NISHI DENSEN

Branch Cable System (Pre-Fabricated)

Quality Assured

Contents

About NSD

Trusted Solutions Since 2003

Since its establishment in 2003, Nishi Densen Sdn Bhd, also known as NSD, is proud to have supplied Branch Cable Systems for a large number of high-rise buildings and tunnel projects across Asia and in the Middle East.

NSD specialises in Branch Cable Systems which can be customised to suit your project requirements. Our dedicated sales and design professionals are always ready to assist.

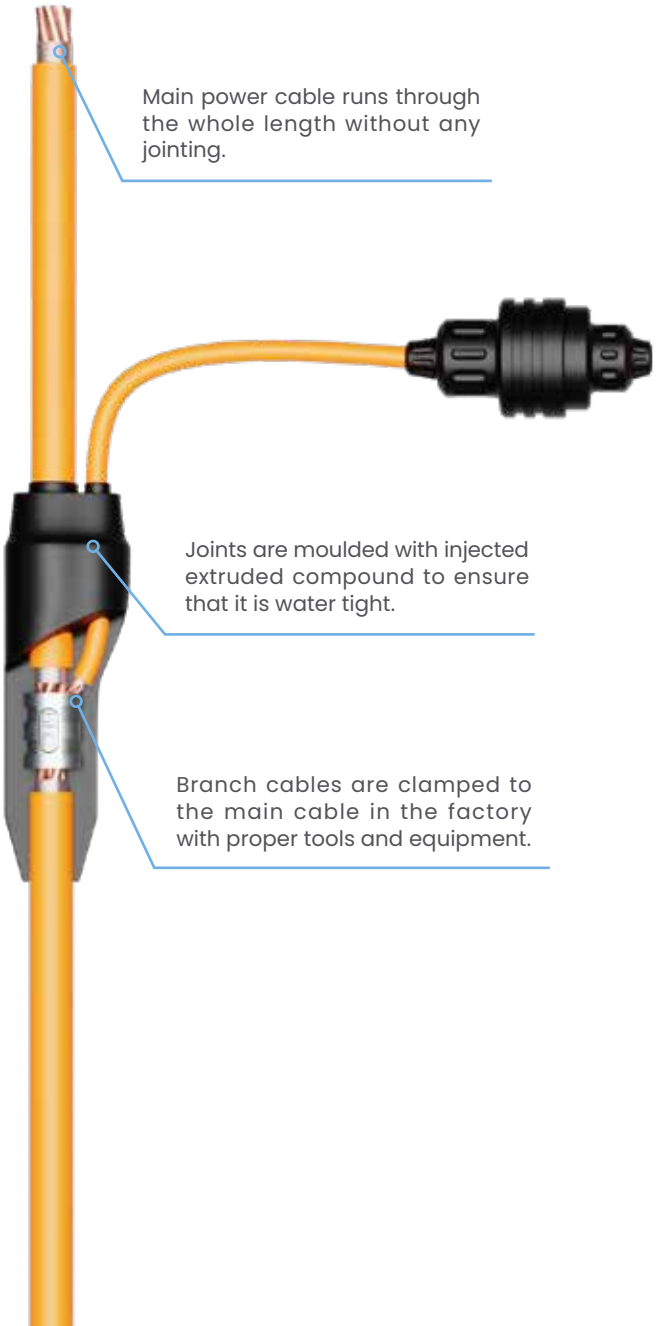
NSD's Branch Cable System is assembled in a controlled factory environment, greatly reducing installation time and eliminating the risks associated with terminating cables on site. The modular systems that we produce in our dedicated facility are assembled and tested according to the highest standards by highly skilled professionals.

Quality Assured

- Uniformity of mould thickness is ensured, with no voids or cracks in the mould.
- Factory pre-terminated and 100% pre-tested before shipment.
- Manufactured in compliance with IEC60754 & IEC61034. Can be made fire-resistant compliant to BS6387 (C,W,Z) and water-resistant compliant to IEC60529 (IP68)

Customisable Solutions

- Can be fitted with cables using copper or aluminium conductors based on your requirements.
- We also offer armoured, single core and multicore cables, and fire-resistant solutions for our branch cable system.
- Can be pre-fitted with fuse-isolated branches to prevent system outages in during emergency events.
- Can be pre-fitted with BS6387 (C,W,Z) proprietary fire-resistant plug and play safety connector kits.



International Certifications

Advantages of NSD Branch Cable Systems

Relentless Commitment to Quality

As the modern day economy brings about rapid changes in the technological environment, the requirements for building infrastructure are evolving with more emphasis placed on the electrical power distribution system.

Thus, the demand for more cost-effective yet efficient and reliable power distribution solution is increasing exponentially alongside the rising costs of construction.

At NSD, we understand that time is of the essence for every project. Our branch cable systems are designed to achieve cost and time efficiency without having to sacrifice on the quality and compromising on the integrity of the electrical distribution network.

Reduced Installation Time

Our branch cables are ready for installation upon delivery to the site, saving on the time and labour required for site fabrication.

Drums are used to store our branch cables to facilitate delivery and ease installation process. This also simplifies the logistics management at site to prevent delays in installation schedule.

Cost Effective

With the joints prefabricated, installation of our branch cable system does not require costly skilled labour to do the joint fabrication on site. At the same time, material wastage during site fabrication is prevented.

Cables may be fixed to walls with cleats or brackets, eliminating the need for costly trunking.

Safe & Reliable

Our prefabrication factory environment follows stringent quality control standards certified by a third party. All our branch cables are tested in accordance to various international safety standards before it is delivered to site for installation.

Issues associated with human error during site fabrication is also eliminated.

Easy Phase Identification

Both the main cables and branch cables can be colour-coded for easy phase identification upon request.

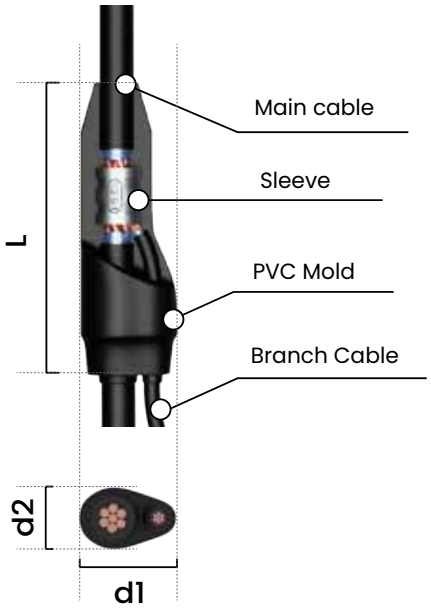
Highly Durable & Weather Resistant

Prevent humidity-induced issues caused by wet conditions or humid environment with our IP68-rated branch cable system which is completely airtight and waterproof .

