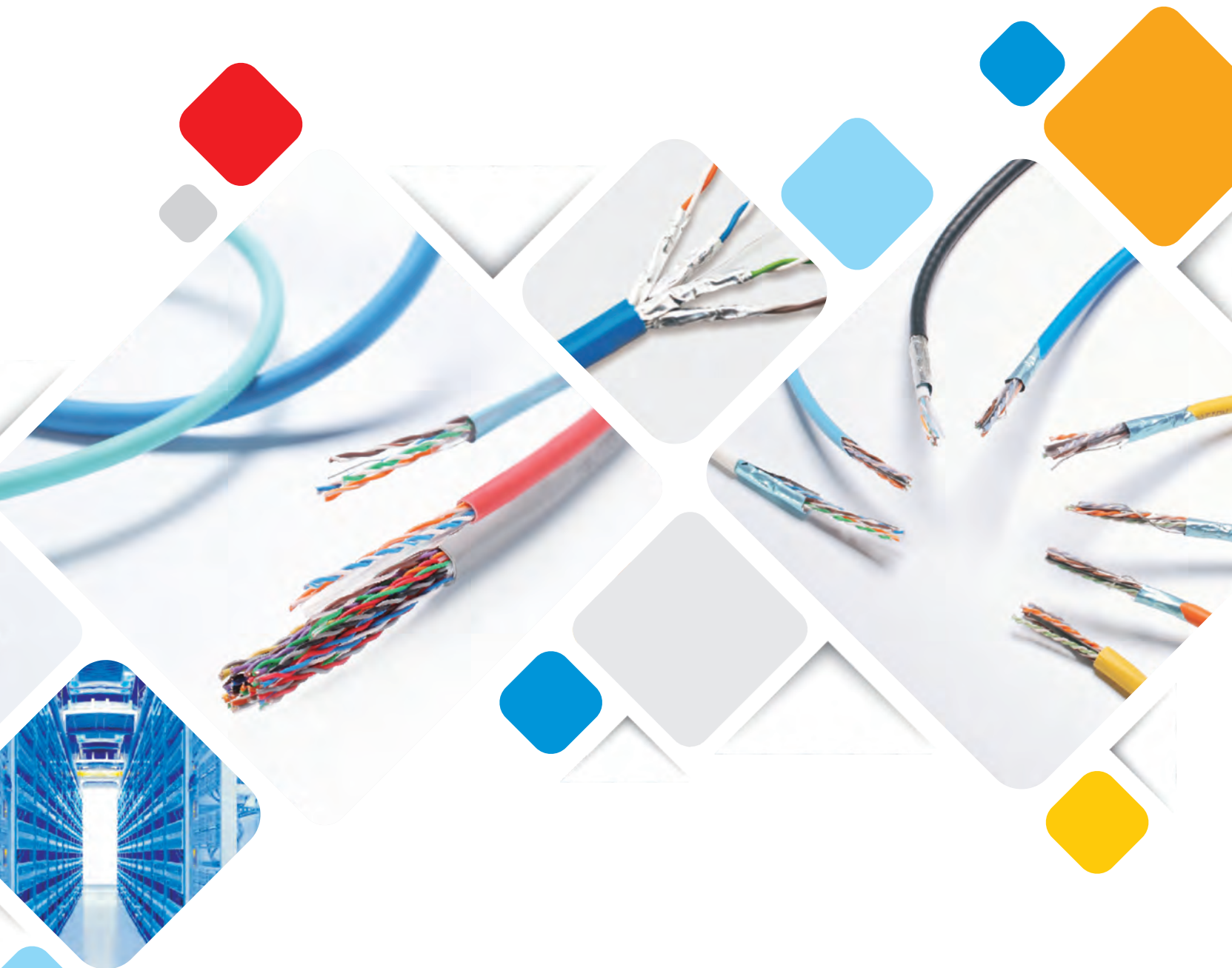




WONDERFUL HI-TECH

Professional / Precision / Technology



ISO 9001
BUREAU VERITAS
Certification



CCCA
Communications Cable & Connectivity Association



NORTH AMERICAN MARKET

LAN Cable Flame Rating Introduction

| Cable Type | Application Area | Standard |
|------------|---|-----------|
| CMP | Plenum spaces(ceiling, elevated floor) | NFPA 262 |
| CMR | Between floors/Backbone cable | UL-1666 |
| CM | Any installation(home network, office network..etc) | UL-1685 |
| LSZH | For any installation | IEC-60332 |

CMP

Plenum cable is cable that is laid in the plenum spaces of buildings. In the United States, plastics used in the construction of plenum cable are regulated under the National Fire Protection Association standard NFPA 90A: Standard for the Installation of Air Conditioning and Ventilating Systems. All materials intended for use on wire and cables to be placed in plenum spaces are designed to meet rigorous fire safety test standards in accordance with NFPA 262 and UL-910. Plenum cable is jacketed with a fire-retardant plastic jacket of either a fluorinated ethylene polymer (FEP) or a low-smoke polyvinyl chloride (PVC).

CMR

Cable that is run between floors in non-plenum areas is rated as riser cable. The fire requirements on riser cable are not as strict. Thus, plenum cable can always replace riser cable, but riser cable cannot replace plenum cable in plenum spaces. These pathways do not handle environmental air. The UL-1666 test is the industry standard for this type of cable.

CM

CM cable is suitable for use in any installation that not in a plenum or riser environment, including (home network, office network..etc), CM cable is designed to meet rigorous fire safety test standards in accordance with UL-1685.

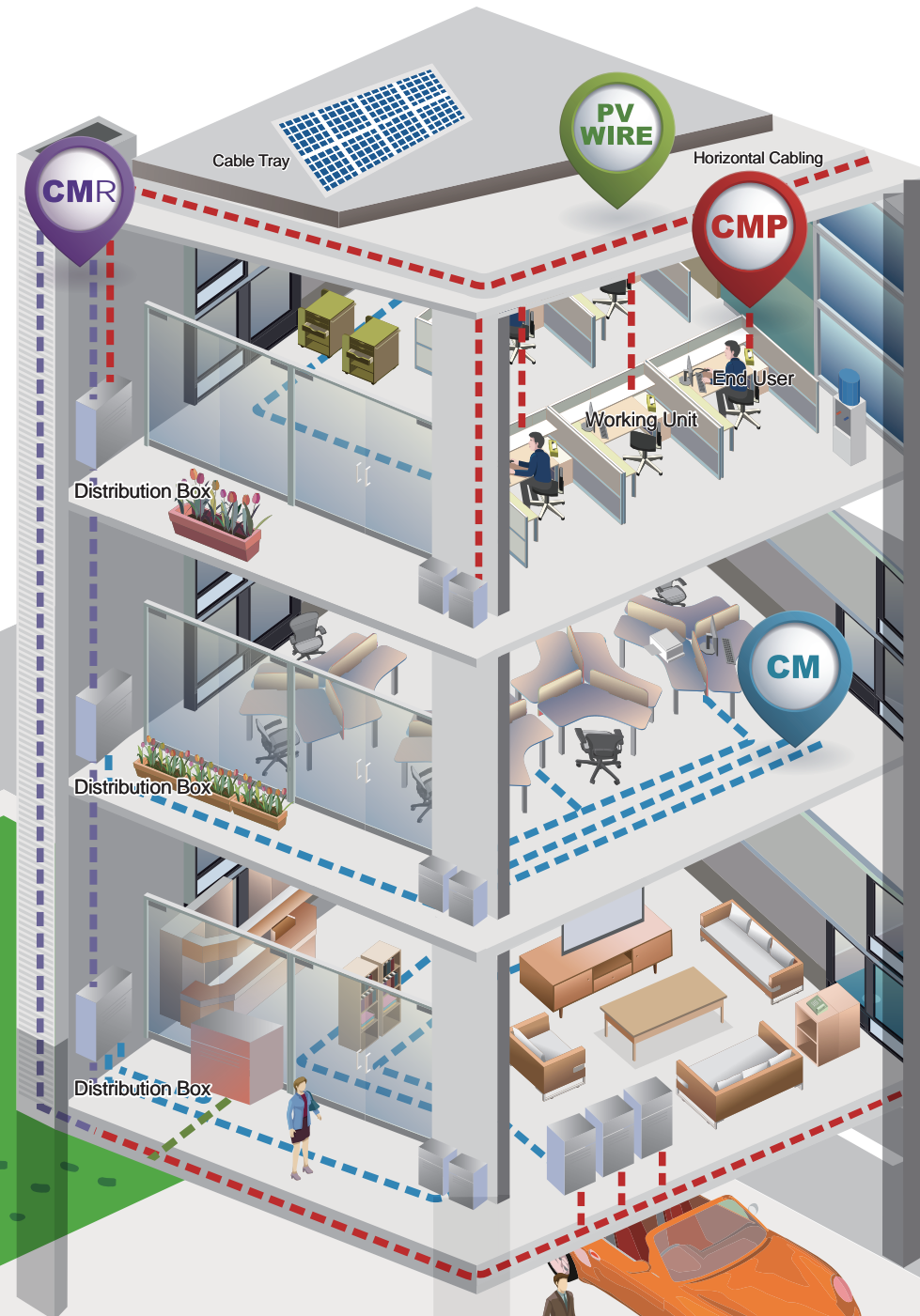
LSZH

Low smoke zero halogen or low smoke free of halogen (LSZH or LSOH or LSOH or LSFH or OHLS) is a material classification typically used for cable jacketing in the wire and cable industry. LSZH cable jacketing is composed of thermoplastic or thermoset compounds that emit limited smoke and no halogen when exposed to high sources of heat.

Most network cables are insulated with polyethylene, PVC or thermoplastic polyurethane. In a fire, a chlorine-containing plastic material releases hydrogen chloride, a poisonous gas that forms hydrochloric acid when it comes in contact with water. Designated halogen-free cables, on the other hand, do not produce a dangerous gas/acid combination when exposed to flame. Low smoke zero halogen cable reduces the amount of toxic and corrosive gas emitted during combustion.

Fire safety test standards in accordance with IEC-60332

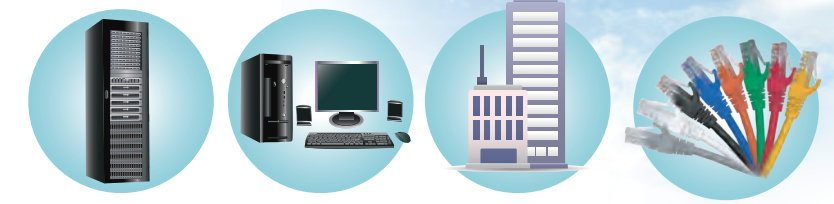
--- CMP
 --- CMR
 --- CM
 --- LSZH
 (for All Area)



LAN Cable Installation Diagram

Product Application

Cable for Computer Mainframe Intelligent Building & Cloud Computing System



Antenna for Mobile Phone, Notebook, All In one PC & Networking Equipment



Power Supply Cable & Power Cord for Household Appliance



Wire Harness for Computer, Car & Household Appliance



Internal Wiring & Flexible PCB for Camera, Mobile Phone, Video Camera, Notebook, LED TV, Medical Equipment



HDMI Cable for Communication Product, Mobile Storage Device & Audio/Video Device



CMP/CMR/CM/LSZH/BURNING COMPARISON

EUROPEAN MARKET

The Construction Products Regulation (CPR)

When the regulations come into effectiveness?

The European Union's (EU) to enforce the new building products regulations 305/2011/EU-CPR as law, and cables shall be required to be compliant from the 1st July 2017. For the construction of the cable, CE certification and product performance statement will become mandatory requirements. EN50575 standard for all power, control and communication cables in the construction period to meet the requirements of fire resistance; EN13501-6 standard provides the reaction to fire classification (Euroclass).

Where should the regulation be applied to?

Any building or civil construction where permanently cabling gets installed is subject, like tunnels, airports, offices, industrial buildings, hospitals and individual homes.

Which Euroclass should be used?

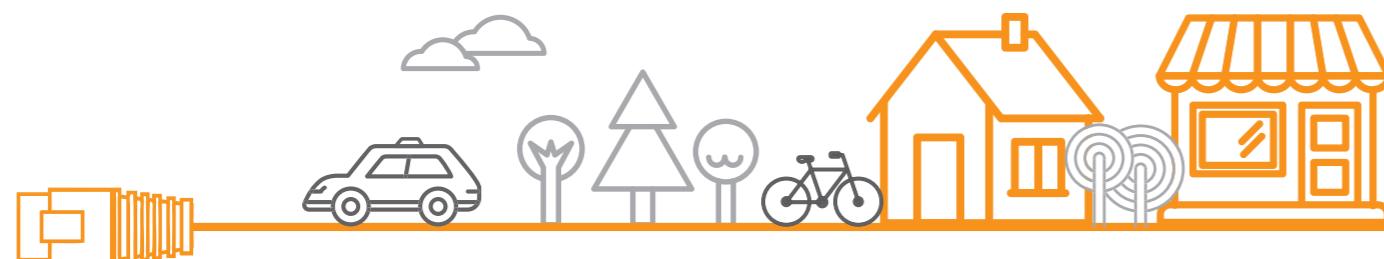
The Euroclass requirement depending on the country, building type, and application potential risk is based on usage and occupancy and client requirements. Therefore it is always important to check the local fire regulations/national CPR implementation and/or insurer's requirements for each country.

What does Wonderful Hi-Tech offer?

Wonderful Hi-Tech offers Euroclass cable with Eca and B2ca, the additional classification of B2ca is B2ca-S1a,d0,a1.

The CPR - Reaction to Fire

| Euroclass (ca) | Classification Criteria | Additional Criteria | | | Risk of Fire | Installation Place / Environment example |
|----------------|---|--|---------------------------|----------------------|--------------|---|
| | | Smoke production EN 50399 / EN 61034-2 | Flaming droplets EN 50399 | Acidity EN 50267-2-3 | | |
| B2 | EN 50399 Heat release Flame spread | s1a | d0 | a1 | Very High | hospital, tunnels, underground railways, high rise building with large of occupants |
| C | | s1b | d1 | a2 | High | airports, shopping centers, public buildings, escape routes |
| D | EN 60332-1-2 Flame propagation | s1 | d2 | a3 | Medium | commercial premises, large office, large storehouses |
| E | EN 60332-1-2 Flame propagation | s2 | | | LOW | single residential, industrial premises, small store building with few occupants |
| F | EN 60332-1-2 Flame propagation | s3 | None | | | outdoor installation and use only |
| F | Fails to meet E ca, Not advisable for public places | | | | | |





Wonderful Hi-Tech is a proactive, innovative and farsseeing provider of high-quality cables and wires. Our goal is to meet the needs of customers around the world with innovative R&D department, stringent QC system, professional sales team, advanced equipment and efficient manufacturing facilities from Taiwan, China, Vietnam and Thailand.

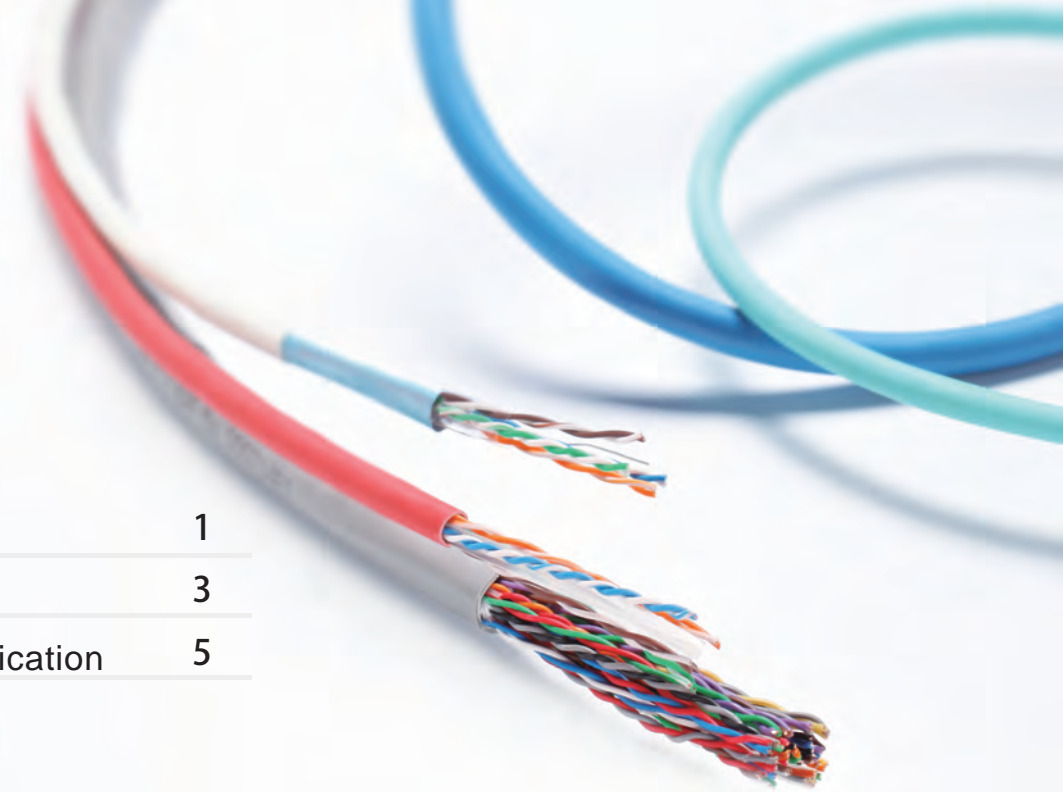
Founded in 1978, Wonderful Hi-Tech grew rapidly and has become a leading manufacturer of wire and cable industry in Asia. In 1995, Wonderful Hi-Tech devoted to producing LAN cables and became a professional manufacturer in structure cabling field. Ever since that, we achieved a lot of milestones with time went by. We get CMP certificate in 1997, Cat 6A (10G) certificate in 2007, we acquired UL “-LP” certificates in 2016, and successfully put Cat8 into mass production in 2018, as the first ETL approved MFR for CMP bulk cable in Asia.

