Thermo Cables



Railway Cable Solutions

Since 1990, Thermo Cables Limited has engineered high performance, customized cable systems for the world's most demanding environments. 60% of our products are exported globally, serving as the strategic backbone for mission-critical sectors. With R & D expertise, unmatched financial strength and a strategic subsidiary in the Kingdom of Saudi Arabia (Thermo Cables Arabia Limited), we ensure project continuity for our partners worldwide.

Thermo Group Ecosystem

Thermo Cables: Global Expert in Speciality Cables Manufacturing.

Thermopads: Global Specialists in Commercial, Domestic and Industrial Heating Solutions.

Thermosystems: Turnkey EPC leaders in Fuel Oil Handling and Fire Protection Systems.



Major Approvals

ADNOC - OFFSHORE
ADNOC - ONSHORE
ALBA
AP GENCO & TRANSCO
ARO DRILLING
AVANT GARDE
BALTIC CHEMICAL PLANT
BAPCO ENERGIES
BDL, BEL, BEML, BHEL, BLW
BOROUGE
BPCL
CLW, CMRL, CSL
DESEIN LTD, DGMS, DVC
DLW, DMDE & DMW
DLRL, DMRL & DMRC
DOLPHIN ENERGY
DRDO - ASL & DRDL
DUBAI WORLD
EGA
ENGINEERS INDIA LTD
ENOC
EXPRO
FICHTNER CONSULTING
GRSE, GSPC
GOA SHIPYARD
HALLIBURTON
HINDUSTAN SHIPYARD
HPCL, HAL, HMRL
INTERNATIONAL MARITIME INDUSTRIES
IOCL, ICF, ISRO
JACOB'S H & G
KNPC - KUWAIT
KOC - KUWAIT
LAMPRELL
L & T
MAADEN
MATERIAL ORGANISATION - KARWAR
MATERIAL ORGANISATION - MUMBAI
MATERIAL ORGANISATION - VIZAG
MECON, MEW, MCF
MN DASTUR & CO.
MAZGOAN DOCK LIMITED
MUMBAI PORT TRUST
NMDC ENERGY
NORTH OIL
NPCIL, NSTL, NTPC
ONGC
ORLEN, OXY
PDIL, PGCIL
PDO OMAN, PETRONAS
PETROPERU
QAFAC, QCHEM
QATAR ENERGY, QATAR PETROLEUM
RCF
SABIC
SAIL, SAIPEM
SAPURA ENERGY
SAR
SHELL, SONATRACH
TATA CONSULTING ENGINEERS
TECNIMONT ICB LTD
TOYO ENGINEERING INDIA LTD
THYSSENKRUPP

Stringent quality retention on par with global standards of thorough precision, Thermo Cables is a name to reckon with in terms of meeting complete customer demand by producing and delivering a wide range of cables. Our commitment to quality, on-time delivery, and competitive pricing has earned us a strong reputation across the industry.

Product Range

- Instrumentation Cables
- Power, Control & Earthing Cables
- Thermocouple Cables
- Fire Resistant Cables
- High Temperature / Heat Resistant Cables
- Foundation Fieldbus Cables
- Special Application (LFH) Cables
- Renewable Energy Cables
- Naval Application Cables
- Marine / Shipboard Cables
- Pressure Tight (PT) Cables
- Digital Data Communication Cables
- Railway Cables
- Material Handling Cables
- Type P Cables
- VFD Cables
- Co-Axial Cables (RG Series)
- ESP Cables
- Downhole (TEC) Cables
- Electromechanical Cables
- Cathodic Protection Cables
- Custom Wiring & Cable Harnesses
  - Railway
  - Defence
  - Wind
- IV Coupler & Jumper Cable Assembly
- Cable Systems

Why Us

- Leading & reputed manufacturer of Speciality Cables
- One stop solution for all Low Voltage Cables
- Serving satisfied customers since 30+ years across 60+ countries
- In-house wire drawing, compounding, Electron beaming and testing facilities
- Quick response time and offer submission in less than 24 hours

Quality & Reliability

- An ISO 9001:2015 certified company with proven track record of delivering quality products
- NABL accredited full-fledged in-house testing laboratory
- Environment, Occupational Health and Safety Systems adhering to ISO 14001:2015, 45001:2018
- 15% of power consumption sourced through in-house generated renewable energy

Standards

- Cables designed and manufactured conforming to various National and International Standards

General Cables: ANSI MC 96.1, BS-6346, BS-5467, BS-7629, BS-6387, BS-7846, BS-5308-I & II, BSEN- 50288-7, IEC-60502-I, IEC-60189-I & II, IEC-60228, IEC-60584-I & III, IEC-60331, IS-8784, IS-613, IS-694, IS-1554-I, IS-7098-I, BS 16246, BS 7211, IEC 60227, UL 13, UL 44, UL 83, UL 1277, UL 2250.

Railway Cables: ELRS-0019 REV-4, CLW-0458 ALT-E, CLW-0459 ALT-C, EDTS - 132 REV - C, EDPS - 179, EDPS - 304, EN - 50264 - 3 - 1 & 2, EN - 50306 - 1, 2, 3 & 4, EN - 50382 - 1 & 2, EN - 45545 - 2, IEC 61156 - 6.

Navy & Marine Cables: EED 50-12 REV-3, EED 50-13 REV-2, DEF STAN 61-12 PART 18, DEF STAN 61-12 PART 31, DEF STAN 02-526, DEF STAN 02-527, MIL - DTL-24640C, MIL - DTL 24643C, IEC 60092 - 350, 353, 376 & 360, BS 6883, BS 7917, IS 9968 Part - I, IS 6380, EN 50525 - 2- 11-12-21-22-41-42, EN 50618, IEEE 1580

Mining Cables: IS 14494, **Co-Axial Cables:** MIL - DTL - 17H,

High Temperature / Aerospace Cables: JSS 51034, 51038, SAE-AS 22759 / 32A, 34B, 41B, 43B, 44A, 45A, 80D, 83E, 84E, 85E, 86E, 87E, 88E, 89E, 90D, 91D, 92D, ANSI / NEMA - WC - 27500, UL 13, UL 44, UL 1277, UL 2250.

Valuable Assets

- Over 5,00,000 sq ft of infrastructure facilities with latest technology
- 2250+ dedicated & high performing workforce
- Experienced & professional leadership team
- Offers technical support in cable selection through SAP



Railway Cables

Control & Power Cables for Diesel Electric Locomotives (EDPS 179 & EDPS 304)

This specifications covers the performance requirements for control & power cables used within the electrical power distribution system of Diesel-Electric Locomotives and other heavy duty industrial equipment with larger duty cycle.

Application : EDPS-179 (Control Wires): Used in the electrical control system of diesel-electric locomotives and other heavy-duty industrial equipment. They are typically of smaller sizes (up to and including AWG size 3).

EDPS-304 (Power Cables): Used in the power distribution system of diesel-electric locomotives and other heavy-duty industrial equipment with variable duty cycles. These are larger cables (AWG size 1 and larger)

- Drilling Rigs
- Railroad and Transit Car Wiring
- Electric Earth-Moving Equipment

Advantages :

- Fire-safe due to flame-retardant, low-smoke and low-acid gas properties
- Performs reliably against oil, grease and extreme temperatures
- Features highly flexible, Class 5 annealed tinned copper conductors
- Engineered for a long service life, minimizing maintenance costs
- Resistance to mineral oil, diesel oil, fluids & ozone

Diesel Electric Locomotive Cables ATC, 125° C, As Per EMD/9094883

Construction

Conductor : Annealed Tinned Copper Conductor

Insulation : Thermosetting Crosslinked Polyolefin compound as Per EDPS 179 Dual Layer Thermosetting Crosslinked Polyolefin compound as Per EDPS 304

Technical Data

Temperature Range : - 65° C to +125° C

Thermal Life Rating : 10,000 Hours at +125° C

Key features

High-Temperature Rating : It can withstand a wide Temperature range from -65° C to 125° C

Durable Construction Rating : Features a flexible, tinned copper conductor with robust dual-layer insulation

Environmental Resistance : Highly resistant to oil, fuel, grease, moisture, ozone and high ambient conditions

Safety Features : Excellent flame retardant and produces low smoke and acid gas generation

Performance and Usability : Flexible, easy to strip and abrasion resistant & crush resistant





Railway Cables

Control & Power Cables for Diesel Electric Locomotives (EDPS 179 & EDPS 304)

EMD-9094883

EMD Part Number	Conductor Size (in AWG)	Conductor Size (in mm^2)	EDPS specification	Nominal Outer Diameter in (mm)	Maximum Outer Diameter in (mm)	Insulation Color	AC Voltage Rating
8466845	18 AWG	0.815	179	2.72	2.82	YELLOW	600
9321021	18 AWG	0.815	179	2.72	2.82	GREEN	600
8466844	16 AWG	1.23	179	3.00	3.10	RED	600
9322292	16 AWG	1.23	179	3.00	3.10	GREEN	600
9086254	16 AWG	1.23	179	3.73	3.86	ORANGE	1000
8470754	14 AWG	2.19	179	3.43	3.53	CHARCOAL	600
8460546	14 AWG	2.19	179	4.19	4.29	GRAY	1000
40019384	12 AWG	3.08	179	3.94	4.04	LT BLUE	600
8460547	12 AWG	3.08	179	4.7	4.80	BLUE	2000
9094884	8 AWG	7.58	179	6.35	6.63	GRAY	2000
9094885	5 AWG	18.63	179	8.74	9.12	GRAY	2000
9094886	3 AWG	25.59	179	10.0	10.34	GRAY	2000
9094887	1 AWG	46.06	304	13.2	13.46	GRAY	2000
9094888	00 AWG	66.84	304	15.2	15.75	GRAY	2000
9094889	0000 AWG	112.6	304	20.7	21.51	GRAY	2100
9094890	-	158.7	304	23.6	24.46	GRAY	2100
9086205	-	225.2	304	26.9	27.94	GRAY	2100
8462288	-	271.2	304	30.9	31.62	DK GRAY	2100
9085669	-	300	304	31.8	33.02	GRAY	2100
9530744	10 AWG	5.53	179	5.41	5.54	BLACK	1000
8408649	20 AWG	0.60	179	1.73	1.80	BROWN	600
40028092	20 AWG	0.60	179	2.44	2.54	TAN	600
40085782	00 AWG	66.84	304	17.3	17.53	GRAY	2000
10661360	1 AWG	46.06	304	15.2	15.75	DK GRAY	2000

EMD/EL/PT/505 (ALT-X)

EMD Part Number	Conductor Size (mm^2)	EDPS Specification	Overall Diameter in (mm)		Insulation Color	AC Voltage Rating
			Minimum	Maximum		
12330772	1.5	179	3.9	4.06	GRAY	1800
12330784	3.0	179	4.56	4.72	GRAY	2000
12330796	6.0	179	6.14	6.35	GRAY	2000
12330802	35	179	11.16	11.50	GRAY	2000
12330814	95	304	18.20	18.50	GRAY	2100
12330826	240	304	28.98	29.60	GRAY	2100
12330838	300	304	32.04	32.60	GRAY	2100
12999040	1.5	179	2.60	2.80	GRAY	600

EMD-40015785

EMD Part Number	Conductor Size (mm^2)	EDPS Specification	Nominal Outer Diameter in (mm)	Maximum Outer Diameter in (mm)	Insulation Color	AC Voltage Rating
40015786	271.2 mm^2	304	28.6	29.08	GREY	2000
40015787	328.0 mm^2	304	31.5	32.26	GREY	2000
40038694	225.5 mm^2	304	26.8	27.43	GREY	2000
40036094	300.0 mm^2	304	30.0	30.61	GREY	2000
40056040	107.2 mm^2	304	20.3	20.96	GREY	2100





Thin Walled Flexible Electron Beam Irradiated Elastomeric Cables

ELRS/SPEC/ELC/0019 REV-4

Electron beam irradiated thin walled flexible elastomeric cables with copper conductor, limited fire hazard, minimum flame spread, low smoke emission & limited toxic fumes emission.