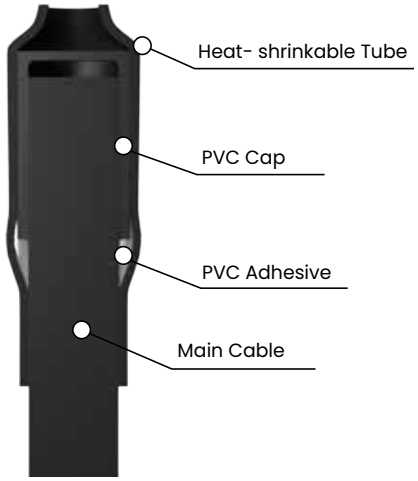
Branch Joint Specifications

Single / Multi-Core Modular Cable Systems

Branch Mould



Top End



One Branch

Main Cable	Branch Cable	Dimensions (Approx.)			Number of Plate
	Min - Max				
Size (mm^2)	Size (mm^2)	d1 (mm)	d2 (mm)	L (mm)	
10	6 – 10	40	35	100	M-00
16	6 – 16				
25	6 – 25				
35	10 – 25				
50	16 – 25	49	41	110	M-01
70	16 – 35				
95	16 – 50				
120	16 – 95	60	47	130	M-02
150	16 – 95				
185	16 – 95				
240	16 – 120	72	56	136	M-03
300	16 – 120				
400	25 – 120				
500	25 – 240	79	52	140	M-04
630	25 – 240				
800	25 – 240	94	78	155	M-05
1000	25 – 240				

Two Branches

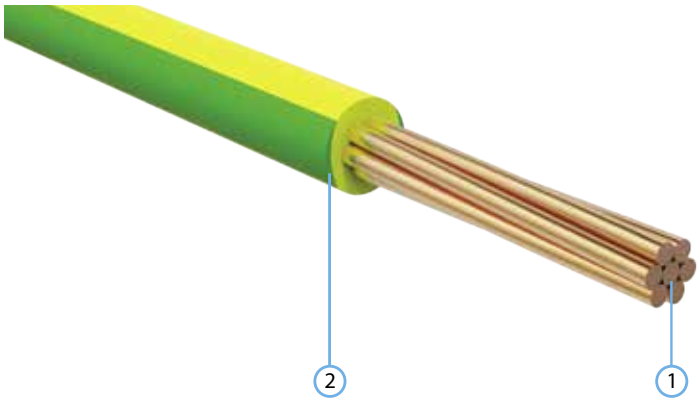
Main Cable	Branch Cable	Dimensions (Approx.)			Number of Plate
	Min - Max				
Size (mm^2)	Size (mm^2)	d1 (mm)	d2 (mm)	L (mm)	
35	10 – 16	60	47	130	M-02
50	10 – 16				
70	10 – 16				
95	10 – 16				
120	10 – 25				

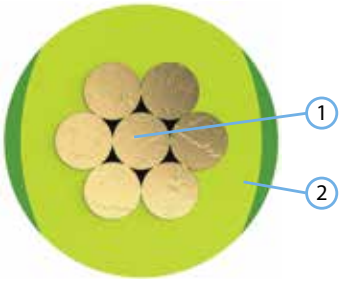
Cable Specifications

PVC Insulated Non-sheathed Cables

CU / PVC (SINGLE CORE)

PVC Insulated, Non-Sheathed Cable, 450/750V, SS358-3, BS EN50525-2-31, IEC60227-3, MS 2112-3





Component
1. Plain Annealed Copper Wire
2. PVC Compound

CONSTRUCTION

Conductor:	Plain Annealed Copper, Class 2 Stranded Circular or Compacted
Insulation:	Polyvinyl Chloride (PVC) Compound Type PVC/C
Insulation Colour:	Black, Green/Yellow, Red, Yellow, Green, Blue, White, Brown, Grey or Others

ELECTRICAL CHARACTERISTICS

Operating Voltage, Uo/U:	450/750V
Operating Temperature:	-15°C to 70°C
Final Short Circuit Temperature:	160°C for cable ≤ 300mm^2 140°C for cable > 300mm^2
Test Voltage:	2.5kV for 5 minutes

REFERENCE STANDARDS

Design Specification:	SS358-3, BS EN50525-2-31, IEC60227-3, MS2112-3
Conductor:	IEC60228, BS EN60228
Flame Retardancy:	IEC60332-1, BS EN60332-1

INSTALLATION REFERENCE

Min. Bending Radius (mm):	6 x cable overall diameter
Max. Pulling Tension (N/mm^2):	50

	Nominal Conductor Area (mm^2)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	Mean Overall Diameter (Upper Limit) (mm)	Approximate Weight (kg/km)
SINGLE CORE	1 x 1.5	7 / 0.53	0.7	3.4	22.7
	1 x 2.5	7 / 0.67	0.8	4.2	34.0
	1 x 4	7 / 0.85	0.8	4.8	50.0
	1 x 6	7 / 1.04	0.8	5.4	70.9
	1 x 10	7 / 1.35	1.0	6.8	117.5
	1 x 16	7 / 1.70	1.0	8.0	177.4
	1 x 25	7 / 2.14	1.2	9.8	282.0
	1 x 35	7 / 2.52	1.2	11.0	380.3
	1 x 35	19 / 1.53	1.2	11.0	376.0
	1 x 50	19 / 1.78	1.4	13.0	515.8
	1 x 70	19 / 2.14	1.4	15.0	726.4
	1 x 95	19 / 2.52	1.6	17.0	1002.9
	1 x 120	37 / 2.03	1.6	19.0	1251.0
	1 x 150	37 / 2.25	1.8	21.0	1538.7
	1 x 185	37 / 2.52	2.0	23.5	1927.9
	1 x 240	61 / 2.25	2.2	26.5	2522.6
	1 x 300	61 / 2.52	2.4	29.5	3155.2
	1 x 400	61 / 2.85	2.6	33.5	4018.0
	1 x 500	61 / 3.20	2.8	37.0	5044.9
	1 x 630	127 / 2.52	2.8	41.0	6443.4

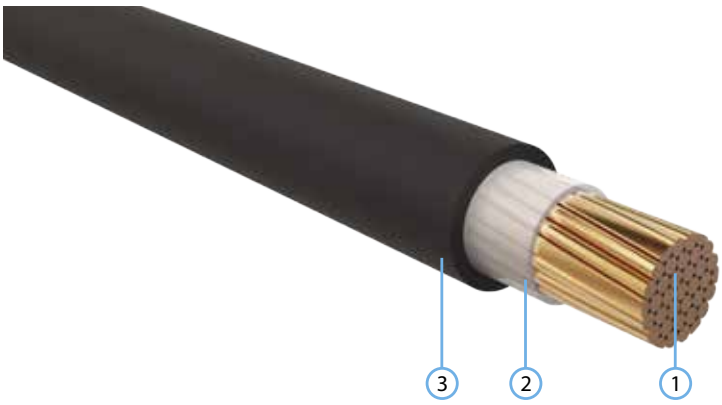
For current rating and voltage drop, please refer to Table 1.1 and 1.2 on Page 13.

