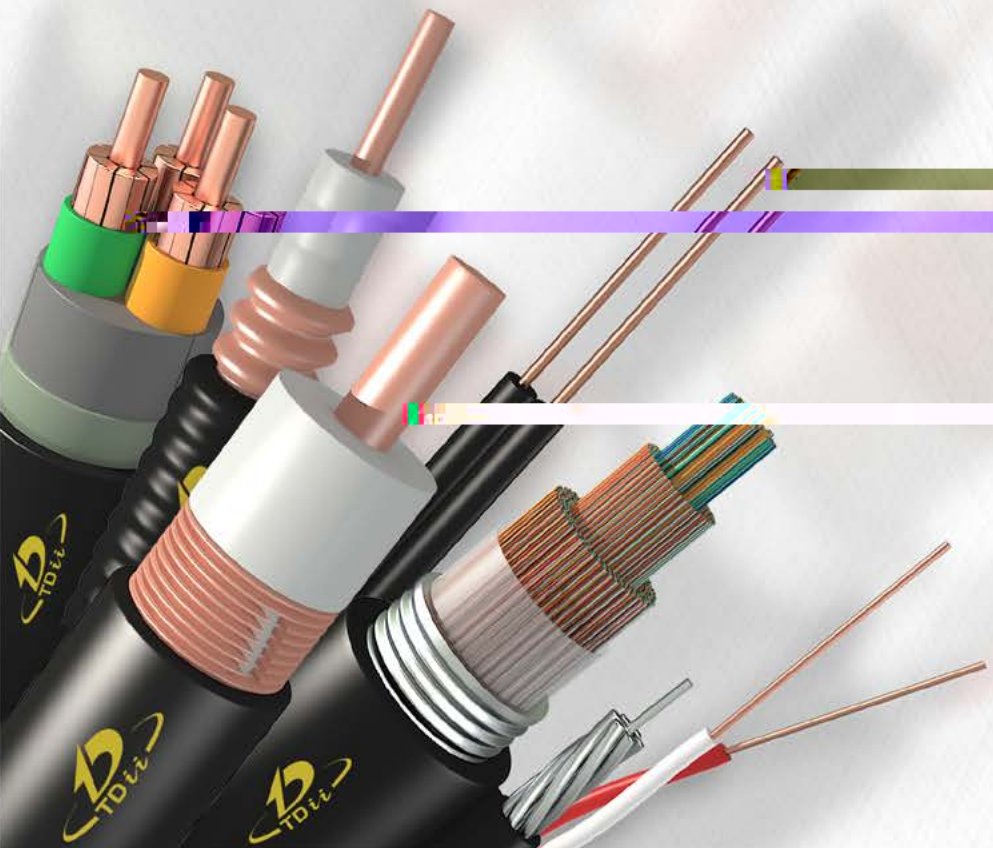




COPPER CABLE



TONGDING

8 *Connecting Horizons*

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TONGDING TIMELINE



October 2001

Company begins manufacturing optical fiber cables and changes name to Jiangsu Tongding Optic-Electronic Co., Ltd "Tongding"

June 1999

Wujiang Shenxin Cable Co. Ltd is incorporated, company focused on Telecommunication copper cable

June 2006

Tongding starts railway signal cable production

March 2004

Tongding expands its fiber optic cable production capacity to 25 million km

December 2008

Tongding opens optical fiber production facility with an annual capacity of 7 million km of fiber

October 2010

Tongding opens FTTH production facility with an annual capacity of 1.4 million fiber-km

June 2009

Tongding engages in RF and Leaky Coaxial Cable production

October 2010

Jiangsu Tongding Optic-Electronic Co., Ltd is listed on the Shenzhen Stock Exchange

September 2011

Jiangsu Tongding Broadband Co., Ltd., a company for manufacturing Optical Network Distribution products is established

October 2011

Tongding Preform Technology Co., Ltd., company for optical preform manufacturing is incorporated

July 2013

Tongding expands its optical fiber and fiber optic cable annual production capacity to 30 million km and 1.4 million km respectively

October 2014

Tongding signs a cooperation agreement with Corning

December 2015

Tongding establishes presence in global markets

December 2014

Cable subsidiary name is changed to Tongding Interconnection Information Co., Ltd.

October 2016

Tdii made "Power cable Phase II Expansion Project" foundation, further expands the copper cable transmission product line.

July 2017

Intelligent transformation project started, and gradually transformed from intelligent production line to intelligent workshop, and even to intelligent factory.

Tongding Group is one of the world's largest communication cable manufacturers. Incorporated in the Chinese industrial city of Suzhou, the company engages in manufacturing fiber optic cable, ODN components and copper cable.

As a publicly listed company, Tongding has succeeded through constant business expansion throughout the communication cable chain. The company has over 13,000 employees and 1.4 million square meters of production facilities.

Tongding constantly pursues standing at the forefront of the communication industry through its R&D center and strategic partnerships with over 15 leading universities.



Copper Cable Facilities

Tongding's copper cable production facilities are among the largest in China. The company has capacity to produce millions of kilometers of copper communication cables including RF coaxial cable, railway signal cables and power cables. This is possible through the facilities' top-of-the-line production facilities.



Strong Portfolio of Communication Cables

Tongding is a key strategic supplier of China Mobile, China Unicom, and China Telecom for the telephone cable, LAN cable, coaxial cable, special electrical cable and accessories.



Market Leader of Railway Signal Cable

Tongding actively participates in about a hundred projects including the high-speed railway between Beijing and Shanghai, and dozens of subway projects in Beijing, Shanghai and others, contributing significantly to the development of China's transportation network. Our partners include Siemens, Thales, Alstom, and CRCC.

