

# Railway Infrastructure Cables

## Product Brochure



# About STL

## **We bring ultra-fast connectivity to all of us**

We are the only company in the world to have unique capabilities across all layers of the network. From photonics and material science-based precision manufacturing to algorithmic design, ultra-fast deployment, AI analytics and programmable networks. We believe in harnessing technology to create a world with next generation connected experiences that transform everyday living. With intense focus on end-to-end network solutions development, we conduct fundamental research in next-generation network applications at our Centres of Excellence. We have four innovation centers for core research in optical fibre ultra-high speed connectivity and applied research on smarter networks. At last count, we had a global patent portfolio of 582 to our credit for optical connectivity, network services, and virtual mobile edge solutions.

## **Innovation is at the core of everything we do**

We have a strong global presence and have historically supplied to over a 100 countries! Today, we are a \$736 Mn. company (FY 20 revenue), with almost 34% of our revenues being export driven. On the supply side, we have next-gen optical preform, fibre and cable manufacturing facilities in India, Italy, China and Brazil, along with two software-development centers across India and one datacentre design facility in the UK. Our manufacturing facilities are world-class and we are the world's first integrated optical fibre and cable manufacturer to be Zero Waste to Landfill certified.

## **We are leading the future of networks**

Over 3,000 people - we call ourselves STLers - from across 30 nationalities work with us. We are a Great Place to Work!! Together with our customers and partners, we STLers are taking digital networks and humanity beyond tomorrow.

## About Optical Interconnect Business



### **Optical Fibre**

With fully backward integrated optical fibre manufacturing capabilities, we are the perfect choice for all types of cable construction and applications such as 5G, FTTH etc



### **Optical Fibre Cables**

Our customised cable solutions including Retractable, Micro Module, Micro cables and ADSS cater to high-bandwidth requirements across customer segments globally



### **Optical Interconnect**

We offer optical fibre termination equipment through Ribbon Optimised Splice Closure (ROSC), Rack mount FMS, Wall mount FMS, Patch cords, etc. that are perfect for all kinds of OSP and ISP patching and termination requirements



### **Speciality Cables**

STL offers a wide range of copper cables as part of its speciality cable portfolio. These include structured cabling solutions and cables for railways and other industrial applications.

Our CAT6A U/UTP structured cables offer best-in-class alien cross-talk immunity from adjacent cables and deliver results even at 500 MHz because of their specialised design and advanced corrugated jacket technology.

Our wide range of data cables offer customised cable design in UTP, STP, indoor and outdoor categories addressing different physical layer applications including enterprise networks, data centres and multi-dwelling units.



# Global Manufacturing Operations

Largest integrated manufacturing facilities for optical fibre and optical fibre cable



## Cables For Railway Industry

Since its advent in the 19th century, railways have been the backbone of every country's economy. With the introduction of high-speed trains in the 1960s, the world saw a major shift in travel pattern. An increasing number of passengers started preferring high speed trains to road travel or short-haul flights owing to greater comforts and state-of-the-art information and entertainment systems in these trains.

Confronted with this surge in digital demand, the rail industry has since been forced to ensure not only hi-tech signal control systems for its trains, but also high-performance data transmission networks. This thus made it imperative for the development and use of advanced families of railway cables.

On the basis of their usage, cables for the railway industry are classified into – cables for rolling stock and cables for signalling systems.



## Cables for Rolling Stock

Cables for rolling stock include all cables that form part of the trains. These include cables used for controlling the train's run, power transmission, communications, and air-conditioning.

Rolling stock cables, therefore, have to confirm to highest level of security that minimize risks for people under every circumstance.

They must be resistant to fires, fluids, shocks and extreme temperatures providing reduced weights and dimensions.

## Cables for Signalling System

Cables for signalling systems are cables used for managing the railway network, including for control and signal conveyance.

Signalling system cables must be capable of managing not only the train run, but also intervening in emergency situations.

They, therefore, must be cables with high technological content capable of ensuring continuous data flow between the train and stations without being influenced by the strong electromagnetic fields generated from the power lines.