Application : They are designed for fixed, protected internal use in power, auxiliary as well as control circuit of conventional tap changer electric locomotives, AC/DC EMU & BG AC EMU & MEMU / Coaching Stock

Fire performance meeting ELRS / SPEC / ELC / 0019 requirements along with EN 45545-2 HL3

Advantages : It's construction provides extreme durability against mechanical stress, chemicals and temperature fluctuations

Halogen-free, fire safety by reducing flame spread, smoke and toxic gas emissions

Resistance to mineral oil, diesel oil, fluids & ozone

Thin-wall design allows for space-efficient installation

Robust build guarantees a long service life

Construction:

	Single Core Cables		Multi Core Cables	
Component	up to 750 V	Above 750 V & Up To 1.8/3 KV	Above 750 V & Up To 1.8/3 KV	
Size (mm^2)	1.5 mm^2 to 150 mm^2	1.5 mm^2 to 300 mm^2	19C X 2.5 mm^2	19C X 4 mm^2
Operating temperature	- 40° C to +120° C			
Electrolytic Flexible Annealed Tinned Copper (Class-5)	☑	☑	☑	☑
Insulation (Type EBXL EPDM)	☒	☑	☑	☑
Insulation (Type EBXL EVA)	☑	☒	☑	☑
Sheath (Type EBXL EVA)	☒	☑	☑	☑
HV Test	6 KV for 5min	8 KV for 15min		
IR Constant-At room temp. at 90 ± 3° C	K ≥ 2000 MΩ-km K ≥ 30 MΩ-km	K ≥ 12000 MΩ-km K ≥ 200 MΩ-km		
Bending Radius:	3 X OD for cable diameter < 10mm 5 X OD for cable diameter > 10mm			

Colors: Various color options available as per customer requirement (Red, Yellow, Blue, Black, Grey, GNYE, Chocolate, White, etc.).

Compliance & Fire Safety

Low Flame Spread / Flame Retardancy : IEC 60332-1-2, IEC 60332-3, CAT-C

Low Smoke Emission : ASTMD 2843 / IEC 61034-2

Corrosivity of Combustion of gases (on Sheath only) : IEC 60754-2

Toxicity of Combustion of gases (on Sheath only) : NES 713

Key Features

Electron Beam Cross Linked (EBXL) Cable

Halogen-Free, Low Smoke & Toxicity

High Temperature Rated - 40° C to +120° C Continuous Operation

Oil, Diesel & Chemical Resistant for Railway Environments

Flexible Tinned Copper Conductors (Class 5) for Easy Installation

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp.



Railway Cables

ELRS/SPEC/ELC/0019 REV-4 (Data Sheet-2A-Table-1) up to 750 V

For Tap Changer Electric Locomotive & AC/DC EMU, BG AC EMU & MEMU with single layer Insulation (Single Core)

Nominal Cross Sectional Area of Core (mm^2)	Single Wire Diameter (maximum) (mm)	Overall Cable (mm) Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
1.5	0.26	2.70 ± 0.10	13.7
2.5	0.26	3.30 ± 0.15	8.21
4	0.31	3.95 ± 0.15	5.09
6	0.31	4.50 ± 0.20	3.39
10	0.41	5.60 ± 0.30	1.95
16	0.41	7.20 ± 0.30	1.24
25	0.41	8.60 ± 0.30	0.795
35	0.41	10.00 ± 0.30	0.565
50	0.41	11.90± 0.30	0.393
70	0.51	14.20± 0.30	0.277
95	0.51	15.70± 0.30	0.210
120	0.51	17.70± 0.30	0.164
150	0.51	20.30± 0.30	0.132

ELRS/SPEC/ELC/0019 REV-4 (Data Sheet-2A-Table-2) Above 750 V & up to 1.8 / 3.0 KV

For Tap Changer Electric Locomotive & AC/DC EMU, BG AC EMU & MEMU with insulation & Sheath (Single Core)

Nominal Cross Sectional Area of Core (mm^2)	Single Wire Diameter (maximum) (mm)	Overall Cable (mm) Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
1.5	0.26	3.20 ± 0.10	13.7
2.5	0.26	3.70 ± 0.15	8.21
4	0.31	4.50± 0.15	5.09
6	0.41	5.10 ± 0.15	3.39
10	0.41	6.30± 0.20	1.95
16	0.41	8.30 ± 0.20	1.24
25	0.41	10.2 ± 0.30	0.795
35	0.41	11.7 ± 0.30	0.565
50	0.41	13.6± 0.30	0.393
70	0.51	15.6± 0.30	0.277
95	0.51	17.3± 0.30	0.21
120	0.51	19.6± 0.30	0.164
150	0.51	21.9± 0.30	0.132
185	0.51	23.8± 0.30	0.108
240	0.51	26.9± 0.30	0.0817
300	0.51	29.7± 0.30	0.0654

ELRS/SPEC/ELC/0019 REV-4 (Data Sheet-2B-Table-1) Above 750 V & up to 1.8 / 3.0 KV

Number of Cores X Cross Sectional (mm^2)	Single Wire Diameter (maximum) (mm)	Overall Cable (mm) Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
19C X 2.5	0.26	23.0 ± 0.5	8.21
19C X 4	0.31	30.5 ± 1.0	5.09





Single Core Cables for Electric Locomotives & Rolling Stock

Types WAG-9, WAG-9H, WAP-5 & WAP-7 (CLW/ES/03/0458 Alt.E)

These high-performance cables are built for demanding applications, ensuring efficient and reliable power transmission in power, auxiliary, control, sensor and driver circuits for AC traction motors in railway rolling stock.

Construction:

Component	4GKW- 1.8 KV (1.8/3 KV) (Single Core Cable)	9GKW- 4 KV (3.6/6 KV) (Single Core Cable)	3GKW (300/500 V) (Single Core Wire)
Size (mm^2)	1.5 mm^2 to 150 mm^2	10 mm^2 to 150 mm^2	0.5 mm^2
Operating temperature	- 40° C to +120° C		
Circular Annealed Tinned Copper (Class-5) Complying to IEC 60228	☑	☑	☑
Insulation - EBXL EPDM	☑	☑	☒
Insulation - (Electron Beam Cross Linked Copolymer - Type EBXL EVA)	☒	☒	☑
Sheath-Type EBXL EVA	☑	☑	☒
HV TEST	6 KV for 15min	12 KV for 15 min	3 KV for 15 min
Min. Bending Radius	3 X OD for Cable dia ≤ 10mm 5 X OD for Cable dia > 10mm		3 X OD for fixed installation 4 X OD for flexing installation

* The 300 / 500 V grade: Insulation Color: Red, Yellow / with Green Strip, Customer requirements.
* For 1.8 KV (4 GKW) Insulation color: Grey & outer sheath color: Black
* For 4.0 KV (9 GKW) Insulation color: Red & outer sheath color: Black

Multi Core / Pair Cables for Electric Locomotives & Rolling Stock

Types WAG-9, WAG-9H, WAP-5 & WAP-7 (CLW/ES/03/0459 Alt.C)

These cables are used in control, sensor & roof circuit of Electric Locomotive with excellent flame retardant and low smoke halogen-free properties. Designed for durability, they resist extreme temperatures, oil, ozone, weathering and abrasion while remaining flexible and easy to strip.

Construction:

Component	300/300 V (0.5 mm^2) Screened	300/300 V (0.5 mm^2) Twisted	600/1000 V (1.0 mm^2) Screened	600/1000 V (1.0 mm^2) Twisted
Circular Annealed Tinned Copper (Class-5) Complying to IEC 228	☑	☑	☑	☑
Operating temperature	- 40° C to +120° C			
Insulation (Type EBXL EPDM)	☑	☑	☑	☑
Fillers	(Optional)	(Optional)	(Optional)	(Optional)
Separators	(Optional)	(Optional)	(Optional)	(Optional)
EMC Screening (Tin Copper Braiding)	☑	☒	☑	☑
Sheath (Type EBXL EVA) (BLACK)	☑	☑	☑	☑
HV Test	1.5 KV at 50HZ for 15 min		4 KV at 50HZ for 15min	
Min. Bending Radius (Fixed installations)	5 x Overall diameter			

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request

Application : Designed for critical power transmission and low voltage signal transmission in railway rolling stock

Advantages : These Electron Beam Cross Linked (EBXL) electrical cables are with limited fire hazard properties. This construction ensures extreme durability low frame spread, low smoke halogen free, flame retardant & excellent resistance to high and low temperature, oil, ozone, weathering and abrasion, flexible & easy to strip.

Ensures very good EMC compatibility for screened cables where signal integrity is essential for safe operation.

Compliance & Fire Safety : Low Flame Spread / Flame Retardant - IEC 60332-1-2, IEC 60332-3 CAT-C Smoke Intensity - IEC 61034-2. Corrosivity of combustion of gases IEC 60754-2 Toxicity of combustion of gases (sheath only) adheres to UTIP part 2 E7 / NES 713

Fire Performance as per EN-45545-2 HL2/HL3

Key Features : Environmental resistance – resists oil, diesel and various chemicals. Physical properties - flexible and highly durable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | High Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp.



Railway Cables

CLW/ES/03/0458 ALT.E (Data Sheet-1)

(Single Core Cables 1.8 KV) (1.8 / 3.0 KV) (4 GKW)

Nominal Cross Sectional Area of Core (mm^2)	Nominal Conductor Diameter (mm)	Minimum Wall thickness		Cable Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
		Insulation (mm)	Sheath (mm)		
1.5	1.6	0.3	0.4	3.20 ± 0.10	13.7
2.5	2.1	0.3	0.4	3.70 ± 0.15	8.21
6	3.3	0.35	0.45	5.10 ± 0.15	3.39
10	4.2	0.4	0.5	6.30 ± 0.20	1.95
16	5.5	0.5	0.7	8.30 ± 0.20	1.24
25	6.8	0.6	0.8	10.20 ± 0.30	0.795
35	7.8	0.65	0.85	11.70 ± 0.30	0.565
50	9.5	0.7	0.9	13.60 ± 0.30	0.393
70	11.5	0.75	0.95	16.60 ± 0.30	0.277
95	12.9	0.85	1.05	17.80 ± 0.30	0.21
120	14.8	0.95	1.15	19.60 ± 0.30	0.164
150	16.3	1	1.2	21.90 ± 0.30	0.132

CLW/ES/03/0458 ALT.E (Data Sheet-2)

(Single Core Cables 4 KV) (3.6 / 6 KV) (9 GKW)

Nominal Cross Sectional Area of Core (mm^2)	Nominal Conductor Diameter (mm)	Minimum Wall thickness		Cable Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
		Insulation (mm)	Sheath (mm)		
10	4.2	0.7	0.8	7.50 ± 0.20	1.95
16	5.5	0.85	0.95	9.40 ± 0.30	1.24
25	6.8	0.85	0.95	10.90 ± 0.40	0.795
70	11.5	1.05	1.15	16.50 ± 0.40	0.277
95	12.9	1.2	1.3	18.30 ± 0.50	0.21
120	14.8	1.3	1.4	20.60 ± 0.50	0.164
150	16.3	1.35	1.45	22.90 ± 0.50	0.132

CLW/ES/03/0458 ALT.E (Data Sheet-3)

(Single Core Cables 300 / 500 V AC) (3 GKW)

Nominal Cross Sectional Area of Core (mm^2)	Nominal Conductor Diameter (mm)	Minimum Wall thickness Insulation (mm)	Cable Diameter (mm)	Cable Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
0.5	0.89	0.35	1.71 ± 0.1	RED	40.1
0.5	0.89	0.35	1.71 ± 0.1	YELLOW - GREEN	40.1

Fire retardant

Good Chemical Resistance

Good Resistance to UV, humidity and ozone

High Flexible

Halogen Free

Low Corrosivity of combustion gases

Low toxicity

Operatingtemp.