Wonderful Hi-Tech built up a solid foundation for being a reliable global cable manufacturer. To this end, we make capital expense on necessary test and production equipment, as well on new product developments in every year. We have an in-house lab approved by UL, which is the only one in Asia. With these facilities we could assure our customers of qualified products with stable and guaranteed performance. In addition, as an UL-listed cable manufacturer, we have huge annual expense on 3rd party lab certification, covering from electrical wire to communication cable, from Cat5e to Cat8, from flame rating CM to CMP, with all criteria in different cable structures.

In future, Wonderful Hi-Tech will target at expanding business from North American market to other markets around the world. We will focus on delivering the most comprehensive technologies and services, including 5G, IOT, POE, AI, electrical vehicle, and Industry 4.0 application through a process of constant evolution. We are dedicated to fulfill all customers’ demands and put their ideas into practice. Wonderful Hi-Tech connect everything and everywhere.



| | |
|-------------------------------|---|
| Worldwide | 1 |
| Milestones | 3 |
| Product Quality Certification | 5 |



| | |
|------------------------------|----|
| Cat8 (S/FTP) | 7 |
| Cat7A (S/FTP) | 8 |
| Cat7 (S/FTP) | 10 |
| Cat6A (U/UTP) | 11 |
| Cat6A (F/UTP) | 13 |
| Cat6A (U/FTP) | 14 |
| Cat6A (F/FTP) | 16 |
| Cat6A (S/FTP) | 17 |
| Cat6A (VTP) | 18 |
| Cat6E (U/UTP) | 19 |
| Cat6E (F/UTP) | 20 |
| Cat6E (SF/UTP) | 22 |
| Cat6 (U/UTP) | 23 |
| Cat6 (S/FTP) | 25 |
| Cat5E (U/UTP) | 27 |
| Cat5E (F/UTP) | 30 |
| Cat5E (SF/UTP) | 32 |
| Cat5 (U/UTP) | 34 |
| Product Packaging | 35 |
| Fiber Cable | 36 |
| Structured Cabling Solutions | 40 |



Wire & Cable Group

To respond the trend of globalization, we have expanded our business to Singapore, Malaysia, Vietnam, Thailand, United States, Hong Kong, China, and so on.

Wonderful Hi-Tech Co., Ltd. (Taiwan)

Address : 1F., No.72 Wugong 6th Rd.,New Taipei Industrial park., Wugu Dist., New Taipei City 24891, Taiwan (R.O.C.)
TEL : 886-2-2298-8033
FAX : 886-2-2298-8031
Web : www.wontex.com.tw
Mail : sales@wontex.com.tw
Established : 1978

Factory



Chung-Li, Taiwan



H.K. China

Branch office



Los Angeles, USA



Taipei Taiwan



Shanghai China

ABA Industry Inc. (U.S.A)

Address : 639E. Walnut St. Carson, CA 90746
Established : 1996
Main Product : Hook UP Wire 、 RF Coaxial Cable 、 Lan Cable 、 Network Accessories

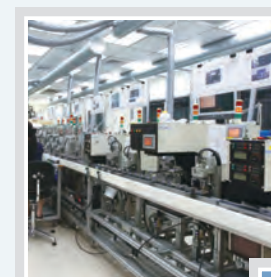
Wonderful Cabling Systems Corp

Address : No.72, Wugong 6th Rd., Wugu Dist., New Taipei City 248, Taiwan
TEL : 886-2-2290-1338#202
FAX : 886-2-2290-1339

Shanghai Elitech Technology Co., Ltd.

Address : Room 201,Buildin g 2, No.268,Taihong Road MinhangDistrict, Shanghai,China
TEL : 86-21-33676880-1
Web : www.wontex.net
Established : 2009
Main Product : Premises Cabling Solutions

Wire Harness Group



Taipei Taiwan



Suzhou China



Dong Guan Humen

Wanshih Electronic Co.,Ltd. (Taiwan)

Address : 72 WuGong 6th RD., WuGu Dist., New Taipei Industrial Park, New Taipei City 24891, Taiwan, R.O.C.
TEL : 886-2-2298-8066
FAX : 886-2-2298-8131
Web : www.wanshih.com.tw
Mail : Howard_tu@wanshih.com.tw
Established : 1987
Main Product : NB Wire Harness 、 Mobile Phone Wire Harness 、 Harness for LCD TV 、 Wireless Antenna

Wanshih Electronic Element Co.,Ltd. (Suzhou)

Address : No.68 Wen Du Road, Wan Ting Town, Wu County, Suzhou City, China
TEL : 86-512-6670-2220
FAX : 86-512-6538-1104
Mail : Alic.yu@wan shih.com.cn
Established : 1994
Main Product : Wire Harness 、 Power Cord 、 Harness for NB 、 Wireless Antenna 、 Harness for Mobile

Wanshih Electronic Element Co.,Ltd. (Dong Guan Humen)

Address : Long yuan Ind. Area Hu-men Dongguan City, Guangdong, china
TEL : 86-769-8555-2215
Mail : nelson_liu@wan shih.com.cn

Wonderful Hi-Tech Co., Ltd. (Factory)

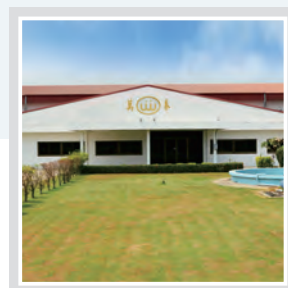
Address : 17 Pei Yuan Road, Chung-Li Industrial Park, Taiwan R.O.C.
TEL : 886-3-452-7777
Main Product : Lan 、 RF Coaxial Cable 、 Hook Up Wire



Hai Duong Province, Vietnam

Wonderful Photoelectricity Co., Ltd. (Dong Guan)

Address : No.51,358 Dart,Loonge Yan,Hu-men, Dongguan, Guangdong, China PC:523920
TEL : 86-769-8862-0666
Web : www.wonderful-wire.com.cn
Established : 1988
Main Product : Power Cable 、 Hook Up Wire 、 Computer Cable Flat Ribbon Cable 、 Lan Cable



Chonburi Thailand

Wonderful Wire & Cable Co., Ltd. (Vietnam)

Address : Lot XN21, Dai An Industrial Zone,KM51, Highway No.5, Hai Duong Province, Vietnam
TEL : 84-320-3555588
E-mail : luhum543058@hotmail.com
Established : 2010
Main Product : Hook up wire, AV wire, and PVC cable

Thai Wonderful Wire Cable Co., Ltd. (Thailand)

Address : 52-52/1 Moo.5, Tambol Nong Ka-kha, Amphur Panthong, Chonburi 20160 Thailand
TEL : 66-3845-1433~7(F) 66-2361-8681~3(O)
Web : www.thaiwonderful.com
Established : 1991
Main Product : Hook Up Wire 、 Wire Harness 、 Power Cable 、 Power Cord

1978

- Establish Wonderful Wire Cable (TWN)

1979

- Factory construction complete, formally commences manufacturing and marketing with total employees of 35

1986

- Become the primary specialized manufacturer of Hook Up Wire in Taiwan

1987

- Joint venture with Asahi Tsushin to establish Wanshin Electronic Co., Ltd.

1988

- Certified by VDE of West Germany, SAA of Australia and F / T Mark of Japan

1989

- Invest in Thai Wonderful Wire Cable Co., Ltd. to set up a wire and cable, and wire harness operations

1990

- Joint venture with Asahi to establish Asahi Best Base in Malaysia for Wire Harness operation
- Add Flat Ribbon Wire into our product lines
- Joint venture with Wan Shih to establish Wan Shin (H. K.) to set up a wire harness factory in Dong Guan

1991

- SEC approves for public filing

1992

- Invest in Lord Hero of Hong Kong
- Invest in Phanthong Wire and Cable of Thailand

1993

- Wonderful Building inauguration, Administration and Marketing departments moved in to meet fast growth of the Company

1994

- Quality Assurance of ISO 9002 1994 Edition certified by BSI of UK and UL of US
- CNS 12682 Quality Assurance certified by the Commodity Inspection Bureau of MOEA
- The first non-Japanese company certified by "Z-Mark" of Japan Electrical Testing Laboratory Inc.
- Invest in DONG GUAN YONG TAI ELECTRIC WIRE&CABLE CO., LTD to manufacture rubber cable through Wonderful Holding (BVI)

1995

- High end product UTP Cat 5 developed
- The first Taiwanese company to be certified by UL on UTP Cat 5

1996

- New product USB wire developed
- Invest in Wonderful International (Cayman) through Wonderful Holding (Cayman)
- Establish Marketing companies in LA and Beijing

1997

- OTC approves listing application

1998

- Listed on the OTC on 4th of February
- Invest in Wonderful Investment co., Ltd

2002

- Rename to Wonderful HI- TECH Co., Ltd. (TWN)
- WSC public on OTC Stock Market (TWN)

2003

- New product RF High Frequency Coaxial Cable commences mass production

2005

- New product Halogen Free (HF) Wires commences mass production 3-layer insulation cable for high frequency transformer commences mass production 10G product commences mass production

2006

- High end LAN cable Cat 6 CMP commences mass production

2007

- New product Cat 6A was certified by ETL

2009

- Invest in Siyang Wan Shih Electronic Component Co., Ltd.
- Invest in Shanghai Elitech Technology Co., Ltd. through Wontex Technology (Hong Kong) CO., LTD.

2010

- Invest in Chongqing Wan Shih Electronic Component Co., Ltd.
- Established Vietnam Wonderful Wire & Cable Factory

2011

- SUNNET CABLING CO.,LTD opened the wiring systembrand 「Wonderful」 market as No.1 brand in Taiwan.
- Vietnam Factory established on Dec 6 and commences mass production and sell.
- Be approbated an official member of TIA (Telecommunication Industry Association) and have the right to vote.

2014

- Wonderful HI-TEC Joined CCCA member

2015

- Wonderful HI-TEC Joined TIA member

2016

- Committed to research and design Cat8 Cable

2018

- New product Cat 8 was certified by ETL

Product Quality Certification

Wonderful is a leader in the design and manufacture of cable for communication networks



Cat8

| | | UL | ETL | 3P | CPR | PoH |
|-------------|-----|----|-----|----|-----|-----|
| S/FTP 22AWG | CMR | S | P | | | |
| S/FTP 22AWG | CMP | S | P | | | |

Cat7A

| | | UL | ETL | 3P | CPR | HDBaseT |
|-------------|------|----|-----|----|-----|---------|
| S/FTP 23AWG | LSZH | | P | | | |
| S/FTP 22AWG | CMP | S | P | | | ● |
| S/FTP 23AWG | CMR | S | | | | |

Cat7

| | | UL | ETL | 3P | CPR | PoH |
|----------------|------|----|-----|----|------|-----|
| S/FTP 23AWG | PVC | | | ● | E ca | |
| | LSZH | | | ● | E ca | |
| S/FTP 26AWG PC | LSZH | | | ● | E ca | |

Cat6A

| | | UL | ETL | 3P | CPR | PoH |
|-------------|------|----|-----|----|------|-----|
| U/UTP 23AWG | CM | S | | | | |
| | CMX | S | | | | |
| | CMR | ● | P | | | |
| | CMP | ● | P | | | |
| | PVC | | | | | |
| | LSZH | | | ● | E ca | |

S : Safety Pass P : Performance Pass ● : All Pass

Cat6A

| | | UL | ETL | 3P | CPR | PoH |
|----------------|------|-------------|-----|----|--------------|-----|
| F/UTP 23AWG | CM | S | | | | |
| | CMX | S | | | | |
| | CMR | ● -LP(0.5A) | P | | | |
| | CMP | ● -LP(0.6A) | P | | | ● |
| | LSZH | DR S | | ● | B2 ca , E ca | |
| S/FTP 23AWG | LSZH | | | ● | E ca | |
| S/FTP 26AWG PC | LSZH | | | ● | E ca | |

Cat6

| | | UL | ETL | 3P | CPR | HDBaseT |
|----------------------|------|-------------|-----|----|--------------|---------|
| U/UTP 23AWG W/Slot | CM | ● | P | | | |
| | CMX | ● | | | | |
| | CMR | ● | ● | | | ● |
| | CMP | ● -LP(0.5A) | ● | | | |
| | PVC | | | ● | E ca | |
| | LSZH | DR S | | ● | B2 ca , E ca | |
| F/UTP 23AWG | CM | S | | | | |
| | CMX | S | | | | |
| | CMR | ● -LP(0.5A) | P | | | |
| | CMP | ● -LP(0.6A) | P | | | |
| | PVC | | | ● | E ca | |
| | LSZH | DR | | ● | B2 ca , E ca | |
| U/UTP 23AWG W/O Slot | CM | ● | | | | |
| | CMX | ● | | | | |
| | CMR | ● | P | | | |
| | CMP | ● | P | | | |
| | LSZH | DR | | | | |
| U/UTP 24AWG W/Slot | CM | ● | | | | |
| | CMX | ● | | | | |
| | CMR | ● | P | | | |
| | CMP | S | | S | E ca | |
| U/UTP 24AWG | LSZH | DR | | | E ca | |
| U/UTP 24AWG PC | CM | S | P | | | |
| | CMX | S | | | | |
| S/FTP 23AWG | LSZH | | | ● | E ca | |
| SF/UTP 23AWG | LSZH | | | ● | E ca | |
| U/FTP 23AWG | CMR | S | | | | |
| U/UTP 28AWG | LSZH | | | | E ca | |

Cat5E

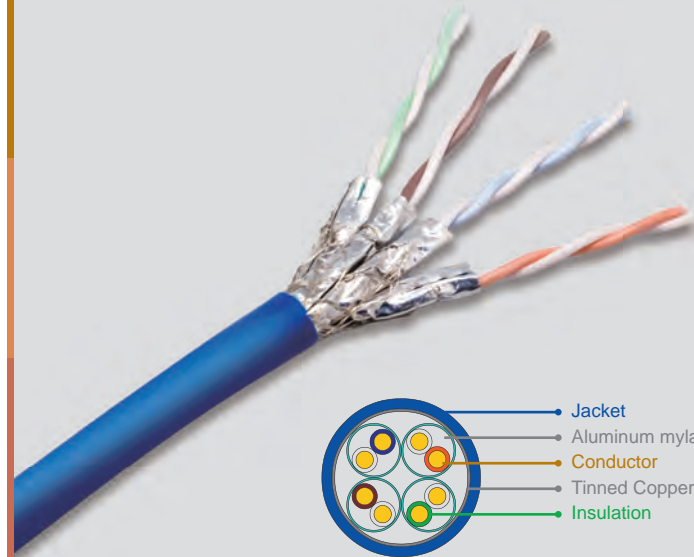
| | | UL | ETL | 3P | CPR | PoH |
|-------------|-----|----|-----|----|-----|-----|
| U/UTP 24AWG | CMP | ● | P | | | |
| | CMX | ● | | | | |
| F/UTP 24AWG | CMP | S | | | | |
| | CMX | ● | | | | |

DR : Dual-Rating, CMR-LSHF S : Safety Pass P : Performance Pass ● : All Pass B2 ca-S1a,d0,a1

WONDERFUL 40GS[®] CATEGORY 8

2000MHz S/FTP SOLID CABLE/PATCH CORD

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 2000 MHz.

Product Description

- S/FTP, 22AWG solid bare copper, CAT.8.
- Each pair twist with metal foil screen.
- With braid wire.

Application

- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded and braided providing good protection from EMI noise.
- Beyond IEEE Std 802.3bq-2016 25G/40GBASE-T and legacy speeds.
- Top-of-Rack(ToR), End-of-Row(EoR), Middle-of Row(MoR) and for data center cabling.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

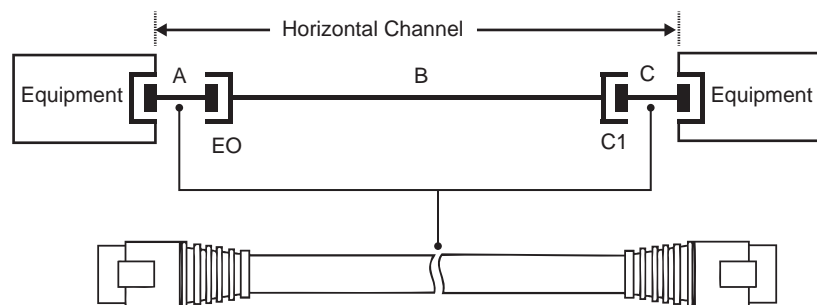
Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|-------|-------------|-------|------------------------|--------------------|------------------|
| Solid | TFP2204Z | 22AWG | CMP | 8.2 +/-0.25mm | 1,000ft |
| | TFR2204Z | 22AWG | CMR | 8.6 +/-0.25mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (Max.) dB/30m | NEXT (Min.) dB/30m | PS.NEXT (Min.) dB/30m | ACRF (Min.) dB/30m | PS.ACRF (Min.) dB/30m | RL (Min.) dB/30m | Propagation Delay (Max.) ns/30m | Delay Skew (Max.) ns/30m | PS. ANEXT (Min.) dB/30m | PS. AACRF (Min.) dB/30m |
|-----------------|------------------|--------------------|-----------------------|--------------------|-----------------------|------------------|---------------------------------|--------------------------|-------------------------|-------------------------|
| 100 | 5.56 | 75.4 | 72.4 | 60.6 | 57.6 | 22.2 | 161.3 | | 80 | 62.2 |
| 500 | 12.83 | 64.9 | 61.9 | 46.6 | 43.6 | 17.3 | 160.7 | 7.5 | 77 | 48.2 |
| 1000 | 18.56 | 60.4 | 57.4 | 40.6 | 37.6 | 15.2 | 160.5 | | 72.5 | 42.2 |
| 2000 | 27.15 | 55.9 | 52.9 | 34.6 | 31.6 | 13.1 | 160.4 | | 68 | 36.2 |

Schematic representation of a horizontal channel configuration



- Cables and cords
Equipment cord : A , C , Horizontal cabling : B
- Connecting hardware
Equipment Outlet : EO , Interconnect : C1
- Maximum length
B : 24m
A + C : 7.2m(22,23AWG). 6m(24AWG). 4.8m(26AWG)

Applicable Standard

- Electrical Transmission
ANSI/TIA-568.2-D
ISO/IEC 11801 (Edition 2.2)
IEC 61156-9 (Category 8.2)
- Flame Test
NFPA 262 (CMP)
UL 1666 (CMR)
- Material and Construction
UL 444
CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)

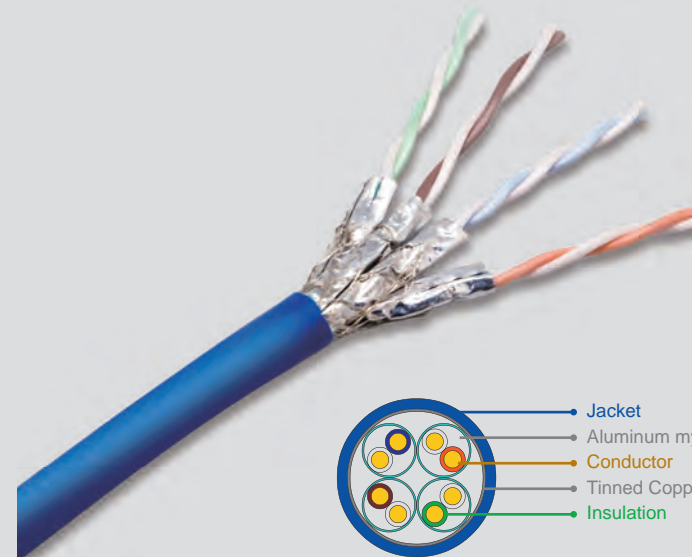
Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating 75°C
- Spark test 2.5 KV DC
- AC leakage current through overall jacket 10mA (1.5KV AC)
- Cable cold bend -20°C for 4 hr
- Conductor DC resistance 2.1 /30m
- Resistance unbalance 2%
- Dielectric strength 1.5 KV ac for 2 s
- Insulation resistance ≥ 5000 MΩ·km
- Capacitance unbalance pair-to-ground 36 pF/30m

WONDERFUL 10GS[®] CATEGORY 7A

1000MHz S/FTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 1000 MHz.

