

BAHRA
CABLES



INSTRUMENTATION CABLES PLTC, ITC AND TC



INSTRUMENTATION CABLES

PLTC, ITC AND TC

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Single/Multi twisted pair/triad, unshielded

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Single/Multi twisted pair/triad, Overall Shielded only

13

Single/Multi twisted pair/triad, Individual and Overall Shielded

XLPE Insulated, Armoured, PVC Sheathed, 300v, UL 13/2250, TYPE PLTC/ITC

15

Single/Multi twisted pair/triad, unshielded

17

Single/Multi twisted pair/triad, Overall Shielded only

19

Single/Multi twisted pair/triad, Individual and Overall Shielded

XLPE Insulated, Unarmoured, PVC Sheathed, 600v, UL 1277, TYPE TC

21

Single/Multi twisted pair/triad, unshielded

23

Single/Multi twisted pair/triad, Overall Shielded only

25

Single/Multi twisted pair/triad, Individual and Overall Shielded

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GENERAL

INTRODUCTION

Bahra Cables Company was established in 2008 to serve Saudi & GCC Markets. It is based in Bahra industrial city located 35km from Jeddah. Bahra Cables Factory occupies over 500,000 square meters of prime manufacturing space together with associated design offices, laboratories and storage area. It specializes in Manufacturing and Distributing Electric Cables.

Bahra Cables Company is committed to the production of the best product quality and service, utilizing cutting edge European Technology in manufacturing. The core technologies in production processes, material applications and logistic procedures were provided by German experts and the key functions are being managed by local and international engineers of long experience in cables industry.

The organization has a lean vertical management structure which is designed to integrate with a highly developed IT-based structure. This partnership allows the rapid flow of information through the management chain and facilities timely response in the best traditions of 'hands on' management. Bahra Cables Company has the flexibility to provide a versatile product range to serve the construction, electric utilities, distribution, industrial, oil & gas and petrochemical sectors. The cables produced comply with both American standards (UL, ANSI and ICEA) and European standards (IEC, BS, NF and VDE Specifications.)

The scope of this catalogue is to provide an in depth view of the technical information of the Instrumentation Cables.

AREA

Bahra Cables Company has a total land area of about 500,000 sqm at disposal. The built-up area, including offices, plants and testing facilities is more than 129,000 sqm. Total available warehouses and open storage area is about 211,500 sqm.

FACTORY MACHINERY

All production machines are top of the line of the cables machinery suppliers. From start up with wire drawing lines to extrusion lines, to assembly machines up to the laboratories and the final test fields , all technical equipment is provided with the highest European standards of electronic control equipment and measuring devices which insures that the requirements of different quality standards are met.

All machines/production lines are prepared for data communication and data exchange bottom up and top down using the most modern decentralized control software at the lines (PLC) combined with an efficient central steering and a planning system focused on the demand of cable manufacturers. This way, full traceability will be guaranteed from production start to end, by being able to follow up the machines involved and the material used.

LOGISTICS

All material flow in BCC from incoming raw material up to outgoing cables will be planned and controlled by a complete software system. Herein a classical ERP system will be enhanced and completed by the most modern MES (Manufacturing Executive System) which has a unique focus on the specific problematic issues of cables manufacturing with longitudinal products being winded up and winded off.

THE MANUFACTURING EXECUTIVE SYSTEM- MES- COVERS: PLANNING

The planning system is active on several levels. For the proper function, all master data (material properties, dimensions, etc.) are saved and permanently maintained in the central database based on;

- Cable design
- Planning of Sales Orders
- Planning of Production Orders

DATA COMMUNICATION

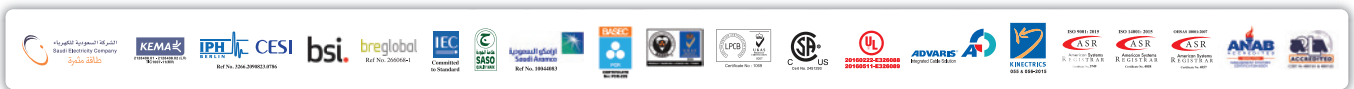
The exchange of data is important in several areas

- Incoming inspection
- Raw Materials – Status quo of production orders
- Finished goods
- Shipping status

QUALITY IS OUR MAIN TARGET

Bahra Cable Company is born to be one of the leading Power Cables Manufacturers in Saudi Arabia and the GCC area. We are working in different axes to completely fulfill customers satisfaction which is the milestone of our business, such axes are:

1. Product quality complying with the local and international standards.
2. Product Reliability is starting from the time of product design to fit for the intended application and environmental conditions, to the selection of the raw material from only the highest class suppliers with internationally trusted reputation. Our state of art testing equipments and the strict quality procedures ensure the product quality and integrity so we can guarantee that our cables are defect free and suitable for the intended application through the cable service lifetime.
3. High performance of the product and service through cooperation between experienced staff from Germany and local experts who are aware of the local market requirements and the highest international standards of cables manufacturing. Such cooperation in knowhow is invested to provide our customer with the best service and support.
4. Bahra Cables Company's Quality Management System conforms to the ISO 9001:2015, ISO 14001:2018, OHSAS 18001:2007 International Management Quality System Standard with scope of Design and Manufacturing of Electrical Power Cables and Wires. BCC is certified by American Systems Registrar (ASR), ANAB Accredited.
5. Bahra Cables lab is accredited to ISO 17025:2017 , A2LA with scope covering all wire and cables testing to a wide range of international test standards.



TECHNICAL INFORMATION

GENERAL

BAHRA Instrumentation cables are designed and manufactured according to UL 13/UL 2250 Type PLTC/ITC and UL 1277 Type TC.

Instrumentation cables are multiple conductor cables that convey low energy electrical signals used for monitoring or controlling electrical power systems and their associated processes.

These cables are used in diverse applications within industrial process manufacturing plant for control, communication, data (analog/digital) and voice transmission signals, industrial signaling and process control circuit required typically in process industries, oil, gas & petrochemical industry, fertilizers, cement, steel etc.

They can be individually shielded units with an overall shield construction, screened, armoured, laid up in cores, pairs, triads, quads etc. They can be insulated in PVC, THHN, XLPE, XHHW and LS0H-XL and sheathed in PVC, PE and LS0H.

For Instrumentation cables, shielding plays a major layer; the shielding of the Instrumentation cables eliminates the external noise pickups while the drain wire in contact with the metallic foil shield earthed to ground to ensure true signals transmission free of noise interferences and interruptions. This guarantees a high quality and robust control system. This shield is designed with a suitable overlap that ensures 100% coverage even when the cable is flexed. Maximum rejection of electromagnetic noise and most efficient noise cancellation is achieved by selecting the right twisting the insulated conductors.

Instrumentation cables can be used for indoor applications, in raceways, direct burial applications and outdoor applications.

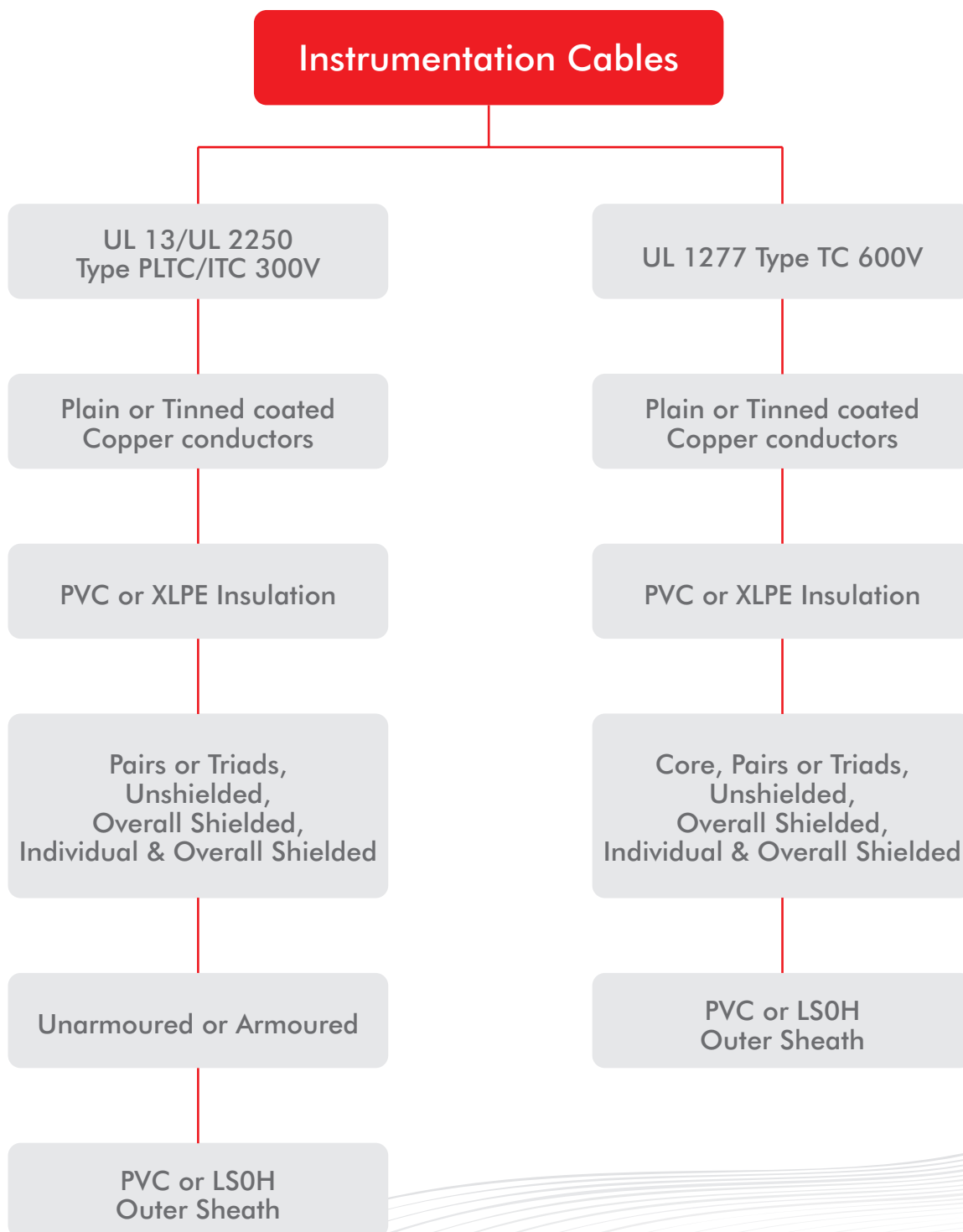
It can be offered with options fire resistant feature intended to be used for wiring and interconnection where it is required to maintain circuit integrity as per BS 6387 under fire conditions for longer periods than can be achieved with cables of conventional construction.



TECHNICAL INFORMATION

GENERAL

BAHRA ELECTRIC Instrumentation Cables PLTC, ITC, and TC types



Note: Lead sheathed cables are offered for refinery projects, requires underground cable installations.

TECHNICAL INFORMATION

PRODUCT RANGE

PRODUCT RANGE

Instrumentation cables are available, generally designed & manufactured based on UL 13/UL 2250 Type PLTC/ITC 300V, UL 1277 Type TC 600V.

Cables sizes generally: 18 AWG up to 12 AWG.

CABLE TYPES & APPLICABLE STANDARDS

XLPE Insulated, Unarmoured, PVC Sheathed, UL 13/UL 2250, TYPE PLTC/ITC, 300 V

- Single/Multi twisted pair/triad, unshielded
- Single/Multi twisted pair/triad, Overall Shielded only
- Multi twisted pair/triad, Individual and Overall Shielded

XLPE Insulated, Armoured, PVC Sheathed, UL 13/UL 2250, TYPE PLTC/ITC, 300 V

- Single/Multi twisted pair/triad, unshielded
- Single/Multi twisted pair/triad, Overall Shielded only
- Multi twisted pair/triad, Individual and Overall Shielded

XLPE Insulated, Unarmoured, PVC Sheathed, UL 1277, TYPE TC, 600 V

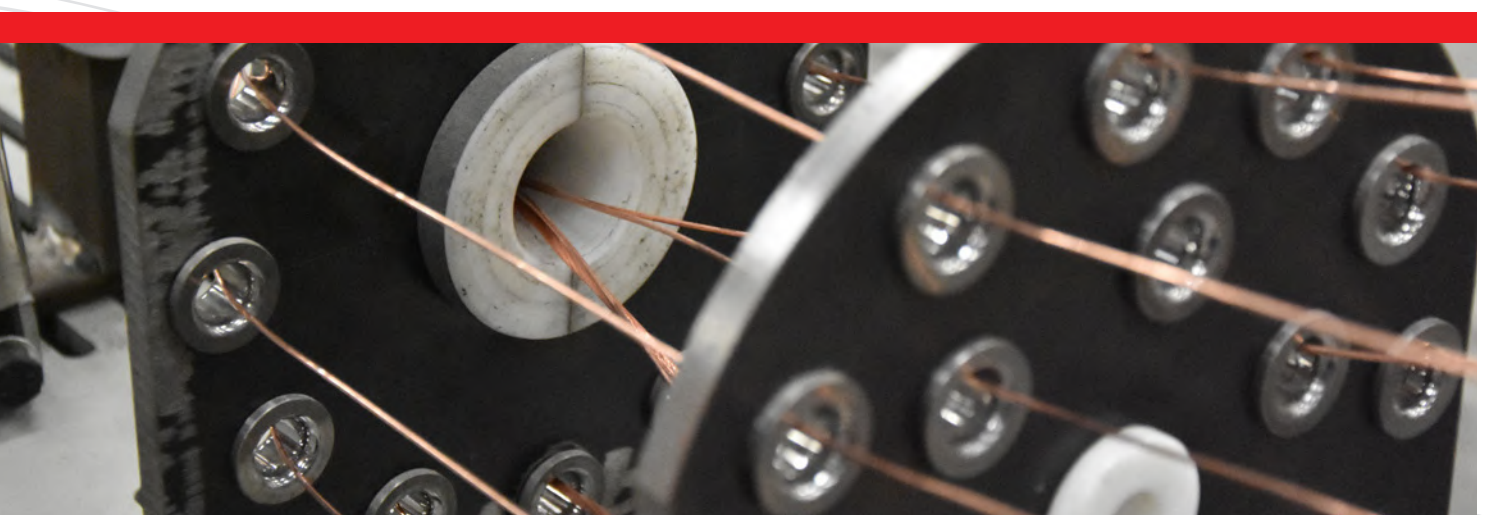
- Single/Multi twisted pair/triad, unshielded
- Single/Multi twisted pair/triad, Overall Shielded only
- Multi twisted pair/triad, Individual and Overall Shielded

ECO-FRIENDLY Low Smoke Zero Halogen [LSOH] Sheathed Cables

Circuit Integrity Fire Resistant Cables

FOUNDATION™ Fieldbus Instrumentation Cables

Note: Lead sheathed cables are offered for refinery projects, requires underground cable installations.