Railway Cables

CLW/ES/03/0459 ALT.C (Data Sheet-1)

(Multi Core Cables 300 / 300 V)

No. of Cores X Nominal Cross Sectional Area of Core (mm^2)	Conductor Typical Construction (Nos. X Nos. X mm)	Nominal Conductor Diameter (mm)	Minimum Wall thickness		Overall Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
			Insulation (mm)	Sheath (mm)		
2C X 0.5 (Screened Cable)	19 x 0.176	0.86	0.25	0.75	5.3 + 0.3	41.1
3C X 0.5 (Screened Cable)	19 x 0.176	0.86	0.25	0.75	5.5 + 0.3	41.1
2 X 2 X 0.5 (Multipair Screened Cable)	19 x 0.176	0.86	0.25	0.9	7.8 + 0.3	43.1
5C X 0.5 (Screened Cable)	19 x 0.176	0.86	0.25	0.8	6.8 + 0.3	41.1
9C X 0.5 (Screened Cable)	19 x 0.176	0.86	0.25	0.55	8.2 + 0.3	41.1
9C X 0.5 (Twisted Cable)	19 x 0.179	0.89	0.25	0.8	7.0 + 0.3	41.1
25C X 0.5 (Twisted Cable)	19 x 0.179	0.89	0.25	0.95	11.2 + 0.4	41.1

CLW/ES/03/0459 ALT.C (Data Sheet-2)

(Multi Core Cables 600 / 1000 V)

No. of Cores X Nominal Cross Sectional Area of Core (mm^2)	Conductor Typical Construction (Nos. X Nos. X mm)	Nominal Conductor Diameter (mm)	Minimum Wall thickness		Overall Diameter (mm)	Max. Conductor Resistance @ 20°C (ohm / Km)
			Insulation (mm)	Sheath (mm)		
2C X 1.0 (Screened Cable)	19 x 0.25	1.25	0.5	0.8	7.1 ± 0.3	20
2 X 2 X 1.0 (Multipair Screened Cable)	19 x 0.25	1.25	0.5	1.0	11 ± 0.4	20.4
3 X 4 X 1.0 (Multiquad Screened Cable)	19 x 0.25	1.25	0.5	1.3	15.5 ± 0.5	20.4
2C X 1.0 (Twisted Cable)	19 x 0.25	1.25	0.5	0.8	6.5 ± 0.3	20

Fire retardant

Good Chemical Resistance

Good Resistance to UV, humidity and ozone

High Flexible

Halogen Free

Low Corrosivity of combustion gases

Low toxicity

Operatingtemp.



Railway Cables

Thin-Walled Electron Beam Irradiated Flexible Elastomeric Cables with copper conductor. (EDTS 132, REV-C)

Flexible copper cables with E-beam cross-linking, designed for passenger coaches, featuring thin walled insulation, low chemical residue and Limited Fire Hazard properties with minimum flame spread, smoke and toxic emissions.

Application : For Coaching Stock Applications. Suitable for use in power and control circuits for passenger coaches, AC/DC EMU, BG AC EMU and MEMU coaching stock. UIC cables are used in modern railway applications to ensure safe and reliable communication and control applications

Advantages

Enhanced Fire Safety : Limited fire hazard type with low smoke and toxicity
EMC Compatibility : Ensures very good EMC compatibility for screened cables
Extreme Durability : Resistant to high temperatures, mechanical stress and harsh chemicals
Space-Efficient Design : Thin-walled construction for easy & compact installation
Reliable Performance : Tinned copper conductors ensure efficient power and signal transmission
Resistance to mineral oil, diesel, fluids and chemicals

Construction:

Component	Data Sheet-1	Data Sheet-2	Data Sheet-3	Data Sheet-4	Data Sheet-5	Data Sheet-7
Voltage Rating	1.8/3.0 KV	600/1000 V	600/1000 V	600/1000 V	300/300 V	600/1000 V
Operating temperature	- 40° C to +120° C					
Core & Cable type	Single Core Unscreened	Single Core Unscreened	Multi Core Unscreened	Multi Core Screened	UIC Screened	Multi Core Unscreened
Circular Annealed Tinned Copper Conductor (120° C) (Class 5)	☑	☑	☑	☑	☑	☑
Insulation (EBXL EPDM)	☑	☑	☑	☑	☑	☑
EMC Screening (ATC Braiding)	☒	☒	☒	☑	☑	☒
Sheath (EBXL EVA)	☑	☒	☑	☑	☑	☑
Test Voltage	6 KV for 15 min	3 KV for 5 min	1.5 KV for 5 min	1.5 KV for 5 min	2.0 KV for 1 min	1.5 KV for 5 min
Bending Radius	3XD< 10 mm 5XD >10 mm	3XD< 10 mm 5XD >10 mm	4XD (fixed) 5XD (flexible)	3XD (fixed) 5XD (flexible)	4XD (fixed) 5XD (flexible)	4XD (fixed) 5XD (flexible)

☑ = Included | ☒ = Not Included * Insulation color shall conform to standard or be customized as per customer requirements. Outer sheath will be provided in black for all Data sheets except Datasheet-2: Outer sheath color : Grey

Compliance & Fire Safety

Low Flame Spread / Flame Retardancy : IEC 60332-1-2, IEC 60332-3 CAT C
Low Smoke Emission : ASTMD 2843 / IEC 61034-2
Corrosivity of Combustion of gases (on Sheath only) : IEC 60754-2
Toxicity of Combustion of gases (on Sheath only) : NES 713

Key Features

Fire Safety : Limited Fire Hazard type with low smoke and toxicity

Insulation : Electron beam irradiated, flexible elastomeric construction provides extreme durability against mechanical stress, chemicals and temperature fluctuations

Environmental Resistance : Resistant to oil, diesel and various chemicals

Flexibility : Class 5 tinned, flexible copper conductors for easy installation

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | High Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



Railway Cables

EDTS 132, REV-C (Data Sheet-1)

(Single Core Cables 1800 / 3000 V)

Nominal Cross Sectional (mm^2)	No. of Wires X Single Wire Diameter (Max)	Cable Overall Diameter	Max. Conductor Resistance @ 20°C (ohm / Km)
1.5	30X0.26	3.20 ± 0.10	13.7
2.5	50X0.26	3.70 ± 0.15	8.21
4.0	56X0.31	4.50 ± 0.15	5.09
6.0	84X0.31	5.10 ± 0.15	3.39
10	80X0.41	6.30 ± 0.20	1.95
16	126X0.41	8.30 ± 0.20	1.24
25	196X0.41	10.2 ± 0.30	0.795
35	266X0.41	11.7 ± 0.30	0.565
50	385X0.41	13.6 ± 0.30	0.393
70	348X0.51	15.6 ± 0.30	0.277
95	468X0.51	17.3 ± 0.30	0.210
120	589X0.51	19.6 ± 0.30	0.164
150	741X0.51	21.9 ± 0.30	0.132

EDTS 132, REV-C (Data Sheet-2)

(Single Core Cables 600 / 1000 V)

Nominal Cross Sectional (mm^2)	No. of Wires X Single Wire Diameter (Max)	Cable Overall Diameter	Max. Conductor Resistance @ 20°C (ohm / Km)
1.5	30X0.26	2.70 ± 0.10	13.7
2.5	50X0.26	3.30 ± 0.10	8.21
4	56X0.31	3.95 ± 0.10	5.09
6	84X0.31	4.70 ± 0.15	3.39
10	80X0.41	5.85 ± 0.15	1.95
16	119X0.41	7.30 ± 0.15	1.24
25	182X0.41	8.90 ± 0.20	0.795
35	259X0.41	10.2 ± 0.20	0.565
50	378X0.41	11.9 ± 0.20	0.393
70	336X0.51	14.3 ± 0.25	0.277
95	444X0.51	15.9 ± 0.25	0.210
120	551X0.51	17.9 ± 0.30	0.164
150	722X0.51	20.3 ± 0.30	0.132

EDTS 132, REV-C (Data Sheet-3)

(Multi Core Unscreened Cables 600 / 1000 V)

No.of Cores X Nominal Cross Section (mm^2)	Conductor Construction (n x mm)	Cable Overall Diameter	Max. Conductor Resistance @ 20°C (ohm / Km)
2X0.50	19X0.18	6.2 ± 0.3	40.1
2X0.75	24X0.20	6.6 ± 0.3	26.7
2X1.0	32X0.20	7.5 ± 0.3	20.0
2X1.5	30X0.25	7.8 ± 0.3	13.7
3X0.5	19X0.18	6.8 ± 0.3	40.1
3X0.75	24X0.20	7.0 ± 0.3	26.7
3X1.0	32X0.20	7.9 ± 0.3	20.0
3X1.5	30X0.25	8.3 ± 0.3	13.7
4X0.5	19X0.18	7.4 ± 0.3	40.1
4X0.75	24X0.20	7.7 ± 0.3	26.7
4X1.0	32X0.20	8.8 ± 0.3	20.0
4X1.5	30X0.25	9.1 ± 0.3	13.7

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | High Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



Railway Cables

EDTS 132, REV-C (Data Sheet-4)

(Multi Core Screened Cables 600 / 1000 V)

No. of Cores X Nominal Cross Section (mm^2)	No. of Cores X Nominal Cross Section (mm^2)	Cable Overall Diameter	Max. Conductor Resistance @ 20°C (ohm / Km)
2X0.5	19X0.18	4.3 ± 0.3	40.1
2X1.0	19X0.25	5.0 ± 0.3	20.0
2X1.5	37X0.22	5.8 ± 0.3	13.7
3X0.5	19X0.18	4.5 ± 0.3	40.1
3X1.0	19X0.25	5.5 ± 0.3	20.0
3X1.5	37X0.22	6.1 ± 0.3	13.7
4X0.5	19X0.18	4.8 ± 0.3	40.1
4X1.0	19X0.25	5.8 ± 0.3	20.0
4X1.5	37X0.22	6.7 ± 0.3	13.7

EDTS 132, REV-C (Data Sheet-5)

(UIC Cables 300 / 300 V)

No. of Cores X Nominal Cross Section (mm^2)	No. of Cores X Nominal Cross Section (mm^2)	Cable Overall Diameter	Max. Conductor Resistance @ 20°C (ohm / Km)
4 QUAD. 4 x 1 mm^2 +1 PAIR. 2 x 0.75 mm^2 18 Core Cable	1 mm^2:19X0.25 0.75 mm^2:19X0.22	17.5 ± 0.5	Pair 2x0.75 mm^2 ≤ 28.7 Quad 4x1.0 mm^2 ≤ 22.6
5 QUAD. 4 x 1 mm^2 +1 PAIR. 2 x 0.75 mm^2 22 Core Cable	1 mm^2:19X0.25 0.75 mm^2:19X0.20	18.3 ± 0.5	Pair 2x0.75 mm^2 ≤ 28.7 Quad 4x1.0 mm^2 ≤ 22.6

EDTS 132, REV-C (Data Sheet-7)

(Multi Core Unscreened Cables 600 / 1000 V)

No. of Cores X Nominal Cross Section (mm^2)	Conductor Construction (n x mm)	Cable Overall Diameter	Max. Conductor Resistance @ 20°C (ohm / Km)
12X1.5	30X0.25	14.4 ± 0.4	13.7
16X1.5	30X0.25	16.3 ± 0.5	13.7
18X1.5	30X0.25	17.5 ± 0.5	13.7
25X1.5	30X0.25	20.9 ± 0.5	13.7
12X2.5	50x0.25	18.7 ± 0.5	8.21
12X4	56x0.3	21.8 ± 0.5	5.09

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | High Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



Power and Control Cables designed for Railway Rolling Stock, Traction & Metro Applications

EN 50264-3-1 Single Core Cables

Offering exceptional flame resistance, durability and EMC compatibility, these cables are ideal for fixed installations in locomotives, metros & EMUs.