Product Description

- S/FTP, 22AWG / 23AWG solid bare copper, CAT.7A.
- Each pair twist with metal foil screen.
- With braid wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded and braided providing good protection from EMI noise.
- 10 / 100 / 1G / 10G / 40G Base-T IEEE 802.3 i / u / ab / an / ba.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|-------|-------------|-------|------------------------|--------------------|------------------|
| Solid | TFP2204T | 22AWG | CMP | 8.1 ± 0.2 mm | 1,000ft |
| | TFR2304T | 23AWG | CMR | 8.0 ± 0.2 mm | 1,000ft |
| | TFM2304T | 23AWG | CM | 8.0 ± 0.2 mm | 1,000ft |
| | TFX2304T | 23AWG | CMX | 8.0 ± 0.2 mm | 1,000ft |
| | TFL2304T | 23AWG | LSZH | 8.0 ± 0.2 mm | 1,000ft |
| | TFL2304T | 23AWG | FRLSZH | 8.0 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (Max.) dB/100m | NEXT (Min.) dB/100m | PS.NEXT (Min.) dB/100m | ACRF (Min.) dB/100m | PS.ACRF (Min.) dB/100m | RL (Min.) dB/100m | Propagation Delay (Max.) ns/100m | Delay Skew (Max.) ns/100m |
|-----------------|-------------------|---------------------|------------------------|---------------------|------------------------|-------------------|----------------------------------|---------------------------|
| 100 | 18.53 | 75.40 | 72.40 | 55.30 | 52.30 | 20.11 | 537.60 | 25.00 |
| 500 | 42.76 | 64.92 | 61.92 | 41.32 | 38.32 | 17.30 | 535.61 | 25.00 |
| 1000 | 61.93 | 60.40 | 57.40 | 35.30 | 32.30 | 15.08 | 535.14 | 25.00 |

Applicable Standard

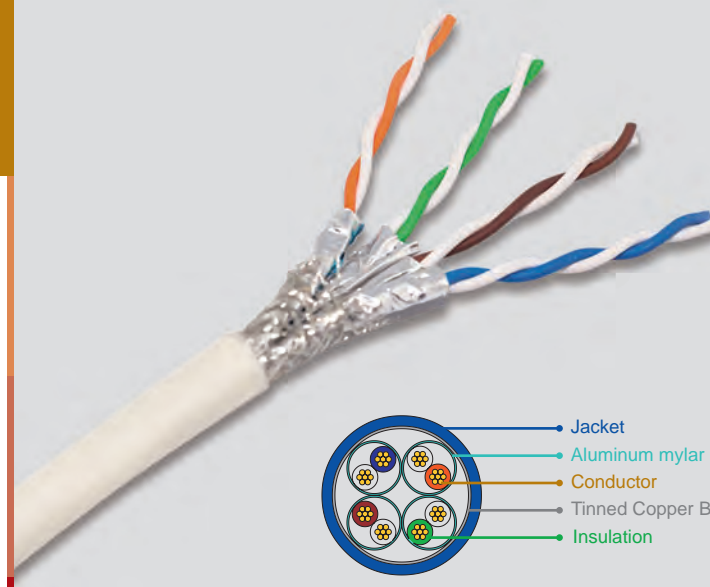
- Electrical Transmission
ISO/IEC 11801 (Edition 2.2)
IEC 61156-5 (Edition 2.1)
- Flame Test
NFPA 262 (CMP)
UL 1666 (CMR)
UL 1685 (CM)
UL 1581 (CMX)
IEC 60332-1 (LSZH)
IEC 60332-3-24(C) (FRLSZH)
- Material and Construction
UL 444
CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating 75°C
- Spark test 2.5 KV DC
- AC leakage current through overall jacket 10mA (1.5KV AC)
- Cable cold bend -20°C for 4 hr
- Conductor DC resistance 9.5 /100m
- Resistance unbalance 2%
- Dielectric strength 1.5 KV ac for 2 s
- Insulation resistance ≥ 5000 MΩ·km
- Mutual capacitance 5.6 nF/100m
- Capacitance unbalance pair-to-ground 160 pF/100m

WONDERFUL 10GS[®] CATEGORY 7A 1000MHz S/FTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 1000 MHz.

Product Description

- S/FTP, 26AWG stranded bare copper, CAT.7A.
- Each pair twist with metal foil screen.
- With braid wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded and braided providing good protection from EMI noise.
- 10 / 100 / 1G / 10G / 40G Base-T IEEE 802.3 i / u / ab / an / ba.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|-----------|--------------|-----------|
| | | | RETARDANT | | |
| | | | RATING | | |
| Stranded | TGM2604T | 26AWG | CM | 6.3 ± 0.2 mm | 1,000ft |
| | TGL2604T | 26AWG | LSZH | 6.3 ± 0.2 mm | 1,000ft |
| | TGL2604T | 26AWG | FRLSZH | 6.3 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL | NEXT | PS.NEXT | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew |
|--------------------|---------|---------|---------|---------|---------|---------|-------------------|------------|
| | Max. | Min. | Min. | Min. | Min. | Min. | | |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | | |
| 100 | 27.78 | 78.00 | 75.00 | 54.00 | 51.00 | 18.99 | 537.60 | 25.00 |
| 500 | 64.14 | 67.92 | 64.92 | 40.02 | 37.02 | 15.60 | 535.61 | 25.00 |
| 1000 | 92.89 | 63.40 | 60.40 | 34.00 | 31.00 | 13.69 | 535.14 | 25.00 |

Applicable Standard

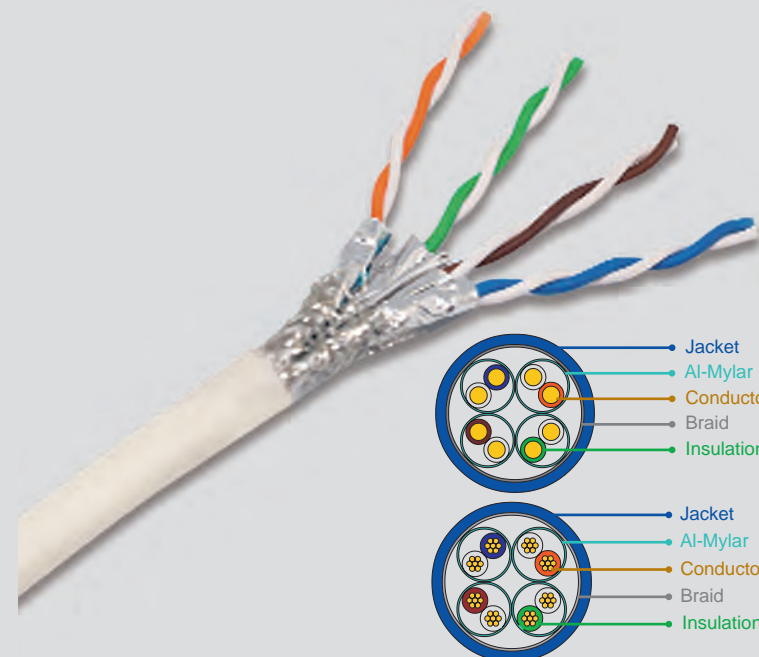
- Electrical Transmission
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C) (FRLSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 14.5 /100m
- Resistance unbalance: 2%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

WONDERFUL 10GS[®] CATEGORY 7 750MHz S/FTP SOLID/STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 750 MHz.

Product Description

- S/FTP, 23AWG solid bare copper, CAT.7.
- S/FTP, 26AWG stranded bare copper, CAT.7.
- Each pair twist with metal foil screen.
- With braid wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded and braided providing good protection from EMI noise.
- 10 / 100 / 1G / 10G / 40G Base-T IEEE 802.3 i / u / ab / an / ba.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|--------------|--------------|-----------|
| | | | RETARDANT | | |
| | | | RATING | | |
| Solid | TFR2304A | 23AWG | CMR | 7.7 ± 0.2 mm | 1,000ft |
| | TFM2304A | 23AWG | CM | 7.7 ± 0.2 mm | 1,000ft |
| | TFX2304A | 23AWG | CMX | 7.7 ± 0.2 mm | 1,000ft |
| Stranded | TFL2304A | 23AWG | LSZH, E ca | 7.7 ± 0.2 mm | 1,000ft |
| | TGM2604A | 26AWG | CM | 7.7 ± 0.2 mm | 1,000ft |
| | TGL2604A | 26AWG | LSZH, E ca | 7.7 ± 0.2 mm | 1,000ft |
| | TGL2604A | 26AWG | FRLSZH, E ca | 6.3 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| TYPE | Frequency (MHz) | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew |
|----------|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|
| | | Max. | Min. | Min. | Min. | Min. | Min. | Min. | Min. | | |
| | | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | | |
| Solid | 100 | 19.02 | 72.40 | 69.40 | 53.38 | 50.38 | 54.00 | 51.00 | 20.11 | 537.60 | 25.00 |
| | 500 | 45.26 | 61.92 | 58.92 | 16.66 | 13.66 | 40.02 | 37.02 | 17.30 | 535.61 | 25.00 |
| | 750 | 56.80 | 59.27 | 56.27 | 2.47 | N.A. | 36.50 | 33.50 | 16.33 | 535.31 | 25.00 |
| Stranded | 100 | 28.53 | 72.40 | 69.40 | 43.87 | 40.87 | 54.00 | 51.00 | 18.99 | 537.60 | 25.00 |
| | 500 | 67.89 | 61.92 | 58.92 | N.A. | N.A. | 40.02 | 37.02 | 15.60 | 535.61 | 25.00 |
| | 750 | 85.20 | 59.27 | 56.27 | N.A. | N.A. | 36.50 | 33.50 | 14.77 | 535.31 | 25.00 |

Applicable Standard

- Electrical Transmission
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C) (FRLSZH)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 14.5 /100m
- Resistance unbalance: 2%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

WONDERFUL 10GS[®] CATEGORY 6A 650MHz U/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

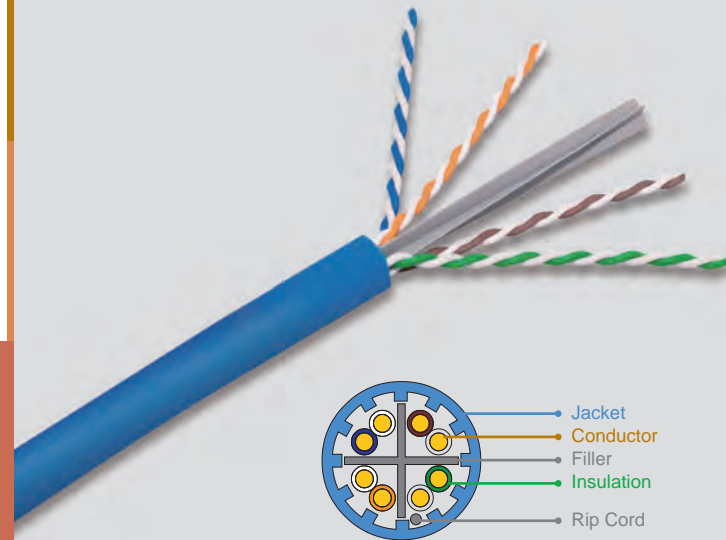
- High performance of single cable transmission.
- Zigzag jacket design provides excellent performance of six around one bundle transmission.
- Round and smooth jacket without twisted stripe.
- High quality of safety property.
- Sweep frequency up to 650 MHz.

Product Description

- U/UTP, 23AWG solid bare copper, CAT.6A.
- With cross filler.
- With rip cord.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



WONDERFUL 10GS[®] CATEGORY 6A 500MHz U/UTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

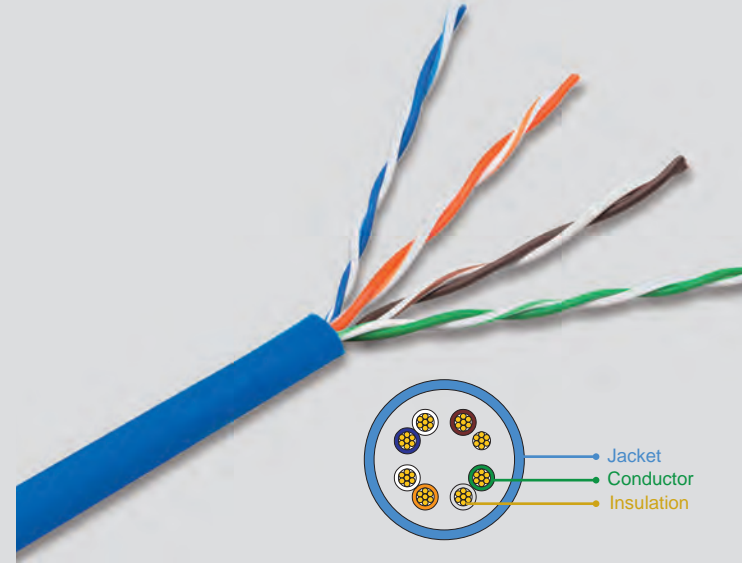
- High performance of single cable transmission.
- Round and smooth jacket.
- High quality of safety property.
- Sweep frequency up to 500 MHz.