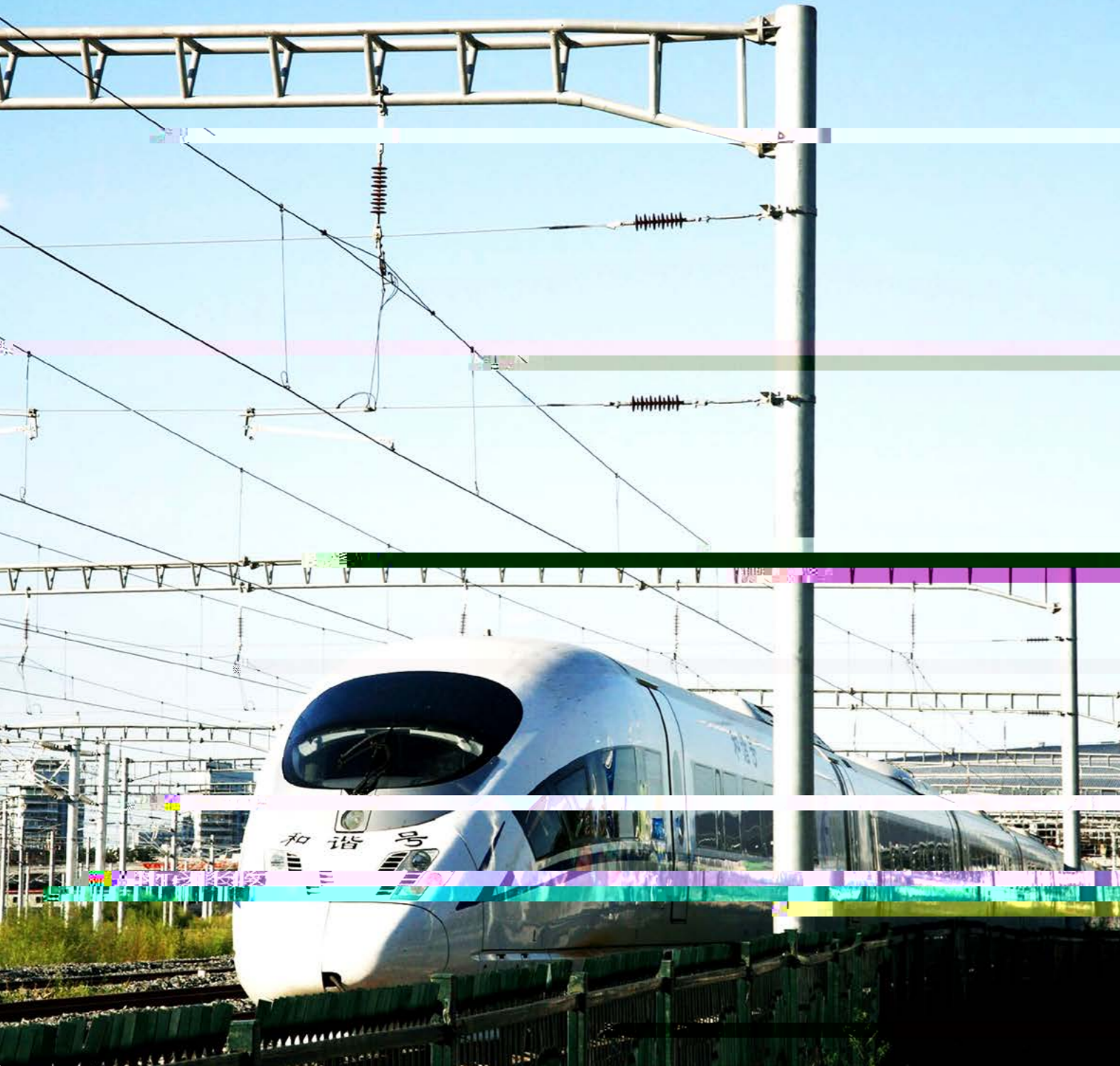


World-class Power Cable

Tongding copper cable facilities also have capacity to manufacture over 100 types of power cables for different applications. Products comply with international standards such as GB, JB, IEC, BS, VDE, JIS and UL. Our customers include State-Grid and China Southern Power Grid.

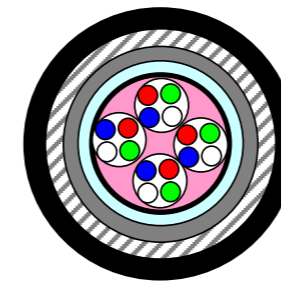


RAILWAY SIGNAL CABLE

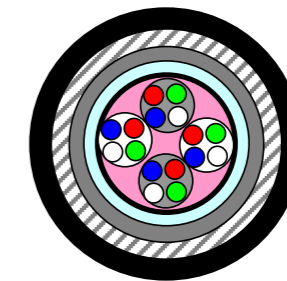


Application:

Suitable for the automatic blocking system of ZPW-2000A Non-insulated track circuit with a transmission distance up to 10km.
 Suitable for the automatic train control device and the ground equipments of over-speed protection system.
 Working as the transmission channel for DMIS bottom information, business calls and regional communications.



- ① TR annealed round copper wire
- ② Skin- foam - skin physically foamed polyolefn insulation
- ③ Star quad
- ④ Aluminum-plastic laminated tape
- ⑤ Inner bedding
- ⑥ Double steel tape armor
- PE sheath



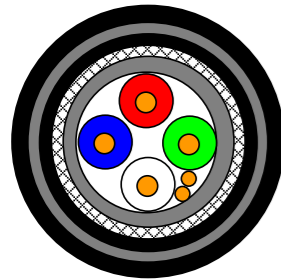
Dimension (Composite sheath type)			
Specifi- cation (Core)	Core Structure (Quad+Pairs+Insulated Wire Core) x1.0	Cable Diameter (mm)	
		SPTYWPA23	SPTYWPL23
8B	2x4(P)	24.4	25.0
12A	2x4(P)+1x4	24.0	25.5
12B	3x4(P)	24.4	26.0
14A	2x4(P)+1x4+2	24.4	26.0
14B	3x4(P)+2	25.4	27.2
16A	2x4(P)+2x4	24.4	26.5
16B	4x4(P)	27.4	29.2
19A	3x4(P)+1x4+3	26.4	28.2
19B	4x4(P) +3	28.6	30.2
21A	3x4(P)+2x4+1	27.2	29.2
21B	5x4(P)+1	29.4	31.4
24A	4x4(P)+2x4	28.9	30.9
24B	6x4(P)	33.3	33.9
28A	4x4(P)+3x4	31.3	31.9
28B	7x4(P)	33.3	33.9
30A	4x4(P)+3x4+2	32.0	32.4
30B	7x4(P)+2	33.8	34.6
33A	4x4(P)+4x4+1	32.8	33.4
37A	4x4(P)+5x4+1	33.5	33.9
42A	5x4(P)+5x4+2	35	35.6
44A	6x4(P)+5x4	36.2	36.6
48A	6x4(P)+6x4	37.0	37.6

Dimension (Aluminum sheath type)					
Specifi- cation (Core)	Core Structure (ScreenedQuad+ Quad+Insulation Wire Core)	Cable Diameter (mm)		Cable Weight (kg/km)	
		SPTY- WPA23	SPTY- WPL23	SPTY- WPA23	SPTY- WPL23
8B	2x4(P)	24.4	25.0	525.5	887.9
12A	2x4(P)+1x4	24.0	25.5	527.1	908.1
12B	3x4(P)	24.4	26.0	566.1	953.1
14A	2x4(P)+1x4+2	24.4	26.0	551.6	938.8
14B	3x4(P)+2	25.4	27.2	602.0	1024.4
16A	2x4(P)+2x4	24.4	26.5	569.8	989.1
16B	4x4(P)	27.4	29.2	687.2	1138.3
19A	3x4(P)+1x4+3	26.4	28.2	666.6	1107.3
19B	4x4(P) +3	28.6	30.2	743.8	1210.5
21A	3x4(P)+2x4+1	27.2	29.2	699.9	1163.6
21B	5x4(P)+1	29.4	31.4	823.3	1310.1
24A	4x4(P)+2x4	28.9	30.9	794.2	1277.9
24B	6x4(P)	33.3	33.9	1262.7	1531.6
28A	4x4(P)+3x4	31.3	31.9	1104.4	1370.7
28B	7x4(P)	33.3	33.9	1258.0	1526.9
30A	4x4(P)+3x4+2	32.0	32.4	1140.7	1389.1
30B	7x4(P)+2	33.8	34.6	1289.1	1568.2
33A	4x4(P)+4x4+1	32.8	33.4	1191.3	1442.3
37A	4x4(P)+5x4+1	33.5	33.9	1247.4	1511.4
42A	5x4(P)+5x4+2	35	35.6	1372.8	1639.1
44A	6x4(P)+5x4	36.2	36.6	1455.2	1737.1
48A	6x4(P)+6x4	37.0	37.6	1514.1	1799.8

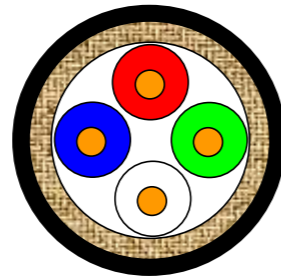


Application:

It can be used to transmit message data between LEU and responder.



- ① TR annealed round copper wire
- ② Drain wire
- ③ Composite screened sheath
- ④ Aluminum sheath
- ⑤ Inner bedding
- ⑥ Double steel tape armor
- ⑦ PE outer sheath



- ① TR annealed round copper wire
- ② PE insulation
- ③ Braided screening
- ④ Polyolefn outer sheath

The electrical Performance and testing methods for composite/aluminum sheath

NO.	Item	Unit	Index	Testing Method
1	DCR at 20°C			
1.1	Each conductor's DCR	/km	9.9	GB/T 3048.4
1.2	Unbalance % of DCR resistance %		1%	GB/T3048.4
2	Insulation Resistance DC 500V 20°C	M •km	10000	GB/T 3048.5
3	Working Capacitance 0.8kHz~1.0kHz	nF/km	42.3	GB/T 5441.2
4	Dielectric strength of insulation 50Hz 3min	V	1500	GB/T 3048.8
			Between wire core	
			Wire core to the ground	
Characteristic impedance				
5	8.82kHz		150±22	GB/T 5441.7
	282.5kHz / 565kHz		120±12	
	1800kHz		120±5	
6	Line pair attenuation at 20°C	dB/km	0.8	GB/T 5441.7
			282.5kHz~565kHz	
			1800kHz	
7	Ideal screened factor 50Hz		0.2(Al-sheath)	GB/T 5441.9
			0.8(Composite sheath)	
8	The induction voltage on the metal sheath is 50V/km~200V/km			
8	The continuity of the screened layer		Electrical conduction	Bell indicator light

The electrical Performance and testing methods for braided screening cable

NO.	Item	Unit	Index	Testing Method
1	Each conductor's DCR 20°C	/km	26.0	GB/T 3048.4
2	Insulation Resistance DC 500V 20°C	M •km	10000	GB/T 3048.5
3	Working Capacitance 0.8kHz~1.0kHz	nF/km	45.3	GB/T 5441.2
4	Dielectric strength of insulation (50Hz ,2min) between wire core	V	1000	GB/T 3048.8
			Wire core to the ground	
5	Characteristic impedance 1800kHz		120±5	GB/T 5441.7

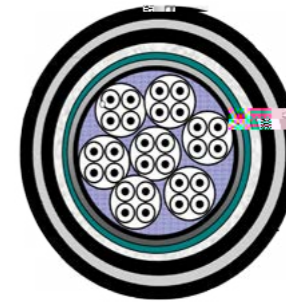
Model	Construction
LEU•BSYL23	Responder data transmission cable with polyolefn insulation, aluminum sheath, dual steel tape armor and PE outer sheath
LEU•BSYYP	Responder data transmission cable with polyolefn insulation, copper wire braid and polyolefn outer sheath

Application:

It is suitable for long-distance trunk lines and regional communication.

