

# Cabling Solutions: Infrastructure











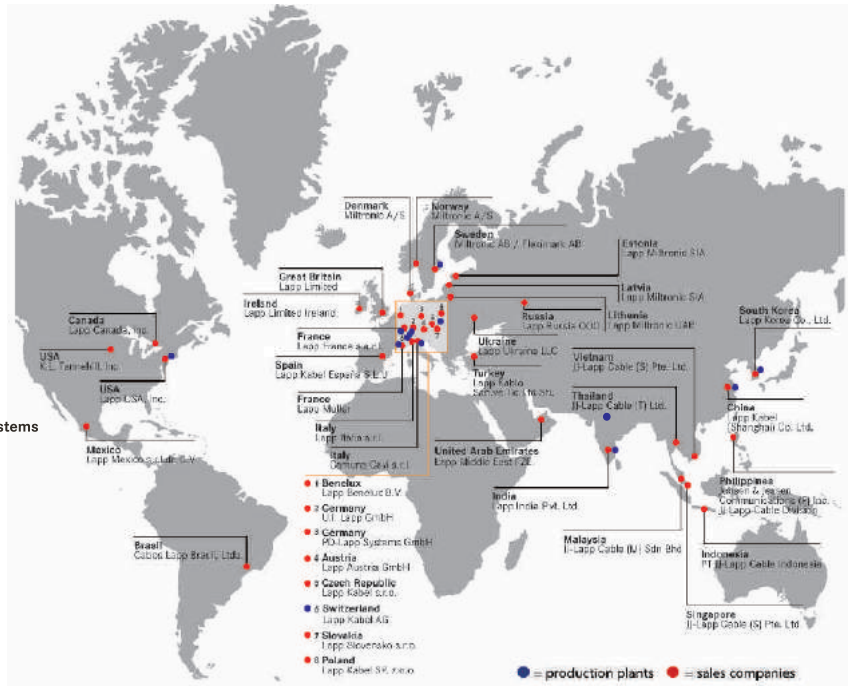
Headquartered in Stuttgart, Germany, the Lapp Group is a leading supplier of integrated solutions and branded products in the field of cable and connection technology. The Group's portfolio includes standard and highly flexible cables, industrial connectors and screw technology, customized system solutions, automation technology and robotics solutions for the intelligent factory of the future, as well as technical accessories. The Lapp Group's core market is in the industrial machinery and plant engineering sector. Other key markets are in the food industry as well as the energy and the mobility sector.

The Lapp Group has remained in continuous family ownership since it was founded in 1959.

- Over 40 sales companies
- Cooperation with around 100 foreign representatives
- Around 3,200 employees across the world
- 18 production sites

Brand quality from Stuttgart

 <b>ÖLFLEX®</b> Power and control cables	 <b>UNITRONIC®</b> Data communication systems
 <b>ETHERLINE®</b> Data communication systems for ETHERNET-Technology	 <b>HITRONIC®</b> Optical transmission systems
 <b>EPIC®</b> Industrial connectors	 <b>SKINTOP®</b> Cable glands
 <b>SILVYN®</b> Protective cable conduit and cable carrier systems	 <b>FLEXIMARK®</b> Cable marking systems



Lapp India is a 100% subsidiary of the Lapp Group. Having started its operations in 1996, Lapp India provided in 2015 about 140,000 km per year of control, instrumentation, power and data cables along with connectors, accessories and EndtoEnd Systems to over 3500 active customers pan India spread across different industry segments such as automation, textile, automotive, machine tools, oil and gas, renewable energy, process industries, as well as in the infrastructure and building sectors.

- 23 Sales offices close to customers all over India & 5 service points.
- 300 employees committed to best serve customers
- Strong network of 130 + dealers
- 2 top of the notch manufacturing units - Bangalore and Bhopal
- 5 Warehouses
- State of the art laboratory
- Fully fledged technology and innovation center



Jigani, India



Testing Facilities



EndtoEnd System facility

## ABOUT INFRASTRUCTURE

**Infrastructure :** Investment in infrastructure are vital to a country's economic development and prosperity. Transportation, communication, sewage, power, highways, shipping are examples of physical systems that provide impetus to the economy in terms of GDP and wealth generation.

**Cables used for infrastructure :** The connected society of today has made cables an integral part of our homes, residential complexes, factories, metros and public utilities. Cables are extensively used in electrical and electronic equipment for power supply, control / signal , internal connections and communication from one device to another.