Product Description

- U/UTP, 26/28AWG Stranded bare copper, CAT.6A.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|-------------------|--------------|-----------|
| | | | RETARDANT RATING | (mm/inch) | Put-Up |
| Solid | TUP2304S | 23AWG | CMP | 8.1 ± 0.2 mm | 1,000ft |
| | TUR2304S | 23AWG | CMR | 8.3 ± 0.2 mm | 1,000ft |
| | TUM2304S | 23AWG | CM | 8.3 ± 0.2 mm | 1,000ft |
| | TUX2304S | 23AWG | CMX | 8.3 ± 0.2 mm | 1,000ft |
| | TUL2304S | 23AWG | LSZH/FRLSZH, E ca | 8.3 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (Max.) dB/100m | NEXT (Min.) dB/100m | PS.NEXT (Min.) dB/100m | ACR (Min.) dB/100m | PS.ACR (Min.) dB/100m | ACRF (Min.) dB/100m | PS.ACRF (Min.) dB/100m | RL (Min.) dB/100m | Propagation Delay (Max.) ns/100m | Delay Skew (Max.) ns/100m | PS.ANEXT (Min.) dB/100m | PS.AACRF (Min.) dB/100m |
|-----------------|-------------------|---------------------|------------------------|--------------------|-----------------------|---------------------|------------------------|-------------------|----------------------------------|---------------------------|-------------------------|-------------------------|
| 100 | 19.14 | 44.30 | 42.30 | 25.17 | 23.17 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 | 62.50 | 38.20 |
| 250 | 31.07 | 38.33 | 36.33 | 7.26 | 5.26 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 | 56.53 | 30.24 |
| 500 | 45.26 | 33.82 | 31.82 | N.A. | N.A. | 13.82 | 10.82 | 15.21 | 535.61 | 45.00 | 52.02 | 24.22 |
| 650 | 52.33 | 32.11 | 30.11 | N.A. | N.A. | 11.54 | 8.54 | 14.42 | 535.41 | 45.00 | 50.31 | 21.94 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C) (FRLSZH)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|------------------|--------------|-----------|
| | | | RETARDANT RATING | (mm/inch) | Put-Up |
| Stranded | TPM2604S | 26AWG | CM | 4.8 ± 0.2 mm | 1,000ft |
| | TPL2604S | 26AWG | LSZH | 4.8 ± 0.2 mm | 1,000ft |
| | TPM2804S | 28AWG | CM | 4.0 ± 0.2 mm | 1,000ft |
| | TPL2804S | 28AWG | LSZH | 4.0 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (Max.) dB/100m | NEXT (Min.) dB/100m | PS.NEXT (Min.) dB/100m | ACR (Min.) dB/100m | PS.ACRF (Min.) dB/100m | RL (Min.) dB/100m | Propagation Delay (Max.) ns/100m | Delay Skew (Max.) ns/100m |
|-----------------|-------------------|---------------------|------------------------|--------------------|------------------------|-------------------|----------------------------------|---------------------------|
| 100 | N.A. | 45.30 | 42.30 | N.A. | N.A. | 18.99 | 537.60 | 45.00 |
| 250 | N.A. | 39.33 | 36.33 | N.A. | N.A. | 15.60 | 536.28 | 45.00 |
| 500 | N.A. | 34.82 | 31.82 | N.A. | N.A. | 15.60 | 535.61 | 45.00 |

Applicable Standard

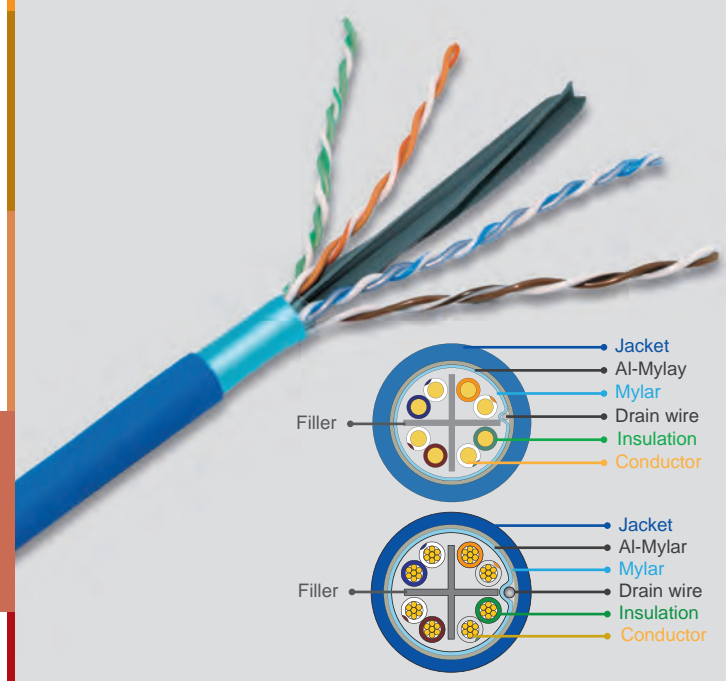
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 14.5 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

WONDERFUL 10GS[®] CATEGORY 6A 500MHz F/UTP SOLID/STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 500 MHz.

Product Description

- F/UTP, 23AWG solid bare copper, CAT.6A.
- F/UTP, 26AWG stranded bare copper, CAT.6A.
- With cross filler.
- Overall metal foil screen with drain wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Overall metal shielded providing good protection from EMI noise.
- 10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|-------------------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TSP2304S | 23AWG | CMP | 7.0 ± 0.2 mm | 1,000ft |
| | TSR2304S | 23AWG | CMR | 7.6 ± 0.2 mm | 1,000ft |
| | TSM2304S | 23AWG | CM | 7.6 ± 0.2 mm | 1,000ft |
| | TSL2304S | 23AWG | LSZH, B2 ca, E ca | 7.6 ± 0.2 mm | 1,000ft |
| Stranded | TAM2604S | 26AWG | CM | 6.3± 0.2 mm | 1,000ft |

Reference electrical characteristics

| TYPE | Frequency | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew | PS.ANEXT | PS. AACRF |
|----------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|----------|-----------|
| | (MHz) | (Max.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Max.) | (Max.) | (Min.) | (Min.) |
| | | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m | dB/100m | dB/100m |
| Solid | 100 | 19.14 | 44.30 | 42.30 | 25.17 | 23.17 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 | 70.50 | 42.20 |
| | 250 | 31.07 | 38.33 | 36.33 | 7.26 | 5.26 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 | 64.53 | 34.24 |
| | 500 | 45.26 | 33.82 | 31.82 | N.A. | N.A. | 13.82 | 10.82 | 15.21 | 535.61 | 45.00 | 60.02 | 28.22 |
| Stranded | 100 | 28.70 | 45.30 | 42.30 | 16.60 | 13.60 | 28.00 | 25.00 | 18.99 | 537.60 | 45.00 | 62.50 | 38.20 |
| | 250 | 46.60 | 39.33 | 36.33 | N.A. | N.A. | 20.04 | 17.04 | 15.60 | 536.28 | 45.00 | 56.53 | 30.24 |
| | 500 | 67.89 | 34.82 | 31.82 | N.A. | N.A. | 14.02 | 11.02 | 15.60 | 535.61 | 45.00 | 52.02 | 24.22 |

Applicable Standard

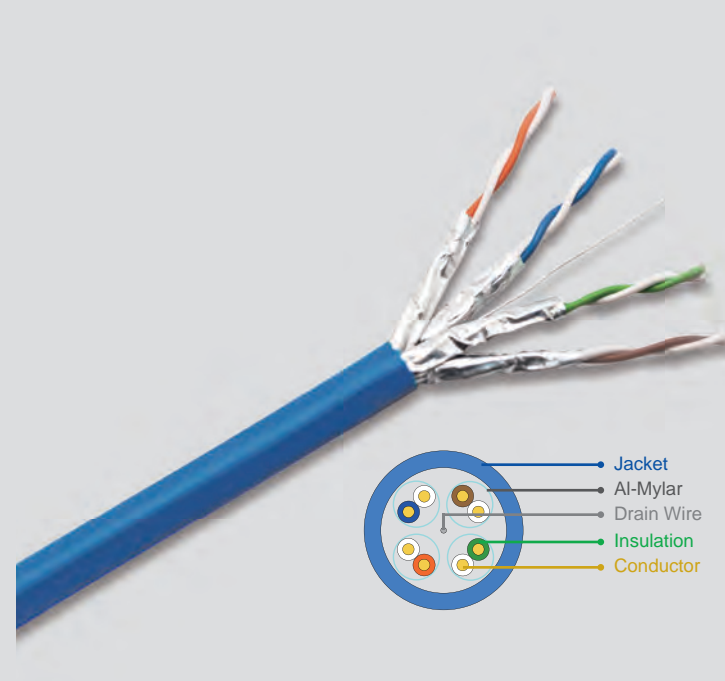
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
 - EN 50399 (B2 ca)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: solid 9.38 /100m, stranded 14.5 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 10GS[®] CATEGORY 6A 500MHz U/FTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 500 MHz.

Product Description

- U/FTP, 23AWG solid bare copper, CAT.6A.
- Each pair twist with metal foil screen.
- With drain wire.

Application

- Structure cabling for cross-connect cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded providing good protection from EMI noise.
- 10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|-----------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TFR2304S | 23AWG | CMR | 7.3 ± 0.2 mm | 1,000ft |
| | TFL2304S | 23AWG | LSZH | 7.3 ± 0.2 mm | 1,000ft |
| | TFL2304S | 23AWG | FRLSZH | 7.3 ± 0.2 mm | 1,000ft |
| | TFP2304S | 23AWG | CMP | 7.4 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew | PS.ANEXT | PS. AACRF |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|----------|-----------|
| (MHz) | (Max.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Max.) | (Max.) | (Min.) | (Min.) |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m | dB/100m | dB/100m |
| 100 | 19.14 | 44.30 | 42.30 | 25.17 | 23.17 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 | 62.50 | 38.20 |
| 250 | 31.07 | 38.33 | 36.33 | 7.26 | 5.26 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 | 56.53 | 30.24 |
| 500 | 45.26 | 33.82 | 31.82 | N.A. | N.A. | 13.82 | 10.82 | 15.21 | 535.61 | 45.00 | 52.02 | 24.22 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C) (FRLSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: solid 9.38 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 10GS[®] CATEGORY 6A 500MHz U/FTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

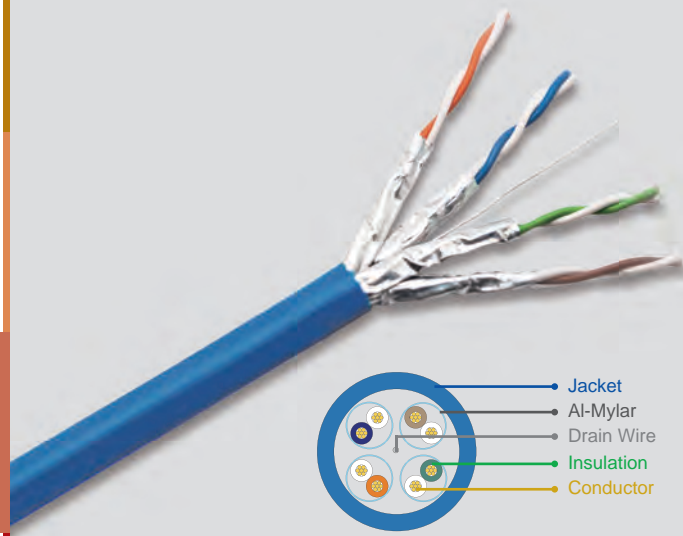
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 500 MHz.

Product Description

- U/FTP, 26AWG / 28AWG stranded bare copper, CAT.6A.
- Each pair twist with metal foil screen.
- With drain wire.

Application

- Structure cabling for cross-connect cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded providing good protection from EMI noise.
- 10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|----------|-------------|-------|------------------------|--------------------|------------------|
| Stranded | TGM2604S | 26AWG | CM | 6.3 ± 0.2 mm | 1,000ft |
| | TGL2604S | 26AWG | LSZH | 6.3 ± 0.2 mm | 1,000ft |
| | TGM2804S | 28AWG | CM | 5.1 ± 0.2 mm | 1,000ft |
| | TGL2804S | 28AWG | LSZH | 5.1 ± 0.3 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (Max.) dB/100m | NEXT (Min.) dB/100m | PS.NEXT (Min.) dB/100m | ACR (Min.) dB/100m | PS.ACR (Min.) dB/100m | ACRF (Min.) dB/100m | PS.ACRF (Min.) dB/100m | RL (Min.) dB/100m | Propagation Delay (Max.) ns/100m | Delay Skew (Max.) ns/100m | PS.ANEXT (Min.) dB/100m | PS. AACRF (Min.) dB/100m |
|-----------------|-------------------|---------------------|------------------------|--------------------|-----------------------|---------------------|------------------------|-------------------|----------------------------------|---------------------------|-------------------------|--------------------------|
| 100 | 28.70 | 45.30 | 42.30 | 16.60 | 13.60 | 28.00 | 25.00 | 18.99 | 537.60 | 45.00 | 62.50 | 38.20 |
| 250 | 46.60 | 39.33 | 36.33 | N.A. | N.A. | 20.04 | 17.04 | 15.60 | 536.28 | 45.00 | 56.53 | 30.24 |
| 500 | 67.89 | 34.82 | 31.82 | N.A. | N.A. | 14.02 | 11.02 | 15.60 | 535.61 | 45.00 | 52.02 | 24.22 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: solid 14.5 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

WONDERFUL 10GS[®] CATEGORY 6A 500MHz F/FTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

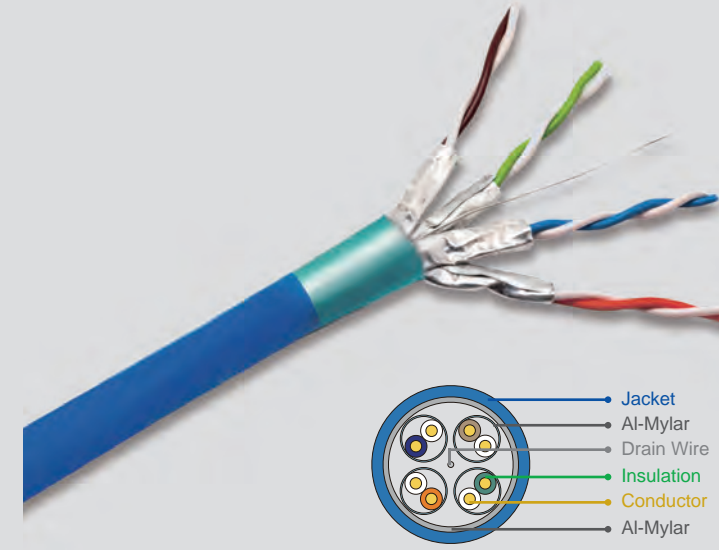
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 500 MHz.

Product Description

- High performance of transmission.
- High quality of safety property.
- F/FTP, 23AWG solid bare copper, CAT.6A.
- With drain wire.

Application

- Structure cabling for cross-connect cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded providing good protection from EMI noise.
- 10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|-------|-------------|-------|------------------------|--------------------|------------------|
| Solid | THR2304S | 23AWG | CMR | 7.5 ± 0.2 mm | 1,000ft |
| | THL2304S | 23AWG | LSZH | 7.5 ± 0.2 mm | 1,000ft |
| | THR2304S | 23AWG | FRLSZH | 7.5 ± 0.2 mm | 1,000ft |
| | THL2304S | 23AWG | FRLSZH | 7.5 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (Max.) dB/100m | NEXT (Min.) dB/100m | PS.NEXT (Min.) dB/100m | ACR (Min.) dB/100m | PS.ACR (Min.) dB/100m | ACRF (Min.) dB/100m | PS.ACRF (Min.) dB/100m | RL (Min.) dB/100m | Propagation Delay (Max.) ns/100m | Delay Skew (Max.) ns/100m | PS.ANEXT (Min.) dB/100m | PS. AACRF (Min.) dB/100m |
|-----------------|-------------------|---------------------|------------------------|--------------------|-----------------------|---------------------|------------------------|-------------------|----------------------------------|---------------------------|-------------------------|--------------------------|
| 100 | 19.14 | 44.30 | 42.30 | 25.17 | 23.17 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 | 62.50 | 38.20 |
| 250 | 31.07 | 38.33 | 36.33 | 7.26 | 5.26 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 | 56.53 | 30.24 |
| 500 | 45.26 | 33.82 | 31.82 | N.A. | N.A. | 13.82 | 10.82 | 15.21 | 535.61 | 45.00 | 52.02 | 24.22 |

Applicable Standard

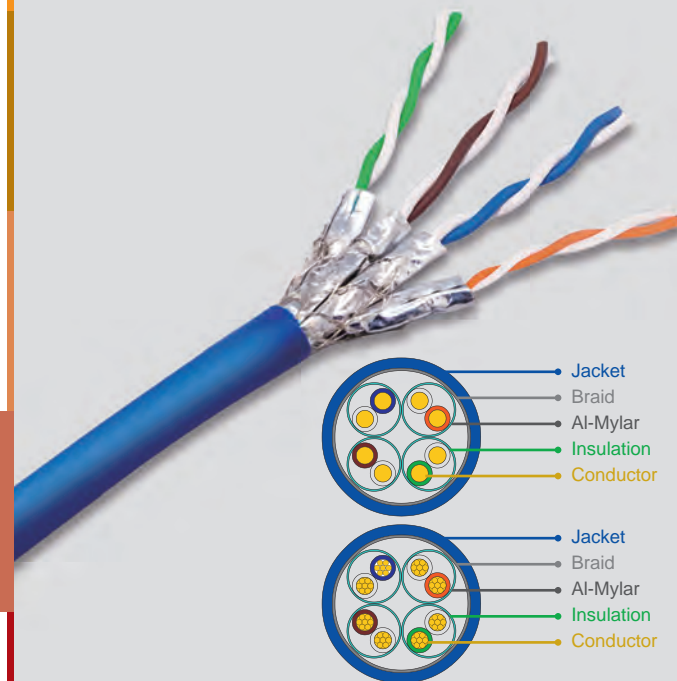
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - UL 1666 (CMR)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C) (FRLSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.5 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 10GS[®] CATEGORY 6A 500MHz S/FTP SOLID/STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 500 MHz.

Product Description

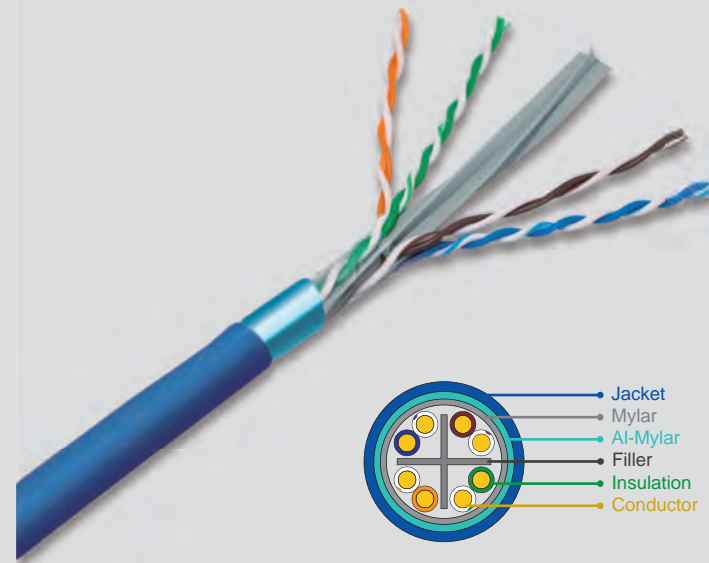
- S/FTP, 23AWG solid bare copper, CAT.6A.
- S/FTP, 24AWG / 26AWG stranded bare copper, CAT.6A.
- Each pair twist with metal foil screen.
- With braid wire.

Application

- Structure cabling for cross-connect cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded and braided providing good protection from EMI noise.
- 10 / 100 / 1G / 10G Base-T IEEE 802.3 i / u / ab / an.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

WONDERFUL 1000X[®] CATEGORY 6A 500MHz VTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 500 MHz.