Application : Used for power transmission, control in various applications in Railway Rolling Stock (Locomotives, Metros, EMU, MEMU)

They are suitable for use in confined spaces due to their reduced bending radius

They can withstand harsh operating conditions, including exposure to oil, ozone and wide temperature fluctuations

The conductors are rated for continuous operation at temperatures 90° C (Optional: 120° C)

Advantages : Halogen-free, fire safety by reducing flame spread, smoke and toxic gas emissions

They are resistant to oils, fuels and ozone, ensuring durability and reliable performance even when exposed to harsh chemicals

They can withstand mechanical stresses like vibration and impact, which are common in railway environments

Construction:

Single Core Cables

Component	0.6/1 KV (Unsheathed) M	1.8/3 KV (Unsheathed) M	1.8/3 KV (Sheathed) MM	3.6/6 KV (Sheathed) MM
Size (mm^2)	1.0 mm^2 to 400 mm^2	1.5 mm^2 to 400 mm^2	1.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2
Operating temperature	- 40° C to +90° C / +120° C			
Flexible Tinned Coated Annealed Copper Conductor (Class 5)	☑	☑	☑	☑
Conductor screening	☒	☒	☒	☑
Separator Tape	(Optional)	(Optional)	(Optional)	☒
Insulation (Type EI 106/107/108/109/110)	☑	☑	☑	☑
Separator Tape	☒	☒	(Optional)	(Optional)
Sheath (Type EM 101/102/103/104)	☒	☒	☑	☑
Test Voltage	3.5 KV for 5 min	6.5 KV for 5 min	6.5 KV for 5 min	11 KV for 5 min

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request

Key features & Fire Safety : IEC 60332-1-2 – Flame Retardant

IEC 60754-1/2 – Corrosivity of Combustion of gases

IEC 61034-2 – Low Smoke Emission

EN 45545-2 HL-2/HL-3 - Fire behavior of the Cable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



Railway Cables

EN 50264-3-1 (Table-1) 0.6 / 1 KV

(Unsheathed Single Core Cables)

Size (in mm^2)	Overall Diameter (mm)		Max. Conductor Resistance @ 20°C (ohm/Km)
	Minimum	Maximum	
1.0	2.4	2.8	20
1.5	2.8	3.3	13.7
2.5	3.0	3.8	8.21
4	3.8	4.4	5.09
6	4.2	5.0	3.39
10	5.1	5.8	1.95
16	6.1	7.2	1.24
25	7.8	9.1	0.795
35	9.0	10.8	0.565
50	10.6	12.4	0.393
70	12.5	14.6	0.277
95	13.9	16.3	0.210
120	15.7	18.4	0.164
150	17.6	20.6	0.132
185	19.6	22.9	0.108
240	22.2	26.0	0.0817
300	24.6	28.6	0.0654
400	28.1	32.9	0.0495

EN 50264-3-1 (Table-2) 1.8 / 3 KV

(Unsheathed Single Core Cables)

Size (in mm^2)	Overall Diameter (mm)		Max. Conductor Resistance @ 20°C (ohm/Km)
	Minimum	Maximum	
1.5	5.3	6.2	13.7
2.5	5.7	6.7	8.21
4	6.2	7.3	5.09
6	6.7	7.8	3.39
10	7.5	8.8	1.95
16	8.8	10	1.24
25	9.9	11.8	0.795
35	11.1	13.0	0.565
50	12.5	14.8	0.393
70	14.2	18.6	0.277
95	16.0	18.7	0.210
120	17.6	20.6	0.164
150	19.1	22.3	0.132
185	20.9	24.4	0.108
240	23.7	27.5	0.0817
300	25.6	30.1	0.0654
400	28.2	34.2	0.0495

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | High Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp.



Railway Cables

EN 50264-3-1 (Table-3) 1.8 / 3 KV

(Sheathed Single Core Cables)

Size (in mm^2)	Overall Diameter (mm)		Max. Conductor Resistance @ 20°C (ohm/Km)
	Minimum	Maximum	
1.5	5.7	6.7	13.7
2.5	6.0	7.0	8.21
4	6.5	7.8	5.09
6	7.0	8.1	3.39
10	8.2	9.8	1.95
16	9.2	10.8	1.24
25	11.6	13.4	0.795
35	12.7	14.9	0.565
50	14.1	15.6	0.393
70	15.8	18.5	0.277
95	18.0	21.0	0.210
120	19.6	22.9	0.164
150	21.4	25.1	0.132
185	23.4	27.4	0.108
240	25.9	30.3	0.0817
300	28.1	32.9	0.0654
400	32.0	37.4	0.0495

EN 50264-3-1 (Table-4) 3.6 / 6 KV

(Sheathed Single Core Cables)

Size (in mm^2)	Overall Diameter (mm)		Max. Conductor Resistance @ 20°C (ohm/Km)
	Minimum	Maximum	
2.5	8.6	10.1	8.21
4	9.1	10.7	5.09
6	9.8	11.2	3.39
10	10.4	12.2	1.95
16	11.1	13.4	1.24
25	13.5	16.3	0.795
35	14.9	16.6	0.565
50	16.4	18.1	0.393
70	18.0	19.1	0.277
95	19.5	22.8	0.21
120	21.4	25.1	0.164
150	22.9	26.8	0.132
185	25.1	29.4	0.108
240	28.3	33.1	0.0817
300	30.6	35.8	0.0654
400	33.7	39.4	0.0495





Power and Control Cables designed for Railway Rolling Stock, Traction & Metro Applications

EN 50264-3-2 Multi Core Cables

Offering exceptional flame resistance, durability and EMC compatibility, these cables are ideal for fixed installations in locomotives, metros & EMUs.

Application : Used for power transmission, control in various applications in Railway Rolling stock (Locomotives, Metros, EMU, MEMU)

The cables can withstand harsh operating conditions, including exposure to oil, ozone and wide temperature fluctuations

The conductors are rated for continuous operation at temperatures 90° C (Optional :120° C)

Their flexible, multi-core design enables easy routing in limited spaces, especially where movement or vibration is present

Advantages : Halogen-free, fire safety by reducing flame spread, smoke and toxic gas emissions

They are resistant to oils, fuels and ozone, ensuring durability and reliable performance even when exposed to harsh chemicals

The cables can withstand mechanical stresses like vibration and impact, which are common in railway environments

Construction:

Multicore Cables

Component	300 / 500 V (Unscreened) MM	300 / 500 V (Screened) MMS	0.6 / 1 KV (Unscreened) MM	0.6 / 1 KV (Screened) MMS
Size (mm^2)	1.0 mm^2 to 2.5 mm^2	1.0 mm^2 to 2.5 mm^2	1.5 mm^2 to 50 mm^2	1.5 mm^2 to 50 mm^2
Operating temperature	- 40° C to +90° C / +120° C			
Flexible Tinned Coated Annealed Copper Conductor (Class 5)	☑	☑	☑	☑
Separator Tape	(Optional)	(Optional)	(Optional)	(Optional)
Insulation (Type EI 106/107/108/109/110)	☑	☑	☑	☑
Metallic Screening	☒	☑	☒	☑
Separator Tape	(Optional)	(Optional)	(Optional)	(Optional)
Sheath (Type EM 101/102/103/104)	☑	☑	☑	☑
Test Voltage	2 KV for 5 min		3.5 KV for 5 min	

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request

Key features & Fire Safety : IEC 60332-1-2 – Flame Retardant

IEC 60754-1/2 – Corrosivity of Combustion of gases

IEC 61034-2 – Low Smoke Emission

EN 45545-2 HL-2 / HL-3 – Fire behavior of the Cable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



Railway Cables

Dimensions of Base Core (0.6 / 1 KV)

EN 50264-3-2 (Table-3) 0.6 / 1 KV

(Single Core Cables)

Size (in mm^2)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum	Maximum	
1.5	2.8	3.3	13.7
2.5	3.2	3.8	8.21
4	3.8	4.4	5.09
6	4.2	5.0	3.39
10	5.1	5.9	1.95
16	6.1	7.2	1.24
25	7.1	8.1	0.795
35	8.0	10.8	0.565
50	10.8	12.4	0.393

EN 50264-3-2 (Table-4) 0.6 / 1 KV

(Unscreened Multi Core Cables)

Size (in mm^2)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum	Maximum	
2X1.5	7.2	9.0	13.7
2X2.5	8.0	10.0	8.21
2X4	9.0	11.3	5.09
2X6	10.1	12.4	3.39
2X10	12.5	15.4	1.95
2X16	14.9	18.4	1.24
2X25	18.7	23.0	0.795
2X35	21.2	25.9	0.565
2X50	25.1	30.7	0.393

EN 50264-3-2 (Table-5) 0.6 / 1 KV

(Screened Multi Core Cables)

Size (in mm^2)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum	Maximum	
2X1.5	7.9	9.9	13.7
2X2.5	8.7	10.7	8.21
2X4	10.2	12.7	5.09
2X6	11.9	13.6	3.39
2X10	13.4	16.6	1.95
2X16	16.0	19.8	1.24
2X25	19.8	24.8	0.795
2X35	22.6	26.6	0.565
2X50	26.4	32.3	0.393





Railway Cables

EN 50264-3-2 (Table-6) 0.6 / 1 KV (Unscreened Multi Core Cables)

Size (in mm²)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum	Maximum	
3X1.5	7.7	9.5	13.7
3X2.5	8.5	10.6	8.21
3X4	9.7	12.0	5.09
3X6	11.7	13.2	3.39
3X10	13.3	16.5	1.95
3X16	18.0	19.8	1.24
3X25	20.0	24.7	0.795
3X35	23.0	28.2	0.565
3X50	26.3	32.2	0.393

EN 50264-3-2 (Table-7) 0.6 / 1 KV (Screened Multi Core Cables)

Size (in mm²)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum	Maximum	
3X1.5	8.4	10.4	13.7
3X2.5	9.2	11.4	8.21
3X4	10.8	13.3	5.09
3X6	11.6	14.3	3.39
3X10	14.4	18.0	1.95
3X16	17.6	20.6	1.24
3X25	20.3	26.1	0.795
3X35	24.5	28.6	0.565
3X50	28.3	34.8	0.393

EN 50264-3-2 (Table-8) 0.6 / 1 KV (Unscreened Multi Core Cables)

Size (in mm²)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum	Maximum	
4X1.5	8.5	10.5	13.7
4X2.5	9.4	11.6	8.21
4X4	11.8	13.4	5.09
4X6	12.2	14.9	3.39
4X10	14.7	16.5	1.95
4X16	18.0	22.1	1.24
4X25	22.6	27.6	0.795
4X35	25.7	37.2	0.565
4X50	30	38.5	0.393

EN 50264-3-2 (Table-9) 0.6 / 1 KV (Screened Multi Core Cables)

Size (in mm²)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum	Maximum	
4X1.5	9.1	11.3	13.7
4X2.5	10.4	12.9	8.21
4X4	11.8	14.5	5.09
4X6	13.1	16.1	3.39
4X10	16.1	18.5	1.95
4X16	18.3	23.8	1.24
4X25	20.0	29.0	0.795
4X35	26.8	32.0	0.565
4X50	31.5	38.2	0.393

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | High Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp.







Thin-Walled Single, Multi-Core & Multi-Pair, Railway Signal & Control Cables with Special Fire Performance for Railway Rolling Stock

EN -50306-1,2,3,4

Ideal for modern railway applications where space, weight, safety and EMC performance are critical.

Application : They are designed for fixed & protected internal & external wiring in all railway vehicles, from locomotives to trams. Rated for occasional thermal stress, with a continuous operational life equivalent to temperatures of 105° C (Optional: 120° C). Their compact size and flexibility are perfect for confined spaces

These cables are crucial for power transmission, controlling & various low voltage signal transmission in various Rolling stock applications (Locomotives, Metros, EMU, MEMU, Control circuits). Their halogen-free, cross linked construction ensures superior fire safety, providing essential protection for passengers and crew

Advantages : Resists mechanical stress, chemicals and extreme temperatures

Halogen-free, cross-linked construction with good flexibility and durability compact and light weight design, very good EMC compatibility for screened cable.Thin-wall design and low bending radius allow for space-saving installations Robust build guarantees a long service life

EN 50306 Thin-Wall Railway Rolling Stock Cables

EN 50306 Cables offer diverse constructions (single / multi core, screened / unscreened, multipair), operate reliably from -40° C to +105° C (Optional 120° C) They are rated for 300 V to earth.