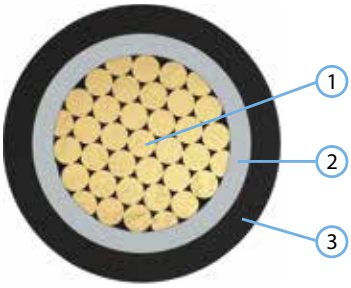
Cable Specifications

XLPE Insulated PVC Sheathed Cables

CU / XLPE / PVC (SINGLE CORE)

XLPE Insulated, PVC Sheathed Cable, 600/1000V, IEC60502-1





Component
1. Plain Annealed Copper Wire
2. Cross-linked Polyethylene Compound
3. PVC Compound

CONSTRUCTION

Conductor:	Plain Annealed Copper, Class 2 Stranded Circular or Compacted
Insulation:	Cross-linked Polyethylene (XLPE) Compound
Insulation Colour:	Natural
Outer Sheath:	Polyvinyl Chloride (PVC) Compound Type PVC/ST2
Outer Sheath Colour:	Black

ELECTRICAL CHARACTERISTICS

Operating Voltage, Uo/U:	600/1000V
Operating Temperature:	-15°C to 90°C
Final Short Circuit Temperature:	250°C
Test Voltage:	3.5kV for 5 minutes

REFERENCE STANDARDS

Design Specification:	IEC60502-1
Conductor:	IEC60228, BS EN60228
Flame Retardancy:	IEC60332-1, BS EN60332-1

INSTALLATION REFERENCE

Min. Bending Radius (mm):	8 x cable overall diameter
Max. Pulling Tension (N/mm^2):	50

	Nominal Conductor Area (mm^2)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	Cable Overall Diameter (mm)	Approximate Weight (kg/km)
SINGLE CORE	1 x 16	7 / 1.70	0.7	9.6	217
	1 x 25	7 / 2.14	0.9	11.3	322
	1 x 35	7 / 2.52	0.9	12.5	423
	1 x 50	19 / 1.78	1.0	14.1	551
	1 x 70	19 / 2.14	1.1	16.1	767
	1 x 95	19 / 2.52	1.1	18.2	1037
	1 x 120	37 / 2.03	1.2	20.0	1287
	1 x 150	37 / 2.25	1.4	22.2	1577
	1 x 185	37 / 2.52	1.6	24.4	1957
	1 x 240	61 / 2.25	1.7	27.5	2536
	1 x 300	61 / 2.52	1.8	30.3	3155
	1 x 400	61 / 2.85	2.0	33.9	4007
	1 x 500	61 / 3.20	2.2	37.6	5020
	1 x 630	127 / 2.52	2.4	42.4	6522
	1 x 800	127 / 2.85	2.6	47.3	8279
	1 x 1000	127 / 3.20	2.8	52.4	10367

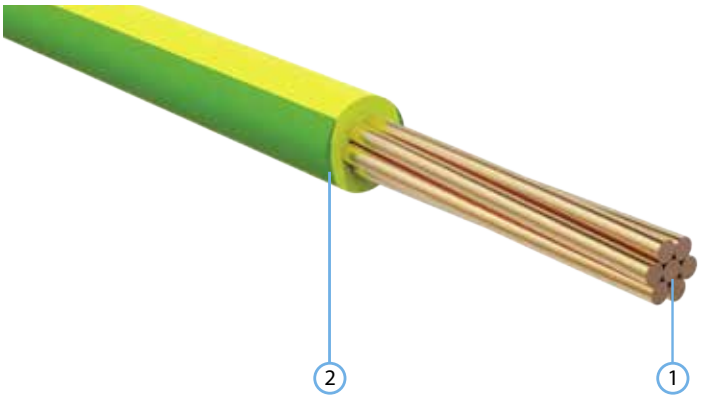
For current rating and voltage drop, please refer to Table 2.1 and 2.2 on Page 14.

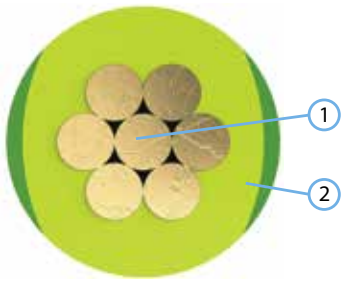
Cable Specifications

LSZH Insulated Non-sheathed Cables

CU / LSZH (SINGLE CORE)

Crossed-Linked Polyolefin LSZH Insulated, Non-Sheathed Cable, 450/750V or 600/1000V*, BS EN 50525-3-41, H07Z-R





Component
1. Plain Annealed Copper Wire
2. Cross-linked Polyolefin LSZH Compound

CONSTRUCTION

Conductor:	Plain Annealed Copper, Class 2 Stranded Circular or Compacted
Insulation:	Cross-linnked Polyolefin Low Smoke Zero Halogen (LSZH) Compound
Insulation Colour:	Black, Green/Yellow, Red, Yellow, Green, Blue, White, Brown, Grey or Others

ELECTRICAL CHARACTERISTICS

Operating Voltage, Uo/U:	450/750V or 600V/1000V*
Operating Temperature:	-15°C to 90°C
Final Short Circuit Temperature:	250°C for cable ≤ 300mm^2
Test Voltage:	2.5kV for 5 minutes (450/750V) 3.5kV for 5 minutes (600/1000V)

REFERENCE STANDARDS

Design Specification:	BS EN50525-3-41, H07Z-R
Conductor:	IEC60228, BS EN60228
Flame Retardancy:	IEC60332-3-22, BS EN60332-3-22
Low Smoke Zero Halogen:	IEC61034-2, BS EN61034-2 IEC60754-1, IEC 60754-2 BS EN60754-1, BS EN60754-2

INSTALLATION REFERENCE

Min. Bending Radius (mm):	6 x cable overall diameter
Max. Pulling Tension (N/mm^2):	50

	Nominal Conductor Area (mm^2)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	Mean Overall Diameter (Upper Limit) (mm)	Approximate Weight (kg/km)
SINGLE CORE	1 x 1.5	7 / 0.53	0.7	3.0	22
	1 x 2.5	7 / 0.67	0.8	3.6	34
	1 x 4	7 / 0.85	0.8	4.2	51
	1 x 6	7 / 1.04	0.8	4.7	71
	1 x 10	7 / 1.35	1.0	5.9	114
	1 x 16	7 / 1.70	1.0	6.7	171
	1 x 25	7 / 2.14	1.2	8.3	268
	1 x 35	7 / 2.52	1.2	9.4	364
	1 x 50	19 / 1.78	1.4	11.0	492
	1 x 70	19 / 2.14	1.4	12.7	695
	1 x 95	19 / 2.52	1.6	14.7	958
	1 x 120	37 / 2.03	1.6	16.2	1196
	1 x 150	37 / 2.25	1.8	18.0	1471
	1 x 185	37 / 2.52	2.0	20.2	1845
	1 x 240	61 / 2.25	2.2	23.2	2417
	1 x 300	61 / 2.52	2.4	25.8	3023
	1 x 400	61 / 2.85	2.6	29.2	3855
	1 x 500	61 / 3.20	2.8	32.9	4846
	1 x 630	127 / 2.52	2.8	38.4	6267