**Characteristics :** Low flame propagation, low smoke emissions, low generation of corrosive and toxic gases are characteristics necessary for a rapidly growing market. Fire Survival (FS) cables to be used in wiring applications in critical life safety systems (e.g. Building Management Systems, emergency lightings, standby power supplies, lifts & elevators) in public and industrial buildings such as airports, hotels, hospitals, subways, train stations, etc. In areas whereby there is a need to maintain circuit integrity for prolonged period of time in a fire situation, these cables provides vital additional time to accomplish the evacuation of personnel, to contain and minimize the damage to equipment, plant and buildings, and to mount an effective fire fighting operation.

**Industry and Applications :** Given below are key applications for industries where cabling plays an important role

### a. Buildings:

- Building Automation and Home Automation
- Air handling and Central heating / chilling plants
- Controllers
- Alarms and Security
- Lighting

### b. Railways / Metro:

- Power supply, Traffic management systems, Station facilities, Signalling systems, Rolling stock, Depot equipment, Power supply

### c. Roads / Highway:

- Traffic signals, Street Lights, Transport control and Passenger Service Centre

### d. Shipping / Ports:

Ship building, Marine equipments such us Unmanned surface and underwater vehicles, Ship automation and communication systems, Ship ports

**Airports:** Power supply, public address systems, Baggage handling, Communication and Security, Ventilation and heating, Air traffic control