TECHNICAL INFORMATION

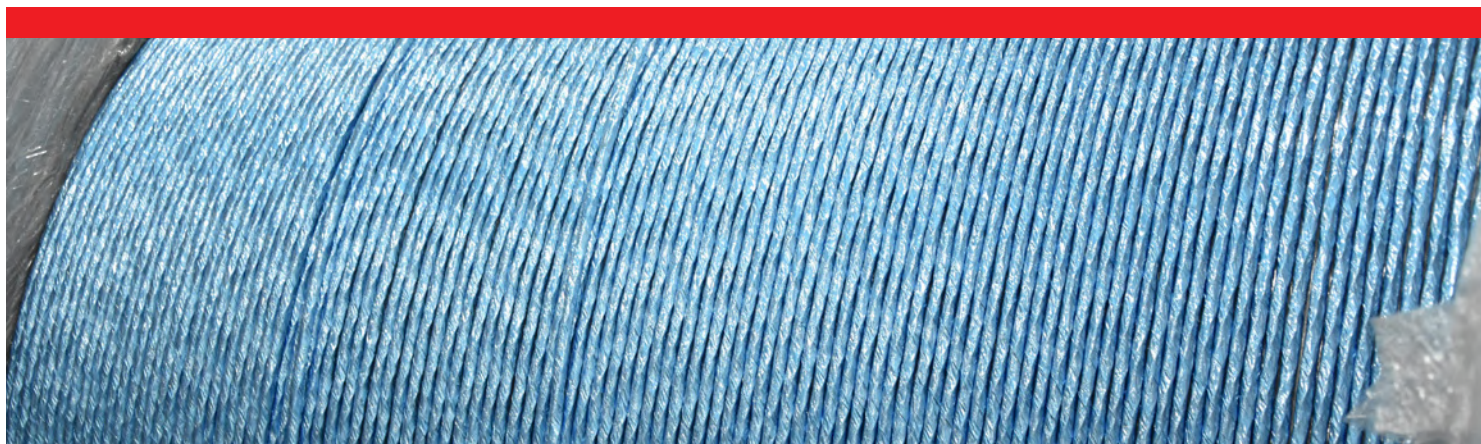
APPLICATION AND ELECTRICAL PERFORMANCE

GENERAL APPLICATION

- Recommended for installation in dry and wet locations, in cable racks and trays, in conduits and suitable for direct burial.
- For Transmission of analogue and digital signals in instrument and control systems; allowed for use in hazardous classified locations class I and class II division 2 acc. to NEC 501-4(b) and NEC 502-4(b)
- Not allowed for direct connection to low impedance sources, e.g. Public mains electricity supply.

ELECTRICAL PERFORMANCE

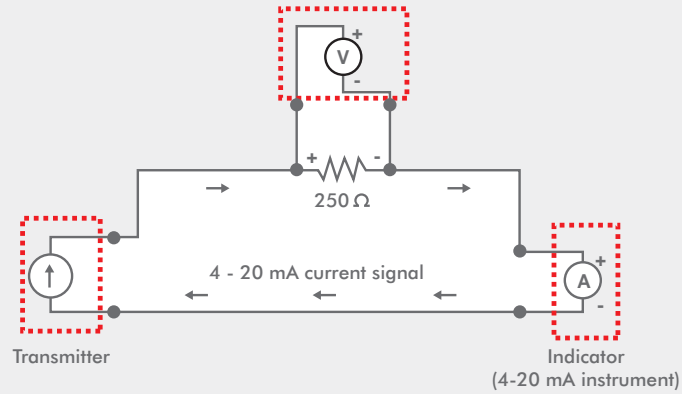
			CONDUCTOR SIZE - AWG			
ELECTRICAL CHARACTERISTIC	MATERIAL TYPE	UNIT	18	16	14	12
Max. Conductor DC Resistance @ 20 °C	Plain copper	Ω/km	22.8	14.3	8.95	5.63
	Tinned copper	Ω/km	23.6	14.9	9.3	5.83
Minimum Insulation Resistance		$\text{M}\Omega/\text{km}$	10	10	10	10
Maximum Mutual Capacitance	XLPE insulated	nf/km	150	150	150	150
	PVC insulated	nf/km	250	250	250	250
Maximum Inductance to Resistance Ratio	L/R	$\mu\text{H}/\Omega$	25	40	60	100



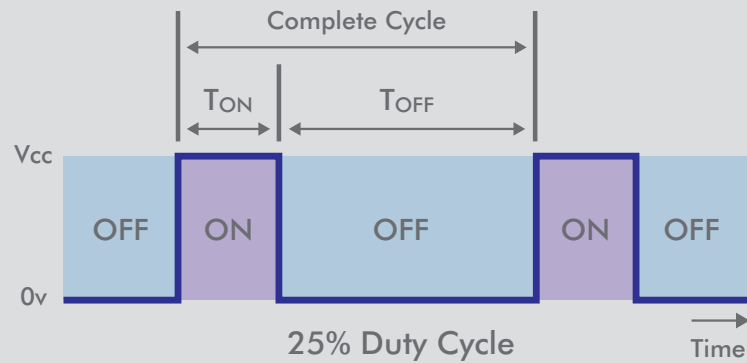
TECHNICAL INFORMATION

APPLICATION AND ELECTRICAL PERFORMANCE

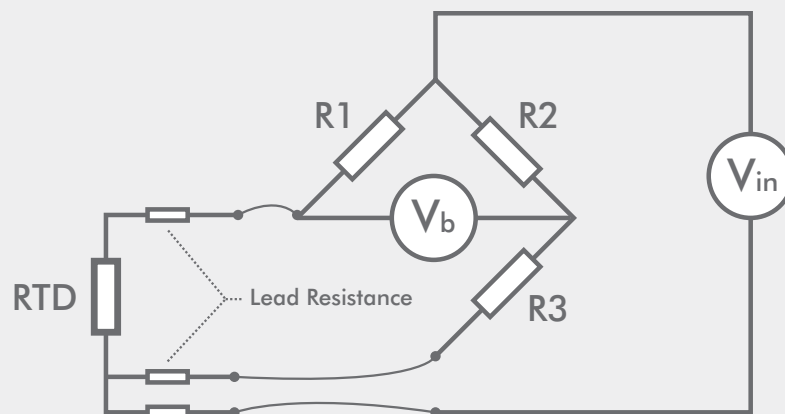
Analogy 4-20 mA / 1-5 Volt Signals



Solenoid Control



RTD Temperature Signals



UL 13/UL 2250 TYPE PLTC/ITC

UNSHIELDED – UNARMoured - PAIRS & TRIADS | 300 V

XLPE/PVC



CABLE STANDARDS:

UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:** Insulated cores are twisted into a pair/triad
- **Individual Pair/Triad Shield:** None
- **Overall Assembly:** Twisted pairs/triads assembled in layers followed by polymer binder tape
- **Overall Shield:** None
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

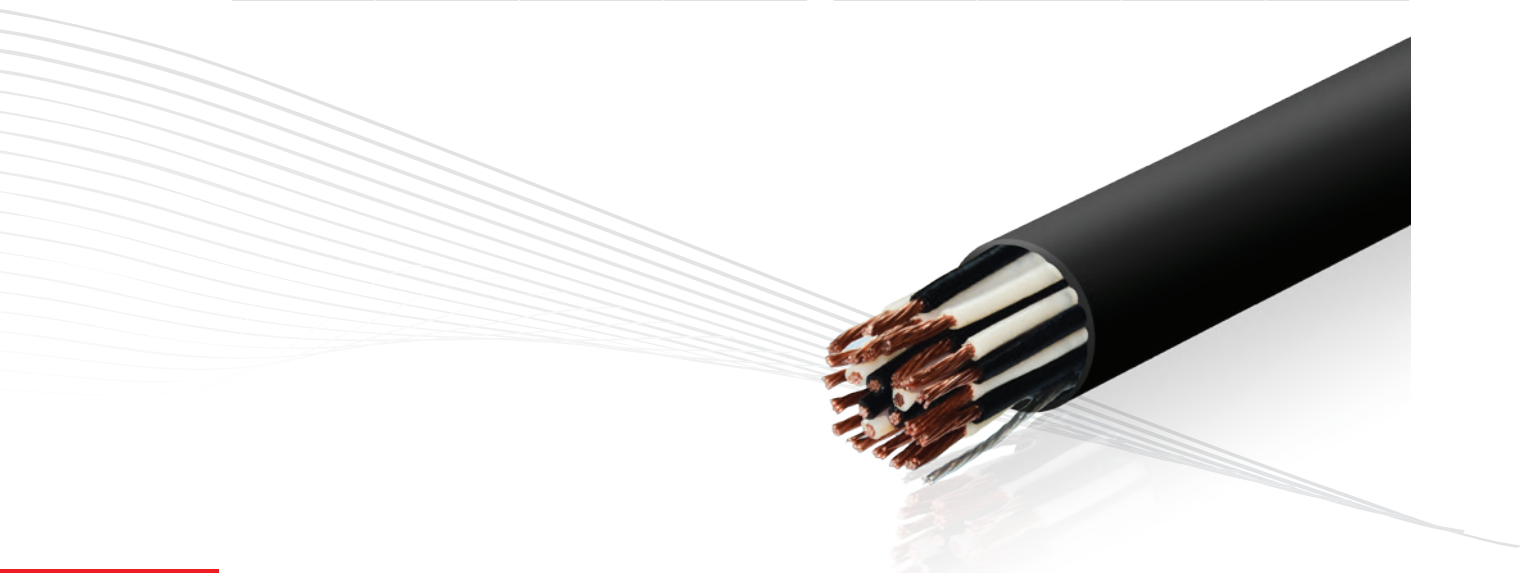
- UL Listed Type PLTC and ITC
- Designated Type PLTC per NEC ART 725
- Designated Type ITC per NEC ART 727

UL 13/UL 2250 TYPE PLTC/ITC

UNSHIELDED – UNARMoured - PAIRS & TRIADS | 300 V

XLPE/PVC

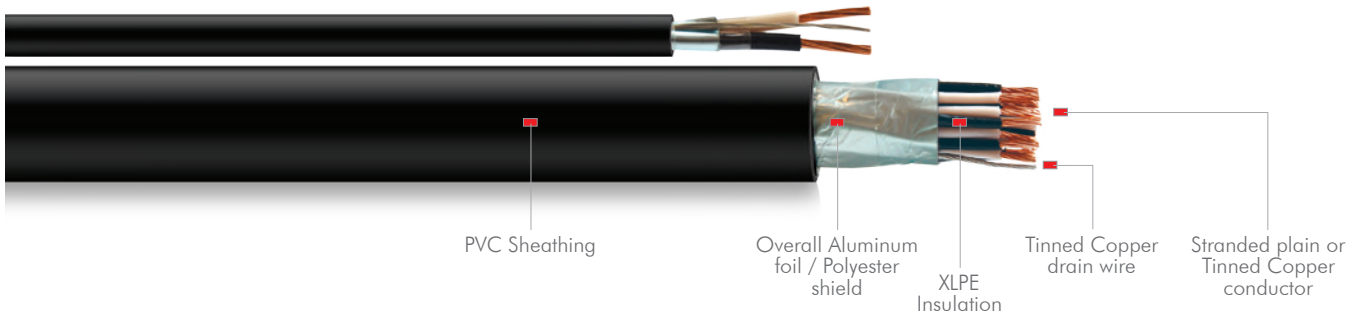
Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	5.7	38	1	18	6	48
2		8.5	77	2		9.4	100
4		10.4	134	4		11.5	179
6		12.3	188	6		13.6	253
8		13.7	236	8		15.2	322
10		16	304	10		17.7	413
12		16.5	344	12		18.3	472
16		18.2	439	16		20.3	608
20		20.2	529	20		23.1	765
24		23.2	659	24		25.9	911
30		24.5	793	30		27.4	1104
36		26.4	928	36		29.5	1299
1		16	6.3	50		1	16
2	9.5		101	2	11.1	148	
4	11.6		181	4	11.7	197	
6	13.7		257	6	12.8	248	
8	15.9		344	8	15.8	373	
10	17.9		419	10	17.7	475	
12	18.5		480	12	20	581	
16	20.6		617	16	20.7	672	
20	23.4		777	20	23.5	898	
24	26.1		925	24	26.1	1094	
30	27.7		1121	30	29.2	1306	
36	29.8		1319	36	31	1592	
1	14		7.9	77	1	14	
2		12.2	161	2	13.5		216
4		14.2	268	4	16.3		390
6		17.4	403	6	19.4		559
8		19.6	513	8	21.8		718
10		22.7	655	10	25.3		913
12		23.5	753	12	26.2		1059
16		26.1	969	16	29.2		1373
20		29	1181	20	33.1		1720
24		33	1447	24	37		2052
30		35	1756	30	39.3		2505
36		37.8	2069	36	42.9		3015