- (1)The 0.9mm low-frequency quad;
- (2)The 0.6mm, 0.7mm twisted pair are for audio communication;
- (3)The 0.6mm, 0.7mm insulated single wire is for signal transmission, alarming and remote control.

With a good screening property, the product can be used in electrified railway sections or other areas with strong electrical interference.

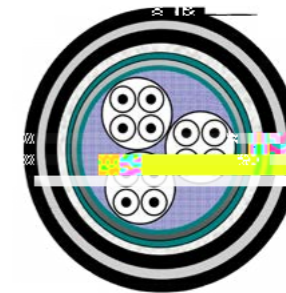


- ① Filling gel
- ② TR annealed round copper wire
- ③ Low frequency quad
- ④ Wrapping tape
- ⑤ Thermal-Protective Coating
- ⑥ Water-blocking tape
- ⑦ Aluminum sheath
- ⑧ Inner bedding
- ⑨ Double steel tape armor
- ⑩ PE outer sheath

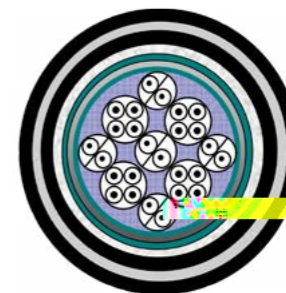
Model	Construction
HEYFLT23	Long-distance symmetrical low-frequency communication cable with physically foamed skin-foam-skin PE insulation, water-blocking gel filling, aluminum sheath, double steel tape armor and PE outer sheath

Electrical Performance

NO.	Item	Index Quad
1	DCR at 20°C (/km)	28.5
2	Work on the DC resistance difference	1%
3	Insulation resistance core to ground (M •km)	
	Every wire core to others (connect with screened/metal sheath)	10000
4	Insulated dielectric strength (50Hz , 2min, V)	
	Wire core to ground	2000
	Wire core to wire core	1000
5	Operating capacitance at 0.8kHz~1.0kHz (nF/km)	
	Unfilled low- frequency group	Nominal value 24.4
		Maximum value 27.0
	Unfilled low- frequency group	Nominal value 29.0
		Maximum value 34.0
6	Capacitive Coupling Coefficient at 0.8kHz~1.0kHz (pF)	
	K1	Average value 81



- ① Low frequency quad
- ② Filling gel
- ③ Inner bedding
- ④ TR annealed round copper
- ⑤ Wrapping Tape
- ⑥ Thermal-Protective Coating
- ⑦ Water-blocking tape
- ⑧ Aluminum sheath
- ⑨ Double steel tape armor
- ⑩ PE outer sheath



- ① Low frequency quad
- ② Filling gel
- ③ Twine
- ④ TR annealed round copper wire
- ⑤ Wrapping Tape
- ⑥ Inner bedding
- ⑦ Water-blocking tape
- ⑧ Aluminum sheath
- ⑨ Inner bedding
- ⑩ Double steel tape armor
- ⑪ PE outer sheath

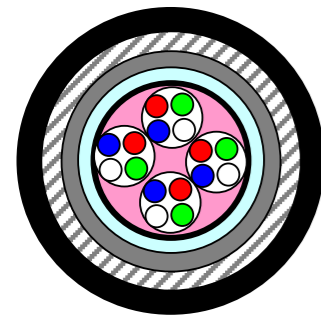


Application:

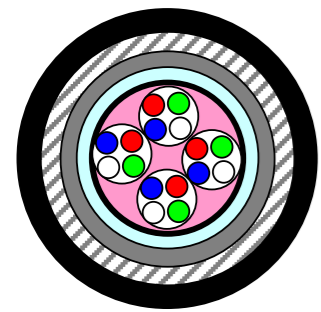
It can be used in the control circuit system of railway signal, audio signal, or automatic signal transmitting device with a rated voltage of AC500V or DC1000V and below.

Cable with composite sheath or aluminum sheath has a certain screening property and can be installed in electrified railway sections and other areas with strong electric interference.

Model	Construction
PTYA23	PE-insulated composite sheathed double steel tape armored PE-sheathed railway signal cable
PTYL23	PE-insulated Al-sheathed double steel tape armored PE-sheathed railway signal cable



- ① TR annealed round copper wire
- ② PE insulation
- ③ Star quad
- ④ Wrapping tape
- ⑤ Composite sheath
- ⑥ Double steel tape armor
- ⑦ PE outer sheath



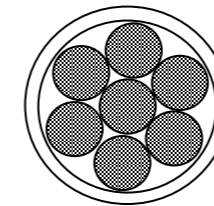
- ① TR annealed round copper wire
- ② PE insulation
- ③ Star quad
- ④ Wrapping tape
- ⑤ Aluminum sheath
- ⑥ Inner bedding
- ⑦ Double steel tape armor
- ⑧ PE outer sheath

Electrical Performance				
NO.	Item	Unit	Index	Testing Method
1	DCR 20°C			
1.1	Each conductor's DCR	/km	23.5	GB 3048.4
1.2	Unbalance of DCR resistance	%	2	
2	Insulation Resistance	M •km	3000	GB 3048.6
3	Capacitance			
3.1	Twine		70	
3.2	Quad	nF/km	50	GB 5441.2
3.3	Any insulated wire core to others (connect to the ground)		100	
4	Capacitive Coupling Coefficient			
4.1	k1 Average Value		100	
	Maximum Value	pF/500m	330	GB 5441.3
4.2	k9-k12 Average Value		120	
	Maximum Value		230	
	The maximum value is four-core cable K1			
5	Capacitance unbalance coefficient to ground			
5.1	Ea1、Ea2 Average Value	pF/500m	330	GB 5441.3
	Maximum Value		1300	
	The maximum value is four-core cable Ea1、Ea2			
6	Insulation resistance 50Hz 2min			
6.1	Between wire core	V	1000	GB 3048.8
6.2	Wire core to others(connect to the ground)		1800	
7	Broken/mixed line for insulated wire core	—	No broken/mixed line	Battery light

Application:

It can be used as the through ground wire in the track circuit section of the railway signal system, installed in the same conduit with other cables.

It also be used in the integrated grounding system in the railways for passenger transportation, or used as grounding wire for electric traction return or electrical equipments in electrified railways.



- ① TR annealed round copper wire
- Conductive plastic sheath



Application:

It is suitable for the fixedly installed train axle counter for the signal equipments with rated voltage of AC500V or DC1500V and below.

The low frequency communication quad can be used as an axle counting data transmission channel to transmit digital/analog audio signals.

The signal quad is fit for transmitting industrial frequency or DC power or audio frequency information.