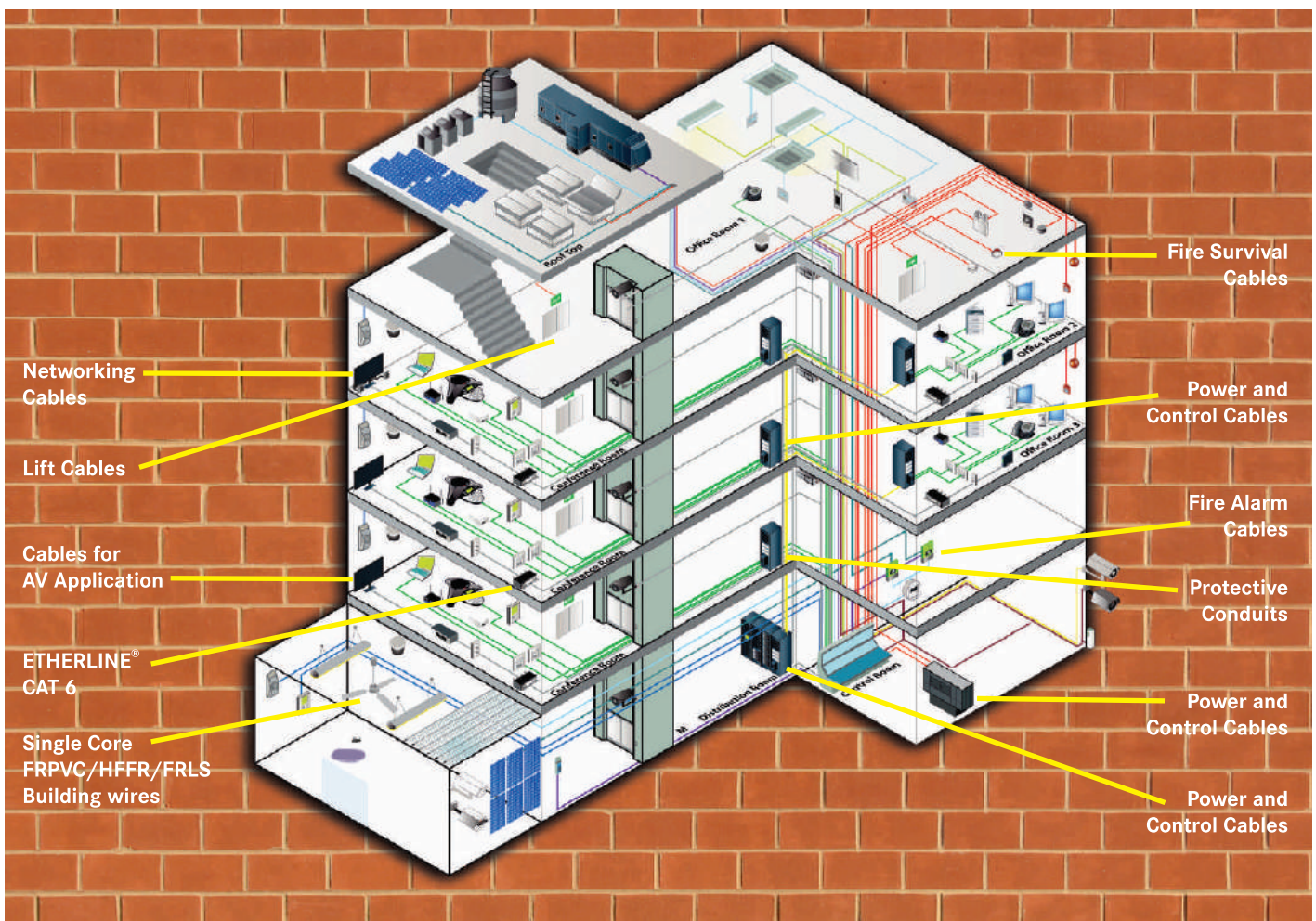
## LAPP VALUE PROPOSITIONS

Peace of Mind	Value for Money	We are where you are	Technology Leadership
<ul style="list-style-type: none"><li>• Lapp products come with German quality &amp; durability</li><li>• Complying with global standards</li><li>• 40000+ products</li></ul>	<ul style="list-style-type: none"><li>• Low maintenance</li><li>• High Service Life</li><li>• Durable and Reliable</li><li>• Harnessing excellence</li></ul>	<ul style="list-style-type: none"><li>• 23 sales offices</li><li>• 5 warehouses and 5 service points in India</li><li>• 146 dealers across India</li><li>• Cabling solutions across all infrastructure verticals – Buildings / Railways / Roads and Ports</li></ul>	<ul style="list-style-type: none"><li>• 2 State of the art manufacturing plants in Bangalore and Bhopal</li><li>• Latest and the best German manufacturing technology</li><li>• Over 58 years of manufacturing intelligence and application knowledge</li></ul>

## RELIABLY CONNECTING BUILDINGS

Every building is a creation- a result of meticulous planning and painstaking effort. Everything that goes into creating a building, including wires and cables are of utmost importance. Therefore, safety becomes top priority in buildings. You can fortify your creation by opting for our safe cabling solutions.

Our cabling solutions, backed by state of the art German technology, are safe and reliable, in every way. We have Pan India Sales and Service Network to provide safe cabling solutions for your buildings.



### Range of Products:

- FR / FR-LSH / HFFR Single cores
- Multicore Power and control cables
- Fire Survival cables
- Fire alarm and security application cables
- Lift cables
- Speaker cables
- Home and lighting automation cables
- RG 6 Cables for CATV application
- LAN cables for structured building
- Protective conduits for infrastructure
- Glands for cable bussing system

## ÖLFLEX® INFRA FR

### FLAME RETARDANT SINGLE CORES

ISI marked IS 694:2010 approved 1100 V rated cable



#### PRODUCT FEATURES:

- Flame Retardant
- High drawability and uniform insulation
- Good adhesion between conductor and insulation

#### APPLICATION RANGE:

- Building wire for installation on wall surface or in concealed conduits
- For lighting & power applications in buildings-residential, commercial, hotels, hospitals & IT parks



## ÖLFLEX® INFRA FR-LSH

### FLAME RETARDANT LOW SMOKE AND LOW HALOGEN SINGLE CORES

ISI marked IS 694:2010 approved 1100 V rated cable



#### PRODUCT FEATURES:

- Flame Retardant
- Low toxicity, Low Smoke and Low Halogen
- High drawability and uniform insulation
- Good adhesion between conductor and insulation

#### APPLICATION RANGE:

- Building wire for installation on wall surface or in concealed conduits
- For lighting & power applications in buildings-residential, commercial, hotels, hospitals & IT parks



## ÖLFLEX® INFRA HFFR

### HALOGEN FREE FLAME RETARDANT SINGLE CORES

Halogen free 1100 V installation cable



#### PRODUCT FEATURES:

- Halogen Free Flame Retardant
- Low smoke
- High drawability and uniform insulation
- Good adhesion between conductor and insulation

#### APPLICATION RANGE:

- Building wire for installation on wall surface or in concealed conduits
- For lighting & power applications in buildings-residential, commercial, hotels, hospitals & IT parks



## ÖLFLEX® 100 I MULTI CORE POWER CABLES

ISI marked IS 694:2010 approved 1100 V rated cable



### PRODUCT FEATURES:

- Flame retardant
- Suitable for static installation and occasional flexing
- Good adhesion between conductor and insulation

