pollution	Cu	185 sqmm - 1600 sqmm
			Al	185 sqmm - 1600 sqmm
SF6 Sealing End	EVG 1170 - 072	SF6 Dry Type Immersed Sealing End for Single Core Extruded Cables	Cu	185 sqmm - 2000 sqmm
			Al	185 sqmm - 2000 sqmm
Single Core Transition Joint	CFTJX - 170	Transition Joint for Single Core Fluid Filled Cable to Single Core XLPE Cable	FF Cable Cu or Al	240 sqmm - 1200 sqmm
			XLPE Cable Cu or Al	240 sqmm - 1200sqmm
Three Core Transition Joint	541048	Transition Joint For Three Core Fluid Filled Cable to Three Single Core XLPE Cables	FF Cable Cu or Al	185 sqmm - 630 sqmm
			XLPE Cable Cu or Al	185 sqmm - 1600 sqmm

Datasheets available on request

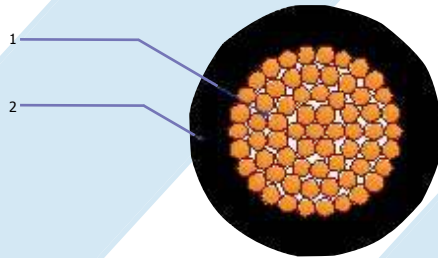


	Ref No.	Box Type	Bonding Lead		Drawing Number	
			Type	Size mm ²		
 <p>LBM 1S Only</p>	LBM 1	Gantry Mounted	Single - Core	120	599801	
	LBM 1S	Gantry Mounted	Single - Core	120	599801	
	LBM 2	Gantry Mounted	Single - Core	240	599801	
	LBM 3	Gantry Mounted	Single - Core	300	599805	
	LBM 3A	Gantry Mounted	Single - Core	500	599813	
 <p>No Link Fitted in Service</p>	LBM 4	Buried	Single - Core	120	5999108	
	LBM 26	Buried	Single - Core	240	5999108	
	LBM 5	Gantry Mounted	Single - Core	120	599802	
	LBM 6	Gantry Mounted	Single - Core	240	599802	
	LBM 7	Gantry Mounted	Single - Core	300	599806	
	LBM 7A	Gantry Mounted	Single - Core	500	599806	
	LBM 8	Buried	Single - Core	120	5999100	
	LBM 9	Buried	Single - Core	240	5999100	
	LBM 10	Buried	Single - Core	300	5999100	
	LBM 10A	Buried	Single - Core	500	5999100	
		LBM 11	Gantry Mounted	Concentric	120 / 120	599804
		LBM 12	Gantry Mounted	Concentric	240 / 240	599804
LBM 13		Gantry Mounted	Concentric	300 / 300	599807	
LBM 13A		Gantry Mounted	Concentric	500 / 500	599807	
LBM 14		Buried	Concentric	120 / 120	5999101	
LBM 15		Buried	Concentric	240 / 240	5999101	
LBM 16		Buried	Concentric	300 / 300	5999101	
	LBM 17	Buried	Concentric	120 / 120	599994	
	LBM 18	Buried	Concentric	240 / 240	599994	
	LBM 19	Buried	Concentric	300 / 300	599994	
	LBM 19A	Buried	Concentric	500 / 500	599994	
	LBM 20	Buried	Concentric	120 / 120	599999	
	LBM 21	Buried	Concentric	120 / 120	599999	
	LBM 20A	Buried	Concentric	240 / 240	599999	
	LBM 20B	Buried	Concentric	300 / 300	599999	
	LBM 20C	Buried	Concentric	500 / 500	599999	
	LBM 22	Buried	Concentric	120 / 120	5999102	
	LBM 23	Buried	Concentric	120 / 120	5999102	
	LBM 24	Gantry Mounted	Concentric	120 / 120	599803	
	LBM 24A	Gantry Mounted	Concentric	240 / 240	599803	
	LBM 25	Buried	Concentric	120 / 120	5999109	
	LBM 27	Buried	Concentric	240 / 240	5999109	
	LBM 28	Gantry Mounted	Concentric	120 / 120	599814	
	LBM 29	Buried	Concentric	120 / 120	599995	