- ① TR annealed roundcopper
- ② PE insulation
- ③ Star quad
- ④ Wrapping tap
- ⑤ Aluminum sheath
- ⑥ Inner bedding
- ⑦ Double steel tape armor
- ⑧ PVC outer sheath

- ① TR annealed round copper
- ② PE insulation
- ③ Star quad
- ④ Wrapping tap
- ⑤ Aluminum sheath
- ⑥ Inner bedding
- ⑦ Double steel tape armor
- ⑧ PVC outer sheath

- ① TR annealed round copper wire
- ② PE insulation
- ③ Star quad
- ④ Wrapping tap
- ⑤ Copper screen
- ⑥ Double steel tape armor
- ⑦ PE outer sheath

Model	Construction
PJZA23	Railway Axle Counter Cable with PE insulation, composite sheath, double steel tape armor and PE outer sheath
PJZL23	Railway Axle Counter Cable with PE insulation, aluminum sheath, double steel tape armor and PE outer sheath
PJZYT23	Railway Axle Counter Cable with PE insulation, copper screen, double steel tape armor and PE outer sheath

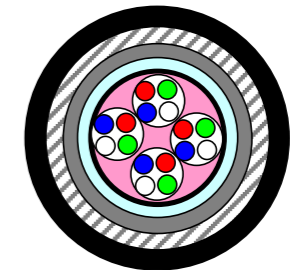
Electrical Performance				
NO.	Item	Index		Testing Method
		Low-frequency quad	Signal quad / twine Insulated single wire	
1	DCR at 20°C (/km)			
1.1	Each conductor's DCR	28.5	23.5	GB/T 3048.4
1.2	Unbalance of DCR resistance (%)	1	1	
2	Insulation Resistance	10000	10000	GB/T 3048.5
	DC 500V at 20°C (M /km)			
	Every insulated wire core to others (connect with screened/metal sheath)			
3	Dielectric strength of insulation at (50Hz, 2min, V)			
3.1	Between wire core	1000	1000	GB/T 3048.8
3.2	Every wire core to others (connect to ground)	1800	1800	
4	Working Capacitance at 0.8~1.0kHz nF/km			GB/T 5441.2
4.1	Quad	40	50	
4.2	Twine		70	
4.3	Each insulated wire core to others which connect to the ground		100	
5	Capacitive Coupling Coefficient at 0.8~1.0kHz (PF/km) Average Value			GB/T 5441.3
		Maximum Value	141	
5.1	K9~k12 Average Value	330	660	GB/T 5441.3
		Maximum Value	168	
5.2	The maximum value is four-core cable K1	230	460	
6	Capacitance unbalance coefficient to ground at 0.8~1.0kHz (PF/km) Average Value		660	GB/T 5441.3
6.1	Maximum Value	800	2600	
6.2	The maximum value is signal four-core cable Ea1/Ea2			
6.3	10% drums' Ea1/Ea2 1294 pF/km are allowed for low frequency quad			

Model	Construction
PTYA23	Intercity Rail Transit Cable with copper core, PE insulation, composite sheath, double steel tape armor and PE outer sheath
PTYT23	Intercity Rail Transit Cable with copper core, PE insulation, copper screen, double steel tape armor and PE outer sheath
PTYL23	Intercity Rail Transit Cable with copper core, PE insulation, aluminum sheath, double steel tape armor and PE outer sheath

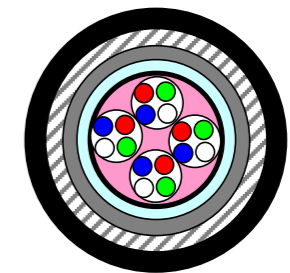
Application:

The products can be installed by direct burial, in duct or aerially.

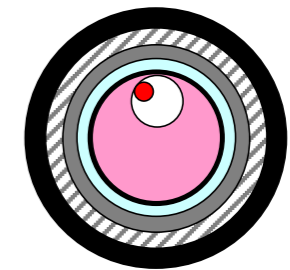
Operational performance
 (1)PTYT 22/23: With a nice screening property, it can be used in railway sections electrified or under strong electric interference;
 (2)PTYA 22/23: With the screening property, it can be used in the railway sections where screened cables are demanded.



- ① TR annealed round copper wire
- ② PE insulation
- ③ Star quad
- ④ Wrapping tap
- ⑤ Composite sheath
- ⑥ Inner bedding
- ⑦ Double steel tape armor
- ⑧ PE outer sheath

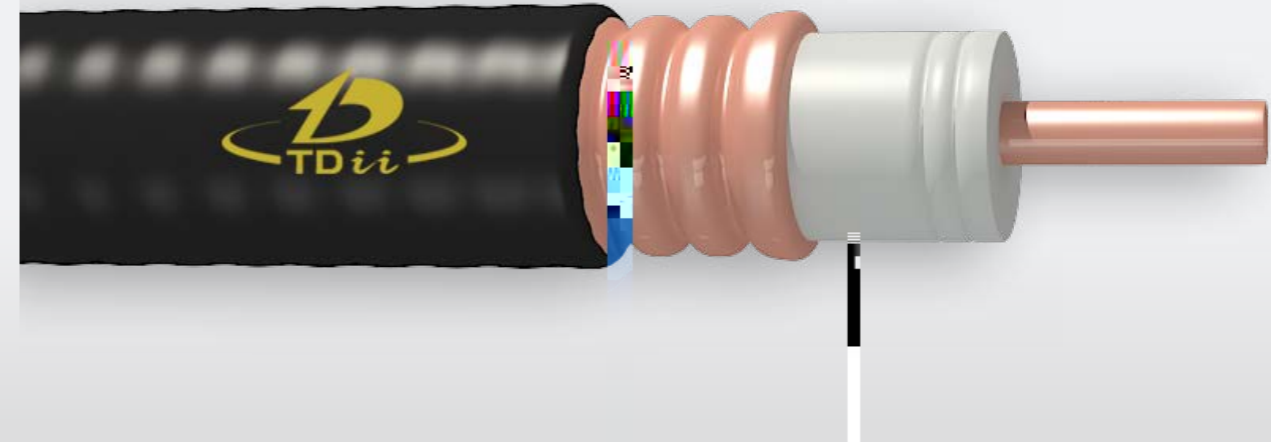


- ① TR annealed round copper wire
- ② PE insulation
- ③ Star quad
- ④ Wrapping tap
- ⑤ Copper screen
- ⑥ Double steel tape armor
- ⑦ PE outer sheath



- ① TR annealed round copper wire
- ② PE insulation
- ③ Star quad
- ④ Wrapping tap
- ⑤ Aluminum sheath
- ⑥ Inner bedding
- ⑦ Double steel tape armor
- ⑧ PE outer sheath

RF COAXIAL CABLE



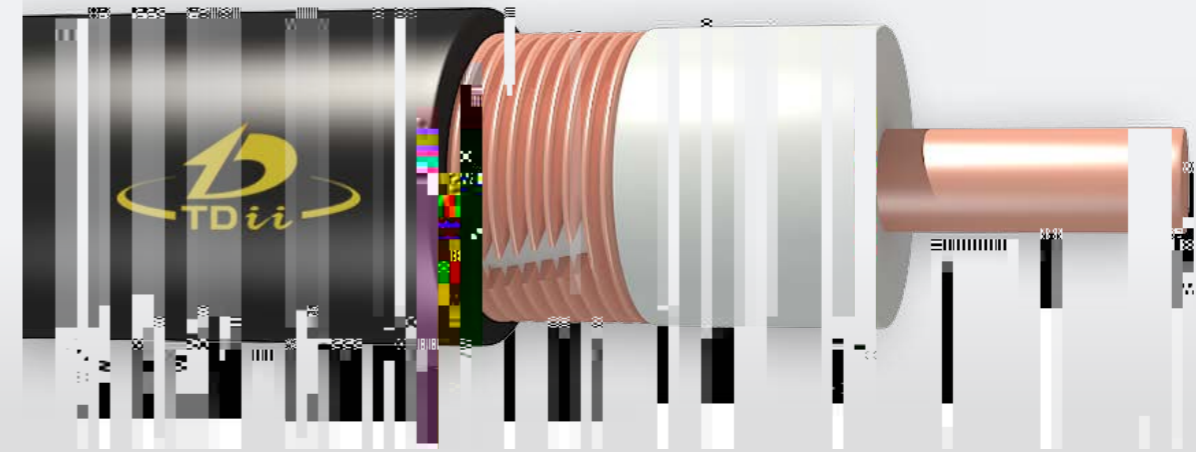
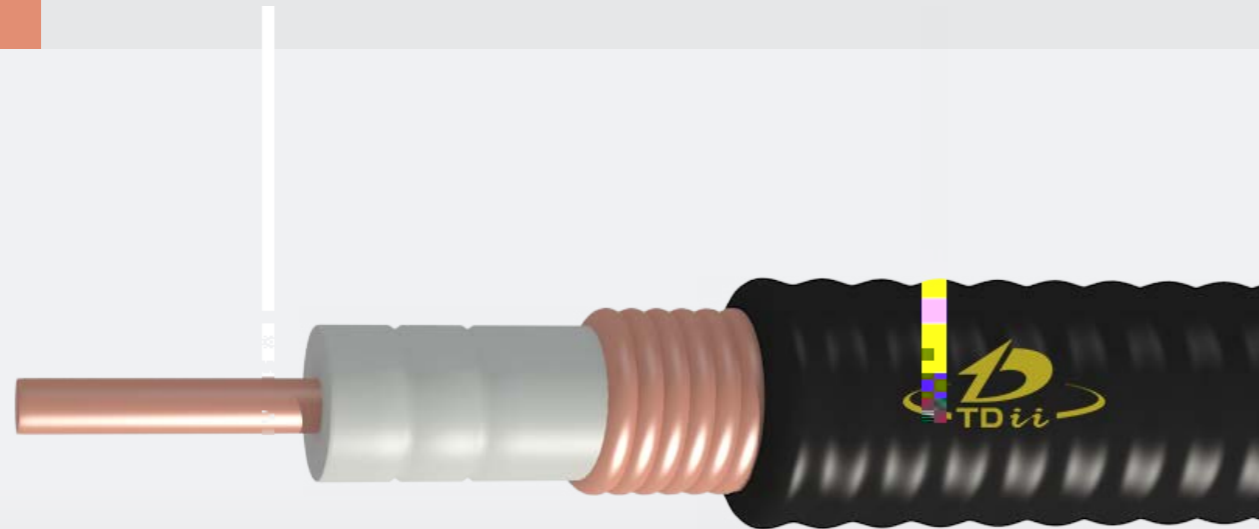
Application:

Meet the third-generation mobile communication requirements, applied to CDMA, GSM, DCS, PHS1900MHz, WLAN, 3G and other public telecommunications networks and private networks.

Type	HCAAY(Z) -50-6(1/4")	HCAAY(Z) -50-8(3/8")	HCAAY(Z) -50-12(1/2")	HCTAY(Z) -50-22(7/8")	HCTAY(Z) -50-23(Low loss 7/8")	HCTAY(Z) -50-32(1- 1/4")	HHTAY(Z) -50-42(1-5/8")
Inner Conductor	Copper-clad aluminum wire			Smooth copper tube			Smooth copper tube

Electrical Characteristics:

Range(Hz)	Nominal Attenuation(dB/100mm)					VSWR	Z ₀ (Ω)
	450	800	1800	2000	2400		
HCAAY(Z)-50-6(1/4")	8.8	12.08	18.86	20.00	22.17	Max. 1.1	Avg 50±1
HCAAY(Z)-50-8(3/8")	7.51	10.23	15.99	16.97	18.81		
HCAAY(Z)-50-12(1/2")	4.75	6.45	10.06	10.67	11.81		
HCTAY(Z)-50-22(7/8")	2.56	3.50	5.50	5.84	6.48		
HCTAY(Z)-50-23(Low loss 7/8")	2.50	3.40	5.30	5.62	6.22		
HCTAY(Z)-50-32(1-1/4")	1.86	2.57	4.15	4.42	4.94		
HHTAY(Z)-50-42(1-5/8")	1.53	2.13	3.47	3.71	4.16		



Application:

Meet the third-generation mobile communication requirements, applied to CDMA, GSM, DCS, PHS1900MHz, WLAN, 3G and other public telecommunications networks and private networks.

Type	HCAHY(Z) -50-5(1/4" S)	HCAHY(Z) -50-7(3/8" S)	HCAHY(Z) -50-9(1/2" S)	HHTAY(Z) -50-21(7/8" S)
Inner Conductor	Copper-clad aluminum wire			Helix wrinkles copper tube
	1.90mm	2.60mm	3.55mm	9.40mm
Insulation	High foamed polyethylene			
Outer Conductor	Helix wrinkles copper tube			Ring wrinkles copper tube
	6.40mm	9.00mm	12.00mm	24.90mm
Jacket	Black polyethylene or Low smoke non-halogen flame-resistant polyethylene			
	7.6mm	10.2mm	13.5mm	27.5mm

Electrical Characteristics:

Range(Hz)	Nominal Attenuation(dB/100mm)				VSWR	Z ₀ (Ω)
Item	800	1800	2000	2400		
HCAHY(Z)-50-5(1/4" S)	16.80	25.51	27.97	31.06	Max. 1.1	Avg 50±1
HCAHY(Z)-50-7(3/8" S)	11.81	18.47	19.60	21.73		
HCAHY(Z)-50-9(1/2" S)	10.43	16.57	17.62	19.63		
HHTAY(Z)-50-21(7/8" S)	3.95	6.22	6.61	7.35		

* Contact TD for your performance specification for your required frequency.

Application:

Building, elevator, the subway, the tunnel and the mine pit and so on, in the seal region the signal transmission and the receive.

Type	HLRCTCY (Z)-50-22(7/8")	HLRCTCY(Z)-50-32(1-1/4")	HLRHCTCY(Z)-50-42(1-5/8")
Inner Conductor	Smooth copper tube		Helix wrinkles copper tube
	9.00mm	13.10mm	17.40mm
Insulation	High Foamed Polyethylene		
Outer Conductor	Longitudinally-wrapped slotted cooper foil		
	22.80mm	33.50mm	44.00mm
Jacket	Black polyethylene or Low smoke non-halogen fame-resistant polyethylene		
	27.8mm	38.0mm	49.0mm

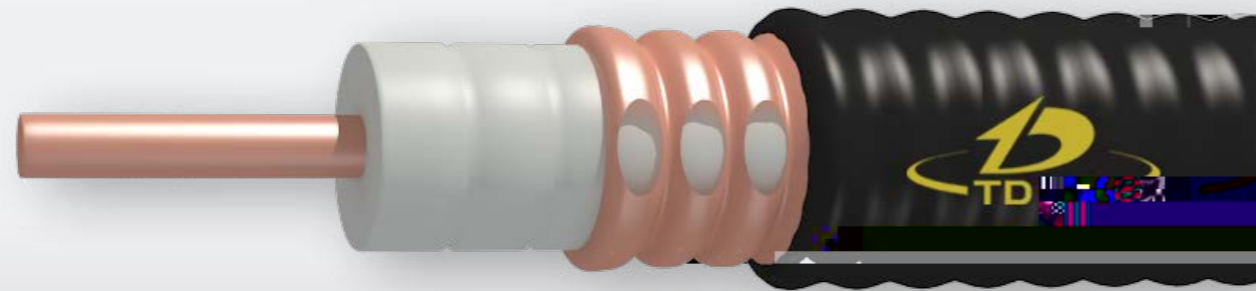
Electrical Characteristics:

Range(Hz)	Attenuation (dB/100mm,±5%)					Coupling Loss (dB±5dB)					Z ₀ (Ω)	
	800	900	1800	2400	2600	800	900	1800	2400	2600		
HLRCTCY(Z)-50-22H (7/8")	4.3	4.6	8.7	13.3	13.9	50%	70	70	68	67	63	Avg 50±2
						95%	78	78	75	73	68	
HLRCTCY (Z)-50-32H (1-1/4")	2.7	3.1	5.0	7.8	8.0	50%	71	69	66	64	69	
						95%	78	73	72	71	76	
HLRHCTCY(Z)-50-42H (1-5/8")	2.2	2.4	4.0	6.0	6.9	50%	68	66	66	64	64	
						95%	75	74	72	70	68	