### APPLICATION RANGE:

- Main power circuit from metering room to individual apartments
- Plant engineering and construction industrial machinery
- Power circuit for air conditioning installations
- Dry or damp interiors under medium mechanical load conditions
- Fixed installation



## ÖLFLEX® CLASSIC 110 MULTI CORE CONTROL CABLES

VDE registered Oil-resistant PVC control cable

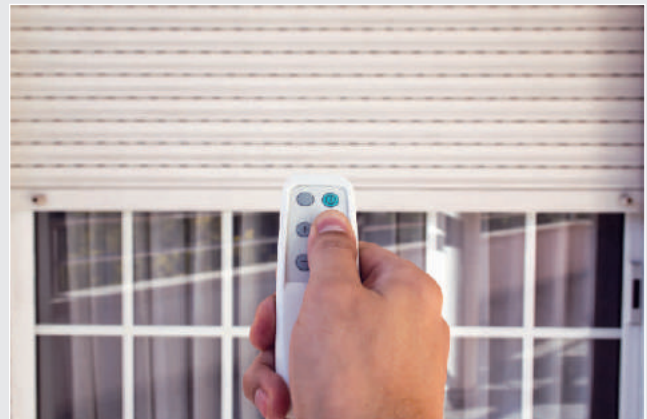


### PRODUCT FEATURES:

- Flame retardant
- Flexible cable
- Good adhesion between conductor and insulation

### APPLICATION RANGE:

- Home automation
- Plant engineering, industrial machinery, heating and air conditioning systems, power stations, stage applications
- For fixed installation as well as occasional flexing free, non-continuously recurring movement without tensile load
- Dry or damp rooms that are subject to medium mechanical loads



## ÖLFLEX® POWER LV SINGLE & MULTI CORE POWER CABLE FOR HEAVY DUTY

Heavy duty cable acc. to IS 1554 and IS 7098

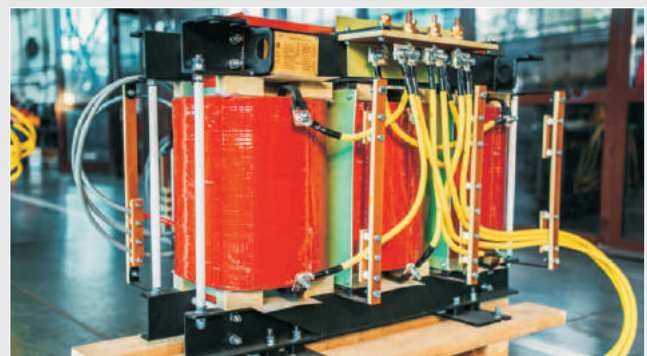


### PRODUCT FEATURES:

- Available in FR, FR-LSH and HFFR
- Available in armoured and un-armoured
- Heavy duty & suitable fixed installation

### APPLICATION RANGE:

- Power cable ideally required for transmission and distribution and Electric Power
- This will help the power cable in maintaining its electrical properties, in the event of any sudden temperature rise caused during short circuit



## ÖLFLEX® FIRE FIRE SURVIVAL CABLES

Fire Survival acc. to BS 786 with 1100 V rated cable



### PRODUCT FEATURES:

- Conforming to fire survival test of BS6387 CWZ Category
- Available in different construction variants Power, Control and Instrumentation Application
- Anti radiant & UV resistant inner /outer sheath optional

### APPLICATION RANGE:

- Metro, railways, oil and gas industry, airports, commercial and residential buildings require that critical control and power systems



## J-H(ST)H... BD BMK FIRE ALARM CABLES

Halogen Free installation cable in accordance with DIN VDE 0815 with red outer sheath cable

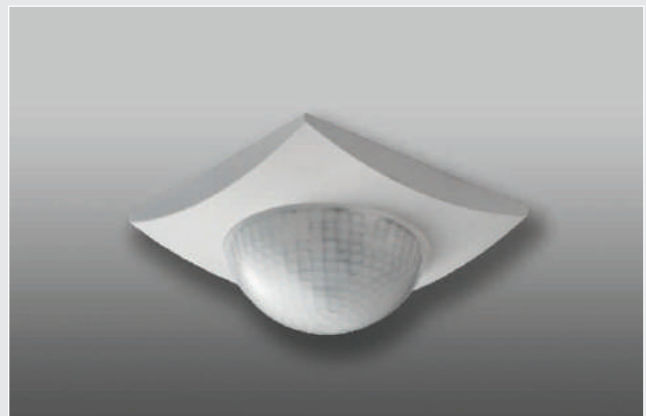


### PRODUCT FEATURES:

- Flame retardant
- Halogen Free
- UV resistance & laterally water tight optional