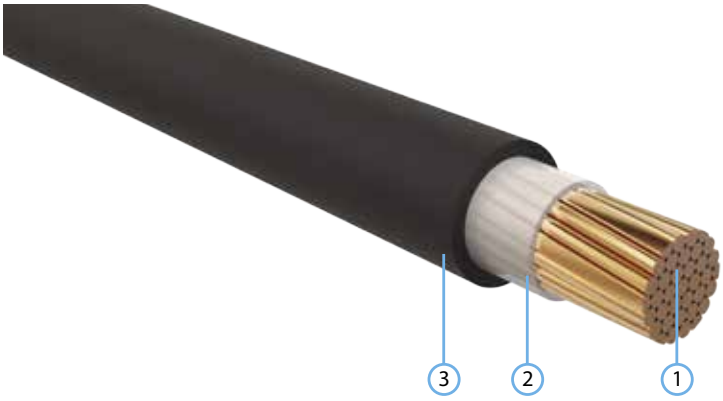
Note: For FRT-H cables, Cross-Linked LSZH Compound will be used as the insulation material.
For current rating and voltage drop, please refer to Table 1.1 and 1.2 on Page 13.
*Condition apply.

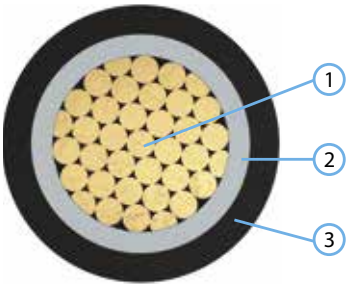
Cable Specifications

XLPE Insulated LSZH Sheathed Cables

CU / XLPE / LSZH (SINGLE CORE)

XLPE Insulated, LSZH Sheathed Cable, 600/1000V, IEC60502-1





Component
1. Plain Annealed Copper Wire
2. Cross-linked Polyethylene Compound
3. Low Smoke Zero Halogen (LSZH) Compound

CONSTRUCTION

Conductor:	Plain Annealed Copper, Class 2 Stranded Circular or Compacted
Insulation:	Cross-linked Polyethylene (XLPE) Compound
Insulation Colour:	Natural
Outer Sheath:	Low Smoke Zero Halogen (LSZH) Compound with Anti-Termite Characteristic and UV Resistant
Outer Sheath Colour:	Black

ELECTRICAL CHARACTERISTICS

Operating Voltage, Uo/U:	600/1000V
Operating Temperature:	-15°C to 90°C
Final Short Circuit Temperature:	250°C
Test Voltage:	3.5kV for 5 minutes

REFERENCE STANDARDS

Design Specification:	IEC60502-1
Conductor:	IEC60228, BS EN60228
Flame Retardancy:	IEC60332-3-22, BS EN60332-3-22
Low Smoke Zero Halogen:	IEC61034-2, BS EN61034-2 IEC60754-1, IEC60754-2 BS EN60754-1, BS EN60754-2

INSTALLATION REFERENCE

Min. Bending Radius (mm):	8 x cable overall diameter
Max. Pulling Tension (N/mm^2):	50

	Nominal Conductor Area (mm^2)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	Cable Overall Diameter (mm)	Approximate Weight (kg/km)
SINGLE CORE	1 x 1.5	7 / 0.53	0.7	6.1	75
	1 x 2.5	7 / 0.67	0.7	6.5	89
	1 x 4	7 / 0.85	0.7	7.1	110
	1 x 6	7 / 1.04	0.7	7.6	136
	1 x 10	7 / 1.35	0.7	8.6	186
	1 x 16	7 / 1.70	0.7	9.6	254
	1 x 25	7 / 2.14	0.9	11.3	367
	1 x 35	7 / 2.52	0.9	12.5	472
	1 x 50	19 / 1.78	1.0	14.1	612
	1 x 70	19 / 2.14	1.1	16.1	837
	1 x 95	19 / 2.52	1.1	18.2	1114
	1 x 120	37 / 2.03	1.2	20.0	1374
	1 x 150	37 / 2.25	1.4	22.2	1675
	1 x 185	37 / 2.52	1.6	24.4	2066
	1 x 240	61 / 2.25	1.7	27.5	2661
	1 x 300	61 / 2.52	1.8	30.3	3291
	1 x 400	61 / 2.85	2.0	33.9	4159
	1 x 500	61 / 3.20	2.2	37.6	5188
	1 x 630	127 / 2.52	2.4	42.4	6638
	1 x 800	127 / 2.85	2.6	47.3	8394
	1 x 1000	127 / 3.20	2.8	52.4	10479

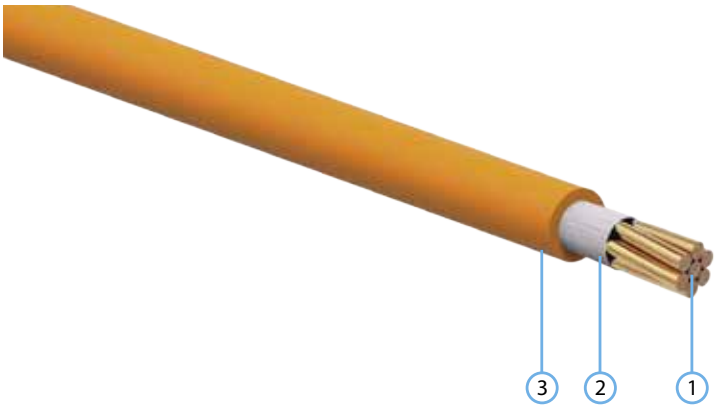
For current rating and voltage drop, please refer to Table 2.1 and 2.2 on Page 14.

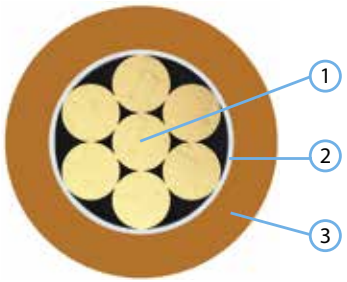
Cable Specifications

LSZH Insulated Non-sheathed Fire Resistant Cables

CU / MGT / LSZH (SINGLE CORE)

Mica Taped, Cross-linked Polyolefin LSZH Insulated, Non-Sheathed Cable, 450/750V or 600/1000V*, BS EN50525-3-41





Component
1. Plain Annealed Copper Wire
2. Mica Tape
3. Cross-linked Polyolefin Low Smoke Zero Halogen Compound

CONSTRUCTION

Conductor:	Plain Annealed Copper, Class 2 Stranded Circular or Compacted
Fire Barrier:	Mica Tape (MGT)
Insulation:	Cross-linked Polyolefin Low Smoke Zero Halogen (LSZH) Compound
Insulation Colour:	Orange or Others

ELECTRICAL CHARACTERISTICS

Operating Voltage, Uo/U:	450/750V or 600V/1000V*
Operating Temperature:	-15°C to 90°C
Final Short Circuit Temperature:	250°C for cable ≤ 300mm²
Test Voltage:	2.5kV for 5 minutes (450/750V) 3.5kV for 5 minutes (600/1000V)