UL 13/UL 2250 TYPE PLTC/ITC

OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 300 V

XLPE/OS/PVC



CABLE STANDARDS:

UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:** Insulated cores are twisted into a pair/triad
- **Individual Pair/Triad Shield:** None
- **Overall Assembly:** Twisted pairs/triads assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10x overall diameter / Free: 12x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

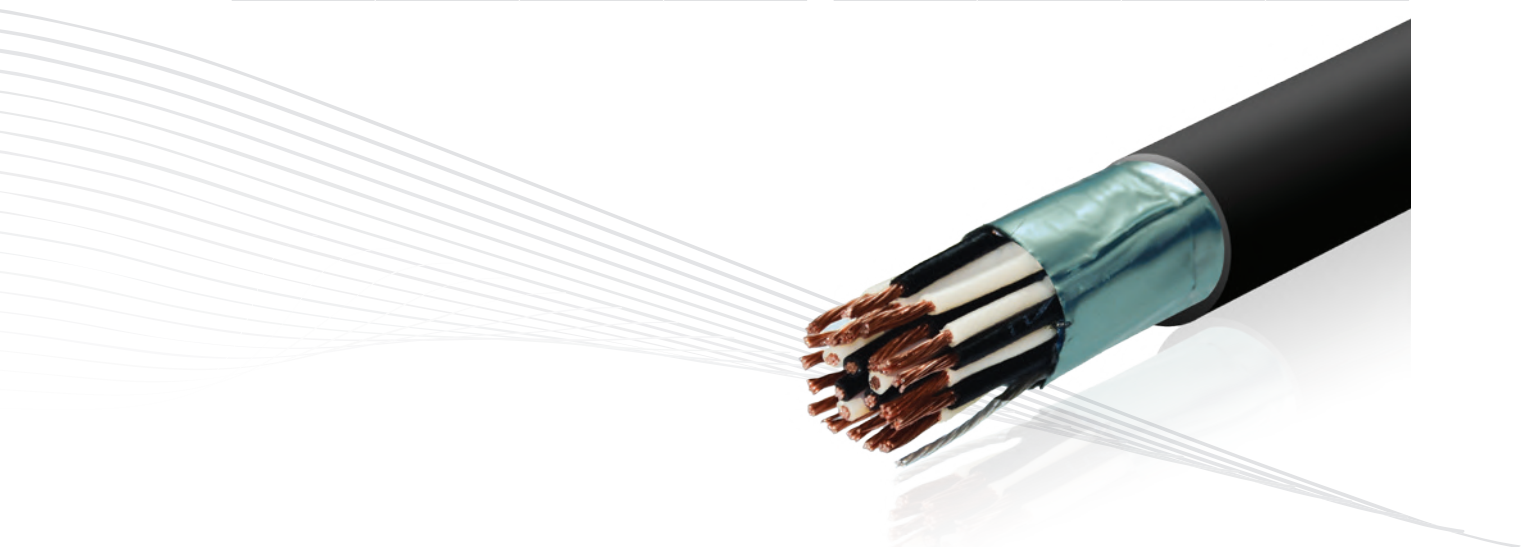
- UL Listed Type PLTC and ITC
- Designated Type PLTC per NEC ART 725
- Designated Type ITC per NEC ART 727

UL 13/UL 2250 TYPE PLTC/ITC

OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 300 V

XLPE/OS/PVC

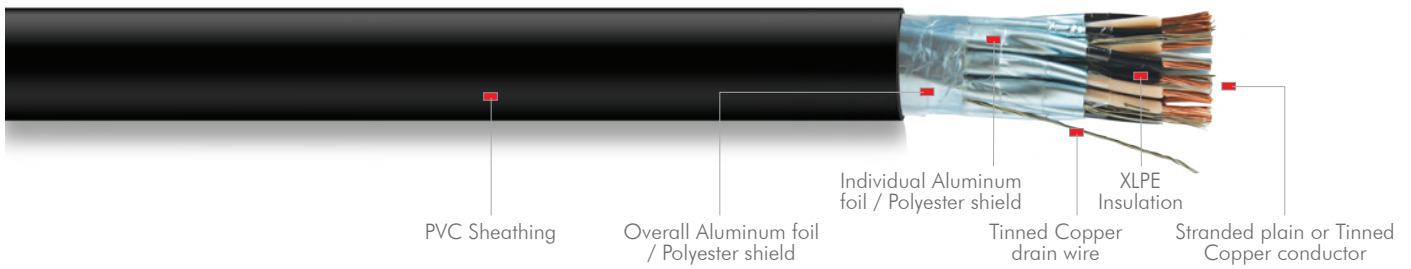
Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	5.8	44	1	18	6.2	55
2		8.7	87	2		9.6	110
4		10.6	145	4		11.7	189
6		12.5	198	6		13.8	264
8		13.9	246	8		15.9	350
10		16.2	315	10		17.9	424
12		16.7	355	12		18.5	484
16		18.4	451	16		20.5	620
20		20.4	542	20		23.3	778
24		23.4	672	24		26.1	926
30		24.7	807	30		27.6	1119
36		26.3	933	36		29.7	1314
1		16	6.4	60		1	16
2	10.2		126	2	11.3	161	
4	11.8		195	4	13	261	
6	13.9		270	6	16	386	
8	16.1		358	8	17.9	489	
10	18.1		433	10	20.2	596	
12	18.7		494	12	20.9	687	
16	20.8		632	16	23.7	914	
20	23.6		793	20	26.3	1111	
24	26.3		942	24	29.4	1324	
30	27.9		1139	30	31.2	1611	
36	30		1278	36	34.1	1940	
1	14		8	91	1	14	
2		12.4	178	2	13.7		233
4		14.4	286	4	16.5		409
6		17.6	422	6	19.6		578
8		19.8	532	8	22		738
10		22.9	675	10	25.5		934
12		23.7	774	12	26.4		1081
16		26.3	991	16	29.4		1395
20		29.2	1203	20	33.3		1744
24		33.2	1471	24	37.2		2077
30		35.2	1781	30	39.5		2531
36		38	2000	36	43.1		3043



UL 13/UL 2250 TYPE PLTC/ITC

INDIVIDUAL & OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 300 V

XLPE/IS/OS/PVC



CABLE STANDARDS:

UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:**
Insulated cores are twisted into a pair/triad
- **Individual Pair/Triad Shield:**
Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Overall Assembly:** Twisted pairs/triads assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

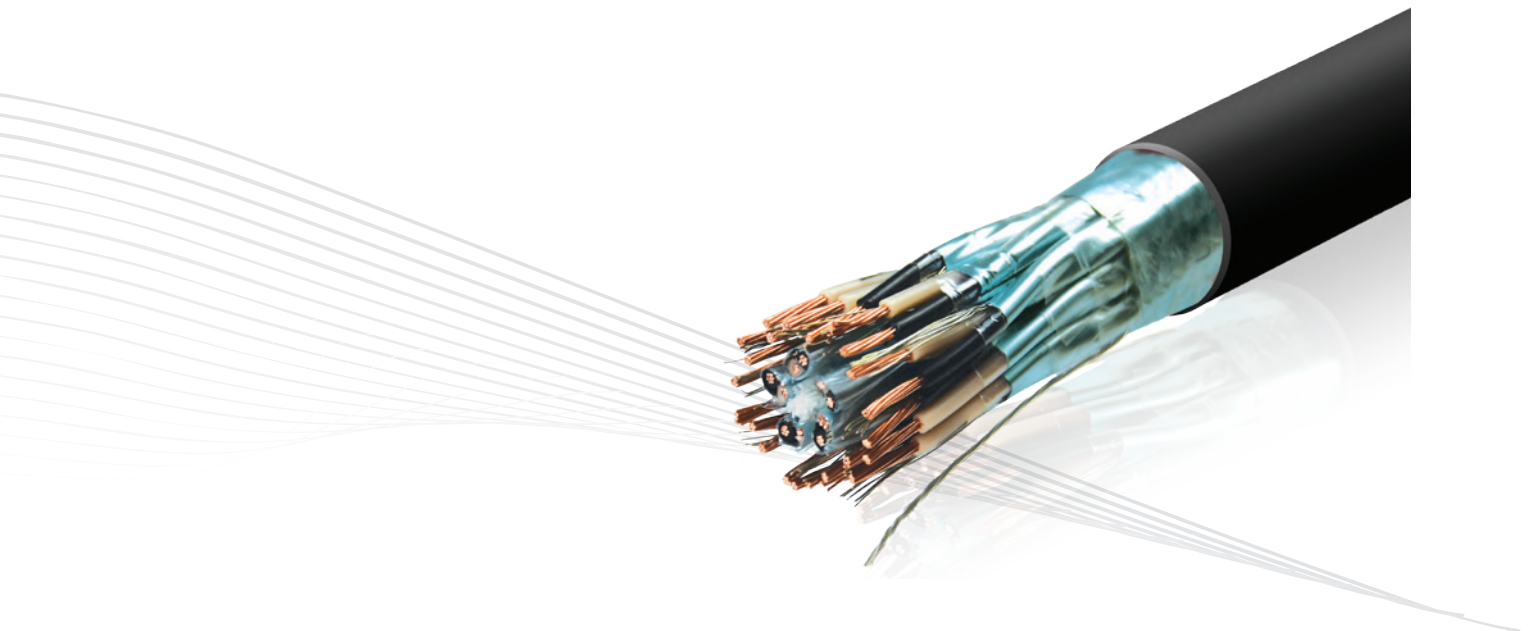
- UL Listed Type PLTC and ITC
- Designated Type PLTC per NEC ART 725
- Designated Type ITC per NEC ART 727

UL 13/UL 2250 TYPE PLTC/ITC

INDIVIDUAL & OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 300 V

XLPE/IS/OS/PVC

Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
2	18	9.6	103	2	18	11	139
4		11.6	175	4		12.8	221
6		13.7	243	6		15.1	310
8		15.8	323	8		17.5	412
10		17.8	390	10		19.7	500
12		18.3	443	12		20.4	573
16		20.3	565	16		23.2	764
20		23.1	710	20		25.7	925
24		25.8	844	24		28.8	1100
30		27.3	1018	30		30.5	1333
36		29.4	1193	36		33.4	1607
2		16	11.1	150		2	16
4	12.9		238	4	14.2	306	
6	15.8		353	6	17.5	454	
8	17.6		444	8	19.6	577	
10	19.9		540	10	22.7	732	
12	20.6		620	12	23.5	843	
16	23.4		826	16	26.1	1085	
20	25.9		1001	20	29	1322	
24	29		1192	24	32.9	1614	
30	30.8		1446	30	34.9	1962	
36	33.7		1742	36	37.7	2314	
2	14		13.4	212	2	14	
4		16.2	367	4	17.9		476
6		19.2	517	6	21.4		677
8		21.6	657	8	24.7		897
10		25	833	10	28		1098
12		25.9	960	12	28.9		1274
16		28.8	1235	16	32.7		1686
20		32.6	1543	20	36.5		2060
24		36.4	1836	24	40.8		2456
30		38.7	2231	30	43.9		3051
36		42.3	2683	36	47.4		3604



UL 13/UL 2250 TYPE PLTC/ITC

UNSHIELDED – ARMoured - PAIRS & TRIADS | 300 V

XLPE/SWA/PVC



CABLE STANDARDS:

UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:**
Insulated cores are twisted into a pair/triad
- **Individual Pair/Triad Shield:** None
- **Overall Assembly:** Twisted pairs/triads assembled in layers followed by polymer binder tape
- **Overall Shield:** None
- **Inner Sheath:** Black PVC, Heat Resistant Polyvinylchloride
- **Armouring:** Round galvanized steel wires
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance
- Increased Mechanical Protection