### APPLICATION RANGE:

- To transmit signals
- For fixed installation on and under plaster, in dry and damp rooms
- For outdoor use this cable should be used installed under plaster only



## ÖLFLEX® LIFT F LIFT CABLES

Flexible at cold temperature, PVC flat cable



### PRODUCT FEATURES:

- Flame retardant
- Flat in design require less space
- Smaller binding radius

### APPLICATION RANGE:

- For hoisting equipment and conveyor systems
- Indoor cranes and high-rack facilities
- As supply line for moving machine parts



## UNITRONIC® ST

### SPEAKER CABLE

Low frequency data transmission metal foil screened pair cable



#### PRODUCT FEATURES:

- 100% screen coverage, offers optimum protection against external interference at medium and high frequencies
- Flame retardant

#### APPLICATION RANGE:

- Suitable connection for audio, control signal and instrument measurement
- For use in dry and damp environment



## UNITRONIC® BUS EIB / KNX

### DATA COMMUNICATION SYSTEMS

Characteristic impedance: 75 ohm



#### PRODUCT FEATURES:

- Serial data transmission
- EIB cable has been tested at 4 kV (1 min.) in a water bath

#### APPLICATION RANGE:

- The product is designed for use in building management, e.g. for decentralised control of lighting, heating, air-conditioning, ventilation, energy management, blinds, time management, locking systems etc.
- The cable can be laid on or under plaster; in pipes, cable ducts; in dry, damp or wet environments.



## RG 6 CABLE

### COAXIAL CABLES

Data cable for CATV application



#### PRODUCT FEATURES:

- Conductor solid bare copper clad steel wire
- Form polyethylene dielectric
- 1st shielding bonded aluminium foil
- 2nd shielding braided aluminium wire, min. 60% coverage

#### APPLICATION RANGE:

- Suitable for 75 ohm drop cable/data transmission, for CATV installation in public housing and buildings. Indoor and outdoor application.





## ETHERLINE® CAT 6 DATA TRANSMISSION CABLES

Structured Building Networking LAN Cable



### PRODUCT FEATURES:

- LAN Cat.6 Cable meet requirements in accordance with EIA/TIA 568
- Transfer of digital and analogue data signals
- LAN Cat.6 Cables are specified up to 250 MHz

### APPLICATION RANGE:

- Data transfer for horizontal network backbone for wiring office, administration and development buildings.
- Transmission of high speed data, digital & analog voice & video signals on LANs. Transmission rate upto 250 MHz.
- Data transfer for cable TV, telephone, video door & CCTV.



## SILVYN® INSTA FBY-EL-F PLASTIC PROTECTIVE CABLE CONDUIT SYSTEMS

Flexible cable protective Conduit



### PRODUCT FEATURES:

- Wires and cables can smoothly be fed over long distances
- Enables installation by one person
- New corrugated design provides enhanced inherent stiffness

### APPLICATION RANGE:

- Due to its flame resistance properties, the conduit is suitable for use in concealed installations and installations in cavity walls. The inner layer provides excellent surface slip properties and makes insertion of wires and cables exceptionally easy, even over longer distances.



## TECHNICAL TABLE

### ÖLFLEX® INFRA FR PVC

Nominal Cross sectional Area of conductor Sq. mm	No of Strands/Nom.Dia of Wire mm ambient temperature	Current carrying capacity in air in Amps at 40°C	Cable Nom. Dia in mm
1.0 sq mm	30/0.2	15	2.60
1.5 sq mm	28/0.25	18	3.0
2.5 sq mm	47/0.25	24	3.6
4.0 sq mm	56/0.3	32	4.25
6.0 sq mm	84/0.3	43	4.80

Note : Higher Cross Sections also available subject to minimum order quantity

## TECHNICAL TABLE

### ÖLFLEX® INFRA HFFR

Nominal Cross sectional Area of conductor Sq. mm	No of Strands/Nom.Dia of Wire mm ambient temperature	Current carrying capacity in air in Amps at 40°C	Cable Nom. Dia in mm
1.0 sq mm	30/0.2	15	2.60
1.5 sq mm	28/0.25	18	3.0
2.5 sq mm	47/0.25	24	3.6
4.0 sq mm	56/0.3	32	4.25
6.0 sq mm	84/0.3	43	4.80