Available in 0.50 mm^2 to 2.5 mm^2 cross-sections, they feature electron-beam cross linked, halogen-free materials ensuring superior fire performance (low smoke, non-toxic, non-corrosive gases) and robust resistance to oils, fuels, ozone and UV, all in a compact, durable, thin-wall design.

Construction:

Component	50306-2	50306-3	50306-4
Size (mm^2)	0.5 mm^2 to 2.5 mm^2	0.5 mm^2 to 2.5 mm^2	0.5 mm^2 to 2.5 mm^2
Operating temperature	- 40° C to +105° C /+120° C		
Cable Types	Single Core	Single Core & Multi Core Cables	Multi Core & Multi Pair Cables
Screening	Unscreened	Screened	Unscreened / Screened
Flexible Tinned Coated Annealed Copper Conductor (120° C) (Class 5)	☑	☑	☑
Separator Tape	☒	(Optional)	(Optional)
Insulation (as per 3.1 of EN 50306-1)	☑	☑	☑
Laying up & Fillers	☒	☑	☑
Metallic Screening	☒	☑	☑
Separator Tape	☒	(Optional)	(Optional)
Sheath (Type S1 or S2 as per 3.2 of EN 50306-1)	☒	☑	☑
Test Voltage	2 KV for 5 min		

☑ = Included | ☒ = Not Included

Key features : IEC 60332-1-2 – Flame Retardant
IEC 60754-1/2 – Corrosivity of Combustion of gases
IEC 61034-2 – Low Smoke Emission
EN 45545-2 HL-2/HL-3– Fire behaviour of the Cable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions







EN 50306-2

(Single Core Thin-wall Insulated Wires) (0.5 mm² To 2.5 mm²)
Construction Details: Requirements for base core construction (Table-1)

Conductor Nominal Crosssection (mm²)	Number of Strands X Wire Diameter	Conductor Diameter		Insulation Overall Diameter		Max. Conductor Resistance @ 20°C (ohm / Km) Min Max
		Minimum	Maximum	Minimum	Maximum	
0.5	19X0.18	0.80	0.95	1.15	1.45	40.1
0.75	37X0.16 *	1.00	1.15	1.35	1.65	26.7
1.00	37X0.18 *	1.10	1.30	1.45	1.80	20.0
1.5	37X0.23 *	1.45	1.65	1.95	2.30	13.7
2.5	37X0.30 *	1.85	2.15	2.5	2.85	8.21

*These cables may be supplied in 19 strand conductor

EN 50306-3 (Table-1)

(Single Core & Multi Core screened and thin wall sheathed cables) (1 to 4 cores, 0.5 mm² to 2.5 mm²)

Number of Cores & Nominal Cross Section (mm)	Minimum Thickness of Sheath (mm)	Overall Diameter (mm)		Max. Conductor Resistance @ 20°C (ohm / Km)
		Minimum	Maximum	
1X0.5	0.20	2.3	2.8	40.1
2X0.5	0.20	3.5	4.3	40.1
3X0.5	0.20	3.7	4.5	40.1
4X0.5	0.20	4.0	5.0	40.1
1X0.75	0.20	2.5	3.0	26.7
2X0.75	0.20	3.9	4.7	26.7
3X0.75	0.20	4.0	5.0	26.7
4X0.75	0.20	4.5	5.5	26.7
1X1	0.20	2.7	3.2	20
2X1	0.20	4.2	5.2	20
3X1	0.20	4.5	5.5	20
4X1	0.20	5.0	6.0	20
1X1.5	0.20	3.1	3.6	13.7
2X1.5	0.20	5.1	6.1	13.7
3X1.5	0.20	5.4	6.4	13.7
4X1.5	0.20	6.0	7.0	13.7
1X2.5	0.20	3.6	4.4	8.21
2X2.5	0.20	6.4	7.4	8.21
3X2.5	0.20	6.8	7.8	8.21
4X2.5	0.20	7.5	8.5	8.21

EN 50306-4 (Table-1)

(Unscreened, sheathed Multi Core Cables for Class E & Class P - 2 to 48 cores (0.5 mm² to 2.5 mm²) Each insulated core as per the requirements given in EN 50306-2)

Number of Cores and Nominal Cross Section (mm)	Class E			Class P			Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum Thickness of Sheath (mm)	Overall Diameter (mm)		Minimum Thickness of Sheath (mm)	Overall Diameter (mm)		
		Min	Max		Min	Max	
4X0.5	1.0	5.5	6.5	0.42	4.1	5.1	40.1
7X0.5	1.0	6.3	7.3	0.42	4.9	5.9	40.1
13X0.5	1.0	8.3	9.3	0.56	7.3	8.3	40.1
19X0.5	1.0	9.0	10.2	0.56	8.1	9.1	40.1
37X0.5	1.0	12.3	13.5	0.56	10.8	12.0	40.1
4X0.75	1.0	6.0	7.0	0.42	4.6	5.6	26.7
7X0.75	1.0	6.9	7.9	0.42	5.5	6.5	26.7
13X0.75	1.0	9.1	10.3	0.56	8.2	9.2	26.7
19X0.75	1.0	10.0	11.2	0.56	9.0	10.2	26.7
37X0.75	1.0	13.2	14.4	0.56	12.2	13.4	26.7
48X0.75	1.0	14.8	16.4	0.56	13.9	15.5	26.7
4X1.0	1.0	6.3	7.3	0.42	4.9	5.9	20
7X1.0	1.0	7.3	8.3	0.42	6.0	7.0	20
13X1.0	1.0	9.7	10.9	0.56	8.7	9.9	20
19X1.0	1.0	10.7	11.9	0.56	9.8	11.0	20
37X1.0	1.0	14.0	15.6	0.56	13.3	14.5	20
4X1.5	1.0	7.4	8.4	0.42	6.0	7.0	13.7
7X1.5	1.0	8.8	9.8	0.56	7.7	8.7	13.7
13X1.5	1.0	11.7	12.9	0.56	10.7	11.9	13.7
19X1.5	1.0	13.0	14.2	0.56	12.0	13.2	13.7
37X1.5	1.0	17.2	18.8	0.56	16.2	17.8	13.7
2X2.5	1.0	7.7	8.7	0.56	6.7	7.7	8.21
3X2.5	1.0	8.1	9.1	0.56	7.7	8.1	8.21
4X2.5	1.0	8.8	10	0.56	7.9	8.9	8.21

* Other constructions on request







EN 50306-4 (Table-3)

(Screened, sheathed Multi Core for Class E & Class P - 2 to 8 cores) (0.5 mm² to 2.5 mm²)
Each insulated core as per the requirements given in EN 50306-2

Number of Cores and Nominal Cross Section (mm)	Class E			Class P			Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum Thickness of Sheath (mm)	Overall Diameter (mm) Min	Max	Minimum Thickness of Sheath (mm)	Overall Diameter (mm) Min	Max	
2X0.5	1.0	5.5	6.5	0.42	4.1	5.1	40.1
3X0.5	1.0	5.7	6.7	0.42	4.3	5.3	40.1
4X0.5	1.0	6.1	7.1	0.42	4.7	5.7	40.1
6X0.5	1.0	6.9	7.9	0.42	5.5	6.5	40.1
8X0.5	1.0	7.5	8.5	0.42	6.0	7.0	40.1
2X0.75	1.0	5.9	6.9	0.42	4.5	5.5	26.7
3X0.75	1.0	6.2	7.2	0.42	4.7	5.7	26.7
4X0.75	1.0	6.5	7.5	0.42	5.2	6.2	26.7
6X0.75	1.0	7.5	8.5	0.42	6.1	7.1	26.7
8X0.75	1.0	8.2	9.2	0.42	6.6	7.6	26.7
2X1	1.0	6.2	7.2	0.42	4.7	5.7	20
2X1	1.0	6.5	7.5	0.42	5.1	6.0	20
4X1	1.0	6.9	7.9	0.42	5.5	6.5	20
6X1	1.0	8.0	9.0	0.42	6.6	7.6	20
8X1	1.0	8.6	9.8	0.56	7.7	8.7	20
2X1.5	1.0	7.1	8.1	0.42	5.7	6.7	13.7
3X1.5	1.0	7.4	8.4	0.42	6.0	7.0	13.7
4X1.5	1.0	8.0	9.0	0.42	6.6	7.6	13.7
6X1.5	1.0	9.2	10.4	0.56	8.3	9.3	13.7
8X1.5	1.0	10.2	11.4	0.56	8.9	10.1	13.7
2X2.5	1.0	8.3	9.3	0.56	7.3	8.3	8.21
3X2.5	1.0	8.6	9.8	0.56	7.7	8.7	8.21
4X2.5	1.0	9.4	10.6	0.56	8.4	9.6	8.21

EN 50306-4 (Table-5)

(Individually Screened and sheathed and with an Overall sheath - Multi Pair cables for Class E & Class P - 2 to 7 pairs) (0.5 mm² to 1.5 mm²) Each insulated core as per the requirements given in EN 50306-2

Number of Cores and Nominal Cross Section (mm)	Class E			Class P			Max. Conductor Resistance @ 20°C (ohm / Km)
	Minimum Thickness of Sheath (mm)	Overall Diameter (mm) Min	Max	Minimum Thickness of Sheath (mm)	Overall Diameter (mm) Min	Max	
2X2X0.5	1.0	10.1	11.3	0.56	9.0	10.2	40.1
3X2X0.5	1.0	10.8	12.0	0.56	9.6	10.8	40.1
4X2X0.5	1.0	11.8	13.0	0.56	10.7	11.9	40.1
7X2X0.5	1.0	13.9	15.5	0.56	13.0	14.2	40.1
2X2X0.75	1.0	10.9	12.1	0.56	9.8	11.0	26.7
3X2X0.75	1.0	11.6	12.8	0.56	10.5	11.7	26.7
4X2X0.75	1.0	12.8	14.0	0.56	11.6	12.8	26.7
7X2X0.75	1.0	15.1	16.7	0.56	14.0	15.6	26.7
2X2X1.0	1.0	11.3	12.5	0.56	10.2	11.6	20
3X2X1.0	1.0	12.0	13.2	0.56	10.9	12.1	20
4X2X1.0	1.0	13.2	14.4	0.56	12.1	13.3	20
7X2X1.0	1.0	15.7	17.3	0.56	14.6	16.2	20
2X2X1.5	1.0	13.3	14.5	0.56	12.2	13.4	13.7
3X2X1.5	1.0	14.0	15.6	0.56	13.1	14.3	13.7
4X2X1.5	1.0	15.5	17.1	0.56	14.3	15.9	13.7
7X2X1.5	1.0	18.7	20.3	0.56	17.6	19.2	13.7

* Other constructions on request



High-Temperature Silicon Rubber Insulated Power Cables having Special Fire Performance for Railway Rolling Stock/Traction/Metro

EN 50382-1 and EN 50382-2

These railway cables deliver superior performance in high-temperature environments, offering excellent flexibility and mechanical strength. Engineered for safe and efficient power transmission in traction systems, metro trains and rolling stock operating under extreme thermal and environmental conditions.