## Code Designation

### A.1 Code Designation

The cable shall be identified by one or two letters, the first of which shall identify the insulation compound, & the second the sheathing compound (where applicable)

#### Insulation Systems:

**C** - EI 101 - Low temprature resistant, oil resistant.

**F** - EI 102 - Extra low temprature resistant, oil resistant.

**J** - EI 103 - Low temprature resistant, extra oil & fuel resistant.

**M** - EI 104 - Extra low temprature resistant, extra oil & fuel resistant.

**O** - EI 105 - Extra low temprature resistant, non oil resistant.

#### Sheath:

**C** - EM 101 - Low temprature resistant, oil resistant.

**F** - EM 102 - Extra low temprature resistant, oil resistant.

**J** - EM 103 - Low temprature resistant, extra oil & fuel resistant.

**M** - EM 104 - Extra low temprature resistant, extra oil & fuel resistant.

### A.2 Additional Codes

Additional letters shall be added after the code designation to identify specific cable parameters, as follows:

**S** - Cable with metallic screen

# Cable For Railway Industry And Mass Transit



Standard Wall and Thin Wall  
Cables for Rolling Stock



Fire-Resistant  
Cables



Cables for Data  
Transmission



Fire-Resistant Data  
Transmission Cables



Jumper  
Cables



Cables for SCMT, ERTMS  
& Signalling Systems

STL, a market leader in the cabling industry, Offers a full range of rolling stock and signalling cables that comply with all rail requirements.

## They bring to play:



High  
Performance



Reduced weights  
and dimensions



Resistance to extreme  
temperatures (-40°C)



Resistance to oils,  
fuels and fluids  
(IRM902, RM903)



Hazard level 3  
(HL3) EN 45545



Resistance to  
Abrasion



Resistance to  
electromagnetic  
interference



Resistance to  
Vibration



Resistance to  
Tear

## And are:



Halogen-free



Low on toxicity  
(EN 50305)



Low on smoke  
(EN 50268-2)



Resistant to fire  
(EN 50200, EN50362)



Flexible



Flame retardant  
(EN 50266, IEC60332-3)

# Standard Wall Cables EN 50264-2

## STANDARD WALL SINGLE CORE UNSHEATHED CABLES

### Features

**M**

Code designation



Extra oil and fuel resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



Operating Temp: -40°C to +90°C



Range: 1 to 400 sqmm & 1.5 to 400 sqmm

### Application

Flexible cable 0,6/1kV designed for lighting circuits, equipment control, monitoring circuits, auxiliary and electric heating circuits. Flexible cable 1,8/3kV designed for auxiliary circuits at line voltage, traction circuits and electric heating fed at line voltage.



## STANDARD WALL SINGLE CORE SHEATHED CABLES

### Features

**OM**

Code designation



Extra oil and fuel resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



Operating Temp: -40°C to +90°C



Range: 1.5 to 400 sqmm & 2.5 to 400 sqmm

### Application

Flexible cable 1,8/3kV designed for auxiliary circuits at line voltage, traction circuits and electric heating fed at line voltage. Flexible cable 3,6/6kV designed for auxiliary circuits at line voltage, traction circuits and electric heating fed at line voltage.



## STANDARD WALL MULTICORE CABLES UNSCREENED 0,6/1kV

### Features

**OM**

Code designation



Extra oil and fuel resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



Operating Temp: -40°C to +90°C



Range: 1.5 to 50 sqmm, 2 to 4 cores

### Application

Flexible cable 0,6/1kV designed for lighting circuits, equipment control, monitoring circuits, auxiliary and electric heating circuits





## STANDARD WALL MULTICORE CABLES SCREENED 0,6/1kV

### Features

#### OM S

Code designation



Extra oil and fuel resistant



Flame retardant  
EN 50265-2-1



Low emission of smoke & toxic gases  
EN 50305, EN 61034-2



Hazard Level 3  
(HL3) EN 45545



Fire retardant  
EN 50266-2-4



Operating Temp:  
-40°C to +90°C



Range: 1.5 to 50 sqmm,  
2 to 4 Cores

### Application

Flexible cable 0,6/1kV designed for lighting circuits, equipment control, monitoring circuits, auxiliary and electric heating circuits



## Reduced Wall Cables EN 50264-3

### REDUCED WALL MULTICORE CABLES 300/500 V

#### Features

#### OM - OM S

Code designation



Extra oil and fuel resistant



Flame retardant  
EN 50265-2-1



Low emission of smoke & toxic gases  
EN 50305, EN 61034-2



Hazard Level 3  
(HL3) EN 45545



Fire retardant  
EN 50266-2-4



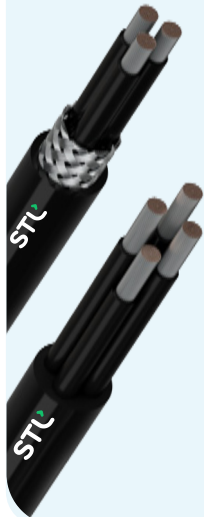
Operating Temp:  
-40°C to +90°C



Range: 1,1,5,2,5 sqmm,  
2 to 40 cores

### Application

Flexible cable 300/500 V designed for the internal safe circuits, control and monitoring circuits