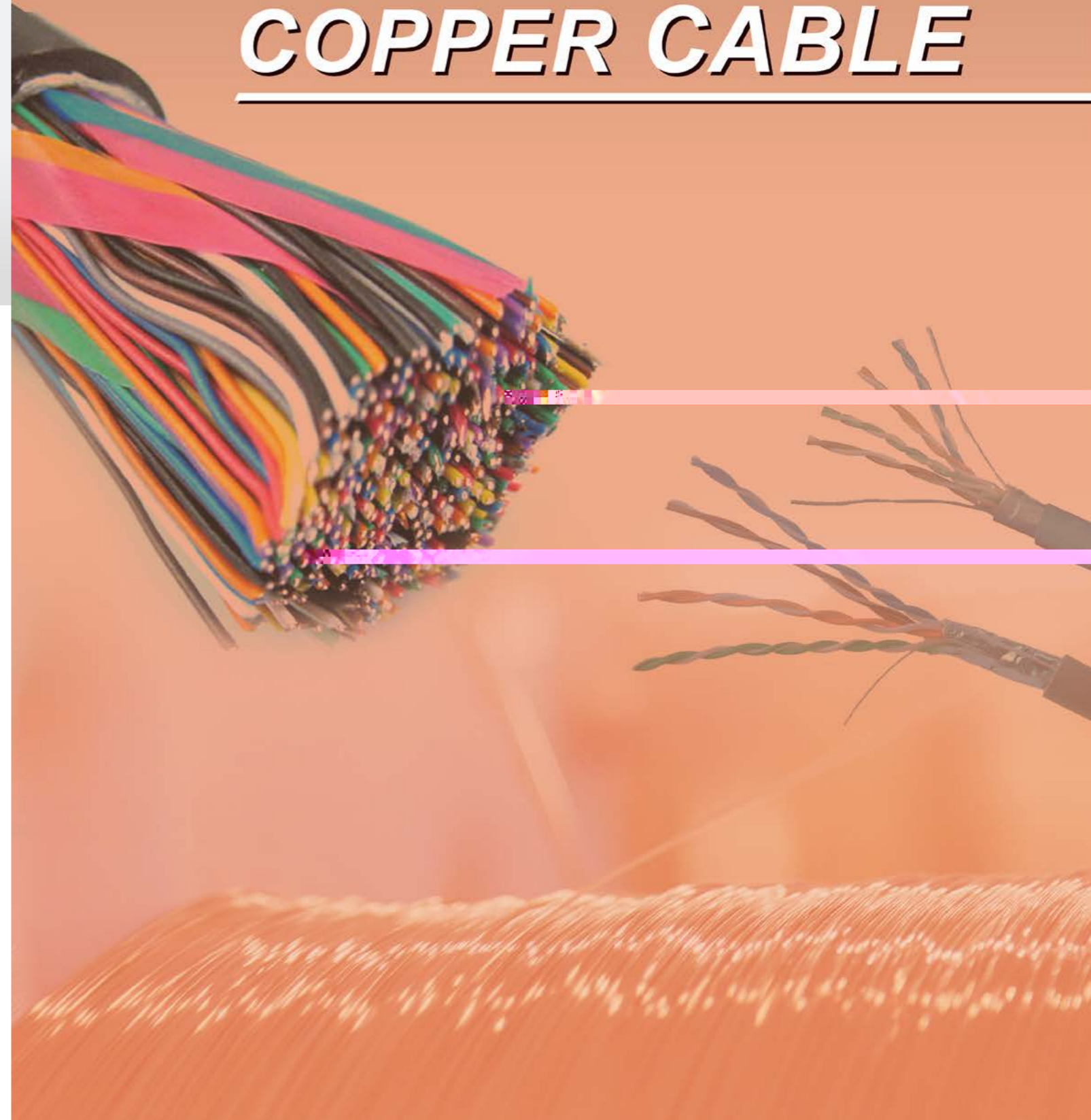
Electrical Characteristics:

Range(Hz)	Attenuation (dB/100mm,±5%)					Coupling Loss (dB±5dB)					Z ₀ (Ω)	
	150	350	450	800	900	150	350	450	800	900		
HLRCTCY(Z)-50-22H (7/8")	1.7	2.8	3.1	4.6	5.1	50%	69	63	65	67	67	Avg 50±2
						95%	78	72	74	75	75	
HLRCTCY (Z)-50-32H (1-1/4")	1.1	1.8	2.1	3.0	3.3	50%	70	72	71	66	64	
						95%	79	80	78	75	73	
HLRHCTCY(Z)-50-42H (1-5/8")	1.0	1.6	1.8	2.7	2.9	50%	74	67	70	64	69	
						95%	80	78	78	73	75	

* Contact TD for your performance specification for your required frequency.



COMMUNICATION COPPER CABLE



Application:

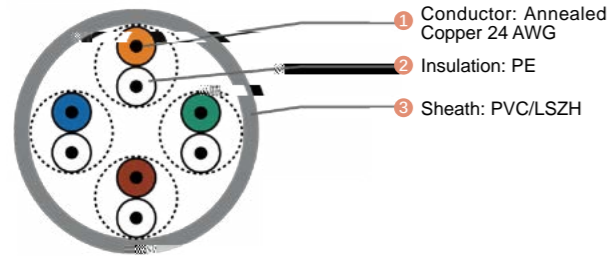
Building, elevator, the subway, the tunnel and the mine pit and so on, in the seal region the signal transmission and the receive.

Type	HLCAAY(Z) -50-8(3/8")	HLCAAY(Z) -50-12(1/2")	HLCTAY(Z) -50-22(7/8")	HLCTAY(Z) -50-32(1-1/4")	HLHTAY(Z) -50-42(1-5/8")
Inner Conductor	Copper-clad aluminum wire		Smooth copper tube		Helix wrinkles copper tube
	3.10mm	4.80mm	9.00mm	13.10mm	17.40mm
Insulation	High foamed polyethylene				
Outer Conductor	Milling hole and Ring wrinkles copper tube				
	9.50mm	13.90mm	24.90mm	35.80mm	46.50mm
Jacket	Black polyethylene or Low smoke non-halogen fame-resistant polyethylene				
	11.1mm	15.7mm	27.5mm	38.8mm	49.5mm

Electrical Characteristics:

Range(Hz)	Attenuation (dB/100mm,±5%)					Coupling Loss (dB±5dB)					Z ₀ (Ω)	
	150	450	900	1800	2400	150	450	900	1800	2400		
HLCAAY(Z) -50-8(3/8")	4.9	8.5	12.1			50%	60	68	70			Avg 50±1
						95%	75	78	80			
HLCAAY(Z) -50-12(1/2")	3.3	6.6	9.5	13.1	15.7	50%	62	70	71	77	77	Avg 50±1
						95%	78	80	82	88	87	
HLCTAY(Z) -50-22(7/8")	1.8	3.6	5.3	7.6	9.0	50%	66	72	74	80	78	Avg 50±1
						95%	76	80	85	87	88	
HLCTAY(Z) -50-32(1-1/4")	1.3	3.0	4.3	5.6	6.9	50%	70	75	77	77	78	Avg 50±1
						95%	80	85	86	88	88	
HLHTAY(Z) -50-42(1-5/8")	0.8	2.0	2.7	4.4	5.6	50%	72	79	79	80	82	Avg 50±1
						95%	84	85	85	86	88	

* Contact TD for your performance specification for your required frequency.



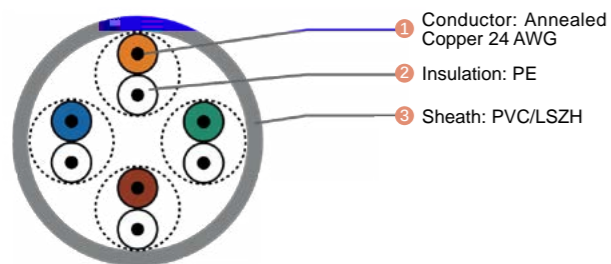
Type	Insulation Dia.	Outer Cable Dia.	Gross Weight (kg/1000ft)	Packing
PVC	0.9+0.01	5.25+0.2	11	305m/box
LSZH	0.9+0.01	5.25+0.2	11	305m/box

Frequency (MHz)	Characteristic Impedance (Ω)	RL (Min. dB)	Attenuation (Max.dB/100m)	NEXT (Min.dB/100m)	FEXT (Min.dB/100m)
1	100±5	--	--	--	--
4	100±5	18.8	4.1	53.3	49.0
8	100±5	19.7	5.8	48.8	42.9
10	100±5	20.0	6.5	47.3	41.0
16	100±5	20.0	8.2	44.2	36.9
20	100±5	20.0	9.3	42.8	35.0
25	100±5	19.3	10.4	41.3	33.0
31.25	100±5	18.6	11.7	39.9	31.1
62.5	100±5	16.5	17.0	35.4	25.1
100	100±5	15.1	22.0	32.3	21.0