Product Description

- VTP, 23AWG solid bare copper, CAT.6A.
- With cross filler.
- Overall metal foil screen.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded providing good protection from EMI noise.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|------------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TFM2304S | 23AWG | CM | 7.7 ± 0.2 mm | 1,000ft |
| | TFX2304S | 23AWG | CMX | 7.7 ± 0.2 mm | 1,000ft |
| | TFL2304S | 23AWG | LSZH, E ca | 7.7 ± 0.2 mm | 1,000ft |
| Stranded | TGL2404S | 24AWG | LSZH, E ca | 7.5 ± 0.2 mm | 1,000ft |
| | TGM2604S | 26AWG | CM | 6.3 ± 0.2 mm | 1,000ft |
| | TGL2604S | 26AWG | LSZH | 6.3 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| TYPE | Frequency | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew | PS.ANEXT | PS.AACRF |
|----------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|----------|----------|
| | (MHz) | (Max.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Min.) | (Max.) | (Max.) | (Min.) | (Min.) |
| | | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m | dB/100m | dB/100m |
| Solid | 100 | 19.14 | 44.30 | 42.30 | 25.17 | 23.17 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 | 62.50 | 38.20 |
| | 250 | 31.07 | 38.33 | 36.33 | 7.26 | 5.26 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 | 56.53 | 30.24 |
| | 500 | 45.26 | 33.82 | 31.82 | N.A. | N.A. | 13.82 | 10.82 | 15.21 | 535.61 | 45.00 | 52.02 | 24.22 |
| Stranded | 100 | 28.70 | 45.30 | 42.30 | 16.60 | 13.60 | 28.00 | 25.00 | 18.99 | 537.60 | 45.00 | 62.50 | 38.20 |
| | 250 | 46.60 | 39.33 | 36.33 | N.A. | N.A. | 20.04 | 17.04 | 15.60 | 536.28 | 45.00 | 56.53 | 30.24 |
| | 500 | 67.89 | 34.82 | 31.82 | N.A. | N.A. | 14.02 | 11.02 | 15.60 | 535.61 | 45.00 | 52.02 | 24.22 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance:
 - Solid 9.38 /100m
 - Stranded 14.5 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|--------------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TVP2304S | 23AWG | CMP | 6.9 ± 0.2 mm | 1,000ft |
| | TVR2304S | 23AWG | CMR | 7.5 ± 0.2 mm | 1,000ft |
| | TVM2304S | 23AWG | CM | 7.5 ± 0.2 mm | 1,000ft |
| | TVL2304S | 23AWG | LSZH, FRLSZH | 7.5 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|
| (MHz) | Max. | Min. | Min. | Min. | Min. | Min. | Min. | Min. | Max. | Max. |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m |
| 100 | 19.14 | 44.30 | 42.30 | 25.17 | 23.17 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 |
| 250 | 31.07 | 38.33 | 36.33 | 7.26 | 5.26 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| 500 | 45.26 | 33.82 | 31.82 | N.A. | N.A. | 13.82 | 10.82 | 15.21 | 535.61 | 45.00 |

Applicable Standard

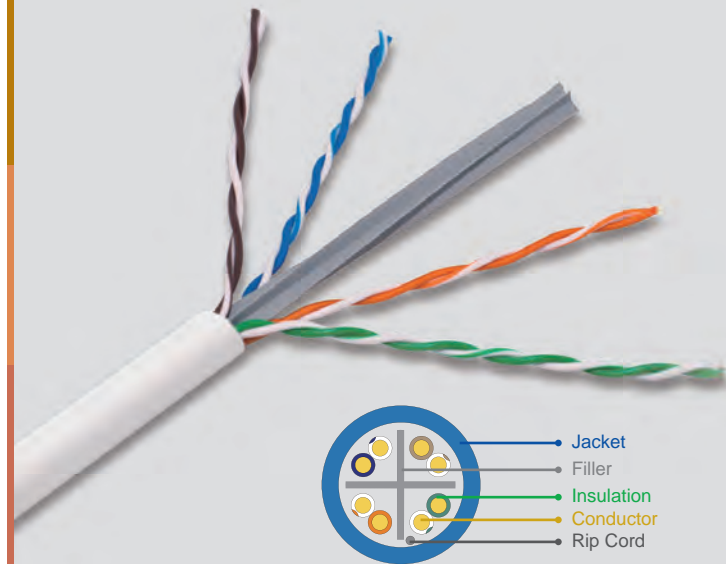
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C)(FRLSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 4%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 1000X[®] CATEGORY 6E 600MHz U/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 600 MHz.
- Reellex II carton and easy to pull out.
- Carton with one layer corrugated design providing sufficient strength and saving packaging space.

Product Description

- U/UTP, 23AWG / 24AWG solid bare copper, CAT.6E.
- With cross filler.
- With rip cord.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|-------------------|--------------|-----------|
| | | | RETARDANT RATING | | |
| Solid | TUP2304X | 23AWG | CMP | 5.7 ± 0.2 mm | 1,000ft |
| | TUP2304H | 23AWG | CMP | 5.6 ± 0.2 mm | 1,000ft |
| | TUR2304X | 23AWG | CMR | 6.0 ± 0.2 mm | 1,000ft |
| | TUM2304X | 23AWG | CM | 6.0 ± 0.2 mm | 1,000ft |
| | TUX2304X | 23AWG | CMX | 6.7 ± 0.2 mm | 1,000ft |
| | TUL2304X | 23AWG | LSZH, B2 ca, E ca | 6.0 ± 0.2 mm | 1,000ft |
| | TUR2404X | 24AWG | CMR | 5.8 ± 0.2 mm | 1,000ft |
| | TUM2404X | 24AWG | CM | 5.8 ± 0.2 mm | 1,000ft |
| | TUX2404X | 24AWG | CMX | 5.8 ± 0.2 mm | 1,000ft |
| | TUL2404X | 24AWG | LSZH, E ca | 5.8 ± 0.2 mm | 1,000ft |
| | TUL2404X | 24AWG | FRLSZH, E ca | 5.8 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|
| | Max. | Min. | Min. | Min. | Min. | Min. | Min. | Min. | Max. | Max. |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m |
| 100 | 19.80 | 44.30 | 42.30 | 24.50 | 22.50 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 |
| 250 | 32.85 | 38.33 | 36.33 | 5.48 | 3.48 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| 600 | 54.49 | 32.63 | 30.63 | N.A. | N.A. | 12.24 | 9.24 | 14.66 | 535.47 | 45.00 |

Applicable Standard

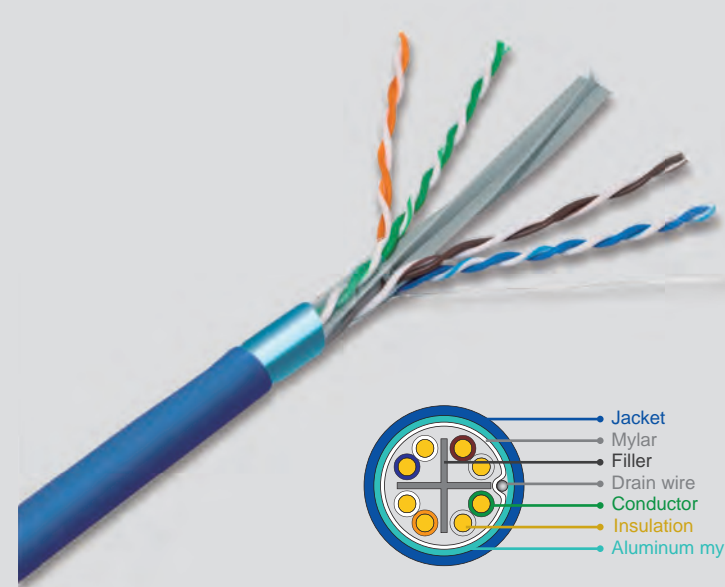
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C) (FRLSZH)
 - EN 50399 (B2 ca)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 1000X[®] CATEGORY 6E 400MHz F/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 400 MHz.

Product Description

- F/UTP, 23AWG solid bare copper, CAT.6E.
- With cross filler.
- Overall metal foil screen with drain wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded providing good protection from EMI noise.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|-------------------|--------------|-----------|
| | | | RETARDANT RATING | | |
| Solid | TSP2304X | 23AWG | CMP | 7.0 ± 0.2 mm | 1,000ft |
| | TSR2304X | 23AWG | CMR | 7.2 ± 0.2 mm | 1,000ft |
| | TSM2304X | 23AWG | CM | 7.2 ± 0.2 mm | 1,000ft |
| | TSX2304X | 23AWG | CMX | 7.5 ± 0.2 mm | 1,000ft |
| | TSX2304X | 23AWG | CMX outdoor | 7.4 ± 0.2 mm | 1,000ft |
| | TSL2304X | 23AWG | LSZH, B2 ca, E ca | 7.2 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|
| | Max. | Min. | Min. | Min. | Min. | Min. | Min. | Min. | Max. | Max. |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m |
| 100 | 19.80 | 44.30 | 42.30 | 24.50 | 22.50 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 |
| 250 | 32.85 | 38.33 | 36.33 | 5.48 | 3.48 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| 400 | 42.97 | 35.27 | 33.27 | N.A. | N.A. | 15.76 | 12.76 | 15.89 | 535.80 | 45.00 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - EN 50399 (B2 ca)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 1000X[®] CATEGORY 6E 400MHz F/UTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

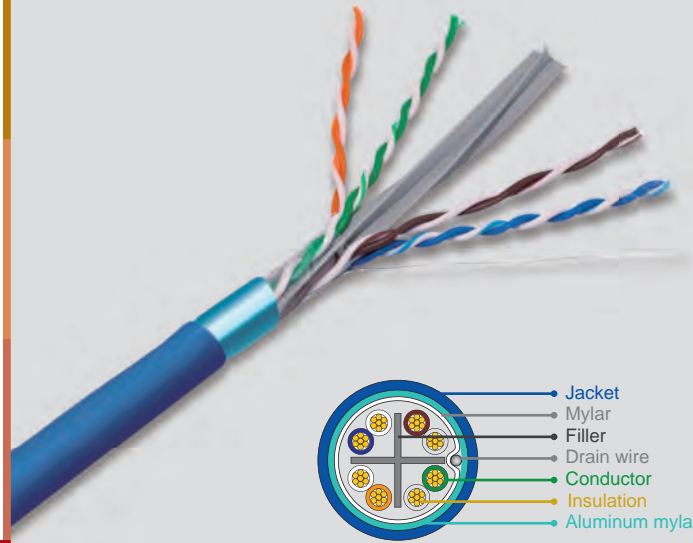
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 400 MHz.

Product Description

- F/UTP, 24AWG stranded bare copper, CAT.6E.
- Overall metal foil screen with drain wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded providing good protection from EMI noise.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|-----------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Stranded | TAR2404X | 24AWG | CMR | 6.9 ± 0.2 mm | 1,000ft |
| | TAM2404X | 24AWG | CM | 6.9 ± 0.2 mm | 1,000ft |
| | TAL2404X | 24AWG | LSZH | 6.9 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL Max. | NEXT Min. | PS.NEXT Min. | ACR Min. | PS.ACR Min. | ACRF Min. | PS.ACRF Min. | RL Min. | Propagation Delay Max. | Delay Skew Max. |
|-----------------|---------|-----------|--------------|----------|-------------|-----------|--------------|---------|------------------------|-----------------|
| 100 | 23.76 | 44.3 | 42.3 | 20.54 | 18.54 | 27.8 | 24.8 | 18.99 | 537.60 | 45.00 |
| 250 | 39.42 | 38.33 | 36.33 | N.A. | N.A. | 19.84 | 16.84 | 15.57 | 536.28 | 45.00 |
| 400 | 51.56 | 35.27 | 33.27 | N.A. | N.A. | 15.76 | 12.76 | 13.81 | 535.80 | 45.00 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 14.0 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 1000X[®] CATEGORY 6E 400MHz SF/UTP SOLID/STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

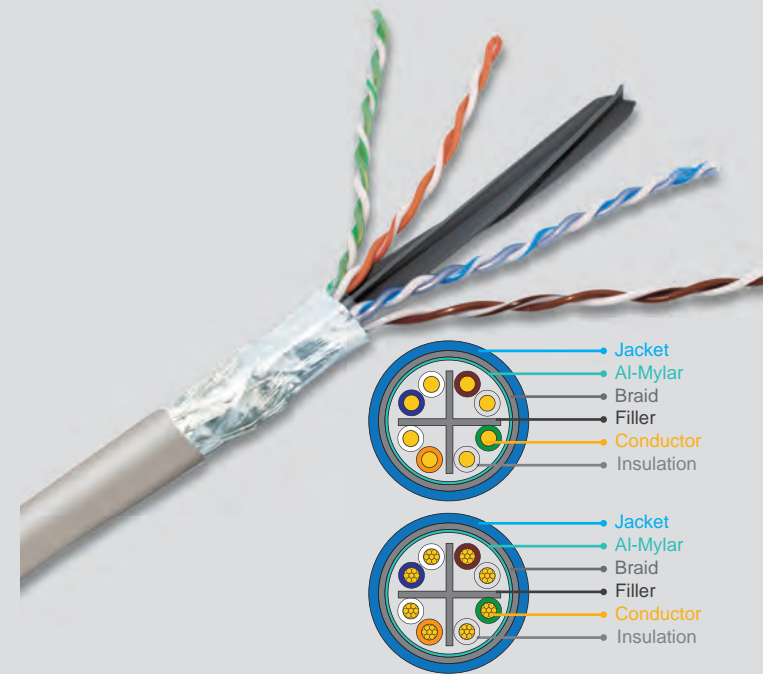
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 400 MHz.

Product Description

- SF/UTP, 23AWG solid bare copper, CAT.6E.
- SF/UTP, 23AWG stranded bare copper, CAT.6E.
- With cross filler.
- Overall metal foil screen .
- With braid wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded and braided providing good protection from EMI noise.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|------------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TCP2304X | 23AWG | CMP | 7.4 ± 0.2 mm | 1,000ft |
| | TCR2304X | 23AWG | CMR | 7.4 ± 0.2 mm | 1,000ft |
| | TCX2304X | 23AWG | CMX | 7.5 ± 0.2 mm | 1,000ft |
| | TCL2304X | 23AWG | LSZH, E ca | 7.4 ± 0.2 mm | 1,000ft |
| Stranded | TBM2304X | 23AWG | CM | 7.9 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| TYPE | Frequency (MHz) | IL Max. | NEXT Min. | PS.NEXT Min. | ACR Min. | PS.ACR Min. | ACRF Min. | PS.ACRF Min. | RL Min. | Propagation Delay Max. | Delay Skew Max. |
|----------|-----------------|---------|-----------|--------------|----------|-------------|-----------|--------------|---------|------------------------|-----------------|
| Solid | 100 | 19.8 | 44.3 | 42.3 | 24.5 | 22.5 | 27.8 | 24.8 | 20.11 | 537.60 | 45.00 |
| | 250 | 32.85 | 38.33 | 36.33 | 5.48 | 3.48 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| | 400 | 42.97 | 35.27 | 33.27 | N.A. | N.A. | 15.76 | 12.76 | 15.89 | 535.80 | 45.00 |
| Stranded | 100 | 23.8 | 44.3 | 42.3 | 20.5 | 18.5 | 27.8 | 24.8 | 19.0 | 537.60 | 45.00 |
| | 200 | 34.8 | 39.8 | 37.8 | 5.0 | 3.0 | 21.7 | 18.7 | 16.4 | 536.55 | 45.00 |
| | 250 | 39.4 | 38.3 | 36.3 | 0.0 | NA | 19.8 | 16.8 | 15.6 | 536.28 | 45.00 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1581 (CMX)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444 (23AWG)
 - CSA 22.2 NO.214 (23AWG)
 - IEC 61156-6 (Edition 3.1) (26AWG)
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 14.5 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 1000X[®] CATEGORY 6 400MHz U/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

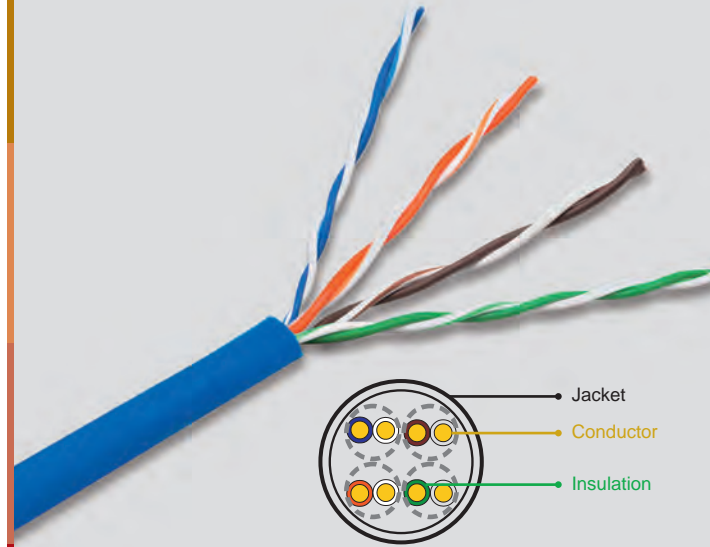
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 400 MHz.
- Reellex II carton and easy to pull out.
- Carton with one layer corrugated design providing sufficient strength and saving packaging space.