## Thin Wall Cables EN 50306

### THIN WALL

#### Features

#### M

Code designation



Extra oil and fuel resistant



Flame retardant  
EN 50265-2-1



Low emission of smoke & toxic gases  
EN 50305, EN 61034-2



Hazard Level 3  
(HL3) EN 45545



Fire retardant  
EN 50266-2-4



Operating Temp:  
-40°C to +105°C



Range: 0.5 to 2.5 sqmm

### Application

Flexible cable 300V designed for equipment control, monitoring circuits and for the internal wiring of the equipment



# Thin Wall Cables EN 50306

## THIN WALL SCREENED CABLES WITH THIN WALL SHEATH

### Features

#### MM S

Code designation



Extra oil and fuel resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



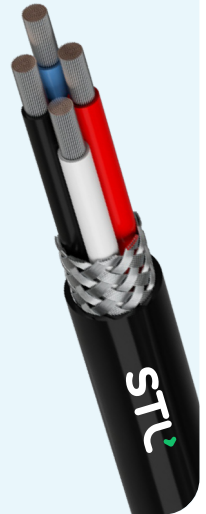
Operating Temp: -40°C to +90°C



Range: 0.5 to 2.5 sqmm, 1 to 4 cores

### Application

Flexible cable 300V designed for equipment control, monitoring circuits and for the internal wiring of equipment run on trays exposed



## THIN WALL MULTICORE UNSCREENED

### Features

#### MM

Code designation



Extra oil and fuel resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



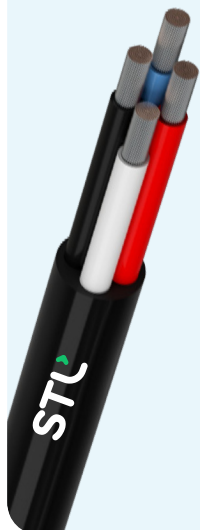
Operating Temp: -40°C to +90°C



Range: 0.5 to 2.5 sqmm, 2 to 48 cores

### Application

Exposed and protected wiring, flexible cable 300V designed for equipment control, monitoring circuits and for the internal wiring of equipment run on trays exposed



## THIN WALL MULTIPAIRS CABLES INDIVIDUALLY SCREENED

### Features

#### MM S

Code designation



Extra oil and fuel resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



Operating Temp: -40°C to +90°C



Range: 0.5 to 1.5sqmm, No of Pairs of Cores from 2 to 7

### Application

Exposed and protected wiring, flexible cable 300V designed for equipment control, monitoring circuits and for the internal wiring of equipment run on trays exposed





# High Temperature Cables EN 50382

## SINGLE CORE UNSHEATHED CABLES FOR HIGH TEMPERATURE

### Features

**F**

Code designation



Extra oil resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



Tear Resistant



Operating Temp: -40°C to +120/150°C



Range: 1.5 to 400 sqmm & 2.5 to 400 sqmm

### Application

Flexible cable suitable for power converter, traction circuits, auxiliary circuits at line voltage and electric heating circuits. High tear resistance