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

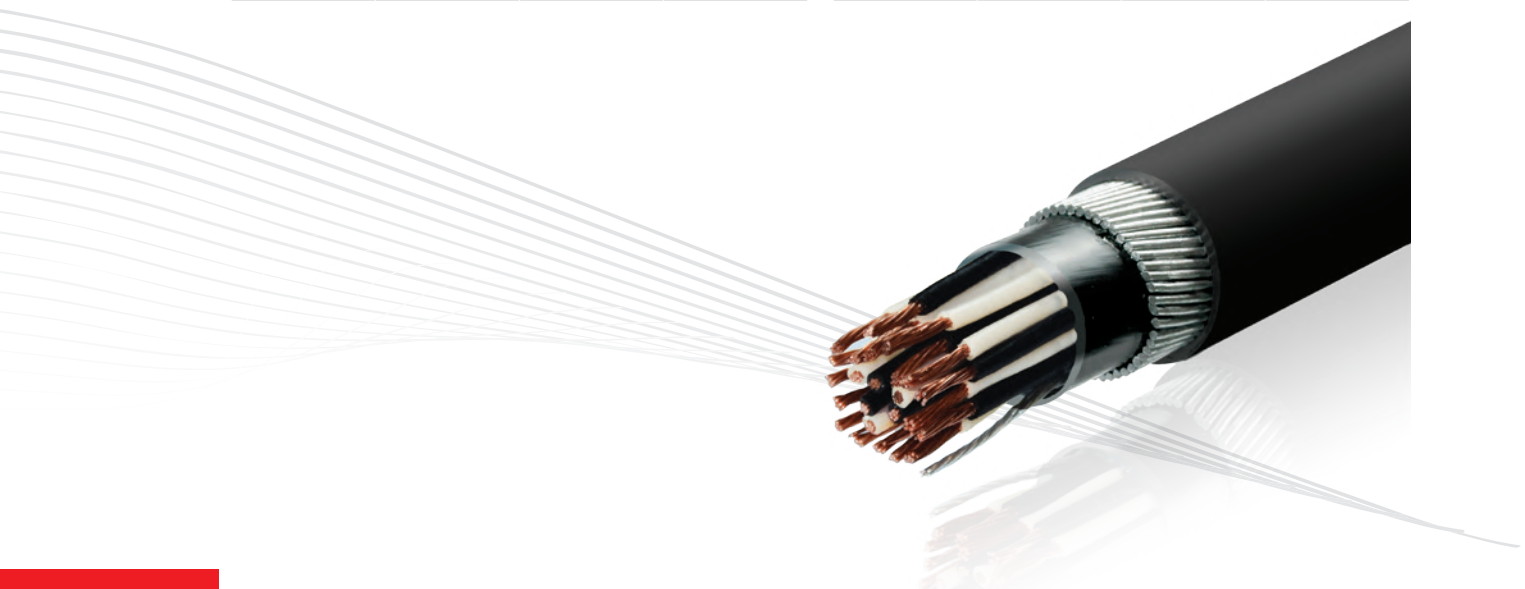
- UL Listed Type PLTC and ITC
- Designated Type PLTC per NEC ART 725
- Designated Type ITC per NEC ART 727

UL 13/UL 2250 TYPE PLTC/ITC

UNSHIELDED – ARMoured - PAIRS & TRIADS | 300 V

XLPE/SWA/PVC

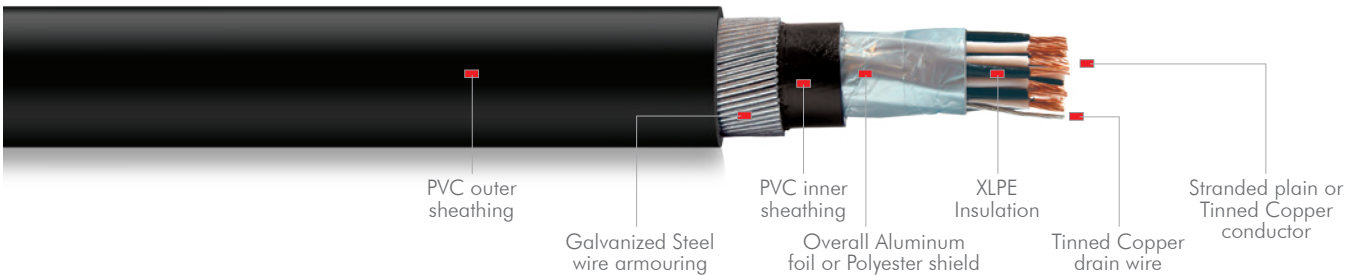
Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	9.5	167	1	18	9.8	184
2		12.3	262	2		13.7	319
4		14.7	373	4		15.8	438
6		16.6	467	6		18.5	641
8		18.7	633	8		20.2	756
10		20.9	760	10		23.4	1021
12		21.4	812	12		23.9	1099
16		23.9	1066	16		25.9	1306
20		25.8	1227	20		28.7	1553
24		28.8	1447	24		31.5	1790
30		30.2	1633	30		33	2036
36		32	1824	36		35.9	2503
1		16	10.1	192		1	16
2	13.8		321	2	15.4	401	
4	15.9		447	4	17.1	540	
6	18.7		655	6	20.7	818	
8	20.9		800	8	23.3	1083	
10	23.5		1029	10	25.6	1263	
12	24.1		1123	12	26.3	1387	
16	26.2		1317	16	29.1	1703	
20	29		1581	20	31.7	1989	
24	31.8		1820	24	35.6	2509	
30	33.3		2055	30	38.3	3124	
36	36.2		2549	36	41.8	3661	
1	14		11.7	251	1	14	
2		16.5	434	2	18.4		603
4		19.1	678	4	21.2		848
6		23	1010	6	25		1222
8		25.2	1193	8	27.5		1471
10		28.3	1425	10	31		1773
12		29.1	1558	12	31.8		1955
16		31.7	1864	16	35.6		2575
20		35.4	2383	20	40.4		3371
24		40.4	3098	24	44.8		3960
30		42.9	3541	30	47.1		4501
36		45.6	4019	36	50.8		5216



UL 13/UL 2250 TYPE PLTC/ITC

OVERALL SHIELDED – ARMOURED - PAIRS & TRIADS | 300 V

XLPE/OS/SWA/PVC



CABLE STANDARDS:

UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:** Insulated cores are twisted into a pair/triad
- **Individual Pair/Triad Shield:** None
- **Overall Assembly:** Twisted pairs/triads assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Inner Sheath:** Black PVC, Heat Resistant Polyvinylchloride
- **Armouring:** Round galvanized steel wires
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance
- Increased Mechanical Protection

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

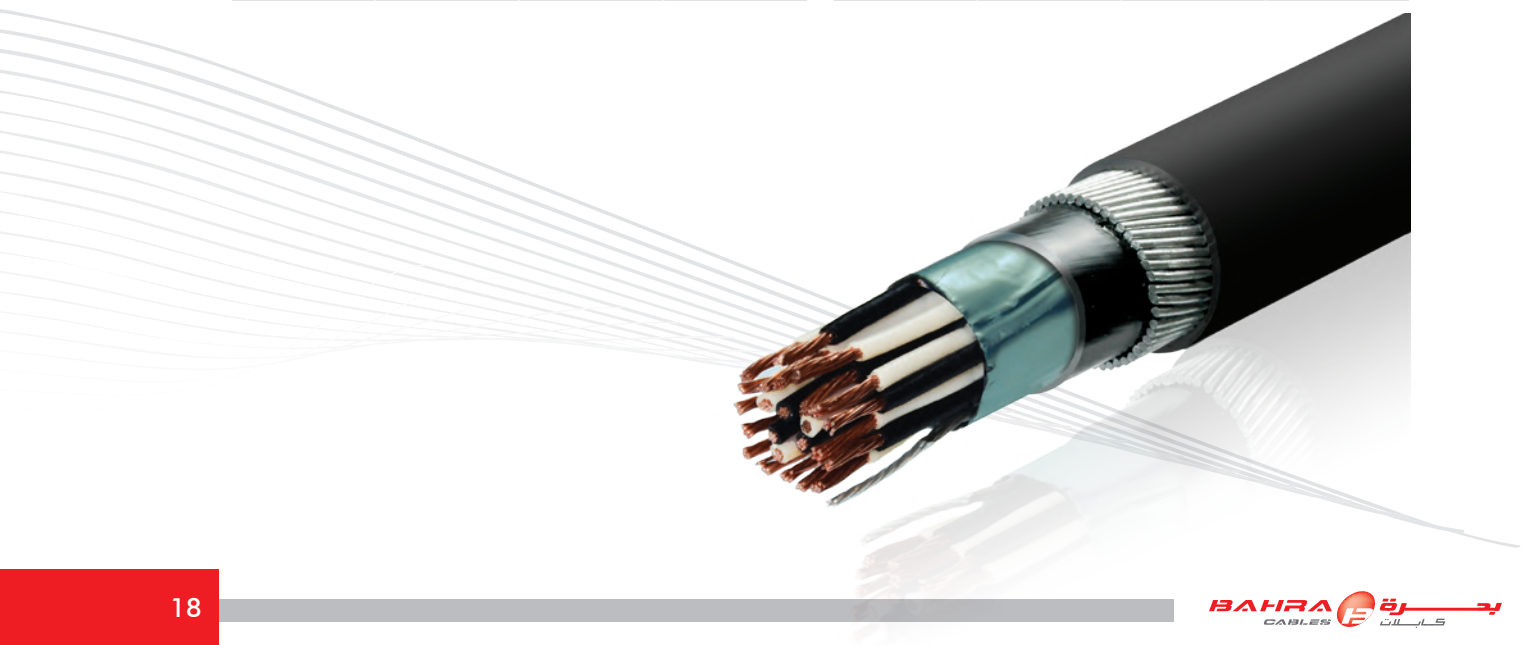
- UL Listed Type PLTC and ITC
- Designated Type PLTC per NEC ART 725
- Designated Type ITC per NEC ART 727

UL 13/UL 2250 TYPE PLTC/ITC

OVERALL SHIELDED – ARMoured - PAIRS & TRIADS | 300 V

XLPE/OS/SWA/PVC

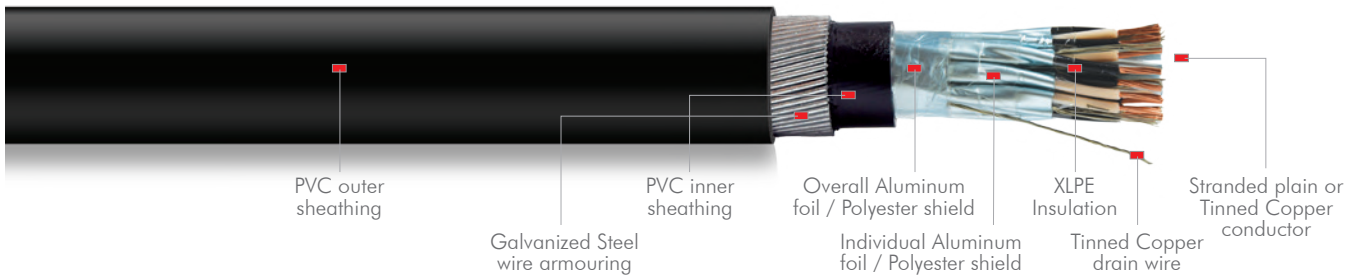
Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	9.6	175	1	18	10	192
2		12.5	273	2		13.9	331
4		14.9	385	4		16	455
6		16.8	478	6		18.7	662
8		18.9	645	8		20.9	806
10		21.1	772	10		23.6	1049
12		21.6	824	12		24.1	1127
16		24.1	1079	16		26.1	1319
20		26	1241	20		28.9	1567
24		29	1477	24		31.7	1805
30		30.4	1649	30		33.2	2052
36		32.2	1839	36		36.1	2544
1		16	10.2	203		1	16
2	14.5		359	2	15.6	420	
4	16.1		461	4	18	636	
6	18.9		669	6	20.9	842	
8	21.1		814	8	23.5	1098	
10	23.7		1059	10	25.8	1294	
12	24.3		1138	12	26.5	1404	
16	26.4		1348	16	29.3	1720	
20	29.2		1598	20	31.9	2007	
24	32		1838	24	35.8	2528	
30	33.5		2089	30	38.5	3181	
36	37.4		2827	36	42	3682	
1	14		11.8	266	1	14	
2		16.7	458	2	18.6		621
4		19.3	696	4	21.4		876
6		23.2	1030	6	25.2		1258
8		25.4	1213	8	27.7		1491
10		28.5	1462	10	31.2		1811
12		29.3	1580	12	32		1977
16		31.9	1887	16	35.8		2599
20		35.6	2406	20	40.6		3396
24		40.6	3123	24	45		3986
30		43.1	3567	30	47.3		4566
36		45.8	4046	36	51		5245



UL 13/UL 2250 TYPE PLTC/ITC

INDIVIDUAL & OVERALL SHIELDED – ARMoured - PAIRS & TRIADS | 300 V

XLPE/IS/OS/SWA/PVC



CABLE STANDARDS:

UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:**
Insulated cores are twisted into a pair/triad
- **Individual Pair/Triad Shield:**
Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Overall Assembly:** Twisted pairs/triads assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Inner Sheath:** Black PVC, Heat Resistant Polyvinylchloride
- **Armouring:** Round galvanized steel wires
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
 - Fixed: 10 x overall diameter
 - Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance
- Increased Mechanical Protection