Product Description

- U/UTP, 23AWG / 28AWG solid bare copper, CAT.6.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



WONDERFUL 1000X[®] CATEGORY 6 400MHz U/UTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

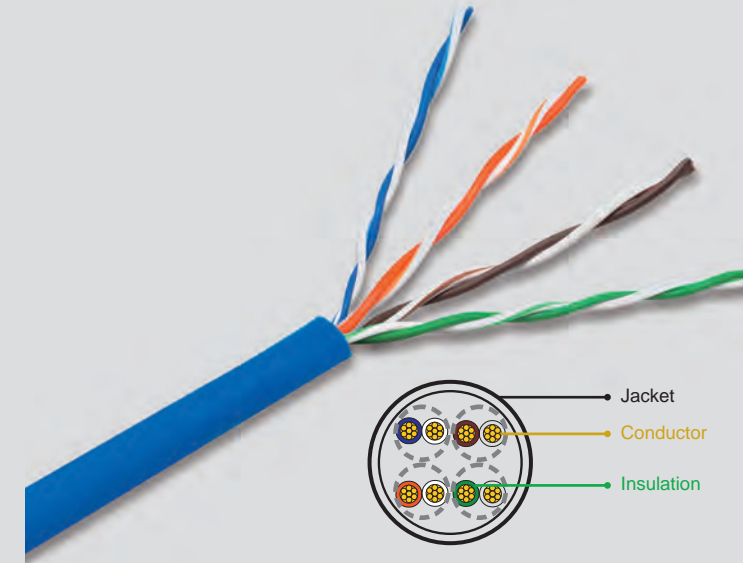
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 400 MHz
- Reellex II carton and easy to pull out.
- Carton with one layer corrugated design providing sufficient strength and saving packaging space.

Product Description

- U/UTP, 24AWG / 26AWG / 28AWG stranded bare copper, CAT.6.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|------------------|--------------|-----------|
| | | | RETARDANT RATING | | |
| Solid | TUP2304L | 23AWG | CMP | 5.1 ± 0.2 mm | 1,000ft |
| | TUP2304U | 23AWG | CMP | 5.1 ± 0.2 mm | 1,000ft |
| | TUR2304U | 23AWG | CMR | 5.4 ± 0.2 mm | 1,000ft |
| | TUM2304U | 23AWG | CM | 5.4 ± 0.2 mm | 1,000ft |
| | TUL2304U | 23AWG | LSZH | 5.4 ± 0.2 mm | 1,000ft |
| | TUM2804U | 28AWG | CM | 3.4 ± 0.2 mm | 1,000ft |
| | TUL2804U | 28AWG | LSZH, E ca | 3.6 ± 0.2 mm | 1,000ft |

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|------------------|--------------|-----------|
| | | | RETARDANT RATING | | |
| Stranded | TPM2404U | 24AWG | CM | 5.4 ± 0.2 mm | 1,000ft |
| | TPL2404U | 24AWG | LSZH | 5.4 ± 0.2 mm | 1,000ft |
| | TPP2604U | 26AWG | CMP | 4.4 ± 0.2 mm | 1,000ft |
| | TPR2604U | 26AWG | CMR | 4.8 ± 0.2 mm | 1,000ft |
| | TPM2804U | 28AWG | CM | 4.0 ± 0.2 mm | 1,000ft |
| | TPL2804U | 28AWG | LSZH | 4.0 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|
| | Max. | Min. | Min. | Min. | Min. | Min. | Min. | Min. | Max. | Max. |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m |
| 100 | 19.8 | 44.3 | 42.3 | 24.5 | 22.5 | 27.8 | 24.8 | 20.11 | 537.60 | 45.00 |
| 250 | 32.85 | 38.33 | 36.33 | 5.48 | 3.48 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| 400 | 42.97 | 35.27 | 33.27 | N.A. | N.A. | 15.76 | 12.76 | 15.89 | 535.80 | 45.00 |

Reference electrical characteristics

| Frequency (MHz) | IL | NEXT | PS.NEXT | RL | Propagation Delay | Delay Skew |
|-----------------|---------|---------|---------|---------|-------------------|------------|
| | Max. | Min. | Min. | Min. | Max. | Max. |
| | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m |
| 100 | N.A. | 45.30 | 42.30 | 18.99 | 537.60 | 45.00 |
| 250 | N.A. | 39.33 | 36.33 | 15.60 | 536.28 | 45.00 |
| 400 | N.A. | 39.33 | 36.33 | 15.60 | 536.28 | 45.00 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

Applicable Standard

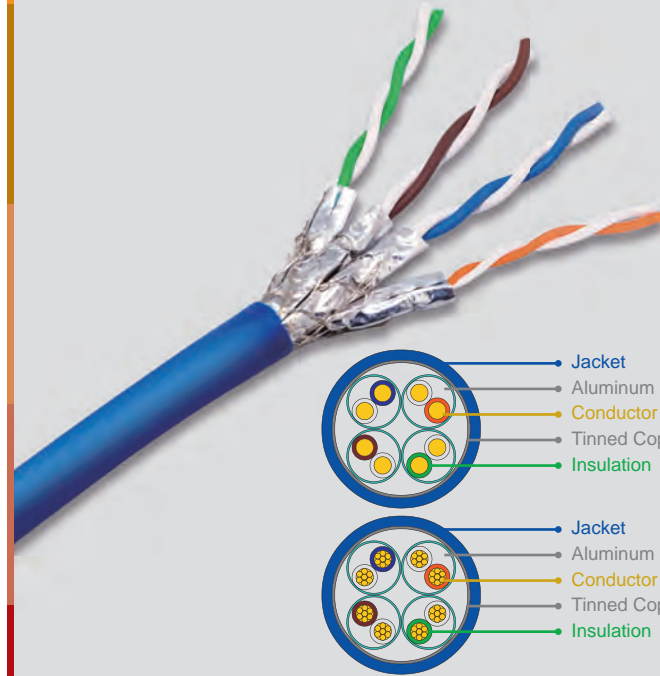
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 22.3 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

WONDERFUL 1000X[®] CATEGORY 6 550MHz S/FTP SOLID/STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 550 MH.

Product Description

- S/FTP, 23AWG solid bare copper, CAT.6.
- S/FTP, 26AWG stranded bare copper, CAT.6.
- Each pair twist with metal foil screen.
- With braid wire.

Application

- S/FTP, 23AWG Structure cabling for horizontal and building backbone cable.
- S/FTP, 26AWG Structure cabling for cross-connect cable.
- Transmission of digital and analogue for data, video and audio applications.
- Metal shielded and braided providing good protection from EMI noise.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|------------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TFM2304X | 23AWG | CM | 7.7 ± 0.2 mm | 1,000ft |
| | TFL2304X | 23AWG | LSZH, E ca | 7.7 ± 0.2 mm | 1,000ft |
| Stranded | TGL2604X | 26AWG | LSZH | 6.3 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| TYPE | Frequency (MHz) | IL (dB/100m) | NEXT (dB/100m) | PS.NEXT (dB/100m) | ACR (dB/100m) | PS.ACR (dB/100m) | ACRF (dB/100m) | PS.ACRF (dB/100m) | RL (dB/100m) | Propagation Delay (ns/100m) | Delay Skew (ns/100m) |
|----------|-----------------|--------------|----------------|-------------------|---------------|------------------|----------------|-------------------|--------------|-----------------------------|----------------------|
| Solid | 100 | 19.80 | 44.30 | 42.30 | 24.50 | 22.50 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 |
| | 250 | 32.85 | 38.33 | 36.33 | 5.48 | 3.48 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| | 400 | 42.97 | 35.27 | 33.27 | N.A. | N.A. | 15.76 | 12.76 | 15.89 | 535.80 | 45.00 |
| Stranded | 100 | 29.94 | 45.30 | 42.30 | 15.36 | 12.36 | 28.00 | 25.00 | 18.99 | 537.60 | 45.00 |
| | 250 | 49.68 | 39.33 | 36.33 | N.A. | 3.48 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| | 400 | 65.02 | 36.27 | 33.27 | N.A. | N.A. | 15.76 | 12.76 | 15.89 | 535.80 | 45.00 |

Applicable Standard

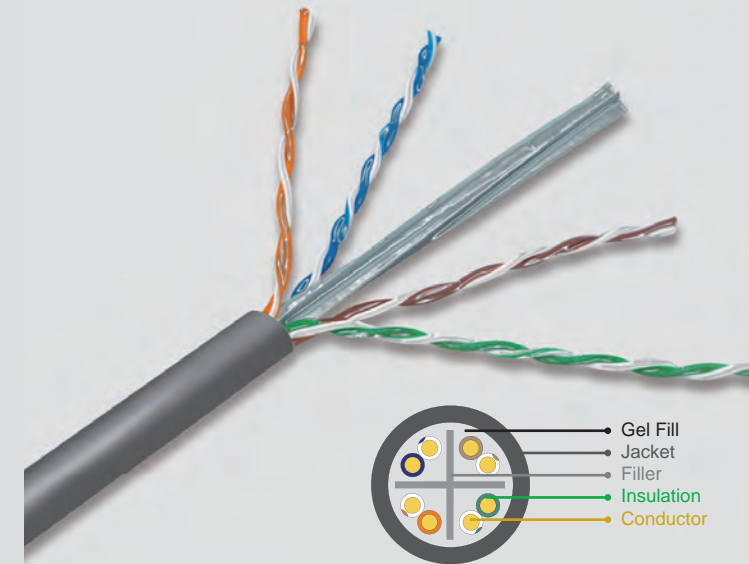
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
 - IEC 61156-6 (Edition 3.1)
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance:
 - Sold 9.38 /100m
 - Stranded 14.5 /100m
- Resistance unbalance: 5% (23AWG) / 4% (26AWG)
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

WONDERFUL 1000X[®] CATEGORY 6 DIRECT BURIAL 550MHz U/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 550 MHz.

Product Description

- U/UTP, 24AWG solid bare copper, CAT.6, CMX outdoor Direct Burial.
- With cross filler.
- Sunlight resistant, Waterproof, Pressure resistance.
- Gel Filling.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 / 1G Base-T IEEE 802.3 i / u / ab.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|-----------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TUX2404XB | 24AWG | CMX | 7.2 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (dB/100m) | NEXT (dB/100m) | PS.NEXT (dB/100m) | ACR (dB/100m) | PS.ACR (dB/100m) | ACRF (dB/100m) | PS.ACRF (dB/100m) | RL (dB/100m) | Propagation Delay (ns/100m) | Delay Skew (ns/100m) |
|-----------------|--------------|----------------|-------------------|---------------|------------------|----------------|-------------------|--------------|-----------------------------|----------------------|
| 100 | 19.80 | 44.30 | 42.30 | 24.50 | 22.50 | 27.80 | 24.80 | 20.11 | 537.60 | 45.00 |
| 250 | 32.85 | 38.33 | 36.33 | 5.48 | 3.48 | 19.84 | 16.84 | 17.32 | 536.28 | 45.00 |
| 550 | 51.76 | 33.19 | 31.19 | N.A. | N.A. | 12.99 | 9.99 | 14.92 | 535.54 | 45.00 |

Applicable Standard

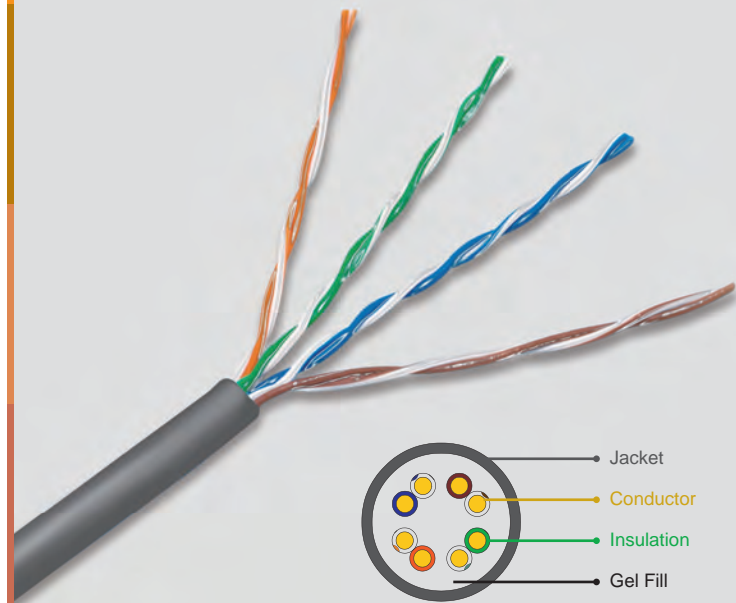
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - UL 1581 (CMX)
- Material and Construction
 - UL 444
 - UL 13 (Sec.35 & 36)
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 350[®] CATEGORY 5E DIRECT BURIAL 350MHz U/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- sweep frequency up to 350 MHz.

Product Description

- U/UTP, 24AWG solid bare copper, CAT.5E, CMX outdoor Direct Burial.
- Sunlight resistant, Waterproof, Pressure resistance.
- Gel Filling.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|-------|-------------|-------|------------------------|--------------------|------------------|
| Solid | TUX2404PB | 24AWG | CMX | 5.8 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL Max. dB/100m | NEXT Min. dB/100m | PS.NEXT Min. dB/100m | ACR Min. dB/100m | PS.ACR Min. dB/100m | ACRF Min. dB/100m | PS.ACRF Min. dB/100m | RL Min. dB/100m | Propagation Delay Max. ns/100m | Delay Skew Max. ns/100m |
|-----------------|-----------------|-------------------|----------------------|------------------|---------------------|-------------------|----------------------|-----------------|--------------------------------|-------------------------|
| 100 | 21.98 | 35.30 | 32.30 | 13.33 | 10.33 | 23.80 | 20.80 | 20.11 | 537.60 | 45.00 |
| 350 | 44.85 | 27.14 | 24.14 | N.A. | N.A. | 12.92 | 9.92 | 16.30 | 535.92 | 45.00 |

Applicable Standard

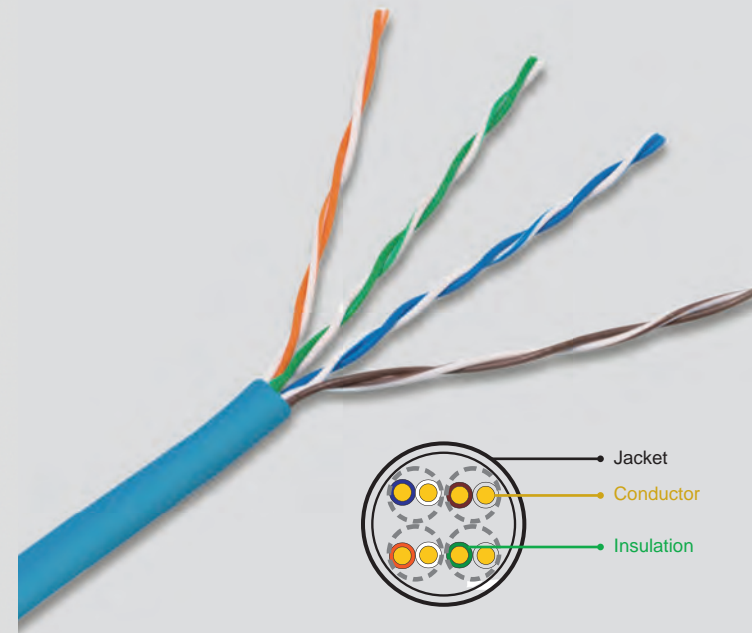
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - UL 1581 (CMX)
- Material and Construction
 - UL 444
 - UL 13 (Sec.35 & 36)
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 350[®] CATEGORY 5E 350MHz U/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- sweep frequency up to 350 MHz.
- Reelex II carton and easy to pull out.
- Carton with one layer corrugated design providing sufficient strength and saving packaging space.

Product Description

- U/UTP, 22AWG / 24AWG solid bare copper, CAT.5E.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|-------|--------------------------|-------|------------------------|--------------------|------------------|
| Solid | TUP2204P | 22AWG | CMP | 5.3 ± 0.2 mm | 1,000ft |
| | TUR2204P | 22AWG | CMR | 5.7 ± 0.2 mm | 1,000ft |
| | TUM2204P | 22AWG | CM | 5.7 ± 0.2 mm | 1,000ft |
| | TUL2204P | 22AWG | LSOH | 5.8 ± 0.2 mm | 1,000ft |
| | TUP2404K | 24AWG | CMP | 4.5 ± 0.2 mm | 1,000ft |
| | TUP2404P | 24AWG | CMP | 4.5 ± 0.2 mm | 1,000ft |
| | TUR2404P | 24AWG | CMR | 4.8 ± 0.2 mm | 1,000ft |
| | TUM2404P | 24AWG | CM | 4.8 ± 0.2 mm | 1,000ft |
| | TUX2404P | 24AWG | CMX | 4.9 ± 0.2 mm | 1,000ft |
| | TUX2404P(water-blocking) | 24AWG | CMX | 5.7 ± 0.2 mm | 1,000ft |
| | TUL2404P | 24AWG | FRLSZH | 4.9 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL Max. dB/100m | NEXT Min. dB/100m | PS.NEXT Min. dB/100m | ACR Min. dB/100m | PS.ACR Min. dB/100m | ACRF Min. dB/100m | PS.ACRF Min. dB/100m | RL Min. dB/100m | Propagation Delay Max. ns/100m | Delay Skew Max. ns/100m |
|-----------------|-----------------|-------------------|----------------------|------------------|---------------------|-------------------|----------------------|-----------------|--------------------------------|-------------------------|
| 100 | 21.98 | 35.30 | 32.30 | 13.33 | 12.33 | 23.80 | 22.80 | 20.11 | 537.60 | 45.00 |
| 350 | 44.85 | 27.14 | 24.14 | N.A. | N.A. | 12.92 | 9.92 | 16.30 | 535.92 | 45.00 |

Applicable Standard

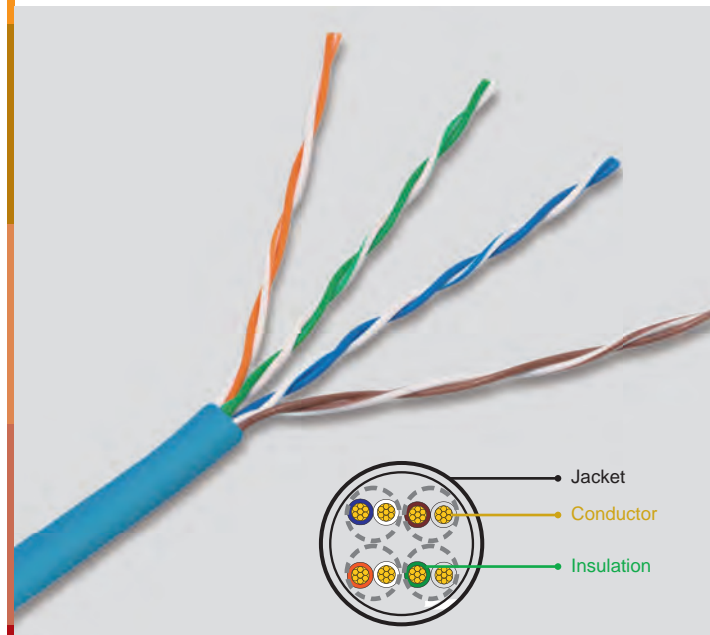
- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - IEC 60332-3-24(C) (FRLSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 350[®] CATEGORY 5E 350MHz U/UTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 350 MHz.
- Reellex II carton and easy to pull out.
- Carton with one layer corrugated design providing sufficient strength and saving packaging space.