Application : Designed for railway rolling stock applications requiring superior fire performance and thermal endurance. Halogen-free with low smoke, toxicity and corrosivity. Ideal for power distribution in locomotives, metros, EMUs and MEMUs, they are well-suited for high-stress areas like traction converters, rooftop and under frame wiring and control systems

Advantages : Engineered with advanced cross-linked silicon rubber compounds, superior mechanical durability & demonstrating high resistance to abrasion, tensile stress and cut through damage. Outstanding chemical resistance ensures reliable performance in environments exposed to oils, fuels, acids and alkalis

Designed for flexibility and ease of handling, these cables simplify installation and stripping processes, meeting the rigorous operational demands of modern railway systems

Construction: EN 50382-2

Component	1.8/3 KV (Unsheathed) F/FZ	1.8/3 KV (Sheathed) FF	3.6/6 KV (Unsheathed) F/FZ	3.6/6 KV (Unsheathed) FX/FXZ	3.6/6 KV (Sheathed) FF
Size (mm^2)	1.5 mm^2 to 400 mm^2	1.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2
Flexible Bare copper (150° C) or Tinned copper conductor (120° C) (Class 5)	☑	☑	☑	☑	☑
Flexible Bare copper (150° C) or Tinned copper conductor (120° C) (Class 6)	☒	☒	☒	☑	☒
Conductor screening	☒	☒	(Optional)	☒	(Optional)
Separator tape	(Optional)	(Optional)	☒	(Optional)	(Optional)
Insulation (Type EI 111)	☑	☑	☑	☑	☑
Insulation (Type EI 112)	☒	☑	☒	☒	☑
Textile braid on request for FZ, FXZ	☑	☒	☑	☑	☒
Sheath (EM 105/106/107)	☒	☑	☒	☒	☑
Test Voltage (R.M.S)	6.5 KV for 5 mins	6.5 KV for 5 mins	11 KV for 5 mins	11 KV for 5 mins	11 KV for 5 mins
Bending Radius	4 x Outer diameter if OD ≤ 12 mm 6 x Outer diameter if OD > 12 mm				

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request
*Type FFXS jumper cable with EMC-protected metallic braided screen is available on request

Compliance & Fire Safety

EN 50382-1 – General construction and performance requirements
EN 50382-2 – Specifications for single core silicon rubber insulated cables
IEC 60332-1-2 – Flame Retardant
IEC 60754-1/2 – Corrosivity of combustion of gases
IEC 61034-2 – Low smoke emission
EN 45545-2 HL-2 / HL-3 – Fire behaviour of the cable stems

Key Features

Safety focused design for enclosed and public environments
Approved for flexible and fixed wiring in rolling stock, tunnels and depots
Low toxicity materials preserve electronics and ensure occupant safety
Resistance to mineral oils, fuels, ozone and UV radiation





Railway Cables

EN 50382-2 (Table-1) 1.8 / 3.0 KV 120°C or 150°C

(Unsheathed flexible Single Core Cables)

Size (in mm²)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm/Km)	
	Minimum	Maximum	Tinned Copper Conductor	Plain Copper Conductor
1.5	6.3	7.3	13.7	13.3
2.5	6.7	7.8	8.21	7.98
4	7.2	8.4	5.09	4.95
6	7.7	9	3.39	3.30
10	8.5	10	1.95	1.91
16	9.6	11.2	1.24	1.21
25	10.9	12.7	0.795	0.78
35	12.1	14.1	0.565	0.554
50	13.5	15.8	0.393	0.386
70	15.2	17.8	0.277	0.272
95	17	19.9	0.210	0.206
120	18.6	21.7	0.164	0.161
150	20.1	23.5	0.132	0.129
185	21.7	25.4	0.108	0.106
240	24.1	28.2	0.0817	0.0801
300	26.4	30.9	0.0654	0.0641
400	29.9	34.9	0.0495	0.0486

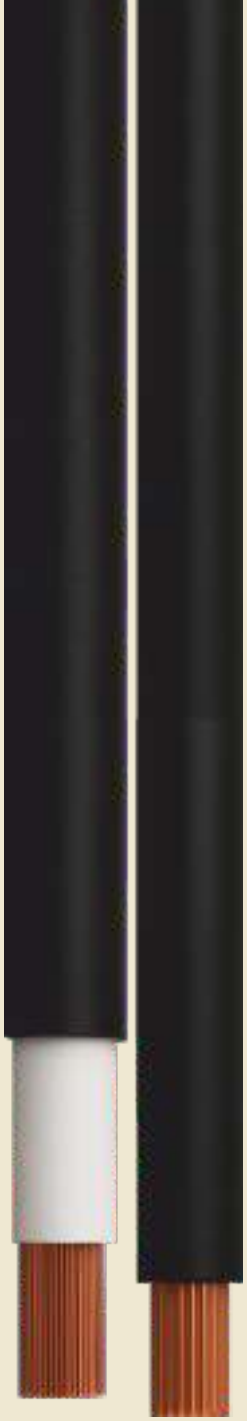
*In case of braided cable the max diameter shall be increased by 0.8 mm

EN 50382-2 (Table-2) 1.8 / 3.0 KV 120°C or 150°C

(Sheathed flexible Single Core Cables)

Size (in mm²)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm/Km)	
	Minimum	Maximum	Tinned Copper Conductor	Plain Copper Conductor
1.5	6.8	7.9	13.7	13.3
2.5	7.2	8.4	8.21	7.98
4	7.7	9	5.09	4.95
6	8.2	9.6	3.39	3.30
10	9.4	11	1.95	1.91
16	10.5	12.2	1.24	1.21
25	12.3	14.4	0.795	0.78
35	13.6	15.9	0.565	0.554
50	15.0	17.5	0.393	0.386
70	16.8	19.7	0.277	0.272
95	19	22.2	0.210	0.206
120	20.8	24.3	0.164	0.161
150	22.3	26.1	0.132	0.129
185	24.5	28.6	0.108	0.106
240	27.1	31.7	0.0817	0.0801
300	29.5	34.6	0.0654	0.0641
400	33.2	38.9	0.0495	0.0486





Railway Cables

EN 50382-2 (Table-3) 3.6 / 6.0 KV 120°C or 150°C

(Unsheathed flexible Single Core Cables)

Size (in mm^2)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm/Km)	
	Minimum	Maximum	Tinned Copper Conductor	Plain Copper Conductor
2.5	7.6	8.9	8.21	7.98
4	8.1	9.5	5.09	4.95
6	9	10.6	3.39	3.30
10	9.5	11.1	1.95	1.91
16	10.5	12.3	1.24	1.21
25	11.8	13.8	0.795	0.78
35	13	15.2	0.565	0.554
50	14.4	16.9	0.393	0.386
70	16.1	18.9	0.277	0.272
95	17.5	20.5	0.210	0.206
120	19.3	22.6	0.164	0.161
150	20.8	24.4	0.132	0.129
185	22.6	26.5	0.108	0.106
240	25.4	29.8	0.0817	0.0801
300	27.7	32.4	0.0654	0.0641
400	30.8	36	0.0495	0.0486

EN 50382-2 (Table-4) 3.6 / 6.0 KV 120°C or 150°C

(Extra flexible Unsheathed Single Core Cables with Class 6 conductor)

Size (in mm^2)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm/Km)	
	Minimum	Maximum	Tinned Copper Conductor	Plain Copper Conductor
50	15.2	17.8	0.393	0.386
70	16.9	19.8	0.277	0.272
95	18.3	21.4	0.21	0.206
120	20.1	23.5	0.164	0.161
150	21.6	25.3	0.132	0.129
185	23.4	27.4	0.108	0.106

EN 50382-2 (Table-5) 3.6 / 6.0 KV 120°C or 150°C

(Sheathed flexible Single Core Cables)

Size (in mm^2)	Overall Diameter		Max. Conductor Resistance @ 20°C (ohm/Km)	
	Minimum	Maximum	Tinned Copper Conductor	Plain Copper Conductor
2.5	9.9	11.6	8.21	7.98
4	10.4	12.2	5.09	4.95
6	10.9	12.8	3.39	3.30
10	11.8	13.8	1.95	1.91
16	12.8	15.0	1.24	1.21
25	14.7	17.2	0.795	0.78
35	15.9	18.6	0.565	0.554
50	17.5	20.5	0.393	0.386
70	19.2	22.4	0.277	0.272
95	20.8	24.3	0.210	0.206
120	22.4	26.2	0.164	0.161
150	24.1	28.2	0.132	0.129
185	26.4	30.9	0.108	0.106
240	29.4	34.4	0.0817	0.0801
300	31.7	37.1	0.0654	0.0641
400	35.0	40.9	0.0495	0.0486

*In case of braided cable the max diameter shall be increased by 0.8 mm











Cable Assembly, Harnesses & Systems

We specialize in the design, development and manufacture of high quality customised cable assemblies and wiring harnesses. We serve critical industries such as Railway Transportation, Defence, Renewable Wind Energy, Oil and Gas etc. Our products are engineered to perform in the most demanding environments which undergo rigorous electrical testing and quality validation to meet international standards and ensure superior reliability.

Railway

- Cable harnesses for locomotives and passenger coaches
- Inter-vehicular (IV) coupler and jumper cable assemblies
- Reliable power, signal, and communication connectivity solutions

Defence

- Rugged cable assemblies for military communication systems
- Pressure tight cable assemblies for naval ships and submarines
- Shore charging and shore supply cable assemblies

Wind Energy

- High performance wind turbine harnesses
- Cable assemblies designed to withstand harsh environmental conditions
- Durable solutions for long term field reliability

Solutions:

IV Coupler & Jumper Cable Assemblies

- Advanced coach to coach and locomotive connectivity systems designed for dependable power, signal, and data transmission

Custom Cable Assemblies & Wiring Harnesses

- From standard wire assemblies to highly complex, customer specific harness solutions

Defence Cable Assemblies

- In house designed outfitted cable assemblies, shore charging connectors, shore supply assemblies, and pressure tight cable assemblies tested up to 100 Bar for demanding naval applications

Locomotive & Coach Harnesses

- Complete wiring harness solutions manufactured to customer specifications

Engineering Capabilities:

- Precision cutting, stripping and coiling
- Cable sizes ranging from 0.2 mm^2 to 400 mm^2
- Custom cable and harness design
- Die and tooling development
- Connector design and product development
- Semi automatic soldering
- Hydraulic and pneumatic crimping
- Potting and sealing
- Compression moulding

Quality & Compliance:

- Electrical Testing - 100% electrical testing for every assembly
- Simultaneous testing capability of up to 1,080 test points, with programmable & traceable
- IPC/WHMA-A-620 Class 3 compliance

Product Certifications



DNV

CERTIFICATE OF CONFORMITY

This is to certify that the product(s)

Power, Control, Instrumentation & Thermocouple Cables

manufactured by

THERMO CABLES LTD.



DNV

TYPE APPROVAL CERTIFICATE

Thermo Cables Ltd



ABS

CERTIFICATE OF

Product Design Assessment

THERMO CABLES LIMITED

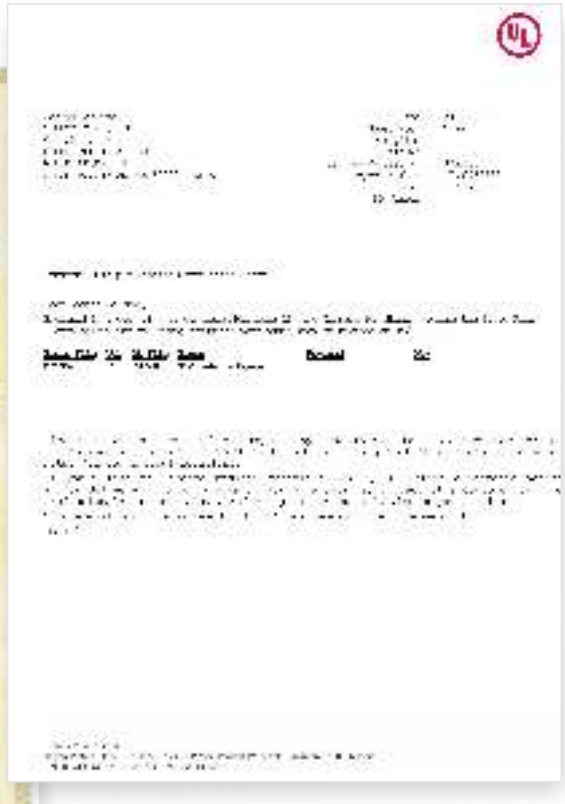
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Type Approval Certificate