Electrical Characteristics:

DC Resistance (/100m @ 20): Max.9.5
 Resistance Unbalance (%): Max.2
 Mutual Capacitance (nF/100m): Max.5.6
 Capacitance Unbalance (pF/100m): Max.160

Type	Insulation Dia.	Outer Cable Dia.	Gross Weight (kg/1000ft)	Packing
PVC	0.9+0.01	5.25+0.2	11	305m/box
LSZH	0.9+0.01	5.25+0.2	11	305m/box

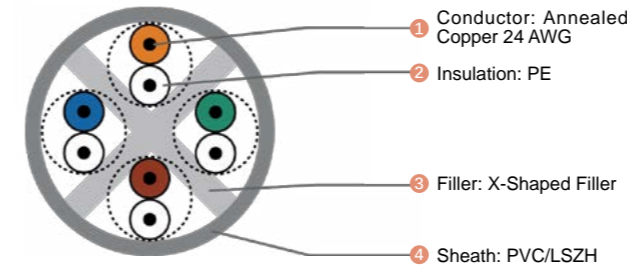


Frequency (MHz)	Characteristic Impedance (Ω)	RL (Min. dB)	Attenuation (Max.dB/100m)	NEXT (Min.dB/100m)	PSNEXT (Min. dB/100m)	FEXT (Min.dB/100m)	PSELFEXT (Min.dB/100m)
1	100±5	20.00	2.04	65.30	62.30	64.00	61.00
4	100±5	23.01	4.05	56.27	53.27	51.96	48.96
8	100±5	24.52	5.77	51.75	48.75	45.94	42.94
10	100±5	25.00	6.47	50.30	47.30	44.00	41.00
16	100±5	25.00	8.25	47.24	44.24	39.92	36.92
20	100±5	25.00	9.27	45.78	42.78	37.98	34.98
25	100±5	24.32	10.42	44.33	41.33	36.04	33.04
31.25	100±5	23.64	11.72	42.88	39.88	34.10	31.10
50	100±5	22.21	15.07	39.82	36.82	30.02	27.02
62.5	100±5	21.54	16.99	38.36	35.36	28.08	25.08
100	100±5	20.11	21.98	35.30	32.30	21.00	18.00

Electrical Characteristics:

DC Resistance (/100m @ 20): Max.9.38
 Resistance Unbalance (%): Max.5
 Mutual Capacitance Unbalance (pF/100m): Max.330

Type	Insulation Dia.	Outer Cable Dia.	Gross Weight (kg/1000ft)	Packing
PVC	1.02+0.02	6.2+0.2	12	305m/box
LSZH	1.02+0.02	6.2+0.2	12	305m/box

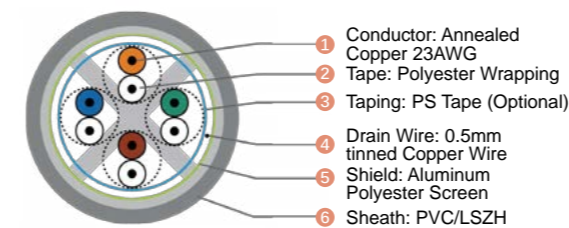


Frequency (MHz)	Characteristic Impedance (Ω)	RL (Min. dB)	Attenuation (Max.dB/100m)	NEXT (Min.dB/100m)	PSNEXT (Min. dB/100m)	FEXT (Min.dB/100m)	PSELFEXT (Min.dB/100m)
1	100±5	--	--	--	--	--	--
4	100±5	23.0	3.8	66.3	63.3	56.0	53.0
8	100±5	24.5	5.3	61.8	58.8	49.9	46.9
10	100±5	25.0	6.0	60.3	57.3	48.0	45.0
16	100±5	25.0	7.6	57.2	54.2	43.9	40.9
20	100±5	25.0	8.5	55.8	52.8	42.0	39.0
25	100±5	24.3	9.5	54.3	51.3	40.0	37.0
31.25	100±5	23.6	10.7	52.9	49.9	38.1	35.1
62.5	100±5	21.5	15.4	48.4	45.4	32.1	29.1
100	100±5	20.1	19.8	45.3	42.3	28.0	25.0
200	100±22	18.0	29.0	40.8	37.8	22.0	19.0
250	100±22	17.3	32.8	39.3	36.3	20.0	17.0

Electrical Characteristics:

DC Resistance (/100m @ 20): Max.9.5
 Resistance Unbalance (%): Max.2
 Mutual Capacitance (nF/100m): Max.5.6
 Capacitance Unbalance (pF/100m): Max.160

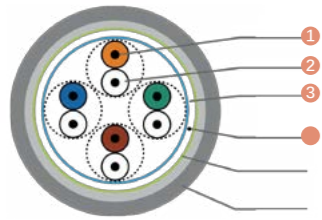
Type	Insulation Dia.	Outer Cable Dia.	Gross Weight (kg/1000ft)	Packing
PVC	1.15±0.02	6.6±0.2	15	Reel
LSZH	1.15±0.02	6.6±0.2	15	Reel



Frequency (MHz)	Characteristic Impedance (Ω)	RL (Min. dB)	Attenuation (Max.dB/100m)	NEXT (Min.dB/100m)	PSNEXT (Min. dB/100m)	FEXT (Min.dB/100m)	PSELFEXT (Min.dB/100m)
1	100±5	--	--	--	--	--	--
4	100±5	23.0	3.8	66.3	63.3	56.0	53.0
8	100±5	24.5	5.3	61.8	58.8	49.9	46.9
10	100±5	25.0	6.0	60.3	57.3	48.0	45.0
16	100±5	25.0	7.6	57.2	54.2	43.9	40.9
20	100±5	25.0	8.5	55.8	52.8	42.0	39.0
25	100±5	24.3	9.5	54.3	51.3	40.0	37.0
31.25	100±5	23.6	10.7	52.9	49.9	38.1	35.1
62.5	100±5	21.5	15.4	48.4	45.4	32.1	29.1
100	100±5	20.1	19.8	45.3	42.3	28.0	25.0
200	100±22	18.0	29.0	40.8	37.8	22.0	19.0
250	100±22	17.3	32.8	39.3	36.3	20.0	17.0

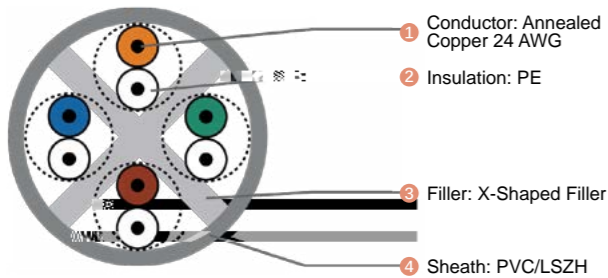
Electrical Characteristics:

DC Resistance (/100m @ 20): Max.9.5
 Resistance Unbalance (%): Max.2
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Electrical Characteristics:

DC Resistance (/100m @ 20): Max.9.5
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 Mutual Capacitance (nF/100m): Max.5.6
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Electrical Characteristics:

DC Resistance (/100m @ 20): Max.9.5
 Resistance Unbalance (%): Max.2
 Mutual Capacitance (nF/100m): Max.5.6
 Capacitance Unbalance (pF/100m): Max.160



Construction:

Conductor: Solid, annealed, bare or tinned copper wire, 0.5mm diameter
 Insulation: HDPE

Electrical Characteristics @ 20 °C

Conductor resistance: Max 92 / km
 Insulation resistance: Min 1000 M / km

Cable Size and Weight			
No. of Conductors	Overall Diameter(mm)	Net Weight(Kg/km)	Package Reel (m)
1	1.1	3.0	500
2	2.2	6.0	500
3	2.4	9.0	500
4	2.7	12.0	250
5	3.0	15.0	250



Construction:

Conductor: Hard Copper Wire
 Sheath: Black PE / PVC

Electrical Characteristics @ 20 °C

Conductor resistance, Max.
 0.8mm Diameter 35.0 / km
 0.9mm Diameter 28.0 / km
 1.0mm Diameter 24.0 / km
 PE 5000 M .km
 PVC 100 M .km