Product Description

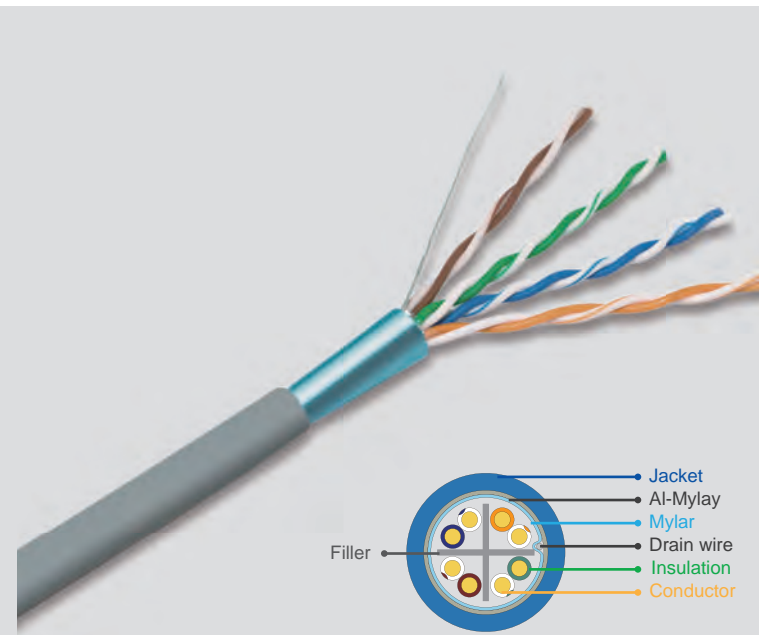
- U/UTP, 24AWG / 26AWG / 28AWG stranded bare copper, CAT.5E.

Application

- Structure cabling for patch cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

WONDERFUL 350[®] CATEGORY 5E 350MHz F/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 350 MHz.

Product Description

- F/UTP, 24AWG solid bare copper, CAT.5E.
- Overall metal foil screen with drain wire.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- Overall metal shielded providing good protection from EMI noise.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|----------|-------------|-------|------------------------|--------------------|------------------|
| Stranded | TPM2404P | 24AWG | CM | 5.3 ± 0.2 mm | 1,000ft |
| | TPL2404P | 24AWG | LSZH, E ca | 5.3 ± 0.2 mm | 1,000ft |
| | TPP2604P | 26AWG | CMP | 4.3 ± 0.2 mm | 1,000ft |
| | TPR2604P | 26AWG | CMR | 4.7 ± 0.2 mm | 1,000ft |
| | TPM2604P | 26AWG | CM | 4.7 ± 0.2 mm | 1,000ft |
| | TPM2804P | 28AWG | CM | 3.9 ± 0.2 mm | 1,000ft |
| | TPL2804P | 28AWG | LSZH | 3.9 ± 0.2 mm | 1,000ft |

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME RETARDANT RATING | DIAMETER (mm/inch) | PACKAGING Put-Up |
|-------|-------------|-------|------------------------|--------------------|------------------|
| Solid | TSP2404P | 24AWG | CMP | 5.8 ± 0.2 mm | 1,000ft |
| | TSR2404P | 24AWG | CMR | 6.1 ± 0.2 mm | 1,000ft |
| | TSM2404P | 24AWG | CM | 6.1 ± 0.2 mm | 1,000ft |
| | TSX2404P | 24AWG | CMX | 6.8 ± 0.2 mm | 1,000ft |
| | TSX2404E | 24AWG | CMX | 6.2 ± 0.2 mm | 1,000ft |
| | TSL2404P | 24AWG | LSZH, E ca | 6.1 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL Max. dB/100m | NEXT Min. dB/100m | PS.NEXT Min. dB/100m | ACR Min. dB/100m | PS.ACR Min. dB/100m | ACRF Min. dB/100m | PS.ACRF Min. dB/100m | RL Min. dB/100m | Propagation Delay Max. ns/100m | Delay Skew Max. ns/100m |
|-----------------|-----------------|-------------------|----------------------|------------------|---------------------|-------------------|----------------------|-----------------|--------------------------------|-------------------------|
| 100 | 26.37 | 35.30 | 32.30 | 8.93 | 5.93 | 23.80 | 20.80 | 18.99 | 537.60 | 45.00 |
| 350 | 53.82 | 27.14 | 24.14 | N.A. | N.A. | 12.92 | 9.92 | 14.31 | 535.92 | 45.00 |

Reference electrical characteristics

| Frequency (MHz) | IL Max. dB/100m | NEXT Min. dB/100m | PS.NEXT Min. dB/100m | ACR Min. dB/100m | PS.ACR Min. dB/100m | ACRF Min. dB/100m | PS.ACRF Min. dB/100m | RL Min. dB/100m | Propagation Delay Max. ns/100m | Delay Skew Max. ns/100m |
|-----------------|-----------------|-------------------|----------------------|------------------|---------------------|-------------------|----------------------|-----------------|--------------------------------|-------------------------|
| 100 | 21.98 | 35.30 | 32.30 | 13.33 | 10.33 | 23.80 | 20.80 | 20.11 | 537.60 | 45.00 |
| 350 | 44.85 | 27.14 | 24.14 | N.A. | N.A. | 12.92 | 9.92 | 16.30 | 535.92 | 45.00 |

Applicable Standard

- Electrical Transmission
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - IEC 61156-6 (Edition 3.1)
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 22.3 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 160 pF/100m

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
 - EN 60332-1-2 (E ca)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 350[®] CATEGORY 5E 350MHz F/UTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

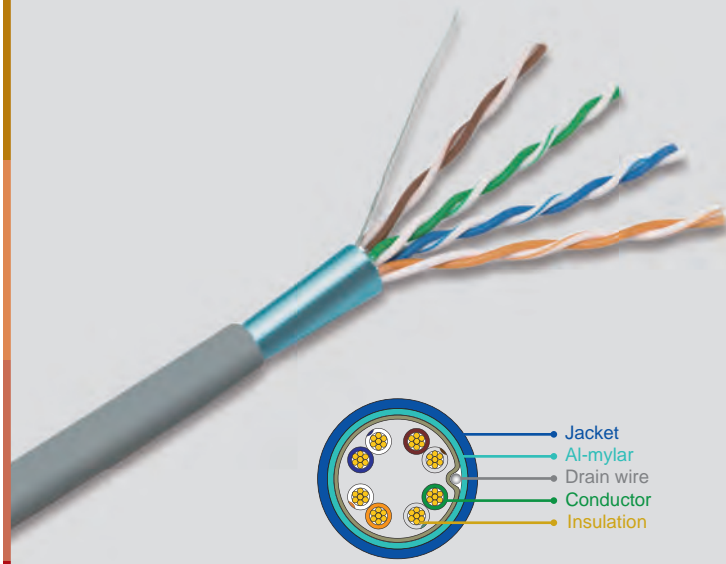
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 350 MHz.

Product Description

- F/UTP, 24AWG / 26AWG stranded bare copper, CAT.5E.
- Overall metal foil screen with drain wire.

Application

- Transmission of digital and analogue for data, video and audio applications.
- Overall metal shielded providing good protection from EMI noise.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / FDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



WONDERFUL 350[®] CATEGORY 5E 350MHz SF/UTP SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

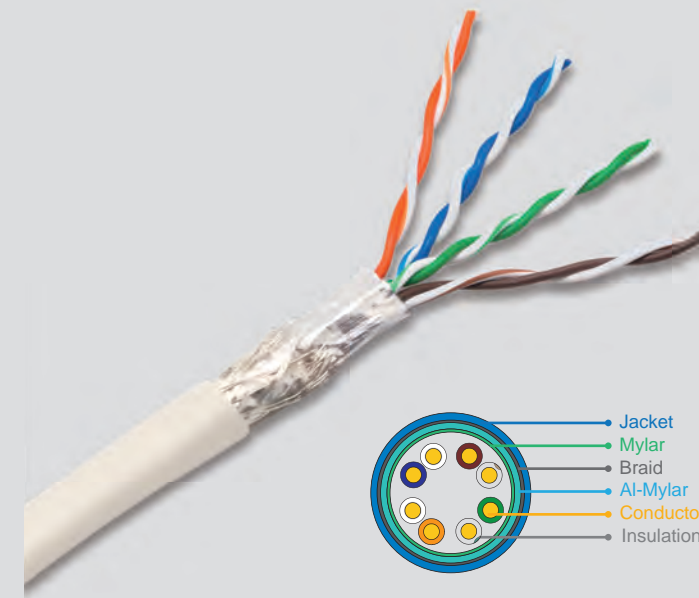
- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 350 MHz.

Product Description

- SF/UTP, 24AWG solid bare copper, CAT.5E.

Application

- Transmission of digital and analogue for data, video and audio applications.
- Overall metal shielded and braided providing good protection from EMI noise.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.



Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|-----------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Stranded | TAM2404P | 24AWG | CM | 6.0 ± 0.2 mm | 1,000ft |
| | TAL2404P | 24AWG | LSZH | 6.0 ± 0.2 mm | 1,000ft |
| | TAP2604P | 26AWG | CMP | 5.2 ± 0.2 mm | 1,000ft |
| | TAR2604P | 26AWG | CMR | 5.4 ± 0.2 mm | 1,000ft |
| | TAM2604P | 26AWG | CM | 5.4 ± 0.2 mm | 1,000ft |

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-------|-----------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Solid | TCX2404P | 24AWG | CMX | 6.5 ± 0.2 mm | 1,000ft |
| | TCM2404P | 24AWG | CM | 6.5 ± 0.2 mm | 1,000ft |
| | TCP2404P | 24AWG | CMP | 6.5 ± 0.2 mm | 1,000ft |
| | TCL2404P | 24AWG | LSZH | 6.6 ± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency (MHz) | IL (Max. dB/100m) | NEXT (Min. dB/100m) | PS.NEXT (Min. dB/100m) | ACR (Min. dB/100m) | PS.ACR (Min. dB/100m) | ACRF (Min. dB/100m) | PS.ACRF (Min. dB/100m) | RL (Min. dB/100m) | Propagation Delay (Max. ns/100m) | Delay Skew (Max. ns/100m) |
|-----------------|-------------------|---------------------|------------------------|--------------------|-----------------------|---------------------|------------------------|-------------------|----------------------------------|---------------------------|
| 100 | 26.37 | 35.30 | 32.30 | 8.93 | 5.93 | 23.80 | 20.80 | 18.99 | 537.60 | 45.00 |
| 350 | 53.82 | 27.14 | 24.14 | N.A. | N.A. | 12.92 | 9.92 | 14.31 | 535.92 | 45.00 |

Reference electrical characteristics

| Frequency (MHz) | IL (Max. dB/100m) | NEXT (Min. dB/100m) | PS.NEXT (Min. dB/100m) | ACR (Min. dB/100m) | PS.ACR (Min. dB/100m) | ACRF (Min. dB/100m) | PS.ACRF (Min. dB/100m) | RL (Min. dB/100m) | Propagation Delay (Max. ns/100m) | Delay Skew (Max. ns/100m) |
|-----------------|-------------------|---------------------|------------------------|--------------------|-----------------------|---------------------|------------------------|-------------------|----------------------------------|---------------------------|
| 100 | 21.98 | 35.30 | 32.30 | 13.33 | 10.33 | 23.80 | 20.80 | 20.11 | 537.60 | 45.00 |
| 350 | 44.85 | 27.14 | 24.14 | N.A. | N.A. | 12.92 | 9.92 | 16.30 | 535.92 | 45.00 |

Applicable Standard

- Electrical Transmission
 - ANSI/TIA-568-C.2 (2009)
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-6 (Edition 3.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 14.5 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

Applicable Standard

- Electrical Transmission
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - NFPA 262 (CMP)
 - UL 1685 (CM)
 - UL 1581 (CMX)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

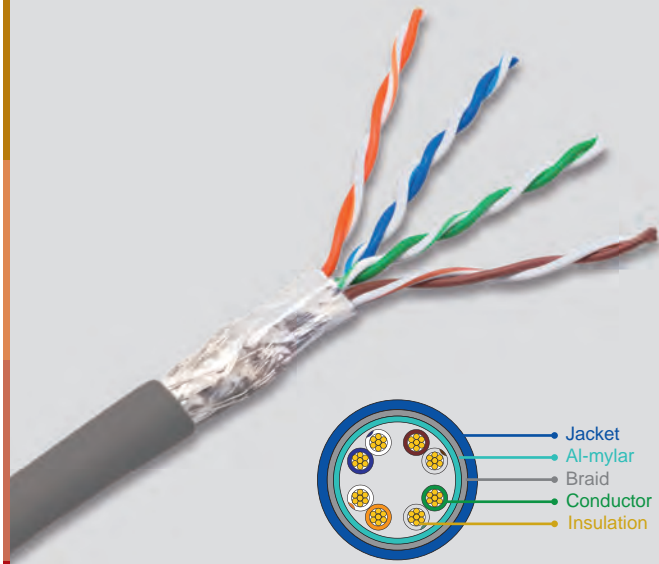
Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ·km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 350[®] CATEGORY 5E

350MHz SF/UTP STRANDED CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 350 MHz.

Product Description

- SF/UTP, 24AWG / 26AWG stranded bare copper, CAT.5E.

Application

- Transmission of digital and analogue for data, video and audio applications.
- Overall metal shielded and braided providing good protection from EMI noise.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | AWG | FLAME | DIAMETER | PACKAGING |
|----------|-------------|-------|-----------|--------------|-----------|
| | | | RETARDANT | (mm/inch) | Put-Up |
| | | | RATING | | |
| Stranded | TBR2404P | 24AWG | CMR | 5.8 ± 0.2 mm | 1,000ft |
| | TBM2604E | 26AWG | CM | 5.2± 0.2 mm | 1,000ft |
| | TBL2604E | 26AWG | LSZH | 5.2± 0.2 mm | 1,000ft |

Reference electrical characteristics

| Frequency | IL | NEXT | PS.NEXT | ACR | PS.ACR | ACRF | PS.ACRF | RL | Propagation Delay | Delay Skew |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------|------------|
| (MHz) | Max. | Min. | Min. | Min. | Min. | Min. | Min. | Min. | Max. | Max. |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m | ns/100m | ns/100m |
| 100 | 26.37 | 35.30 | 32.30 | 8.93 | 5.93 | 23.80 | 20.80 | 18.99 | 537.60 | 45.00 |
| 350 | 53.82 | 27.14 | 24.14 | N.A. | N.A. | 12.92 | 9.92 | 14.31 | 535.92 | 45.00 |

Applicable Standard

- Electrical Transmission
 - ISO/IEC 11801 (Edition 2.2)
 - IEC 61156-5 (Edition 2.1)
- Flame Test
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

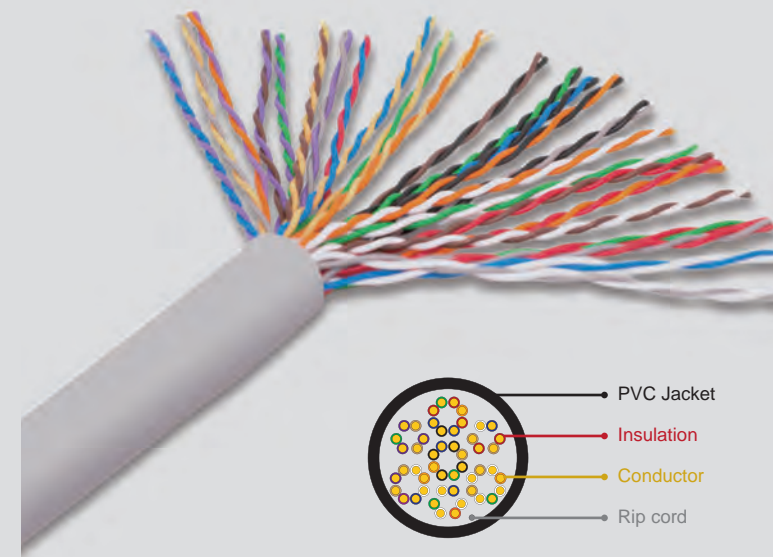
Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 14.5 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

WONDERFUL 100[®] CATEGORY 5

100MHz U/UTP 25PAIR SOLID CABLE

Wonderful is a leader in the design and manufacture of cable for communication networks



Product Feature

- High performance of transmission.
- High quality of safety property.
- Sweep frequency up to 100 MHz.

Product Description

- UTP, 24AWG / 25pair solid bare copper, CAT.5.

Application

- Structure cabling for horizontal and building backbone cable.
- Transmission of digital and analogue for data, video and audio applications.
- 10 / 100 Base-T IEEE 802.3 i / u.
- CDDI / ATM / Token Ring.
- IEEE 802.3af (PoE) / IEEE 802.3at (PoE+)
- Limit Power -LP UL POE Safety standard.
- HDBaseT 2.0 standard.
- EtherCAT Industrial standard.