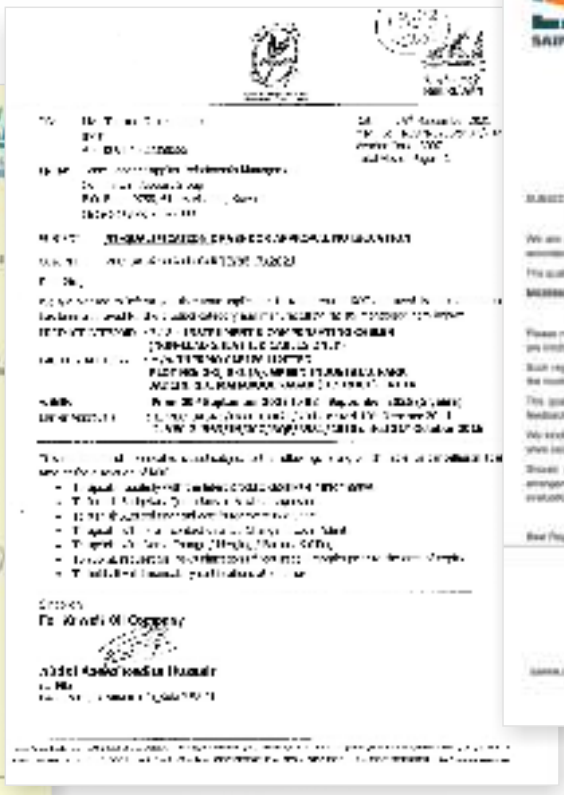
EAC



UL

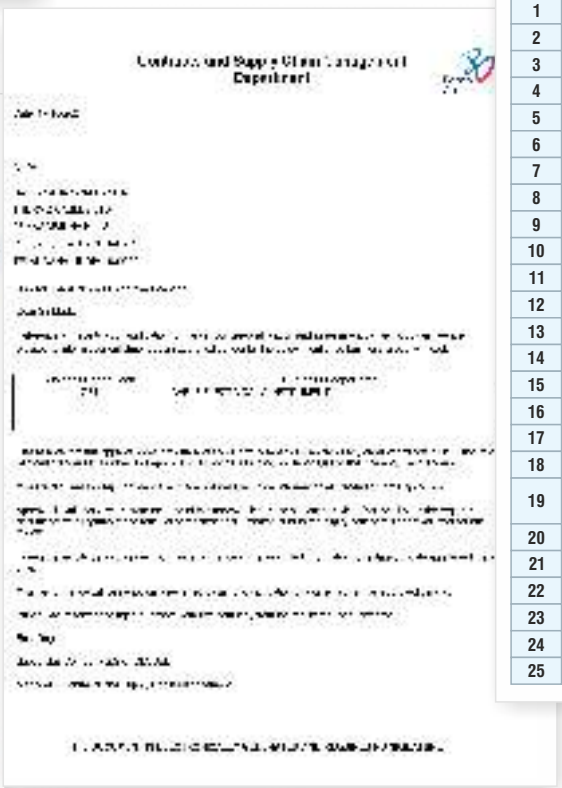
International Approvals





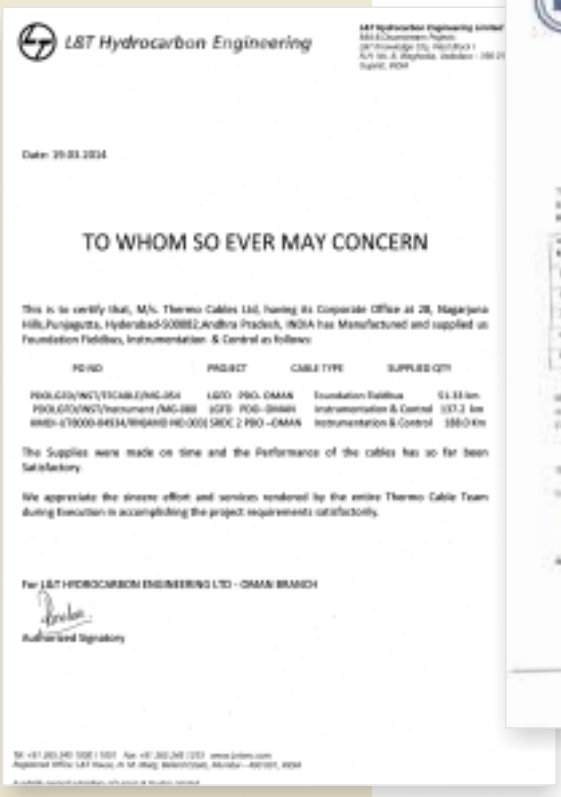






S.No	Customer	Vendor Code
1	ADNOC	20009092
2	Advance Petrochemical	201463
3	Aluminium Bahrain B.S.C. (ALBA)	7791
4	Borogue	000003394
5	Dolphin Energy Ltd	112792
6	Dry Docks	99393
7	Emirates National Oil Company (ENOC)	1001101538
8	ExxonMobil	PC-2024.091753
9	FARABI	9000403
10	GE	SQ-076734.2
11	KOCH Engineered Solutions	SPS000472
12	Kuwait National Petroleum Company (KNPC)	177128
13	Kuwait Oil Company (KOC)	30971
14	MAADEN	20230002
15	NEOM	S10764408
16	National Water Company (NWC)	40317
17	Petroleum Development Oman (PDO)	104158
18	Petronas	1125426A
19	PTT Exploration and Production Public Company Limited (PTTEP)	309104
20	Qatar Energy	309104
21	Qatar Fuel Additives Company Limited (QAFAC)	106712
22	Saudi Arabian Railway (SAR)	4895
23	Saudi Electricity Company	2012054
24	SIBUR	61293
25	TASNEE	S11312730

Accolades



L&T Hydrocarbon Engineering

Date: 29.03.2024

TO WHOM SO EVER MAY CONCERN

This is to certify that, M/s. Thermo Cables Ltd, having its Corporate Office at 28, Nagarjuna Hills,Punjagutta, Hyderabad-500082,Andhra Pradesh, INDIA has Manufactured and supplied as Foundation Fieldbus, Instrumentation & Control as follows:

PO NO	PROJECT	CABLE TYPE	SUPPLIED QTY
PSOL/LTO/WCT/TTCABLE/IMC-054	LOTO PDO, OMAN	Foundation Fieldbus	51.33 km
PSOL/LTO/WCT/Instrument /IMC-080	LOTO PDO -SHAHIN	Instrumentation & Control	137.2 km
8MED-179000-84934/8MJ6MD HO-0001	SROC 2 PDO –OMAN	Instrumentation & Control	160.0 Km

The Supplies were made on time and the Performance of the cables has so far been Satisfactory.

We appreciate the sincere effort and services rendered by the entire Thermo Cable Team during Execution in accomplishing the project requirements satisfactorily.

For L&T HYDROCARBON ENGINEERING LTD - OMAN BRANCH

Authorised Signatory



Chennai Metro Rail Limited

(A Joint Venture of Govt. of India and Govt. of Tamil Nadu)

TO Whomsoever It May Concern

Sl. No	Purchase Order	PO Date	Indent/ WO	Cable Type	Project	Quantity supplied (Km./Mtr)	Year of manufacture/ installation
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Thanking you,

For Chennai Metro Rail Ltd.

Authorised Signatory



NATIONAL CEMENT COMPANY LTD

Building The Nation

SIMBA CEMENT

Dated : 29.03.2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s.Thermo Cables Ltd., Hyderabad have supplied LT Power, Control, Signal, Thermocouple and Composite Cables to our 3000 TPD Clinkerisation Unit at Hiroshi, Embl-Lukkiluk Road, Kajiado County, KENYA vide our PO No.NCCL/PRIJ/YML-DAE004/2014-2015 dated 9th November, 2015.

This PO consists supply of 15000 Mtrs of 3.5 C X 300 Sq mm alongside other type of Cables.

We appreciate Thermo Cables effort in executing this Order with quick deliveries to meet our Project Schedules. The Cables are in operation for more than 1 Years and the performance is found to be satisfactory.

for NATIONAL CEMENT COMPANY LTD.,

Name: Lokesh Kumar

Designation: Commercial Director

Seal

MANUFACTURER OF ALL TYPES OF QUALITY PPC AND OPC CEMENT INCLUDING SUBULK CLUB AND SIMBA PAPER BAGS



cpp

Date: 24 June 2015

To Whomsoever It May Concern

Subject: Performance Letter for Supply of Cables

This is to certify that Thermo Cables Limited, having its registered office at 28, Nagarjuna Hills Punjagutta, Hyderabad, Telangana, India – 500082 has successfully supplied cables for our various projects over the past years.

Details of the major supply orders executed are as follows:

Project Name	Purchase Order No.	Year of Supply	Quantity Supplied	Description of Material Supplied
RAS MARKAZ CRUDE OIL PARK PROJECT - OTTCO	CPP-RM-PO-0117	2015/2015	306.31 KM	Instrumentation and Control Cables

Thermo Cables Limited has met all the technical and delivery requirements of the above projects and has demonstrated good performance in terms of quality, timely delivery, and support for Smooth Execution of the project.

We acknowledge their contribution and purchase cables and wish them all the best in their future endeavors.

For and on behalf of

China Petroleum Pipeline Engineering Company Limited - Middle East

Head of Procurement, CPP MEE

Address: 40th Floor, Addax Tower, Al Reem Island, Abu Dhabi, UAE



Abhiveerjeet Group

Date: 13.03.2014

TO WHOM SO EVER MAY CONCERN

This is to certify that, M/s. Thermo Cables Ltd, having its Corporate Office at 28, Nagarjuna Hills, Punjagutta, Hyderabad-500082,Andhra Pradesh, INDIA has Manufactured and supplied as Foundation Fieldbus, FF Instrumentation & Control of 40E line against our Purchase order PSOSC-LE/D18 for Kuwait Oil Company MEW GC 16 Project.

The Supplies were made on time and the Performance of the cables has so far been Satisfactory.

We appreciate the sincere effort and services rendered by the entire Thermo Cable Team during Execution in accomplishing the project requirements satisfactorily.

For Abhiveerjeet Group Company

Authorised Signatory



HITACHI

Inspire the Next

Subject: Letter of Appreciation to Thermo Cables Limited

To, Thermo Cables Limited Hyderabad.

Dear Thermo Cables Team,

We extend our sincere gratitude for the exceptional support provided during the period of 2022-2023. As it was previous, Thermo Cables Limited has played a pivotal role in the success of Hitachi Energy India Ltd, particularly in the manufacturing of different type of cables for GIS at our Vadodara facility.

Hitachi Energy India Limited is a global leader in power technologies, providing the most comprehensive grid and power plant solutions. Hitachi provides compact, reliable, fast, flexible and intelligent HVDC with high, and technology for which Thermo Cables is also an important stakeholder for the supplies of required, instrumentation shielded GIS cables.

Since commencement of operations, the consistent quality of your products and on time supply has significantly contributed to the smooth functioning of our manufacturing processes. Thermo Cables Limited's dedication in delivering top-notch solutions aligns seamlessly with our standards at Hitachi.

As we reflect on the successes of the past year, we eagerly anticipate continuing and strengthening this successful partnership in the years ahead.

In recognition of Thermo Cables Limited's substantial contributions, we present this letter of appreciation.

Best wishes to Thermo Cables Limited for continued success.