REFERENCE STANDARDS

Design Specification:	BS EN50525-3-41, H07Z-R
Conductor:	IEC60228, BS EN60228
Fire Resistance:	BS6387 (C,W,Z), SS299 (C), IEC60331
Flame Retardancy:	IEC60332-3-22, BS EN60332-3-22
Low Smoke Zero Halogen:	IEC61034-2, BS EN61034-2 IEC60754-1, IEC 60754-2 BS EN60754-1, BS EN60754-2

INSTALLATION REFERENCE

Min. Bending Radius (mm):	8 x cable overall diameter
Max. Pulling Tension (N/mm²):	50

	Nominal Conductor Area (mm²)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	Mean Overall Diameter (Upper Limit) (mm)	Approximate Weight (kg/km)
SINGLE CORE	1 x 1.5	7 / 0.53	0.7	4.1	32
	1 x 2.5	7 / 0.67	0.8	4.8	46
	1 x 4	7 / 0.85	0.8	5.3	62
	1 x 6	7 / 1.04	0.8	5.9	84
	1 x 10	7 / 1.35	1.0	7.3	135
	1 x 16	7 / 1.70	1.0	8.3	195
	1 x 25	7 / 2.14	1.2	10.1	299
	1 x 35	7 / 2.52	1.2	11.2	397
	1 x 50	19 / 1.78	1.4	12.9	533
	1 x 70	19 / 2.14	1.4	14.7	740
	1 x 95	19 / 2.52	1.6	17.0	1015
	1 x 120	37 / 2.03	1.6	18.7	1257
	1 x 150	37 / 2.25	1.8	20.6	1524
	1 x 185	37 / 2.52	2.0	22.9	1926
	1 x 240	61 / 2.25	2.2	25.9	2510
	1 x 300	61 / 2.52	2.4	28.7	3131
	1 x 400	61 / 2.85	2.6	32.1	3975
	1 x 500	61 / 3.20	2.8	35.6	4978
	1 x 630	127 / 2.52	2.8	39.6	6333

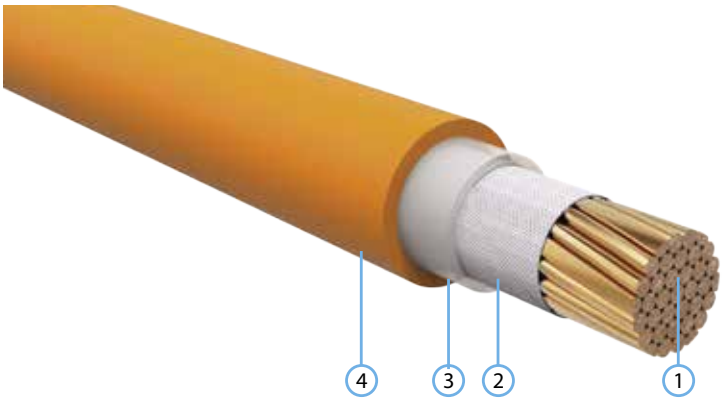
Note: For FRT-H cables, Cross-Linked LSZH Compound will be used as the insulation material.
For current rating and voltage drop, please refer to Table 1.1 and 1.2 on Page 13.
*Condition apply.

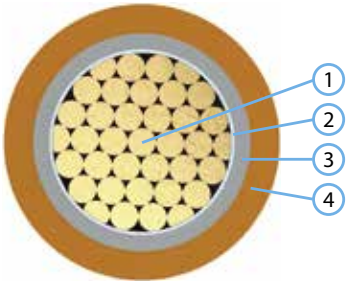
Cable Specifications

XLPE Insulated LSZH Sheathed Fire Resistant Cables

CU / MGT / XLPE / LSZH (SINGLE CORE)

Mica Taped, XLPE Insulated, LSZH Sheathed Cable, 600/1000V, IEC60502-1





Component
1. Plain Annealed Copper Wire
2. Mica Tape
3. Cross-linked Polyethylene Compound
4. Low Smoke Zero Halogen (LSZH) Compound

CONSTRUCTION

Conductor:	Plain Annealed Copper, Class 2 Stranded Circular or Compacted
Fire Barrier:	Mica Tape (MGT)
Insulation:	Cross-linked Polyethylene (XLPE) Compound
Insulation Colour:	Natural
Outer Sheath:	Low Smoke Zero Halogen (LSZH) Compound with Anti-Termite Characteristic and UV Resistant
Outer Sheath Colour:	Orange or Others

ELECTRICAL CHARACTERISTICS

Operating Voltage, Uo/U:	600/1000V
Operating Temperature:	-15°C to 90°C
Final Short Circuit Temperature:	250°C
Test Voltage:	3.5kV for 5 minutes

REFERENCE STANDARDS

Design Specification:	IEC60502-1
Conductor:	IEC60228, BS EN60228
Fire Resistance:	BS6387 (C,W,Z), SS299(C), IEC60331
Flame Retardancy:	IEC60332-3-22, BS EN60332-3-22
Low Smoke Zero Halogen:	IEC61034-2, BS EN61034-2 IEC60754-1, IEC60754-2 BS EN60754-1, BS EN60754-2

INSTALLATION REFERENCE

Min. Bending Radius (mm):	8 x cable overall diameter
Max. Pulling Tension (N/mm^2):	50

	Nominal Conductor Area (mm^2)	No. and Diameter of Wires (no./mm)	Radial Thickness of Insulation (mm)	Cable Overall Diameter (mm)	Approximate Weight (kg/km)
SINGLE CORE	1 x 1.5	7 / 0.53	0.7	6.1	78
	1 x 2.5	7 / 0.67	0.7	6.5	92
	1 x 4	7 / 0.85	0.7	7.1	114
	1 x 6	7 / 1.04	0.7	7.6	141
	1 x 10	7 / 1.35	0.7	8.6	192
	1 x 16	7 / 1.70	0.7	9.6	261
	1 x 25	7 / 2.14	0.9	11.3	376
	1 x 35	7 / 2.52	0.9	12.5	482
	1 x 50	19 / 1.78	1.0	14.1	624
	1 x 70	19 / 2.14	1.1	16.1	851
	1 x 95	19 / 2.52	1.1	18.2	1131
	1 x 120	37 / 2.03	1.2	20.0	1393
	1 x 150	37 / 2.25	1.4	22.2	1695
	1 x 185	37 / 2.52	1.6	24.4	2088
	1 x 240	61 / 2.25	1.7	27.5	2687
	1 x 300	61 / 2.52	1.8	30.3	3319
	1 x 400	61 / 2.85	2.0	33.9	4190
	1 x 500	61 / 3.20	2.2	37.6	5222
	1 x 630	127 / 2.52	2.4	42.4	6675
	1 x 800	127 / 2.85	2.6	47.3	8436
	1 x 1000	127 / 3.20	2.8	52.4	10525

For current rating and voltage drop, please refer to Table 2.1 and 2.2 on Page 14.