## SINGLE CORE SHEATHED CABLES FOR HIGH TEMPERATURE

### Features

**OF**

Code designation



Extra oil resistant



Flame retardant EN 50265-2-1



Low emission of smoke & toxic gases EN 50305, EN 61034-2



Hazard Level 3 (HL3) EN 45545



Fire retardant EN 50266-2-4



Tear Resistant



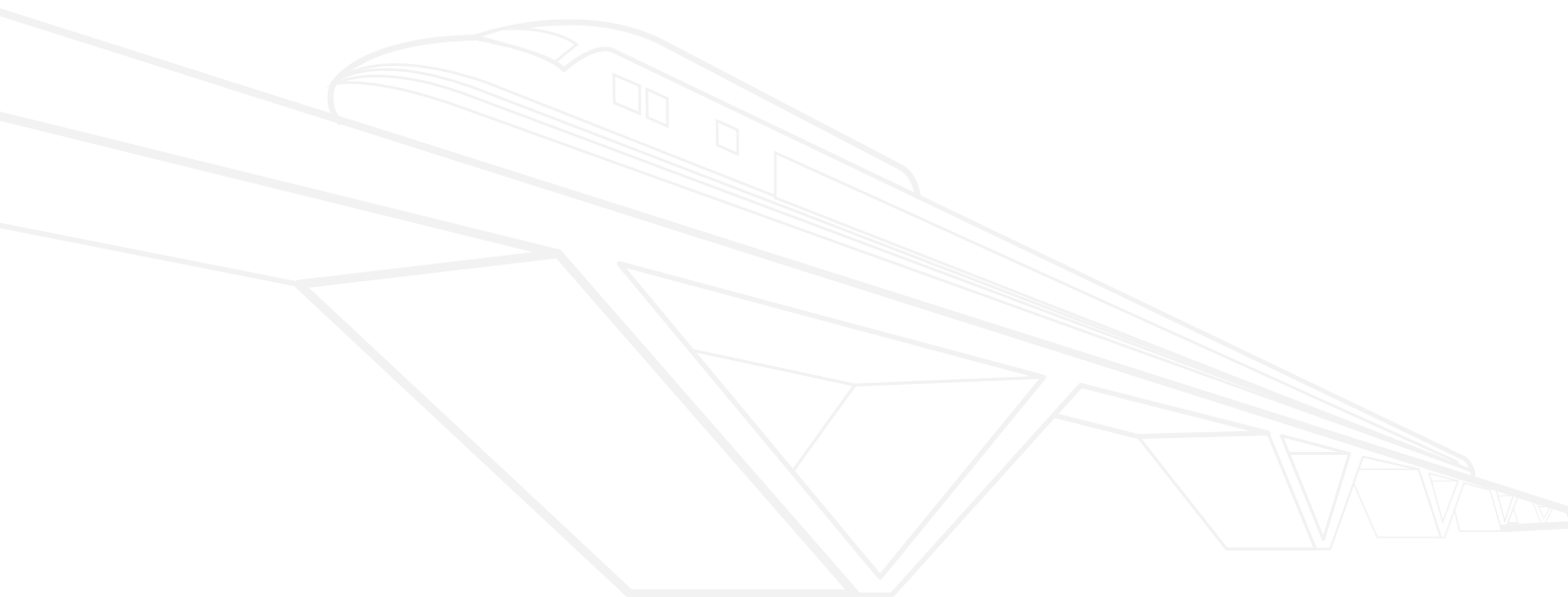
Operating Temp: -40°C to +120/150°C



Range: 1.5 to 400 sqmm & 2.5 to 400 sqmm

### Application

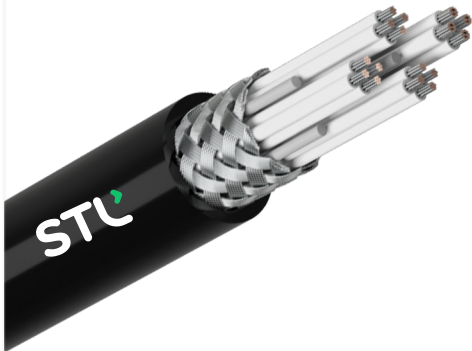
Flexible cable suitable for power converter, traction circuits, auxiliary circuits at line voltage and electric heating circuits. High tear resistance.



# Data Transmission Cables

## STL-UIC CABLES

4x4x1 mm<sup>2</sup>



16 cores transit cable for remote control and information line, according to UIC 558

### Features



Flame retardant:  
DIN EN 60332-1-2



Smoke density:  
DIN EN 61034-1



Toxicity index:  
≤3 DIN EN 50305  
par. 9.2



Transmittance:  
≥ 60 %

### Benefits / Application

UIC connection cables for fixed and protected installations inside of rail vehicles. These cables are applied for signal transmission between the locomotive and coaches. They are suitable for door controls, lighting, loud-speaker systems.

- Excellent fire performance
- Low fire load
- Low toxicity
- High flexibility
- Halogen-free
- Electron-beam cross-linked