Datasheets available on request

Equivalent link pillars available

Single Core Bonding Lead

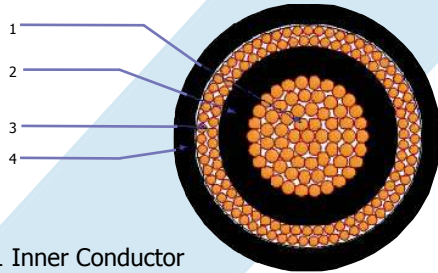


- 1 Conductor
- 2 Insulation

Sizes Available

- 120 sqmm
- 240 sqmm
- 300 sqmm
- 500 sqmm

Concentric Bonding Lead

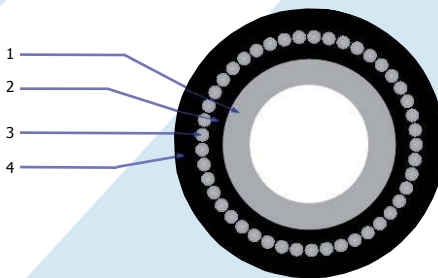


- 1 Inner Conductor
- 2 Inner Insulation
- 3. Outer Conductor
- 4. Outer Insulation

Sizes Available

- 120 sqmm
- 240 sqmm
- 300 sqmm
- 500 sqmm

Armoured Oil Line



- 1 Lead Pipe
- 2 Extruded Bedding
- 3. Galvanised Steel Wire Armour
- 4. Oversheath

Details

- Internal lead pipe diameter 20mm
- Overall diameter 41mm
- Nominal weight 5kg/m

All bonding lead type registered
Datasheets available on request

Prysmian also has the following range of continental accessories approved for UK use.

Accessory	Description	Size Range
CFJ-72	Click-Fit straight joint for 72kV	185 sqmm - 1200 sqmm
CFJX-72	Click-Fit straight joint with sheath interuptor for 72kV	
CFJ-72-T	Click-Fit size transition joint for 72 kV	
CFJX-72-T	Click-Fit size transition joint with sheath interuptor for 72kV	
CFJ-123	Click-Fit straight joint for 110kV	240 sqmm - 1600 sqmm
CFJX-123	Click-Fit staight joint with sheath interuptor for 110kV	
CFJ-123-T	Click-Fit size transition joint for 110kV	
CFJX-123-T	Click-Fit size transition joint with sheath interuptor for 110kV	
CFJ-145	Click-Fit straight joint for 138kV	240 sqmm - 2000 sqmm
CFJX-145	Click-Fit straight joint with sheath interuptor 138kV	
CFJ-145-T	Click-Fit size transition joint for 138kV	
CFJX-145-T	Click-Fit size transition joint with sheath interuptor for 138kV	
OTC-72	Outdoor composite termination for 72kV	185 sqmm - 1200 sqmm
OTC-72-X	Outdoor composite termination with extended creepage for 72kV	
OTC-123	Outdoor composite termination for 110kV	240 sqmm - 2000 sqmm
OTC-123-X	Outdoor composite termination with extended creepage for 110kV	
OTC-145	Outdoor composite termination for 138kV	240sqmm - 2000 sqmm
OTC-145-X	Outdoor composite termination with extended creepage for 138kV	
CFC-72	Dry type Click-Fit GIS termination for 72kV	185 sqmm - 1200 sqmm
CFMT-72	Fluid filled GIS termination for 72kV	
CFC-123	Dry type Click-Fit GIS termination for 110kV	240 sqmm - 1600 sqmm
CFMT-123	Fluid filled GIS termination for 110kV	
CFC-145	Dry type Click-Fit GIS termination for 138kV	240 sqmm - 1600 sqmm
CFMT-145	Fluid filled GIS termination for 138kV	

Datasheets available on request

Service Business Unit

The Services Business Unit is a dedicated resource within Prysmian for the provision of maintenance on high voltage cable systems. Prysmian has many decades of experience in the installation, maintenance and repair of fluid filled cables and as such can provide expertise in relation to all aspects of fluid filled networks.