Cable Technical Data

Current Rating & Voltage Drop for Non-sheathed Cables

MS 2112-3
SS358-3
IEC60227-3
BS EN50525-2-31
IEC60502-1
BS7671

Table 1.1: Current Carrying Capacity (IN AMPERES)

Single-core copper conductor, 70°C PVC insulated, non-armoured, with or without sheathed cables
Ambient air temperature: 30°C, Ambient ground temperature: 20°C, Soil thermal resistivity (cable buried in ground): 2.5K.m/W

Conductor Cross-Sectional Area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical)				
							Touching			Spaced by One Cable Diameter	
	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, 3-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, 3-Phase a.c.	2 Cables, Single-Phase a.c. or d.c. Flat and Touching	3 or 4 Cables, 3-Phase a.c. Flat and Touching or Trefoil	2 Cables, Single-Phase a.c. or d.c. Flat	3 Cables, 3-Phase a.c. Flat	3 Cables, 3-Phase a.c. Trefoil	2 Cables, Single-Phase a.c. or d.c., or 3 Cables, 3-Phase a.c. Flat Horizontal	2 Cables, Single-Phase a.c. or d.c., or 3 Cables, 3-Phase a.c. Flat Vertical
mm²	A	A	A	A	A	A	A	A	A	A	A
1.0	11	10.5	13.5	12	15.5	14	–	–	–	–	–
1.5	14.5	13.5	17.5	15.5	20	18	–	–	–	–	–
2.5	20	18	24	21	27	25	–	–	–	–	–
4	26	24	32	28	37	33	–	–	–	–	–
6	34	31	41	36	47	43	–	–	–	–	–
10	46	42	57	50	65	59	–	–	–	–	–
16	61	56	76	68	87	79	–	–	–	–	–
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162
50	119	108	151	134	182	167	196	174	167	219	197
70	151	136	192	171	234	214	251	225	216	281	254
95	182	164	232	207	284	261	304	275	264	341	311
120	210	188	269	239	330	303	352	321	308	396	362
150	240	216	300	262	381	349	406	372	356	456	419
185	273	245	341	296	436	400	463	427	409	521	480
240	321	286	400	346	515	472	546	507	485	615	569
300	367	328	458	394	594	545	629	587	561	709	659
400	–	–	546	467	694	634	754	689	656	852	795
500	–	–	626	533	792	723	868	789	749	982	920
630	–	–	720	611	904	826	1005	905	855	1138	1070
800	–	–	–	–	1030	943	1086	1020	971	1265	1188
1000	–	–	–	–	1154	1058	1216	1149	1079	1420	1337

Table 1.2: Voltage Drop (IN mV/A/m)

Single-core copper conductor, 70°C PVC insulated, non-armoured, with or without sheathed cables
Ambient air temperature: 30°C, Conductor operating temperature: 70°C

Conductor Cross-Sectional Area	2 Cables d.c.	2 Cables, Single-Phase a.c.						3 or 4 Cables, 3-Phase a.c.													
		Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C & F (clipped direct, on tray or in free air)						Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C & F (clipped direct, on tray or in free air)							
					Cables Touching			Cables Spaced*						Cables Touching, Trefoil			Cables Touching, Flat			Cables Spaced*, Flat		
mm²	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.0	44	44			44			44			38			38			38			38		
1.5	29	29			29			29			25			25			25			25		
2.5	18	18			18			18			15			15			15			15		
4	11	11			11			11			9.5			9.5			9.5			9.5		
6	7.3	7.3			7.3			7.3			6.4			6.4			6.4			6.4		
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8			3.8		
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4			2.4		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.24	1.10	1.10	0.32	1.15
50	0.93	0.95	0.30	1.00	0.93	0.190	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.80	0.165	0.82	0.80	0.24	0.84	0.80	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.160	0.57	0.55	0.24	0.60	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.180	0.50	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.40	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.150	0.36	0.32	0.23	0.40	0.32	0.30	0.44
150	0.29	0.31	0.27	0.41	0.30	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.150	0.30	0.26	0.23	0.34	0.26	0.30	0.40
185	0.23	0.25	0.27	0.37	0.24	0.170	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.30	0.36
240	0.180	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.160	0.145	0.22	0.160	0.22	0.27	0.160	0.29	0.34
300	0.145	0.160	0.29	0.31	0.150	0.165	0.22	0.150	0.25	0.29	0.14	0.23	0.27	0.130	0.140	0.190	0.130	0.22	0.25	0.130	0.29	0.32
400	0.105	0.130	0.26	0.29	0.120	0.160	0.20	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.140	0.175	0.105	0.21	0.24	0.100	0.29	0.31
500	0.086	0.110	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.10	0.22	0.25	0.086	0.135	0.160	0.086	0.21	0.23	0.081	0.29	0.30
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.150	0.072	0.21	0.22	0.066	0.28	0.29
800	0.053	–			0.068	0.150	0.165	0.061	0.24	0.25	–			0.060	0.130	0.145	0.060	0.21	0.22	0.053	0.28	0.29
1000	0.042	–			0.059	0.150	0.160	0.050	0.24	0.24	–			0.052	0.130	0.140	0.052	0.20	0.21	0.044	0.28	0.28

Note: *Spacings larger than one cable diameter will result in a larger voltage drop.

Cable Technical Data

Current Rating & Voltage Drop for Sheathed Cables

IEC60502-1
BS EN50525-3-41
*based on 600/1000V application
BS7889
BS7671

Table 2.1: Current Carrying Capacity (IN AMPERES)

Single-core 90°C XLPE / Cross-Linked LSZH / EPR insulated, unarmoured, with or without sheath (PVC / LSZH) cables
Ambient air temperature: 30°C, Ambient ground temperature: 20°C, Soil thermal resistivity (cable buried in ground): 2.5K.m/W

Conductor Cross-Sectional Area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray etc, horizontal or vertical etc)			Reference Method G (in free air)	
							Touching			Spaced by One Cable Diameter	
	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, 3-Phase a.c.	2 Cables, Single-Phase a.c. or d.c.	3 or 4 Cables, 3-Phase a.c.	2 Cables, Single-Phase a.c. or d.c. Flat and Touching	3 Cables, 3-Phase a.c. Flat and Touching or Trefoil	2 Cables, Single-Phase a.c. or d.c. Flat	3 Cables, 3-Phase a.c. Flat	3 Cables, 3-Phase a.c. Trefoil	2 Cables, Single-Phase a.c. or d.c., or 3 Cables, 3-Phase a.c. Flat	
										Horizontal	Vertical
mm²	A	A	A	A	A	A	A	A	A	A	A
1.0	14	13	17	15	19	17.5	–	–	–	–	–
1.5	19	17	23	20	25	23	–	–	–	–	–
2.5	26	23	31	28	34	31	–	–	–	–	–
4	35	31	42	37	46	41	–	–	–	–	–
6	45	40	54	48	59	54	–	–	–	–	–
10	61	54	75	66	81	74	–	–	–	–	–
16	81	73	100	88	109	99	–	–	–	–	–
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	–	–	683	584	868	793	940	868	823	1085	1008
500	–	–	783	666	990	904	1083	998	946	1253	1169
630	–	–	900	764	1130	1033	1254	1151	1088	1454	1362
800	–	–	–	–	1288	1179	1358	1275	1214	1581	1485
1000	–	–	–	–	1443	1323	1520	1436	1349	1775	1671

Note: 1. Where a conductor operates at a temperature exceeding 70°C it must be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature.
2. Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70°C, the current ratings given in the equivalent table for 70°C thermoplastic insulated cables must be used.