Regards

For Hitachi Energy India Limited, Vadodara

Prashanth Kumar

Category Manager

Hitachi Energy India Limited

Registered and Corporate Office:

Factory Address:

Hitachi Energy

System Certifications

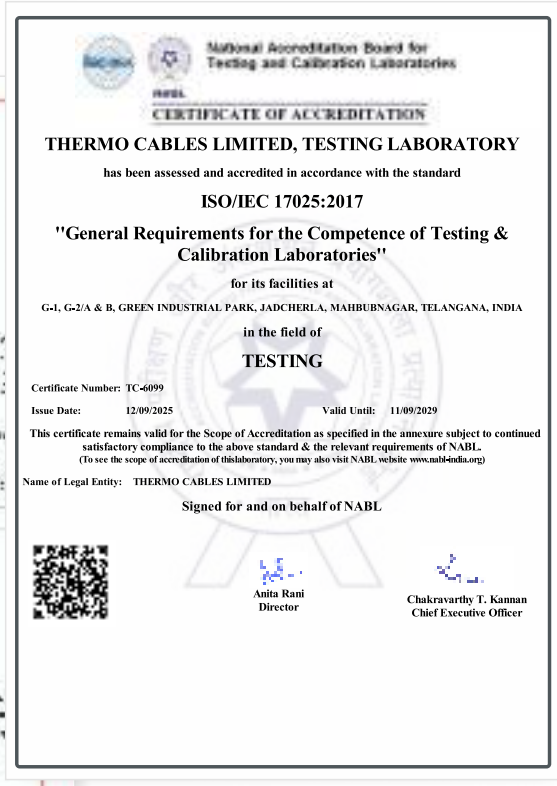












Infrastructure

Machinery

Name of the Machine	Name of the Machine
Rod Break Down Machine (9 Die)	HOIST 'H' - 48 Armouring - 2 Nos
Rod Break Down Machine (11 Die)	HOIST 'H' - 48 B Armouring - 2 Nos
Rod Break Down Machine (13 Die)	HOIST 'J' - 72 B Armouring
Skip Stranding Machine - 2 Nos	HOIST 'F' - 96 Armouring
Electroplating Tinning Machine - 2 Nos	HOIST 'K' - HV Area
Multi Wire Drawing Machine 30 mm	HOIST 'L' - Drum Twister Area
Multi Wire Drawing Machine 8 Wire - 2 Nos	HOIST 'O' - RBD Area
Fine Wire Drawing Machine - 4 Nos	HOIST 'I' - Despatch - 2 Nos
Mixing Machine 75 mm - 3 Nos	HOIST - MMH Area - 6 Nos
Kneader Line - 2 Nos	Chain Hoist 'A' - G I Rewinding - 2 Nos
75 L Kneader	Chain Hoist 'C' - Simon Taping - 4 Nos
Ring Marker	High Speed Bunching Machine - 10 Nos
High Speed Core Rewinding - 4 Nos	Chiller - 2 Nos
Taping Machine - 8 Nos	Chiller - 5 TR - 5 Nos
Vertical Taping Machine - 6 Nos	Chiller - 10 TR - 5 Nos
Horizontal Taping Machine - 12 Nos	Chiller - 20 TR
Single Twist Bunching Machine	PVC Mixer
400 Single Twist Bunching Machine	High Speed Mixer 60 kg
Tandem Extrusion Line (Ø50 + 65 / 35 mm)	High Speed Mixer 120 kg
Tandem Extruder Line (Ø80+ Ø100 / Ø35)	High Speed Mixer 200 kg
Tandem Extruder Line (Ø35+ Ø50 / Ø35)	16 A High Speed Braiding - 3 Nos
Extruder Machine 20 mm Bi Color	16 F High Speed Braiding - 2 Nos
Extruder Machine 45 mm	24 High Speed Braiding - 2 Nos
Extruder Machine 45 mm Bi Color	24 A High Speed Braiding - 5 Nos
Extruder Machine 65 mm - 9 Nos	24 E High Speed Braiding - 4 Nos
Extruder Machine 70 mm - 2 Nos	24 F High Speed Braiding
Extruder Machine 70 / 35 mm	48 High Speed Braiding
Extruder Machine 75 mm - 3 Nos	3 HP Air Compressor
Extruder Machine 80 mm - 4 Nos	10 HP Air Compressor - 3 Nos
Extruder Machine 100 mm	15 HP Air Compressor
Extruder Machine 120 mm - 2 Nos	20 HP Air Compressor - 2 Nos
Extruder Machine 150 mm	25 HP Air Compressor
Foam Extruder Machine	100 HP Air Compressor - 7 Nos
Core Rewinding Machine - 7 Nos	Brazing Machine - 4 Nos
Cooling Tower - 6 Nos	H V Testing - 3 Nos
High Speed GI Rewinding Machine - 27 Nos	Drum Twister Machine - 2 Nos
Ceramic Butt Welding Machine	630 Single Twister Machine 7 Bobbin
Butt Welding Machine - 15 Nos	800 Single Twister Machine 12 Bobbin
Electron Beam Accelerator - 2 Nos	1250 Single Twister Machine 19 Bobbin
Pairing Machine - 4 Nos	1050 Single Twister Machine
Pairing Back Twist Machine - 3 Nos	Pairing Back Twist Machine - 2 Nos
Laying Machine (7 Bobbins)	DT 500 & 800 Buncher Machine - 1 No & 5 Nos
Laying Machine (7 Bobbins) - Single Twist	Scissor Lift 2 ton
Laying Machine (13 Bobbins)	Steam Boiler
Laying Machine (19 Bobbins) - 4 Nos	PVC Grinder
Laying Machine (37 Bobbins) - 3 Nos	Hydraulic Press
Laying (42 Bobbin)	PT Stranding & Taping Machine
Armouring Machine (30 Bobbin) - 2 Nos	Vertical Taping Machine -18 Nos
Armouring Machine (40 Bobbin)	Silicon Rubber Mixing Machine
Armouring Machine (48 Bobbin) - 4 Nos	65/150 Two Stage Extruder (Compounding Line)
Armouring Machine (72 Bobbin) - 2 Nos	60 KVA UPS
Armouring Machine (96 Bobbin)	80 KVA UPS - 2 Nos
Extruder Sheathing Machine 80 mm - 2 Nos	100 KVA UPS
Extruder Sheathing Machine 100 mm	120 KVA UPS
Cable Rewinding Machine - 5 Nos	160 KVA UPS
GI Rewinding Strip Machine - 2 Nos	200 KVA UPS
Off Line Annealer	250 KVA UPS - 5 Nos
Nickel Plating - 2 Nos	320 KVA DG Set
Pointing Machine - 2 Nos	365 KVA DG Set
Fork Lift - 2 Nos	600 KVA DG Set
Auto Clave	1000 KVA DG Set
HOIST 'A' - Skip	Inkjet Printers - 36 Nos
HOIST 'B' - 54 Stranding	Laser Printers - 4 Nos
HOIST 'P' - Stores	EOT 15MT
HOIST 'C' - 7 B Laying	80 / 50 Insulation Line (High Speed)
HOIST 'E' - 13 Laying	Rubber Compound Line
HOIST 'E' - 19 Laying - 2 Nos	Electro Tin Plating
HOIST 'E' - 19 B Laying - 2 Nos	Multi Wire Drawing Machine (16 wire)
HOIST 'G' - 30 Armouring - 2 Nos	37 Bobbin Planetary Laying Machine
HOIST 'G' - 30 B Armouring	Interlock Armouring Machine
HOIST 'F' - 37 Laying	Induction Heating System
HOIST 'F' - 37 B Laying - 2 Nos	3150 Cable Rewinding Machine
HOIST 'K' - 40 Armouring	

Testing Equipment

Name of the Machine - Range/LC
Fourier Transmission infrared Spectrometer (FTIR)
Profile Projector
Digital Thermometer With Sensor - 2 Nos
Hot Air Ageing Oven
Hot Air Oven 6 Nos - Upto 250° C & 300° C
Hot Set Oven - 3 Nos
Ozone Resistance Test Equipment
Smoke Density Apparatus - 3 Nos
Oxygen & Temperature Index Apparatus - 2 Nos
Flammability Tester - 3 Nos
Cold Chamber Bend Cold Impact Test Set - 2 Nos 20° C to +25° C -30° C
Hot Set Test Apparatus - 3 Nos
Toxicity Index Test Equipment
Halogen Acid Gas Emission Test Apparatus
pH & Conductivity Test Equipment - 2 Nos - 0 to 14 pH
Abrasion Resistance Tester - 2 Nos
Electronic Tensile Tester - 3 Nos - 0 to 1000 N
Dielectric Breakdown Tester & Leakage Current Tester
High Frequency Spark Tester - 8 Nos - 0 to 15 KV AC
Main Frequency Spark Tester - 2 Nos - 0 to 15 KV AC
Digital Micro Ohm Meter 5 Nos - 1 mΩ to 19.999 kΩ (2 Nos.) & 1 mΩ to 1.9999 kΩ (1 No.)
H V Tester - 4 Nos - 0-5/10 KV
Million Mega Ohm Meter - 6 Nos - 1 MΩ to 100 GΩ, 1 MΩ to 50 TΩ & 2 MΩ to 20 GΩ
Digital L C R Q Meter
Thermal E M F Error Test Apparatus - 0 to 200 mV DC
Digital M V Source Cum Meter - 0 to 199.9° C
Digimatic Caliper - 0 to 300 mm
Acid Gas Generation Apparatus - 2 Nos
Swedish Chimney Test Equipment
Water Immersion Test Equipment - Upto 100° C
4 Cell Ageing Oven With Data Scanning Logger - 2 Nos - 16 Channels
Heating Oven - Upto 200° C
Thermal Stability Test Apparatus
Water Absorption Test Apparatus Gravimetric
Electronic Balance Weighing Machine 3 Nos - 0 to 180 gms 10 gms to 3 kgs
Kelvin Bridge - 0-11 Ω
Torsion Testing Machine (Digital Control Meter - Upto 99999 Count)
Fire Survival Test Equipment
Static Noise Rejection Ratio Meter - 60 to 100 dB
H V Break Down Tester - 0 to 2.5 KV DC
Transfer Impedance Tester
Steel Rule & Test Mandrel Set - 0 to 1 Metre
Condition Chamber - 2 Nos - 20° to 40° C (Temp.) & 40 to 80 RH
Insulation Resistance Tester - 0 to 1000 MΩ / 500 V
Hydro Meter - 4 Nos - 0.700 - 1.000 g/ml
Digital Stop Watch - 5 Nos - 0 - 24 hrs
Mutual Capacitance Meter - 1.999 nF - 1999.9 nF
Length Counter Meter - Upto 99999 mtr
Tear Resistance Die
Coating Thickness Measurement Meter
Digital Multimeter - 4 Nos - MΩ
Inductance Decade Box - 10 mH-10 H
Capacitance Decade Box - 10 pF-10 μF
Wet & Dry Thermometer - 2 Nos - -40° to + 50° C
Glass Thermometer - 5 Nos - -10° C to + 110° C & -10° to 250° C
Thermometer - 2 Nos - 195° C to 205° C
Digital Anemo Meter - 0 -45 m/s
Digital Thermo Hygrometer - 2 Nos - 0 to 95° C / 20 to 99% RH
Senior Double Kelvin Bridge
UV Radiation Test Apparatus
Notch Propagation Tester (Analog)
Water Bath (Size 120cm X 90cm X 60cm)
H V Probe Milimeter
Abrasion Resistance Tester
Dynamic Cut Through Tester
Cable Analyzer
Universal Testing Machine
PC Based Crosstalk Attentuation & Impedance Meter - Attenuation 0.1 to 20 dB, Cross talk (-40 to 100 dB), Impedance 199.9 Ω to 1.999 kΩ
Network Analyzer (AESA)
Fluke - DSX - 8000
Toxity Index Tester as per EN 45545-2
Step Load Tester
Bending Torsion Tester
Vibration Tester
Fluorine Content Test Equipment
Thermal Endurance Test Ovens - 12 Nos
Cable Harness Testers - 2 Nos
Melt Flow Index Testers - 2 Nos
A.C High Voltage Tester 0-8KV - 3 Nos
High Temperature Oven upto 400° C - 2 Nos
Pull Force Tester
Micro Scope (Terminal Analyzer with Software)
DC milli Volt Drop Test Equipment
Variable mA Current Source Tester
DC-20MHz Dual Trace Oscilloscope
Conduit Flexing Tester
Digital Compression Tester - 2 Nos
Mooney Viscometer
Dust Particle Counter (Light House)
Bulk Density Test Apparatus
Digital Million Megohm Meter with Volume Resistivity



OUR CUSTOMERS

Thermo Cables Ltd

An ISO 9001, 14001 & 45001 Certified Company

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