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

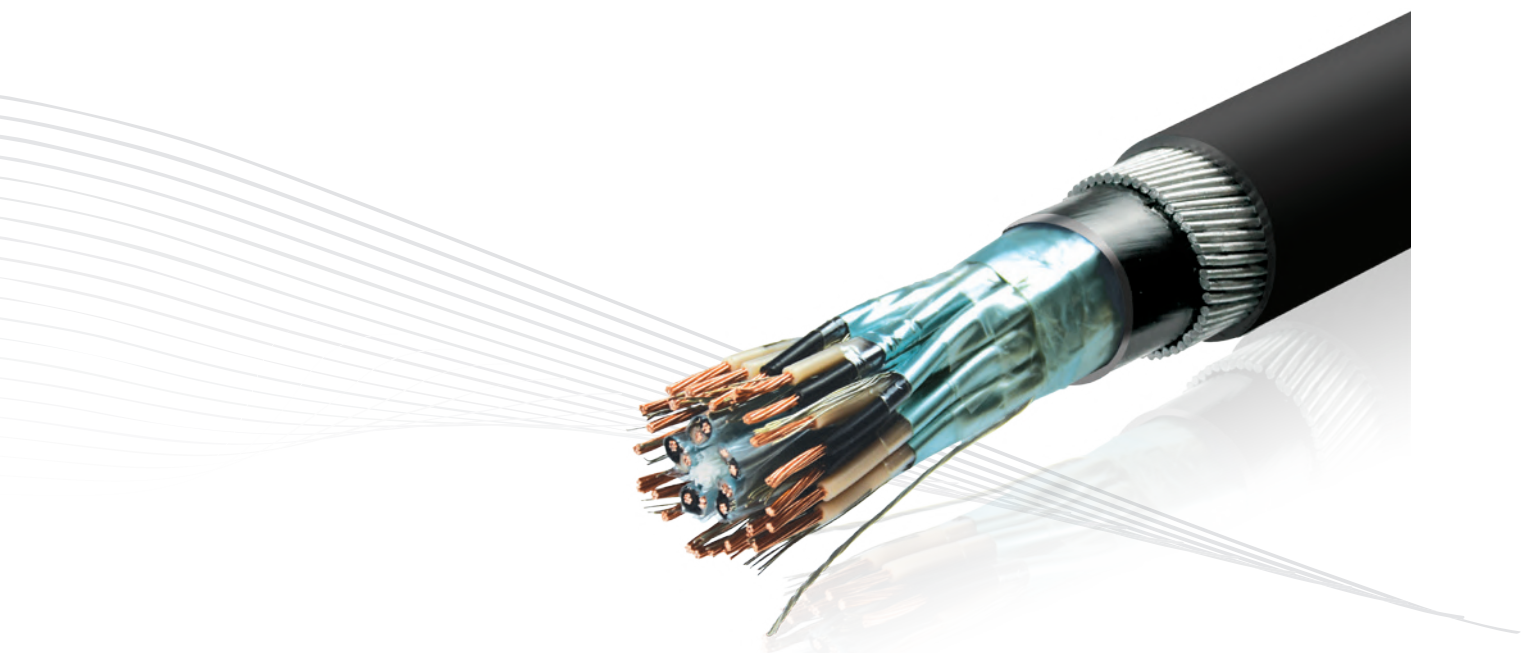
- UL Listed Type PLTC and ITC
- Designated Type PLTC per NEC ART 725
- Designated Type ITC per NEC ART 727

UL 13/UL 2250 TYPE PLTC/ITC

INDIVIDUAL & OVERALL SHIELDED – ARMoured - PAIRS & TRIADS | 300 V

XLPE/IS/OS/SWA/PVC

Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
2	18	13.9	323	2	18	15.3	392
4		15.9	436	4		17.1	507
6		18.6	631	6		20.1	743
8		20.7	768	8		23.1	1019
10		23.4	999	10		25.4	1181
12		24	1070	12		26	1272
16		26	1264	16		28.8	1552
20		28.7	1498	20		31.3	1802
24		31.4	1722	24		35.2	2277
30		32.9	1949	30		37.8	2862
36		35.8	2397	36		41.2	3307
2		16	15.4	403		2	16
4	17.2		530	4	19.2	716	
6	20.7		798	6	23.1	1061	
8	23.2		1052	8	25.2	1257	
10	25.5		1222	10	28.3	1503	
12	26.2		1320	12	29.1	1648	
16	29		1630	16	31.7	1964	
20	31.6		1880	20	35.4	2500	
24	35.4		2370	24	40.3	3265	
30	38.1		2977	30	42.8	3746	
36	41.5		3481	36	45.5	4226	
2	14		18.4	599	2	14	
4		21.1	824	4	23.5		1086
6		24.9	1179	6	27		1412
8		27.2	1393	8	30.3		1739
10		30.7	1691	10	33.6		2048
12		31.5	1838	12	35.3		2452
16		35.2	2412	16	40.1		3298
20		39.9	3154	20	44.3		3928
24		44.3	3703	24	48.7		4536
30		46.5	4224	30	51.7		5294
36		50.1	4842	36	55.2		6017



UL 1277 TYPE TC

UNSHIELDED – UNARMoured - PAIRS & TRIADS | 600 V

XLPE/PVC



CABLE STANDARDS:

UL 1277, TYPE TC

RATED VOLTAGE:

AC: 600 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:**
Insulated cores are twisted into a pair/ triad
- **Individual Pair/Triad Shield:** None
- **Overall Assembly:** Twisted pairs/ triads assembled in layers followed by polymer binder tape
- **Overall Shield:** None
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

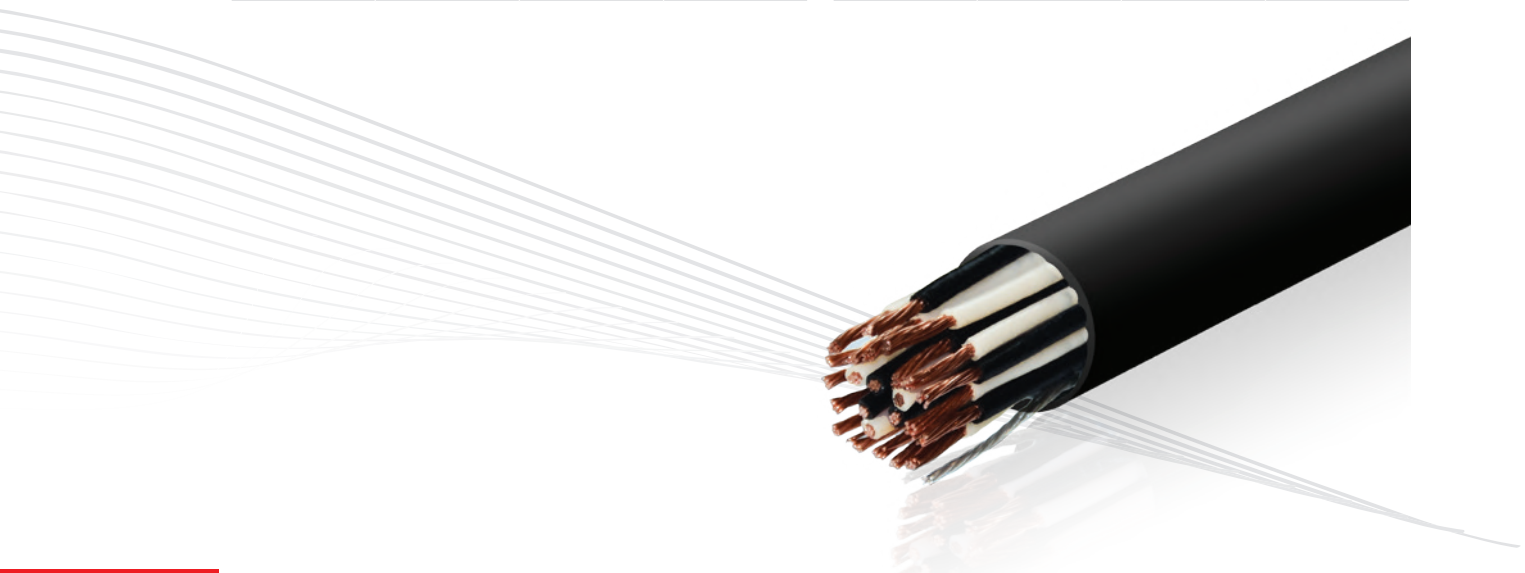
- UL Listed Type TC
- Designated Type TC per NEC ART 336

UL 1277 TYPE TC

UNSHIELDED – UNARMoured - PAIRS & TRIADS | 600 V

XLPE/PVC

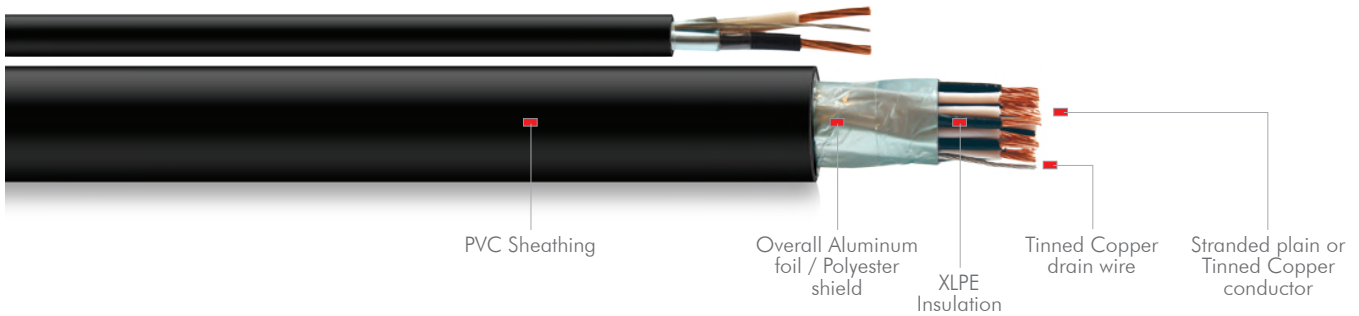
Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	7.7	58	1	18	8.1	73
2		11.3	109	2		12.5	142
4		13.9	197	4		15.4	259
6		16.5	272	6		18.3	364
8		18.5	340	8		20.6	460
10		22	463	10		24.4	617
12		22.7	520	12		25.2	701
16		25.1	655	16		28	891
20		27.9	785	20		31.2	1078
24		31.2	931	24		34.9	1281
30		33	1115	30		37	1546
36		35.6	1302	36		39.9	1815
1		16	8.3	72		1	16
2	12.3		136	2	14.4	206	
4	15.1		249	4	16.8	336	
6	18		349	6	20	476	
8	20.2		441	8	23.6	662	
10	23.9		592	10	26.7	805	
12	24.7		672	12	27.6	924	
16	27.4		853	16	30.7	1184	
20	30.5		1031	20	34.2	1440	
24	34.1		1225	24	38.2	1716	
30	36.2		1477	30	40.6	2083	
36	39.1		1734	36	45.4	2613	
1	14		9.1	93	1	14	
2		14.3	201	2	15.9		267
4		16.6	328	4	18.5		450
6		19.9	465	6	23.2		697
8		23.4	646	8	26.1		888
10		26.5	786	10	29.6		1086
12		27.4	902	12	30.6		1256
16		30.5	1154	16	34.1		1621
20		33.9	1403	20	38		1983
24		38	1671	24	44.1		2518
30		40.3	2028	30	46.8		3049
36		45.1	2546	36	50.5		3591



UL 1277 TYPE TC

OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 600 V

XLPE/OS/PVC



CABLE STANDARDS:

UL 1277, TYPE TC

RATED VOLTAGE:

AC: 600 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:**
Insulated cores are twisted into a pair/triad
- **Individual Pair/Triad Shield:** None
- **Overall Assembly:** Twisted pairs/triads assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

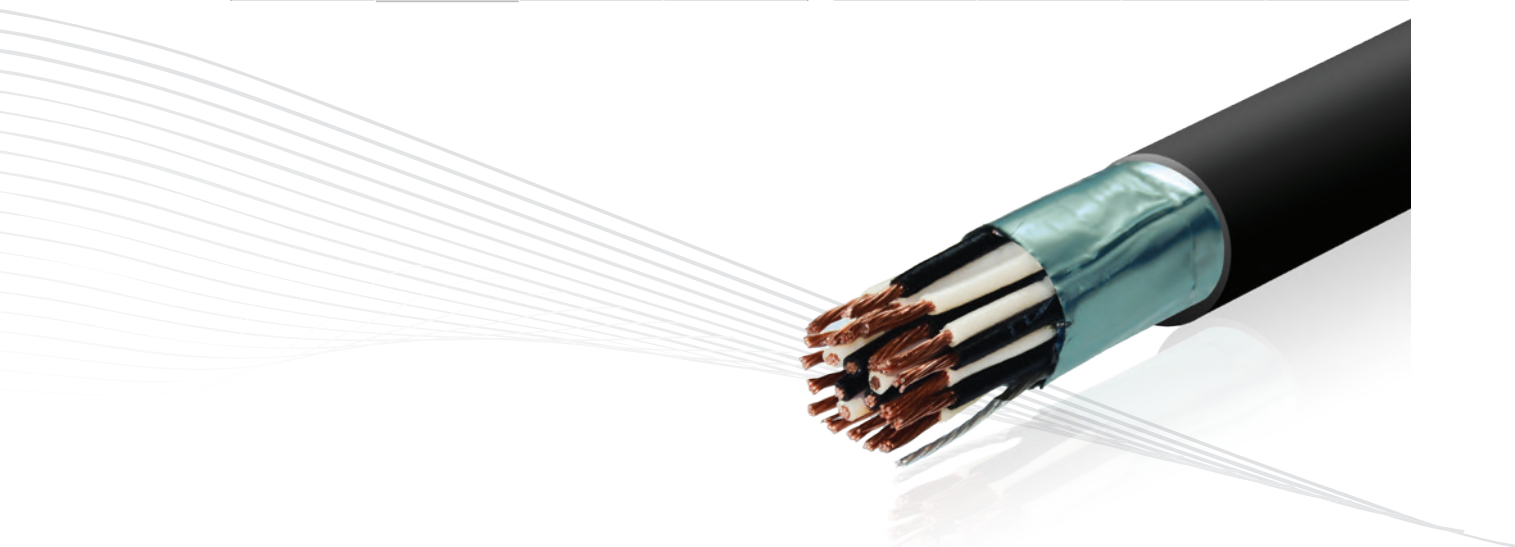
- UL Listed Type TC
- Designated Type TC per NEC ART 336