Table 2.2: Voltage Drop (IN mV/A/m)

Single-core 90°C XLPE / Cross-Linked LSZH / EPR insulated, unarmoured, with or without sheath (PVC / LSZH) cables
Ambient temperature: 30°C, Conductor operating temperature: 90°C

Conductor Cross-Sectional Area	2 Cables d.c.	2 Cables, Single-Phase a.c.									3 or 4 Cables, 3-Phase a.c.											
		Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C, F & G (clipped direct, on tray or in free air)						Reference Methods A & B (enclosed in conduit or trunking)			Reference Methods C, F & G (clipped direct, on tray or in free air)								
					Cables Touching			Cables Spaced*						Cables Touching, Trefoil			Cables Touching, Flat			Cables Spaced*, Flat		
mm²	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
1.0	46	46			46			46			40			40			40			40		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4	12	12			12			12			10			10			10			10		
6	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.17	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056	–			0.072	0.150	0.170	0.064	0.24	0.25	–			0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045	–			0.063	0.150	0.165	0.054	0.24	0.24	–			0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.23	0.24

Note: *Spacings larger than one cable diameter will result in a larger voltage drop.

Applications

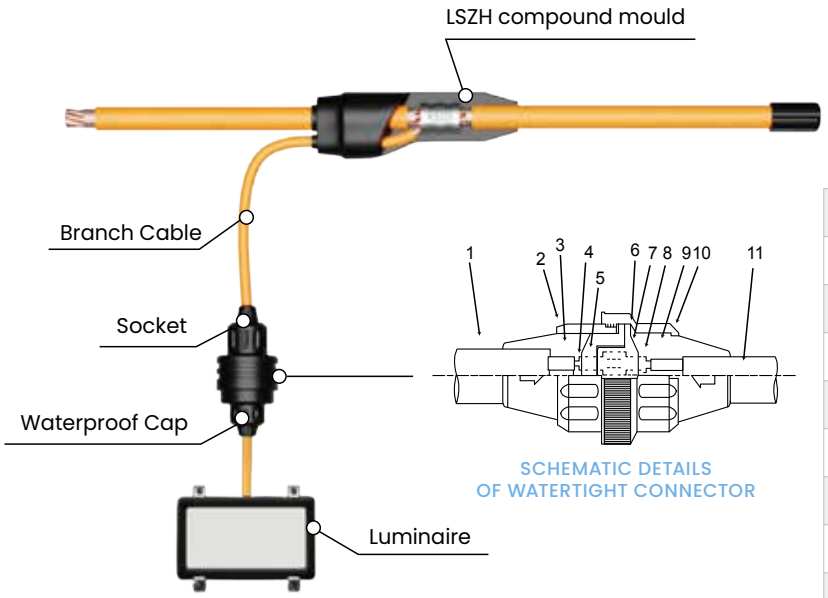
Tunnels & Mining

Our IP68-rated branch cable system can be used in any kind of tunnel, be it pedestrian, road, high-speed rail or urban/suburban metro. Low-smoke, halogen-free and fire-proof rated to BS6387 (C,W,Z) are some of the characteristics of our branch cable, making it suitable for emergency lighting runs and any installation environment where safety is of utmost concern, whilst their simplicity can reduce installation time down by as much as 80% compared to conventional installation techniques.

We can also supply the systems pre-terminated with fireproof connectors to ensure the safety and integrity of the entire cable run.

Illumination Cables with Watertight Connectors

- Each luminaire is fuse protected. In the case where a luminaire is faulty due to any accident, the other luminaires on the same circuit remain unaffected.
- The damaged fitting is easily identifiable and the replacement process is easy with the plug & socket type connector.



SCHEMATIC DETAILS
OF WATERTIGHT CONNECTOR

1	Receptacle-use cable	2PNCT3cx2.0 mm^2
2	Receptacle-use hexagon cap nut	Flame retardant nylon
3	Receptacle-use mould	Chloroprene rubber mould
4	Receptacle pin (male)	BsB
5	Receptacle mould (push)	Chloroprene rubber mould
6	Washer	Flame retardant mould
7	Plug mould (push)	Chloroprene rubber mould
8	Plug pin (female)	BsB
9	Plug mould	Chloroprene rubber mould
10	Plug-use hexagon cap nut	FVCT3cx2.0 mm^2
11	Plug-use cable	Flame retardant cable