Note : Higher Cross Sections also available subject to minimum order quantity

### ÖLFLEX® INFRA FR-LSH

Nominal Cross sectional Area of conductor Sq. mm	No of Strands/Nom.Dia of Wire mm ambient temperature	Current carrying capacity in air in Amps at 40°C	Cable Nom. Dia in mm
1.0 sq mm	30/0.2	15	2.60
1.5 sq mm	28/0.25	18	3.0
2.5 sq mm	47/0.25	24	3.6
4.0 sq mm	56/0.3	32	4.25
6.0 sq mm	84/0.3	43	4.80

Note : Higher Cross Sections also available subject to minimum order quantity

### ETHERLINE® CAT6

Freq	Insertion Loss	Return Loss	NEXT	PS NEXT	ACR	PS ACR	ELFEX (ACR-F)	PS EL-ELFEX (PS ACR-F)
MHz	Max [dB/200m]	[dB]	[dB]	Min [dB]	Min [dB]	Min [dB]	Min [dB]	Min [dB]
1	2.0	20.0	74.3	72.3	72.3	70.3	67.8	64.8
4	3.8	23.0	65.3	63.3	61.5	59.5	55.8	52.8
8	5.3	24.5	60.8	58.8	55.4	53.5	49.7	46.7
10	6.0	25.0	59.3	57.3	53.3	51.3	47.8	44.8
16	7.6	25.0	56.2	54.2	48.6	46.6	43.7	40.7
20	8.5	25.0	54.8	52.8	46.3	44.3	41.8	38.8
25	9.5	24.3	53.3	51.3	43.8	41.8	39.8	36.8
31.25	10.7	23.6	51.9	49.9	41.2	39.2	37.9	34.9
62.5	15.4	21.5	47.4	45.4	32.0	30.0	31.9	28.9
100	19.8	20.1	44.3	42.3	24.5	22.5	27.8	24.8
200	29.0	18.0	39.8	37.8	10.8	8.8	21.8	18.8
250	32.8	17.3	38.3	36.3	5.5	3.5	19.8	16.8

## TECHNICAL TABLE

### RG 6 CABLE

Freq	Insertion Loss
MHz	Max [dB/100m]
5	2.20
55	5.24
211	9.42
270	10.7
300	11.3
400	13.3
450	14.2
550	15.5
750	18.5
870	20.0
1000	22.9

### ÖLFLEX® LIFT F

Number of cores and mm <sup>2</sup> per conductor	Outer dimensions, width x height(mm)	Copper index (kg/km)	Weight (kg/km)
Nominal voltage U <sub>0</sub> /U: 300/500 V, temperature range: 0°C to +70°C			
12 G 1.0	35.0 x 4.3	115.0	392
16 G 1.0	46.0 x 4.3	154.0	521
20 G 1.0	57.0 x 4.3	192.0	645
24 G 1.0	68.0 x 4.3	230.0	772
Nominal voltage U <sub>0</sub> /U: 450/750 V, temperature range: -15°C to +70°C			
4 G 1.5	15.0 x 5.0	58.0	132
5 G 1.5	19.0 x 5.0	72.0	170
7 G 1.5	26.5 x 5.0	101.0	236
8 G 1.5	28.5 x 5.0	115.0	266
10 G 1.5	35.5 x 5.0	144.0	333
12 G 1.5	41.5 x 5.0	173.0	422
4 G 2.5	18.4 x 5.7	96.0	206
5 G 2.5	23.4 x 5.7	120.0	257
7 G 2.5	32.0 x 5.7	168.0	345
8 G 2.5	34.5 x 5.7	192.0	390
12 G 2.5	51.5 x 5.7	288.0	580
4 G 4	20.4 x 6.6	154.0	343
7 G 4	36.6 x 6.6	269.0	589
4 G 6	23.2 x 7.3	230.0	425
4 G 10	28.0 x 9.0	384.0	709
4 G 16	34.0 x 10.5	614.0	1015
4 G 25	42.0 x 12.7	960.0	1366

# ÖLFLEX®

# UNITRONIC®

# ETHERLINE®

# HITRONIC®

# EPIC®

# SKINTOP®

# SILVYN®

# FLEXIMARK®

 [www.olflex-lappindia.in](http://www.olflex-lappindia.in)

 /lappindia



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 **LAPP GROUP**