Services include

- Pump ups of fluid filled circuits
- Cable fault location and repair
- Circuit condition assessments
- Engineering feasibility studies

PFT Leak Detection Services

The Services Business Unit is at the forefront of non-invasive detection of leaks from fluid filled cables. A leak is the first sign that a fluid filled cable is damaged. Left alone the cable will run dry and fail, requiring expensive cable replacement. Topping up the cables with more cable fluid will prevent the cables running dry, but now cable fluid is being pumped directly into the environment.

Prysmian PFT solutions is here to help – Your 3 step guide to repairing leaking cables

1. Inject the cable circuit with cable oil containing the PFT tracer
2. Cover the cable route (by van or foot) 'sniffing' for traces of the PFT from the leak, using a sophisticated chemical detector
3. Once the PFT 'hot spot' has been located, excavate down and repair the cable in the conventional manner.



Prysmian PFT Detection Van



Prysmian is the only operative who can provide the complete service

Inject – Detect – Repair

HV Testing

The Services Business Unit is the only organisation with UK based mobile high voltage test equipment. Available at competitive rates, Prysmian has two mobile test trailers that can independently test circuits at 66kV/132kV or combined, test circuits at 275/400kV. Experienced test engineers are available to discuss test requirements, assess site conditions and help with test planning prior to visiting site with the test equipment



Prysmian HV Test Equipment

- HV DC testing
- AC testing from 50kV to 400kV
- Partial discharge monitoring
- Sheath fault location

Services Business Unit – Operational 24/7/365 – for all your emergency needs
Call 0845 400 - 2 -132



In response to customer demand, Prysmian has compiled a package of products suitable for the majority of 132 kV cabling requirements. These products are available "off the shelf". Ideal for emergency situations where products are required urgently, or for projects where cable demand would be below minimum manufacturing quantities.

Problem Solver

Emergency

The XLPE Xpress service is ideal if you experience any of the following emergency situations:

- Breakdown
- Supplier Letdown
- System Redesign
- Temporary Diversion

Planned

Also ideal for situations where there is only a small cable requirement or where lead time exceeds project requirements.

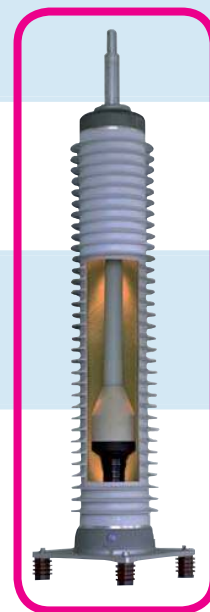
Products

The standard product portfolio is:

- 132 kV XLPE cable 630mm² Cu/Pb sheath 25kA/3s
- 132 kV XLPE cable 1000mm² Cu/Pb sheath 40kA/3s
- Composite Outdoor Terminations - to suit above cables
- Single Core Transition Joints - to suit above cables
- Three Core Transition Joints - to suit above cables
- Link Boxes
- Bonding Lead

All items offered fully comply with the relevant British Standards, for the majority of requirements within the UK

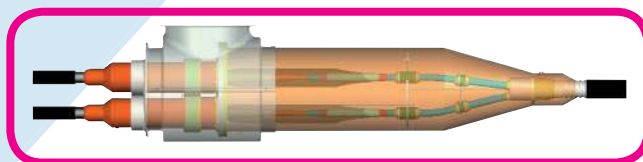
Equipment is supported by the expertise of Prysmian design engineering



132 kV Composite Termination



132 kV XLPE Cable



132 kV Transition Joint



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