UL 1277 TYPE TC

OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 600 V

XLPE/OS/PVC

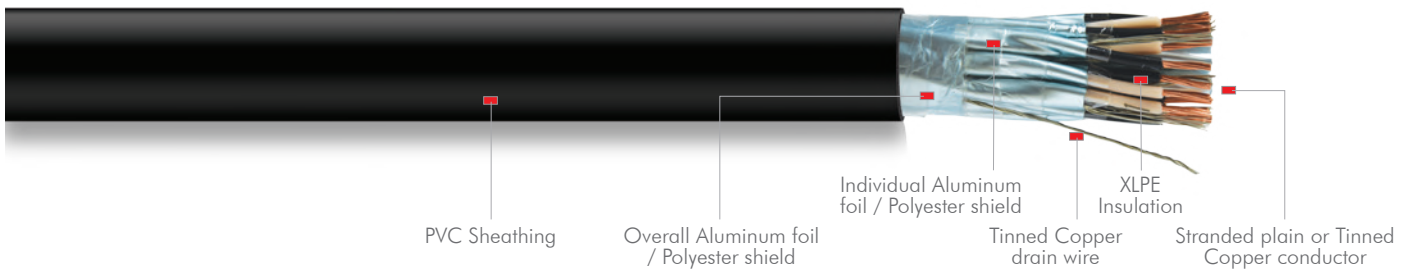
Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	7.9	66	1	18	8.3	81
2		11.5	119	2		12.7	152
4		14.1	207	4		15.6	270
6		16.7	283	6		18.5	375
8		18.7	352	8		21.8	523
10		22.2	476	10		24.6	631
12		22.9	533	12		25.4	716
16		25.3	669	16		28.2	906
20		28.1	800	20		31.4	1094
24		31.4	948	24		35.1	1299
30		33.2	1132	30		37.2	1564
36		35.8	1266	36		40.1	1835
1		16	8.5	82		1	16
2	12.5		149	2	14.6	219	
4	15.3		263	4	17	350	
6	18.2		363	6	20.2	491	
8	20.4		455	8	23.8	678	
10	24.1		608	10	26.9	823	
12	24.9		689	12	27.8	942	
16	27.6		871	16	30.9	1203	
20	30.7		1049	20	34.4	1460	
24	34.3		1245	24	38.4	1737	
30	36.4		1498	30	40.8	2105	
36	39.3		1679	36	45.6	2637	
1	14		9.2	108	1	14	
2		14.5	219	2	16.1		285
4		16.8	346	4	18.7		469
6		20.1	484	6	23.4		718
8		23.6	667	8	26.3		909
10		26.7	808	10	29.8		1109
12		27.6	924	12	30.8		1280
16		30.7	1177	16	34.3		1646
20		34.1	1428	20	38.2		2008
24		38.2	1697	24	44.3		2546
30		40.5	2054	30	47		3078
36		45.3	2464	36	50.7		3621



UL 1277 TYPE TC

INDIVIDUAL & OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 600 V

XLPE/IS/OS/PVC



CABLE STANDARDS:

UL 1277, TYPE TC

RATED VOLTAGE:

AC: 600 V

CONSTRUCTION

- **Conductor:** Stranded Plain/Tinned copper as per ASTM B3/B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:**
Pair: Black/White, Numbered for multipair
Triad: Black/White/Red, Numbered for multi triad
- **Individual Pair/Triad Assembly:**
Insulated cores are twisted into a pair/ triad
- **Individual Pair/Triad Shield:**
Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Overall Assembly:** Twisted pairs/ triads assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/ polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Outer Sheath:** Black PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

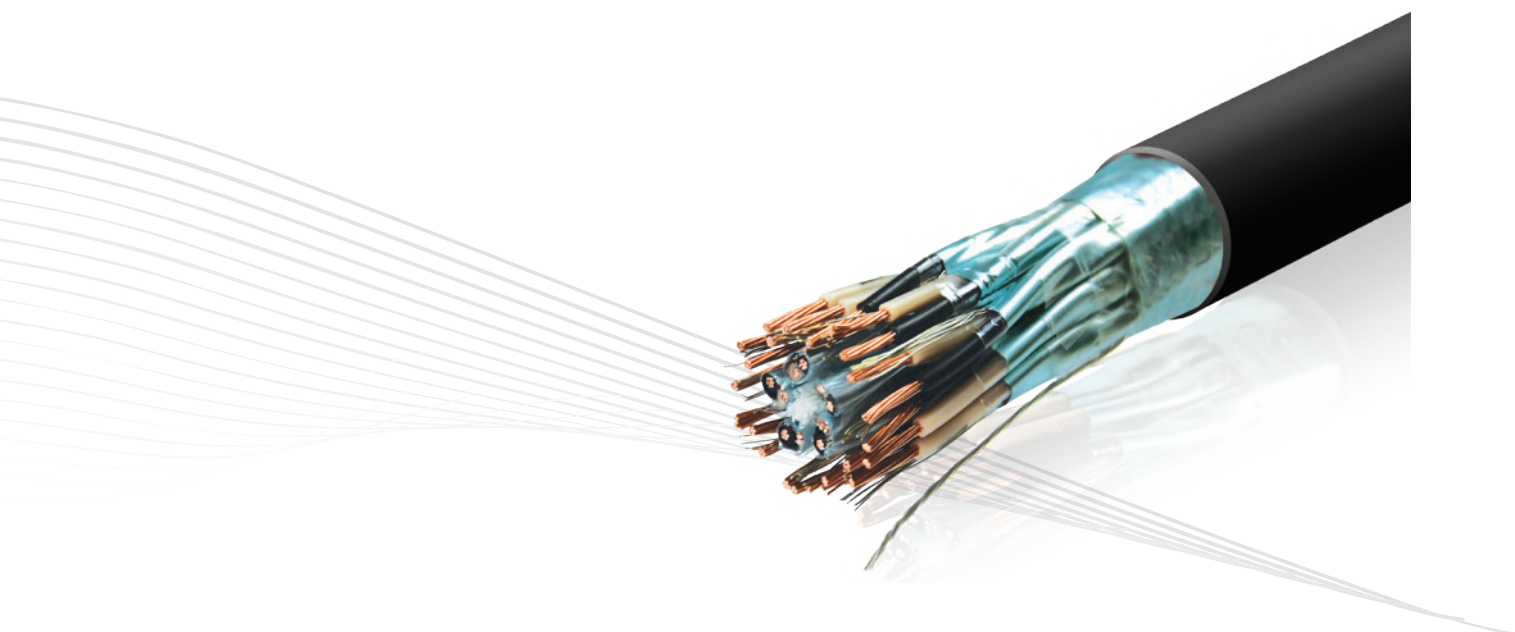
- UL Listed Type TC
- Designated Type TC per NEC ART 336

UL 1277 TYPE TC

INDIVIDUAL & OVERALL SHIELDED – UNARMoured - PAIRS & TRIADS | 600 V

XLPE/IS/OS/PVC

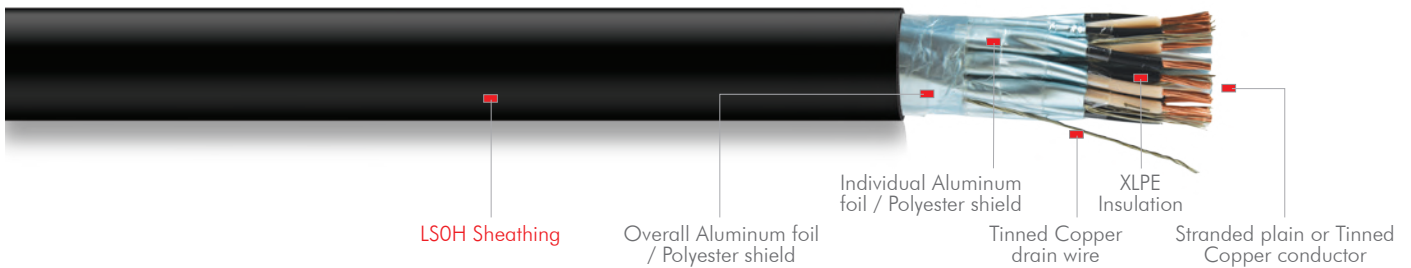
Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)	Number of Triads	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
2	18	12.5	138	2	18	14.6	196
4		15.3	243	4		17	307
6		18.2	334	6		20.3	428
8		20.4	418	8		23.8	595
10		24.2	562	10		26.9	720
12		25	634	12		27.8	819
16		27.7	799	16		30.9	1040
20		30.8	960	20		34.4	1257
24		34.4	1138	24		38.5	1493
30		36.5	1364	30		40.9	1801
36		39.4	1596	36		45.7	2273
2		16	14.3	198		2	16
4	16.6		310	4	18.5	400	
6	19.8		432	6	23.1	617	
8	23.3		599	8	25.9	777	
10	26.3		724	10	29.4	945	
12	27.2		824	12	30.4	1085	
16	30.2		1047	16	33.8	1388	
20	33.6		1266	20	37.7	1689	
24	37.6		1504	24	43.7	2161	
30	39.9		1815	30	46.3	2599	
36	44.6		2287	36	50	3049	
2	14		15.7	257	2	14	
4		18.3	414	4	20.4		538
6		22.9	636	6	25.5		824
8		25.7	801	8	28.7		1046
10		29.1	974	10	32.5		1278
12		30.1	1119	12	33.7		1479
16		33.5	1433	16	37.5		1905
20		37.3	1744	20	41.9		2329
24		41.8	2075	24	48.4		2944
30		45.9	2680	30	51.4		3565
36		49.5	3145	36	55.5		4199



ECO-FRIENDLY | INSTRUMENTATION CABLES

ECO-FRIENDLY LOW SMOKE ZERO HALOGEN

 LSOH SHEATHED CABLES



APPLICATION:

Low Smoke Zero Halogen sheath cables are that cables which intended to be used for wiring and interconnection where it is required to maintain a very low levels of smoke and toxic fumes and no acid gas when exposed to fire, they are often specified for indoor use, especially in public areas, across tunnels, underground rail networks and in other hazardous environments and poorly ventilated areas.



CABLE TYPES:

- TYPE PLTC/ITC
- TYPE TC
- Other Types

RATED VOLTAGE:

- AC: 300 V
- AC: 500 V
- AC: 600 V

CONSTRUCTION:

Cables will have the same construction of PVC sheathed cables but using Low Smoke Halogen Free Sheathing materials [LSOH].

OPTIONS:

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

ECO-FRIENDLY PERFORMANCE:

- SMOKE EMISSION: Minimum light transmittance as per EN 61034-1&2

- ASSESSMENT OF HALOGENS: Halogen free as per IEC 60754-1

- CORROSIVE GASES: Low corrosive gas emission IEC 60754-2

OTHER FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance
- Oil Resistance
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

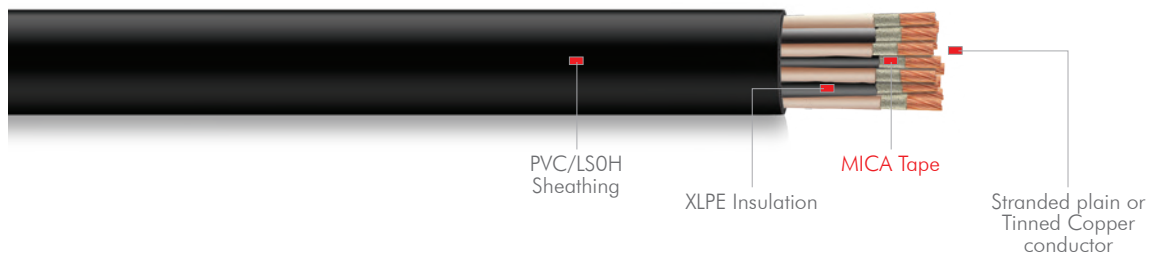
- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr



CIRCUIT INTEGRITY | INSTRUMENTATION CABLES

CIRCUIT INTEGRITY FIRE RESISTANT CABLES

CONDUCTOR/MICA/XLPE



APPLICATION:

Fire Resistant cables are intended to be used for wiring and interconnection where it is required to maintain circuit integrity under fire conditions for longer periods than can be achieved with cables of normal use.