### Features



Maximum conductor  
temperature operating:  
+70°C



Minimum ambient  
temperature: -40°C



Flame retardant:  
EN 60332-1-2



Amount of halogen  
acid gas during the  
combustion: EN 50267-2-1



Toxicity index:  
≤ 3 | EN 50305 par. 9.2



Non fire propagation:  
EN 50305 par. 9.1



Smoke density:  
DIN EN 61034-1 |  
Transmittance: ≥70%



Fluorine content:  
≤ 0,10 % EN 60684-2

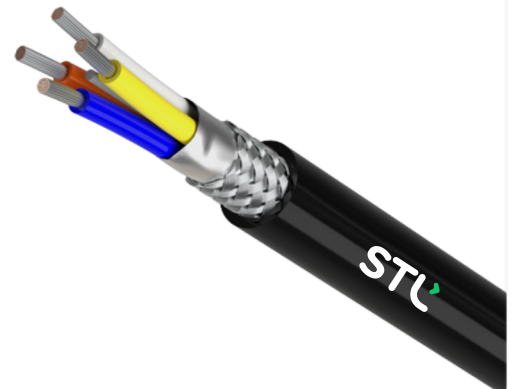


Degree of acidity of  
gasses (corrosivity)  
EN 50267-2-2

### Benefits / Application

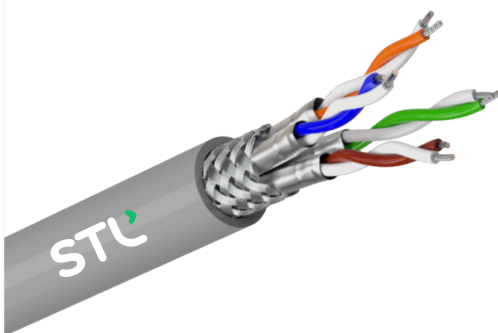
Data networks, computer networks, subway turnstile link, link automata ticketing systems

## ETHERNET CABLES CAT 5e



Cable for ethernet connection, CAT. 5E according to EN 50288-2-2 and IEC 61156-6 2x2x22 AWG S-FTP

## ETHERNET CABLES CAT 7



Cable for ethernet connection, CAT. 7 4x2x24 AWG S-FTP

### Features



Maximum conductor  
temperature operating:  
+70°C



Minimum ambient  
temperature: -40°C



Flame retardant:  
EN 60332-1-2



Amount of halogen  
acid gas during the  
combustion: EN 50267-2-1



Toxicity index:  
≤ 3 | EN 50305 par. 9.2



Non fire propagation:  
EN 50305 par. 9.1



Smoke density:  
DIN EN 61034-1 |  
Transmittance: ≥70%



Fluorine content:  
≤ 0,10 % EN 60684-2



Degree of acidity of  
gasses (corrosivity)  
EN 50267-2-2

### Benefits / Application

Data networks, computer networks, subway turnstile link, link automata ticketing systems

## STL - SERIAL CABLES



(2+1)x0,5 mm<sup>2</sup>, CAN  
BUS CABLE

### Features



Maximum conductor  
temperature operating:  
+70°C



Minimum ambient  
temperature: -40°C



Flame retardant:  
EN 60332-1-2



Amount of halogen  
acid gas during the  
combustion: EN 50267-2-1



Toxicity index:  
≤ 3 | EN 50305 par. 9.2



Non fire propagation:  
EN 50305 par. 9.1



Smoke density:  
DIN EN 61034-1 |  
Transmittance: ≥70%



Fluorine content:  
≤ 0,10 % EN 60684-2



Degree of acidity of  
gasses (corrosivity)  
EN 50267-2-2

### Benefits / Application

Most common application is in-vehicle electronic networking.  
Railway applications such as streetcars, trams, undergrounds, light  
railways, and long-distance trains incorporate CAN

### Features



Flame retardant:  
EN 60332-1-2



Toxicity index:  
≤ 3 | EN 50305 par. 9.2

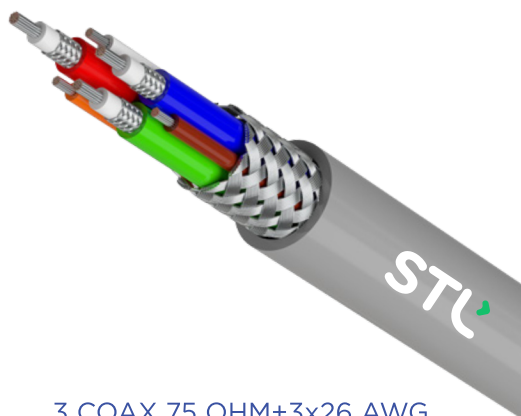


Smoke density:  
DIN EN 61034-1 |  
Transmittance: ≥70%

### Benefits / Application

Cables for video surveillance network, cameras cable,  
high resolution.

## STL - VGA



3 COAX 75 OHM+3x26 AWG



## About STL-Sterlite Technologies Ltd

### **STL is an industry-leading Integrator of digital networks.**

Our fully 5G ready digital network solutions help telcos, cloud companies, citizen networks, and large enterprises deliver enhanced experiences to their customers. STL provides integrated 5G ready end-to-end solutions ranging from wired to wireless, design to deployment, and connectivity to compute. Our core capabilities lie in Optical Interconnect, Virtualised Access Solutions, Network Software, and System Integration.

We believe in harnessing technology to create a world with next generation connected experiences that transform everyday living. With a global patent portfolio of 582 to our credit, we conduct fundamental research in next-generation network applications at our Centre of Excellence. STL has a strong global presence with next-gen optical preform, fibre, cable, and interconnect subsystem manufacturing facilities in India, Italy, China, and Brazil, along with two software-development centers across India and a data centre design facility in the UK.