Cable Size and Weight				
Conductor Diameter mm	Overall Dimension (W*H) mm	Sheath	Net Weight(kg/km)	Package Reel (m)
0.8	PE	2.6*5.7	20	500
0.9	PE	2.7*5.9	23	500
1.0	PE	3.0*6.5	28	500
0.8	PVC	2.6*5.7	24	500
0.9	PVC	2.7*5.9	27	500
1.0	PVC	3.0*6.5	33	500

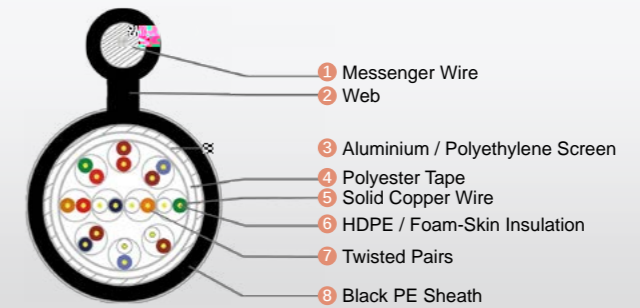


Application:

Widely used in MAN Communication Network by duct & aerial installation
 Transmit audio signals, analog signals at up to 150kHz
 Transmit digital signals in up to 2048kbit/s

Application:

Widely used in MAN Communication Network by aerial installation
 Transmit audio signals & analog signals at up to 150kHz
 Transmit digital signals in up to 2048kbit/s



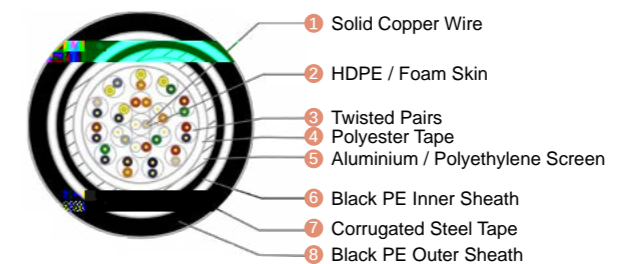
Application:

Widely used in complicated environment of MAN Communication Network by duct installation
 Jelly filled
 Transmit digital signals in up to 2048kbit/s



Application:

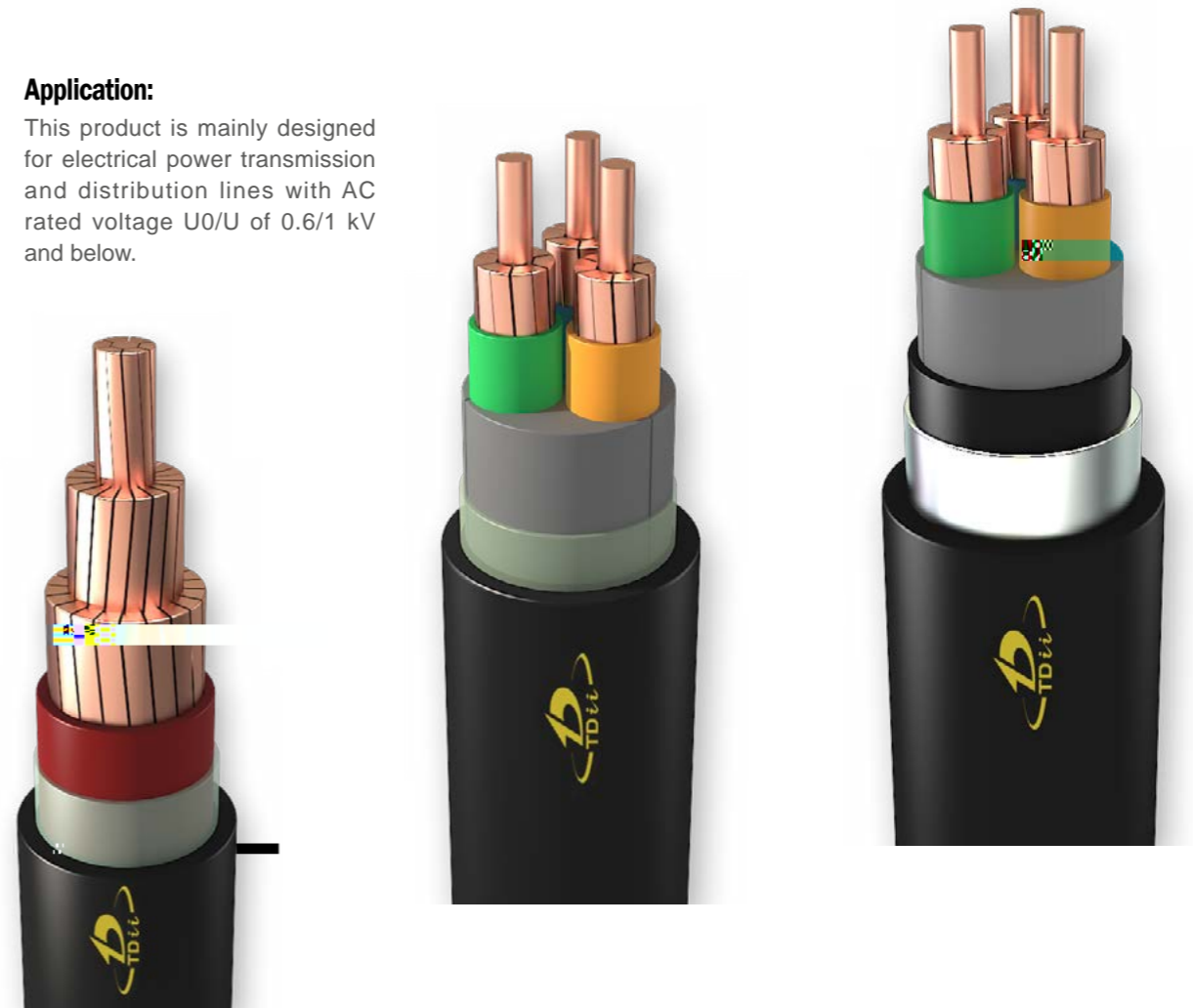
Widely used in complicated environment of MAN Communication Network by directly buried underground installation
 Transmit audio signals & analog signals at up to 150kHz
 Transmit digital signals in up to 2048kbit/s



POWER CABLE

Application:

This product is mainly designed for electrical power transmission and distribution lines with AC rated voltage U_0/U of 0.6/1 kV and below.



Model	Construction
VV (VLV)	Copper (Aluminum) core PVC insulated and PVC sheathed power cable
VY (VLY)	Copper (Aluminum) core PVC insulated and PE sheathed power cable
VV22 (VLV22)	Copper(Aluminum) core PVC insulated, steel tape armored and PVC sheathed power cable
VV23 (VLV23)	Copper(Aluminum) core PVC insulated, steel tape armored and PE sheathed power cable
YJV(YJLV)	Copper(aluminum)core XLPE insulated and PVC sheathed power cable
YJY(YJLY)	Copper(aluminum)core XLPE insulated and PE sheathed power cable
YJV22(YJLV22)	Copper(aluminum)core XLPE insulated, steel tape armored and PVC sheathed power cable
YJV23(YJLV23)	Copper(aluminum)core XLPE insulated, steel tape armored and PE sheathed power cable
YJV32(YJLV32)	Copper(aluminum)core XLPE insulated, fne steel wire armored and PVC sheathed power cable
YJY33(YJLY33)	Copper(aluminum)core XLPE insulated, fne steel wire armored and PE sheathed power cable

CERTIFICATE OF COMPLIANCE

Certificate Number 20180423-E352311
Report Reference E352311-20120528
Issue Date 2018-APRIL-23

Issued to: TONGDING INTERCONNECTION INFORMATION CO
LTD
8 XIAOPING RD
BADU ECONOMIC DEVELOPMENT ZONE
ZHENZE TOWN, WUJIANG
JIANGSU 215223, CHINA

This is to certify that representative samples of Local Area Network Cable Verified for Transmission Performance in Accordance With National or International Specifications, Type CMR also Verified to Category 5E.

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

Standard(s) for Safety: Subject 444 Data Transmission Cable Verified in Accordance with National and International Specifications
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.

Look for the UL Certification Mark on the product.


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CERTIFICATE OF COMPLIANCE

Certificate Number 20170731-E352311
Report Reference E352311-20170726
Issue Date 2017-JULY-31

Issued to: TONGDING INTERCONNECTION INFORMATION CO
LTD


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