Applications

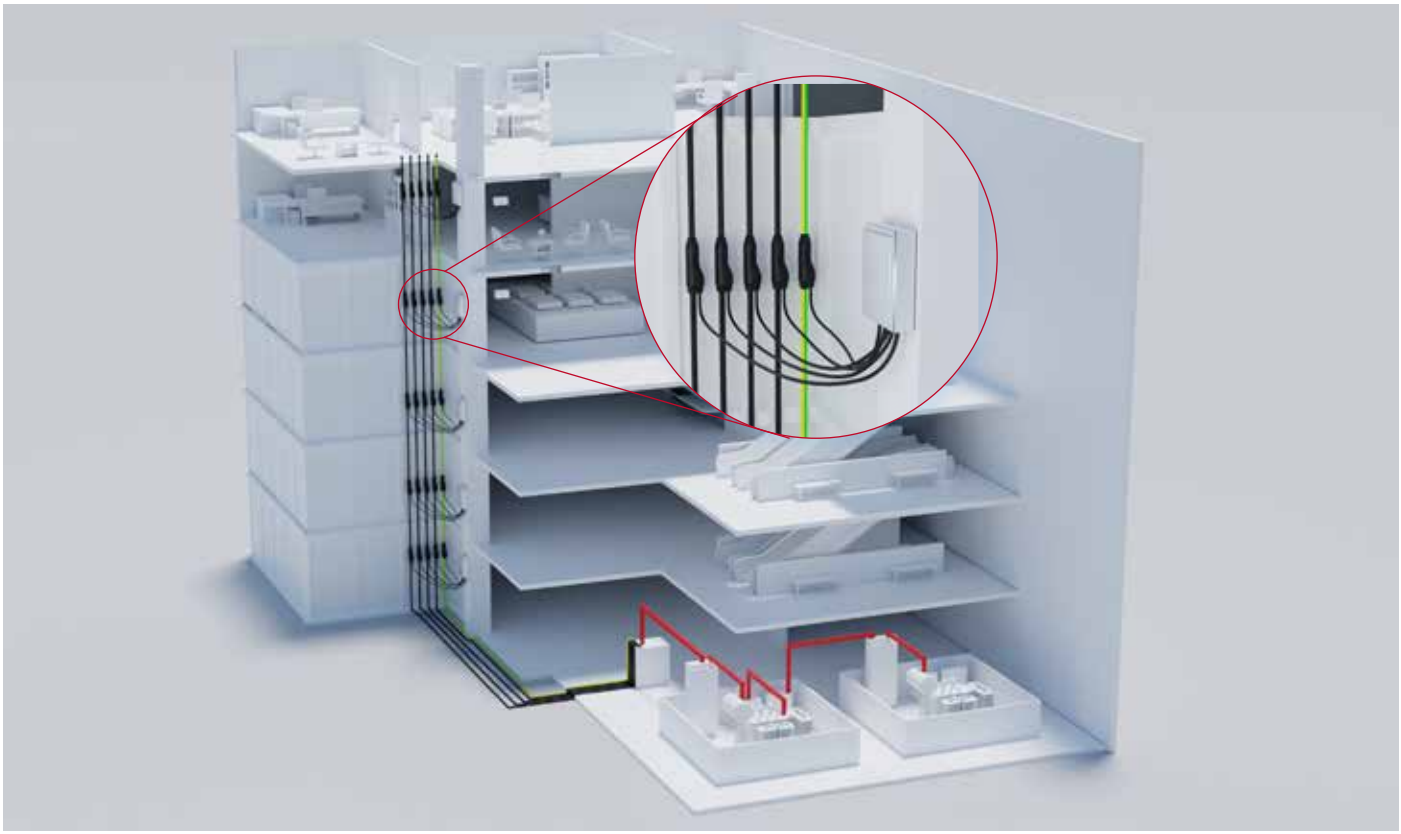
High-Rise Buildings

We have a comprehensive range of single and multi-branch systems to meet the needs of any electrical installation project, be it high-rise multiple-occupancy residential blocks, hospital, commercial, data centres, hotels or mixed-use buildings.

Our modular branch cable systems can be fitted with a wide range of cables including fire-rated cables, armoured cables, anti-termite/anti-rodent or standard PVC cables. Each joint can accommodate from 1 to 8 branches from a single main cable.

As with our other systems, the joints are IP68-rated fully dust and waterproof and can be manufactured to any specification, including British Standard BS6387 (C,W,Z) for fire resistance. Production in our facility currently caters for main cables up to 630mm^2, with a maximum of 8 branches of up to 50mm^2, depending on the configuration required.

System Overview



Branch cables for vertical trunks make it possible to reduce cable laying work significantly while ensuring a high level of reliability, due to the installation of suspension equipment and processing of branch connectors at the factory for use in electrical wiring for buildings and condominiums.

Project References

Customers Who Trusted Our Solutions

Singapore

Singapore Land Transport Authority (LTA) MRT Projects

- CIRCLE LINE
- DOWNTOWN LINE
- THOMSON-EAST COAST LINE
- NORTH-EAST LINE EXTENSION

Singapore Power Grid Projects

- EAST-WEST TUNNEL
- NORTH-SOUTH TUNNEL

Other Building / Infrastructure Projects

- DATA CENTRE PROJECTS
- MULTI-STOREY WAREHOUSE PROJECTS
- CONDOMINIUM PROJECTS

Malaysia

Residential Projects

- BANDAR UTAMA HIGH CLASS CONDO
- CASA TROPICANA, PETALING JAYA
- CONTINENTAL HEIGHTS, KL
- HAMPSHIRE RESIDENCES, KLCC
- TIARA KELANA, KELANA JAYA
- ST. MARY CONDO, KLCC
- SPACE RESIDENCY, JOHOR BAHRU
- SKY TREES SERVICED APARTMENT, JOHOR BAHRU

Commercial / Mixed-Used Projects

- GIANT HYPERMARKET KELANA JAYA
- MANDARIN ORIENTAL HOTEL, KLCC
- GLENMARIE HOLIDAY INN
- E-GATE BUILDING, PENANG

Instituitional Projects

- PRIME MINISTERIAL OFFICES, PUTRAJAYA
- YAYASAN, SELANGOR
- SJK CHUNG HWA, KUCHING SARAWAK

Project References

Customers Who Trusted Our Solutions

Indonesia

Commercial Projects

- MILLENIUM CENTENNIAL CENTER
- MENARA BNI 46 PEJOMPONGAN
- MENARA AIA
- CENTENNIAL TOWER
- BADAN NASIONAL PENANGGULANGAN BENCANA (BNPB)
- GEDUNG KANTOR KEMENTRIAN KELAUTAN & PERIKANAN
- BANK INDONESIA - THAMRIN OFFICE

Residential Projects

- TOKYO RIVERSIDE - PIK 2
- MENARA JAKARTA
- CAPITOL
- THE MANSION @KEMANG APARTMENT
- SUDIRMAN PLAZA OFFICE (INDOFOOD TOWER + PLAZA MARIN)
- PACIFIC PLACE (OFFICE + HOTEL + APARTMENT)
- APARTEMENT SENAYAN RESIDENCE
- APARTEMENT SCBD SUITES

Philippines

- MANDANI BAY TOWER 1 & 2 RESIDENTIAL CONDO, CEBU
- SOUTHKEY PLACE, MANILA
- MEDIAN 1 CONDO, CEBU
- UST SANTA ROSA INNOVATION CENTER, LAGUNA
- CALOOCAN CITY UNIVERSITY, MANILA
- CASA MIRA TOWER A & B, CEBU

United Arab Emirates (UAE)

Dubai Roads & Transport Authority (RTA) Road Improvement Projects

- AL-ITTIHAD ROAD
- DUBAI AIRPORT ROADS, BEIRUT ROAD & AL NAHDA ROAD JUNCTION
- SHEIKH ZAYED ROAD
- PARALLEL ROAD
- AL SHINDAGHA CORRIDOR (SANA JUNCTION)
- WAFI INTERCHANGE
- TRIPOLI ROAD & ALGERIA ROAD
- EXPO 2020 ROADS NETWORK
- AL KHAWANEEJ ROAD & MUSHRIF PARK CORRIDOR
- AL AIN ROAD

Commercial, Residential & Mixed-Used Projects

- AL MARYAH ISLAND, ABU DHABI
- DRAGON MART 2, ABU DHABI
- ABU SHAGARA, SHARJAH

Other Infrastructure Projects

ABU DHABI

- RAS AL AKHDAR AND BAYNOONAH STREET AND TUNNEL WORKS
- SHEIKH ZAYED TUNNEL (AL SALAM TUNNEL)
- SAADIYAT ISLAND TUNNEL

DOHA

- RAS AL AKHDAR AND BAYNOONAH STREET AND TUNNEL WORKS
- EAST & WEST CORRIDOR
- E-RING ROAD EXTENSION (NORTH/SOUTH LINK)

NISHI DENSEN

Nishi Densen Sdn Bhd

17 Jalan Paku 16/6. Section 16
40200 Shah. Alam,
Selangor D.E, Malaysia

www.densen.com.my

Authorised Distributor:

NSD-BCS-V1-032023