CABLE TYPES:

- TYPE PLTC/ITC
- TYPE TC
- Other Types

RATED VOLTAGE:

- AC: 300 V
- AC: 500 V
- AC: 600 V

CONSTRUCTION:

Cables will have the same construction of cables that intended for normal use but adding a MICA tape over conductor before the XLPE insulation.

OPTIONS:

The following constructions can be provided on special orders:

- PVC or LSOH Sheathed
- Alternate color / identification for cores
- Alternate outer sheath colors

CIRCUIT INTEGRITY FIRE RESISTANT PERFORMANCE:

FIRE RESISTANT: Circuit integrity performance when tested as per BS 6387. The cable is subjected to an action of linear gas burner for 3 hours and the flame temperature equal to 950°C.

OTHER FEATURES:

Outdoor Use / Weather Resistance:

- Temperature Rating: Fixed: -5°C to +90°C
- Minimum Bending Radius:
 - Fixed: 10 x overall diameter
 - Free: 12 x overall diameter
- Moisture Resistance
- Gas / Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr



Eco-Friendly Performance (only for LSOH sheathed cables)

- SMOKE EMISSION: Minimum light transmittance as per EN 61034-1&2
- ASSESSMENT OF HALOGENS: Halogen free as per IEC 60754-1
- CORROSIVE GASES: Low corrosive gas emission IEC 60754-2

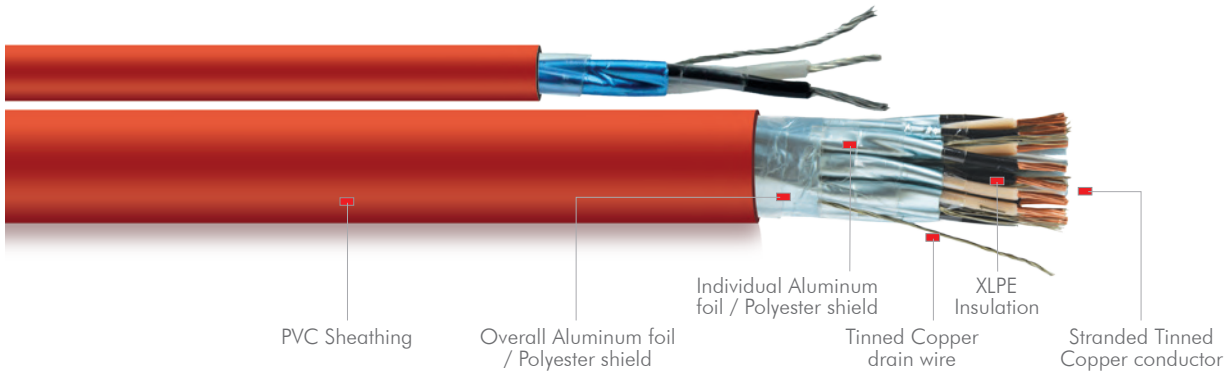


FOUNDATION™ FIELDBUS IEC 61158-2 TYPE A

SHIELDED - UNARMoured - PAIRS | UL 13/UL 2250 TYPE PLTC/ITC 300 V

SINGLEPAIR TCU/XLPE/OS/PVC

MULTIPAIR TCU/XLPE/IS/OS/PVC



CABLE STANDARDS:

FF-844 Type A, H1 Cable

IEC 61158-2 Section 12.8.2

UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Tinned Copper as per ASTM B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:** Pair: Black/White, Numbered for multipair
- **Individual Pair Assembly:** Insulated cores are twisted into a pair
- **Individual Pair Shield:**
Single Pair: Overall Shield only
Multi Pairs: Aluminum foil/polyester shield wrapped to provide 100% coverage with tinned Cu drain wire that is minimum one even gauge size smaller than conductor size.
- **Overall Assembly:** Twisted pairs are assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Outer Sheath:** Orange PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating:
Fixed: -30°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance / Oil Resistance / Moisture Resistance / Gas, Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

- Registered FIELDCOMM Group™
- UL listed type PLTC and ITC
- Designated type PLTC per NEC ART 725
- Designated type ITC per NEC ART 727

FOUNDATION™ FIELDBUS IEC 61158-2 TYPE A

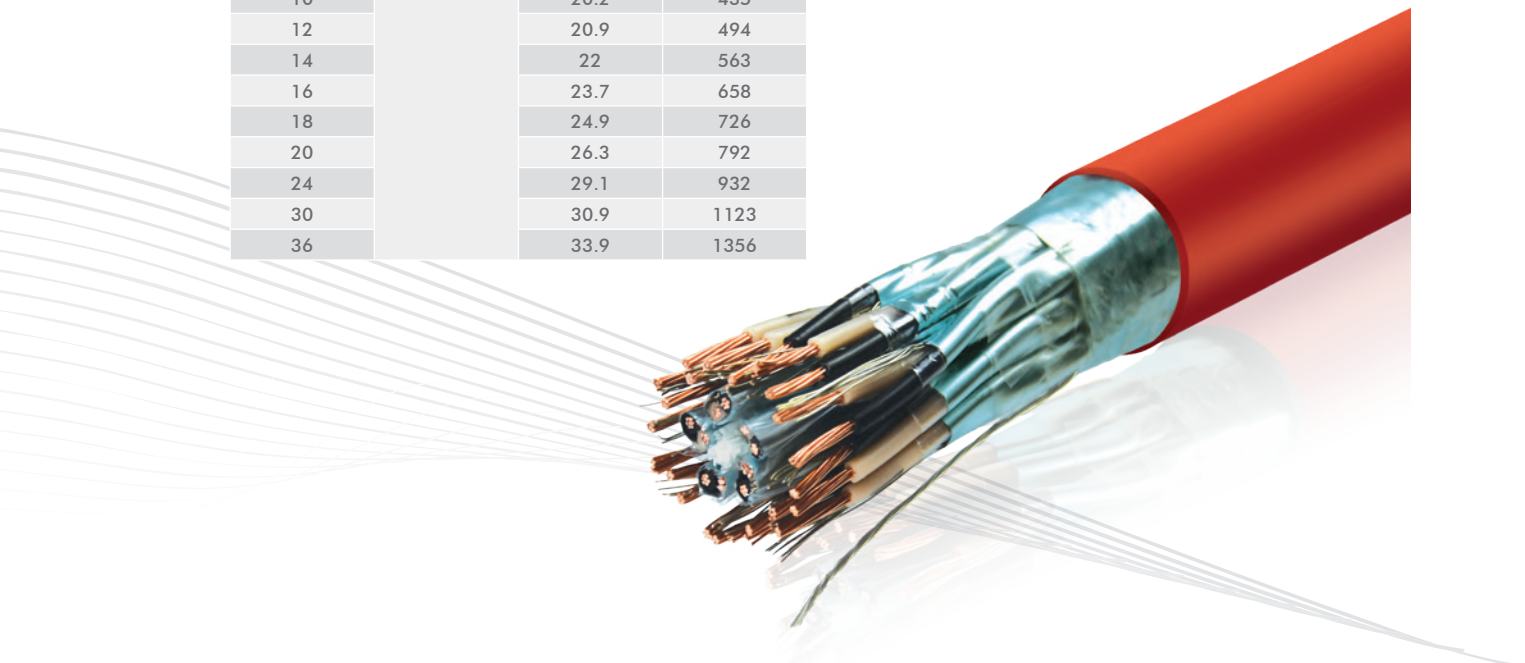
SHIELDED - UNARMoured - PAIRS | UL 13/UL 2250 TYPE PLTC/ITC 300 V

SINGLEPAIR TCU/XLPE/OS/PVC

MULTIPAIR TCU/XLPE/IS/OS/PVC

		Conductor Size
ELECTRICAL CHARACTERISTIC @ 25 °C	Unit	18 AWG
Max. Conductor DC resistance	Ω/km	24
Max. Drain Wire DC resistance	Ω/km	51
Nom. Mutual Capacitance (between conductors) (at 1 kHz)	nf/km	78
Max. Capacitance unbalance to shield (at 1 kHz)	nf/km	4
Max. Inductance to Resistance Ratio	μH/ohm	25
Max. Attenuation at 1.25 fr (39 kHz)	dB/km	3
Characteristic Impedance at fr (31.25 kHz)	Ω	100 ± 20
Max. Propagation delay change 0.25 fr to 1.25 fr	μs/km	1.7
Min. Shield to ground resistance	Mohm/330 m	1

Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	6.5	50
2		11.3	127
3		11.9	160
4		13	195
5		14.3	231
6		16	289
7		16	314
8		17.9	360
9		19.3	396
10		20.2	435
12		20.9	494
14		22	563
16		23.7	658
18		24.9	726
20		26.3	792
24		29.1	932
30		30.9	1123
36	33.9	1356	

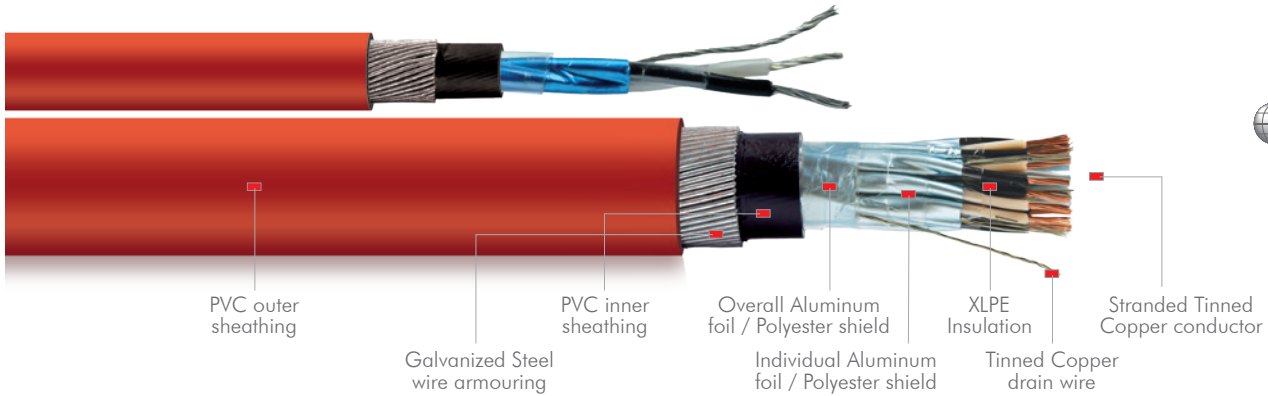


FOUNDATION™ FIELDBUS IEC 61158-2 TYPE A

SHIELDED - ARMoured - PAIRS | UL 13/UL 2250 TYPE PLTC/ITC 300 V

SINGLEPAIR TCU/XLPE/OS/SWA/PVC

MULTIPAIR TCU/XLPE/IS/OS/SWA/PVC



CABLE STANDARDS:

- FF-844 Type A, H1 Cable
- IEC 61158-2 Section 12.8.2
- UL 13/UL 2250, TYPE PLTC/ITC

RATED VOLTAGE:

AC: 300 V

CONSTRUCTION

- **Conductor:** Stranded Tinned Copper as per ASTM B33
- **Insulation:** XLPE, Cross-linked polyethylene compound
- **Cores Identification:** Pair: Black/White, Numbered for multipair
- **Individual Pair Assembly:** Insulated cores are twisted into a pair
- **Individual Pair Shield:**
Single Pair: Overall Shield only
Multi Pairs: Aluminum foil/polyester shield wrapped to provide 100% coverage with tinned Cu drain wire that is minimum one even gauge size smaller than conductor size.
- **Overall Assembly:** Twisted pairs are assembled in layers followed by polymer binder tape
- **Overall Shield:** Aluminum foil/polyester shield wrapped to provide 100% coverage with a tinned copper drain wire that is minimum one even gauge size smaller than conductor size.
- **Inner Sheath:** Black PVC, Heat Resistant Polyvinylchloride
- **Armouring:** Round galvanized steel wires
- **Outer Sheath:** Orange PVC, Heat Resistant Polyvinylchloride Flame Retardant

OPTIONS

The following constructions can be provided on special orders:

- Alternate color / identification for cores
- Alternate outer sheath colors

FEATURES

Outdoor Use / Weather Resistance:

- Temperature Rating:
Fixed: -30°C to +90°C
- Minimum Bending Radius:
Fixed: 10 x overall diameter
Free: 12 x overall diameter
- Sunlight Resistance / Oil Resistance / Moisture Resistance / Gas, Vapour Tight

Mechanical Features

- Direct Buried
- Crushing Resistance
- Increased Mechanical Protection

Fire Performance

- Flame Propagation: Flame retardant as per IEEE 383 vertical fire tests at 70,000 BTU/hr

Approvals And Designations:

- Registered FIELDCOMM Group™
- UL listed type PLTC and ITC
- Designated type PLTC per NEC ART 725
- Designated type ITC per NEC ART 727

FOUNDATION™ FIELDBUS IEC 61158-2 TYPE A

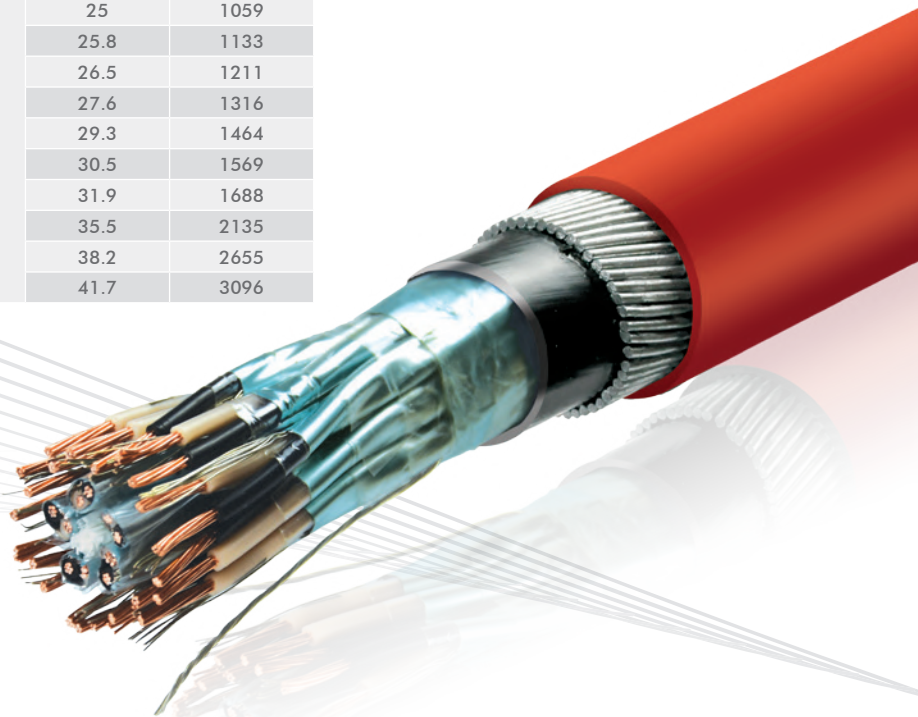
SHIELDED - ARMoured - PAIRS | UL 13/UL 2250 TYPE PLTC/ITC 300 V

SINGLEPAIR TCU/XLPE/OS/SWA/PVC

MULTIPAIR TCU/XLPE/IS/OS/SWA/PVC

		Conductor Size
ELECTRICAL CHARACTERISTIC @ 25 °C	Unit	18 AWG
Max. Conductor DC resistance	Ω/km	24
Max. Drain Wire DC resistance	Ω/km	51
Nom. Mutual Capacitance (between conductors) (at 1 kHz)	nf/km	78
Max. Capacitance unbalance to shield (at 1 kHz)	nf/km	4
Max. Inductance to Resistance Ratio	μH/ohm	25
Max. Attenuation at 1.25 fr (39 kHz)	dB/km	3
Characteristic Impedance at fr (31.25 kHz)	Ω	100 ± 20
Max. Propagation delay change 0.25 fr to 1.25 fr	μs/km	1.7
Min. Shield to ground resistance	Mohm/330 m	1

Number of Pairs	Conductor Size (AWG)	Nominal Outer Diameter (mm)	Net Weight (kg/km)
1	18	10.3	193
2		15.6	385
3		16.2	432
4		18	570
5		19.2	641
6		20.9	744
7		20.9	769
8		23.5	969
9		25	1059
10		25.8	1133
12		26.5	1211
14		27.6	1316
16		29.3	1464
18		30.5	1569
20		31.9	1688
24		35.5	2135
30		38.2	2655
36		41.7	3096



CERTIFICATIONS

INSTRUMENTATION CABLES

CERTIFICATE OF COMPLIANCE

Certificate Number 20190814-E509680
Report Reference E509680-20190806
Issue Date 2019-AUGUST-14

Issued to: BAHRA CABLES CO
 Ring Rd
 Makkah Express Way
 Po Box 11967
 Jeddah 21463 SAUDI ARABIA

This certificate confirms that representative samples of POWER-LIMITED CIRCUIT CABLE
 Power Limited Circuit Cables,
 Type CL2, CL3, PLTC (60°C - 105°C).

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 13, Power-Limited Circuit Cables
Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information.

This Certificate of Compliance does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.


 Bruce Mahvenholz, Director North American Certification Program
 UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at ul@ulprospector.com



CERTIFICATE OF COMPLIANCE

Certificate Number 20190814-E509681
Report Reference E509681-20190806
Issue Date 2019-AUGUST-14

Issued to: BAHRA CABLES CO
 Ring Rd
 Makkah Express Way
 Po Box 11967
 Jeddah 21463 SAUDI ARABIA

This certificate confirms that representative samples of INSTRUMENTATION TRAY CABLE
 Instrumentation Tray Cables Type ITC (60°C - 105°C)

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 2250, Instrumentation Tray Cable
Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information.

This Certificate of Compliance does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.


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 UL LLC

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CERTIFICATE OF COMPLIANCE

Certificate Number 20180702-E491798
Report Reference E491798-20180628
Issue Date 2018-JULY-02

Issued to: BAHRA CABLES CO
 Ring Rd
 Makkah Express Way
 Po Box 11967
 Jeddah 21463 SAUDI ARABIA

This is to certify that representative samples of POWER AND CONTROL TRAY CABLE
 Type TC Power and Control Tray Cable.

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1277, Electrical Power and Control Tray Cables with Optional Optical-Fiber Members
Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

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H1 Cable Registration

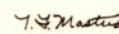
Manufacturer	Bahra Advanced Cable Manufacture Co. Ltd. Makkah Express Way, CPC Industrial Park, Bahra, P.O.Box 5989 Jeddah 21432 Saudi Arabia
Product Name	FFA-xxSTP18-UP (Un Armored Cable) FFA-xxSTP18-AP (Armored Cable)
Product Revision	0
Conductor Size / Number of Pairs	18 AWG / 1-36 STP
Application Type	Trunk and Spur
Cable Ratings or Listings / Standard	Instrument Tray Cable (ITC) / UL 2250 Power Limited Tray cable (PLTC) / UL 13 Tray Cable (TC) / UL 1277
Optional Characteristics	Optional Galvanized Steel Wire Armor Direct Burial per UL 13 Oil Resistant per UL 13 Sunlight Resistant per UL 1581 Article 1200 Abrasion Resistant Flame Retardant per UL 1277 / UL 1685 Jacket color: Orange Wire insulation color: Black / White
Registration Number	CL/125500/1
Registration Program	FF-534-1.1
Manufacturer Test Report Number	FF-845-1.0
Date Issued	September 24, 2020

Authorized Mark

Use of mark subject to Graphic Identity Style Guide



FOUNDATION



Ted Masters
 President and Chief Executive Officer

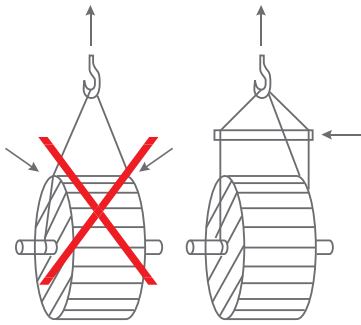
INDUSTRIAL PROJECTS

INSTRUMENTATION CABLES

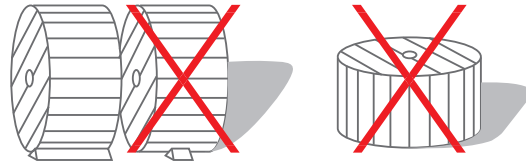


DRUM HANDLING INSTRUCTIONS

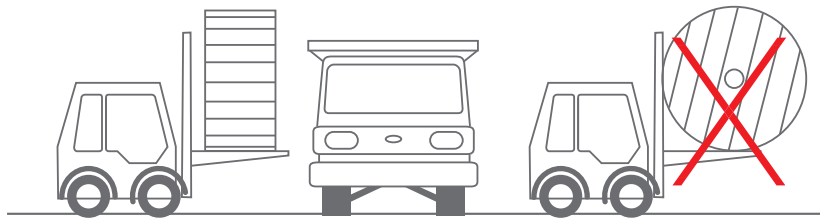
Cables and Conductors should be installed by trained personnel in accordance with good engineering practices, recognized codes of practise, statutory local requirements, IEE wiring regulations and where relevant, in accordance with any specific instructions issued by the company. Cables are often supplied in heavy cable reels and handling these reels can constitute a safety hazard. In particular, dangers may arise during the removal of steel binding straps and during the removal of retaining battens and timbers which may expose projecting nails.



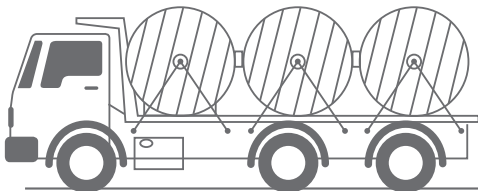
Lifting cable drums using crane.



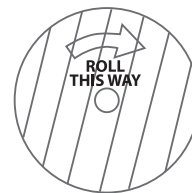
Do not lay drums flat on their sides, use proper stops to prevent drums rolling.



Lift drums on fork trucks correctly.

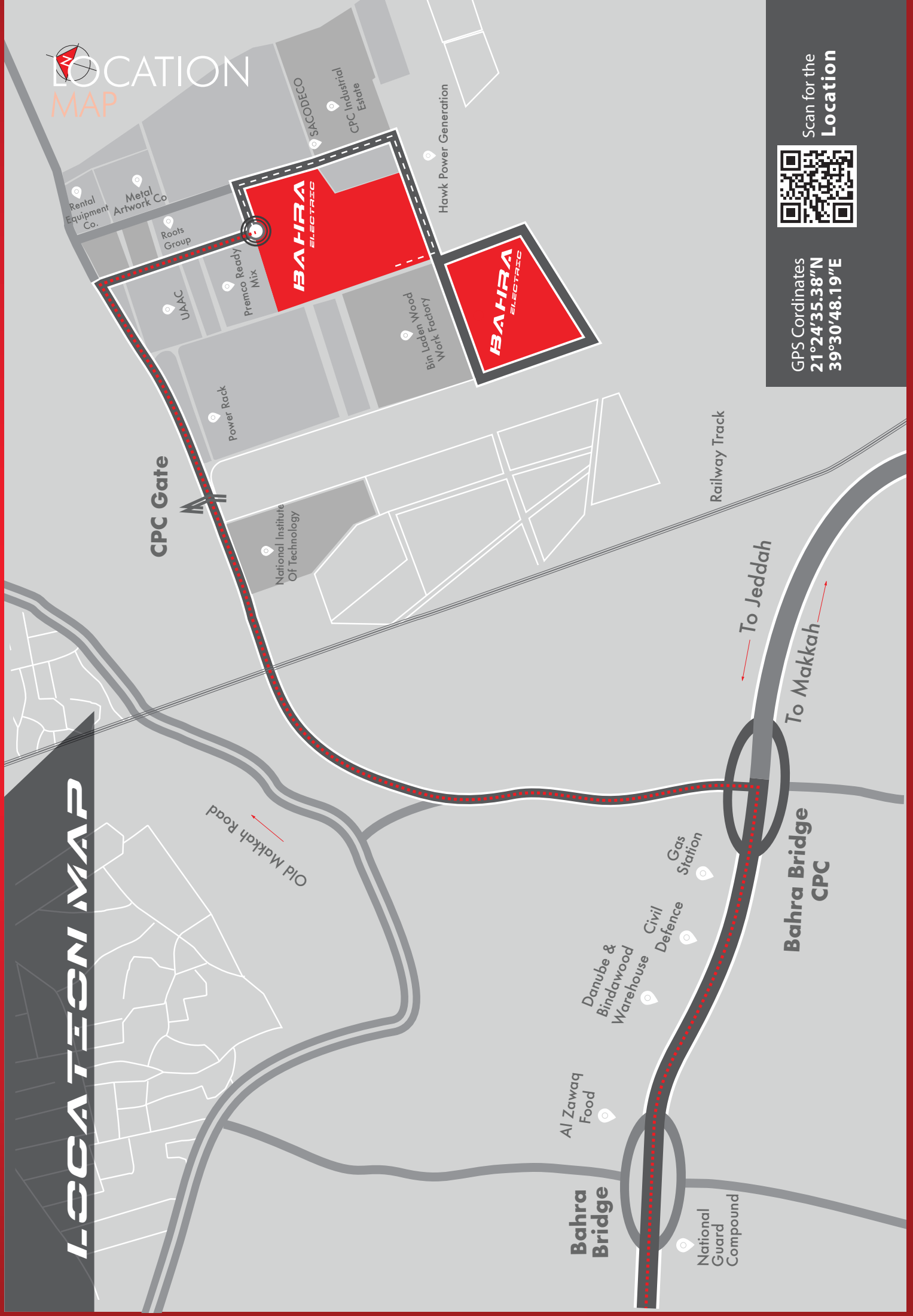


Secure drums adequately before transportation.



Roll in the direction shown by the arrow.

LOCATION MAP



LOCA TECH MAP



Scan for the Location

GPS Coordinates
21°24'35.38"N
39°30'48.19"E

Bahra Advanced Cable Manufacture Co. Ltd.

ص.ب. ٥٩٨٩ جبة ٢١٤٣٢. المملكة العربية السعودية. هاتف ١١١٥ ١٢ ٥٩١ +٩٦٦. فاكس ٥٦٨٣ ١٢ ٥٩١ +٩٦٦
P O Box 5989, Jeddah 21432, Saudi Arabia, Tel +966 12 591 1115, Fax +966 12 591 5683
sales@bahra-cables.com

شركة بحرة المتطورة لصناعة الكابلات المحدودة ش.م.م

Customer Service: +966 92 001 1127 / 800 124 8111

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