Cable data

| TYPE | PRODUCT NO. | FLAME | DIAMETER | PACKAGING |
|-------|-------------|-----------|---------------|-----------------|
| | | RETARDANT | (mm/inch) | Put-Up |
| | | RATING | | |
| Solid | TUR2425N | CMR | 13.0 ± 0.3 mm | 1,000ft 25 Pair |
| | TUM2425N | CM | 13.0 ± 0.3 mm | 1,000ft 25 Pair |
| | TUL2425N | LSZH | 13.0 ± 0.3 mm | 1,000ft 25 Pair |

Reference electrical characteristics

| Frequency | IL | NEXT | ACR | ACRF | SRL |
|-----------|---------|---------|---------|---------|---------|
| (MHz) | Max. | Min. | Min. | Min. | Min. |
| | dB/100m | dB/100m | dB/100m | dB/100m | dB/100m |
| 100 | 22.0 | 32.3 | 10.3 | 20.8 | 16.0 |

Applicable Standard

- Electrical Transmission
 - TIA-568-C.2
- Flame Test
 - UL 1666 (CMR)
 - UL 1685 (CM)
 - IEC 60332-1 (LSZH)
- Material and Construction
 - UL 444
 - CSA 22.2 NO.214
- EU Directive 2011/65/EU (RoHS2)
- EU Directive 2006/95/EC (LVD)
- CE compliance date: 2010.01.01

Physical & Electrical Characteristics (at 20°C)

- Temperature & voltage rating: 75°C
- Spark test: 2.5 KV DC
- AC leakage current through overall jacket: 10mA (1.5KV AC)
- Cable cold bend: -20°C for 4 hr
- Conductor DC resistance: 9.38 /100m
- Resistance unbalance: 5%
- Dielectric strength: 1.5 KV ac for 2 s
- Insulation resistance: ≥ 5000 MΩ•km
- Mutual capacitance: 5.6 nF/100m
- Capacitance unbalance pair-to-ground: 330 pF/100m

Wonderful Product Packaging

Wonderful is a leader in the design and manufacture of cable for communication networks

Wonderful LAN cable offers variable customized package for customer choices.

•Each pallet is well-packed and delivered with cellophane packing Tape.

Upper Pallet

Lower Pallet

| Configuration | Quantity | HQ |
|---------------|----------|----|
| BSD1 | 39 | 39 |
| BSD2 | 35 | 39 |
| BSD3/4 | 24 | 36 |
| BSD5/6 | 20 | 30 |

Dimensions: W, L, H

•Each pallet is well-packed and delivered with cellophane packing Tape.

Upper Pallet

Lower Pallet

| Configuration | Quantity | HQ |
|---------------|----------|----|
| RSD1 | 36 | 48 |
| RSD2 | 27 | 36 |
| RSD3 | 15 | 20 |
| RSD4 | 12 | 16 |

Dimensions: D, H, h, d

Order Information

| Example | T | U | P | 23 | 04 | S | XX | 1 | 9 | I | 09 | 00305 |
|-------------------------|------------|---|---|-------|-----|--------------|----------|---------|-------------|------------|--------------------|-------|
| | Cable Type | | | Pairs | AWG | Flame rating | Category | Packing | Color Index | Color code | Length per unit(m) | |
| U:U/UTP SOLID | | | | | | | | | | | | |
| P:U/UTP STRANDED cable | | | | | | | | | | | | |
| F:S/FTP SOLID | | | | | | | E,P:5E | 2:BOX | | A:BLACK | | |
| G:S/FTP STRANDED cable | | | | | | | X:6.6E | | | C:RED | | |
| C:SF/UTP SOLID | | | | | | P:CMR | U,L:6 | | | D:ORANGE | | |
| B:SF/UTP STRANDED cable | | | | | | R:CMR | S:6A | | | E:YELLOW | | |
| S:F/UTP SOLID | | | | | | M:CM | A:7 | | | F:GREEN | | |
| A:F/UTP STRANDED cable | | | | | | X:CMX | T:7A | | | G:BLUE | | |
| H:F/FTP SOLID | | | | | | L:LSZH | Z:8 | | | H:PURPLE | | |
| | | | | | | | | | | I:WHITE | | |
| | | | | | | | | | | M:GRAY | | |

Please note that product specifications and features are for reference only and are subject to change without notice.

Wonderful Fiber Cable Products

Wonderful is a leader in the design and manufacture of cable for communication networks

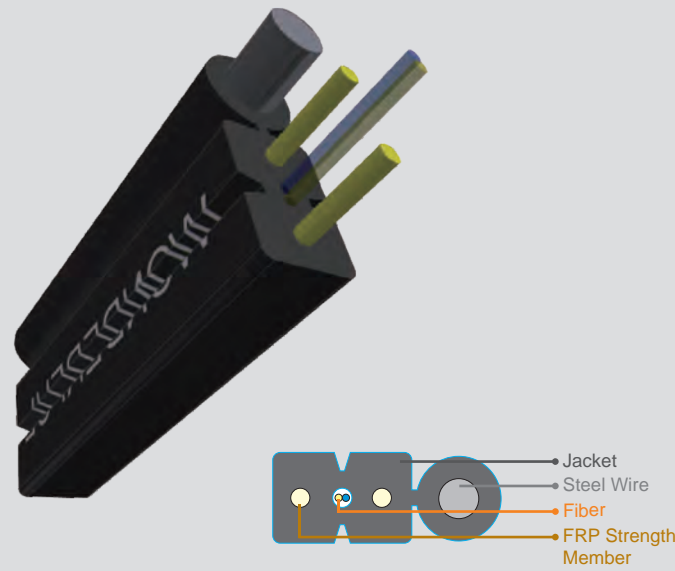
| TBF (Tight Buffer Cable) | | Sectional Drawing | Mini(Micro) Bundle for MTP MPO Cable | | Sectional Drawing |
|--------------------------|--|-------------------|---------------------------------------|---|-------------------|
| Part No. | 0.9 S | | Part No. | L | |
| Product | Simplex 900um | | Product | Mini Bundle Cable | |
| Cores | 1 | | Cores | 8/12 | |
| Jack Diameter (mm) | 0.9 | | Jack Diameter (mm) | 3.0 | |
| UL1651 | OFNP/OFNR/OFN (1-12C) | | UL1651 | OFNP/OFNR/OFN (1-12C) | |
| TBF (Tight Buffer Cable) | | Sectional Drawing | Indoor/outdoor Cable | | Sectional Drawing |
| Part No. | S | | Part No. | DW | |
| Product | Simplex Round Cable | | Product | Gel-Free Loose Tube Cable | |
| Cores | 1 | | Cores | 4/6/8/12 | |
| Jack Diameter (mm) | 1.6/2.0/3.0 | | Jack Diameter (mm) | 6.50 mm | |
| UL1651 | OFNP/OFNR/OFN (1-12C) | | UL1651 | OFNP/OFNR/OFN (1-12C) | |
| TBF (Tight Buffer Cable) | | Sectional Drawing | Indoor/outdoor Cable | | Sectional Drawing |
| Part No. | T | | Part No. | SMF-28E | |
| Product | Distribution Cable | | Product | Gel-Filled Multi-Loose Tube Cable 4+1 T | |
| Cores | 2 | | Cores | 48C | |
| Jack Diameter (mm) | 3.5/4.0/5.0/6.0 | | Jack Diameter (mm) | 10.2 mm | |
| UL1651 | OFNP/OFNR/OFN (1-12C) | | UL1651 | OFNP/OFNR/OFN (1-12C) | |
| TBF (Tight Buffer Cable) | | Sectional Drawing | Indoor/outdoor Cable | | Sectional Drawing |
| Part No. | D | | Part No. | 2C A2 | |
| Product | Duplex Zipcord Cable | | Product | HYBRID +U-UTP #23 Solid CAT 6 LSZH | |
| Cores | 2 | | Cores | * | |
| Jack Diameter (mm) | 1.6 x 3.3 2.0 x 4.1 | | Jack Diameter (mm) | 7.4 mm | |
| UL1651 | OFNP/OFNR/OFN (1-12C) | | UL1651 | OFNP/OFNR/OFN (1-12C) | |
| TBF (Tight Buffer Cable) | | Sectional Drawing | Indoor/outdoor Cable | | Sectional Drawing |
| Part No. | B | | Part No. | WW | |
| Product | Duplex Flat Cable | | Product | Gel-Filled Loose Tube Cable | |
| Cores | 2 | | Cores | 4/6/8/12 | |
| Jack Diameter (mm) | 3.0 x 5.0 | | Jack Diameter (mm) | 6.5-6.7 | |
| UL1651 | OFNP/OFNR/OFN (1-12C) | | UL1651 | OFNP/OFNR/OFN (1-12C) | |
| Drop Cable | | Sectional Drawing | Indoor/outdoor Cable | | Sectional Drawing |
| Part No. | E | | Part No. | WW | |
| Product | Self Support 3-Circle PE Indoor-Outdoor Drop Cable | | Product | Gel-Filled Loose Tube Cable | |
| Cores | 2 | | Cores | 4/6/8/12 | |
| Jack Diameter (mm) | 1.0 | | Jack Diameter (mm) | 8.0 | |
| Drop Cable | | Sectional Drawing | Indoor/outdoor Cable | | Sectional Drawing |
| Part No. | E | | Part No. | WW | |
| Product | Self Support Drop Cable | | Product | Gel-Filled Loose Tube Cable-Mini Tube | |
| Cores | 2 | | Cores | 4/6/8/12 | |
| Jack Diameter (mm) | 2.2 x 5.3 | | Jack Diameter (mm) | 1.0 | |
| Drop Cable | | Sectional Drawing | Indoor/outdoor Cable | | Sectional Drawing |
| Part No. | F | | Part No. | DV | |
| Product | Drop Cable | | Product | Gel-Free Dual Loose Tube Cable | |
| Cores | 2 | | Cores | 16/24 | |
| Jack Diameter (mm) | 2.0 x 3.1 | | Jack Diameter (mm) | 8.00 | |

Self- supporting Drop Cable

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Duplex Zip Interconnect Cable

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Applications

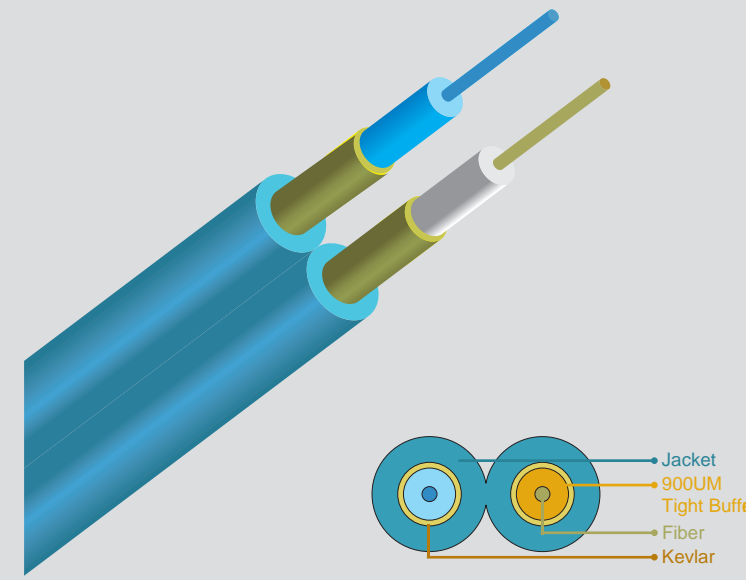
- FTTX, Outdoor and aerial use.
- Suitable for introducing cables in building.
- Suitable for standard single ferrule mechanical connectors (LC, SC, ST, etc.) via a furcation kit.
- IEEE 802.3z 10GBase, 40GBase, 100GBase Ethernet and legacy speeds.
- FDDI / ATM

Features

- High performance of bending insensitive.
- Self-supporting steel wire make aerial installation more convenient.
- Easily strip of jacket to expose fiber core.
- Customized service fit various requirements from clients.

Customization

- Fiber Type: G.652.D \ G.657.A1 \ G.657.A2 \ OM2 \ OM3 \ OM4
- Dimension: As specification or per client's request.
- Delivery Length: 1km, 2km or per client's request.



Applications

- Indoor use.
- Suitable for pigtails, patch cords and interconnection between optical instruments.
- Suitable for standard single ferrule mechanical connectors (LC, SC, ST, etc.) via a furcation kit.
- IEEE 802.3z 10GBase, 40GBase, 100GBase Ethernet and legacy speeds.
- FDDI / ATM

Features

- High performance of bending insensitive.
- Customized service fit various requirements from clients.

Customization

- Fiber Type: G.652.D \ G.657.A1 \ G.657.A2 \ OM2 \ OM3 \ OM4
- Dimension: As specification or per client's request.
- Delivery Length: 1km, 2km or per client's request.

Specifications

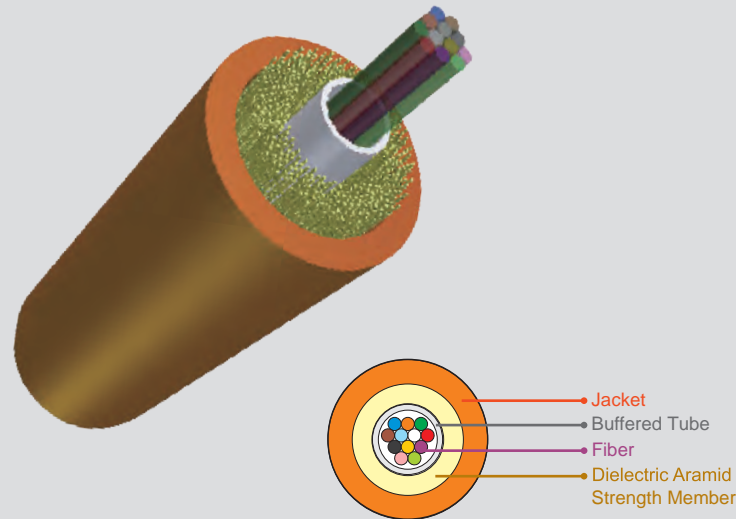
| Fiber Core Count | 2 | 4 |
|-----------------------------------|---|------|
| Fiber Core Color | Blue, Yellow, Green, Black | |
| FRP Strength Members | E-Glass FRP 0.4 mm Tensile Strength 140 Kg/mm2 | |
| Self Support Wire | Zinc Steel 1.2 mm Tensile Strength 125 Kg/mm2 | |
| Jacket Material / Flame Retardant | LSZH / IEC 60332-1-2 LSFRZH / IEC 60332-3-24 | |
| Jacket Color | Black | |
| Jacket Diameter (mm) | 5.3 x 2.0 | |
| Jacket Thickness (mm) | 0.4~0.8 | |
| Cable Weight (Kg/Km) | 19.4 | 19.5 |
| Tensile Loading (Short Term) | 600 N | |
| Tensile Loading (Long Term) | 300 N | |
| Crush Load (Short Term) | 2000 N/100mm | |
| Crush Load (Long Term) | 1000 N/100mm | |
| Bend Radius (Short Term) | 20 Times of Cable Diameter | |
| Bend Radius (Long Term) | 10 Times of Cable Diameter | |

Specifications

| Fiber Core Count | 2 | | | | | |
|-----------------------------------|---|---------|---------|---------|---------|---------|
| Fiber Core Color | Blue & Yellow or Per Client's Request | | | | | |
| Tight Buffer Diameter (mm) | 0.6 | 0.6 | 0.9 | 0.9 | 0.9 | 0.9 |
| Jacket Material / Flame Retardant | PVC / OFN \ FRPVC / OFNR \ FRLSPVC / OFNP LSZH / IEC 60332-1-2 \ LSFRZH / IEC 60332-3-24 | | | | | |
| Jacket Color | Standard Colors or Per Client's Request. | | | | | |
| Jacket Diameter (mm) | 1.6x3.3 | 1.8x3.7 | 2.0x4.1 | 2.4x4.9 | 2.8x5.7 | 3.0x6.1 |
| Jacket Thickness (mm) | 0.4 | 0.4 | 0.45 | 0.65 | 0.80 | 0.85 |
| Cable Weight (Kg/Km) | 5.7 | 6.4 | 8.8 | 12.8 | 17.1 | 19.3 |
| Tensile Loading (Short Term) | 150 N | | | | | |
| Tensile Loading (Long Term) | 90 N | | | | | |
| Crush Load (Short Term) | 1000 N/100mm | | | | | |
| Crush Load (Long Term) | 200 N/100mm | | | | | |
| Bend Radius (Short Term) | 20 Times of Cable Diameter | | | | | |
| Bend Radius (Long Term) | 10 Times of Cable Diameter | | | | | |

Indoor Distribution Cable

Wonderful is a leader in the design and manufacture of cable for communication networks



Applications

- Indoor distribution.
- IEEE 802.3z 10GBase, 40GBase, 100GBase Ethernet and legacy speeds.
- FDDI
- ATM

Features

- High performance of bending insensitive.
- Suitable for standard single ferrule mechanical connectors (LC, SC, ST, etc.) via a furcation kit.

Customization

- Fiber Type: G.652.D · G.657.A1 · G.657.A2 · OM2 · OM3 · OM4
- Dimension: As specification or per client's request.
- Delivery Length: 1km, 2km or per client's request.

Specifications

| Item | Value | | | | |
|------------------------------------|---|------|------|------|------|
| Fiber Core Count | 2 | 4 | 6 | 8 | 12 |
| Buffer Tube Material | Same as Jacket | | | | |
| Buffer Tube Diameter (mm) | 1.7 | | | | |
| Buffer Tube Thickness (mm) | 0.25 | | | | |
| Each Buffer Tube Fiber Core Count | 2 | 4 | 6 | 8 | 12 |
| Dielectric Aramid Strength Members | 4 Clusters of Kevlar 1500D Tensile Strength 350 N | | | | |
| Jacket Material / Flame Retardant | PVC · OFN FRPVC · OFNR FRLSPVC · OFNP LSZH / IEC 60332-1-2 · LSFRZH / IEC 60332-3-24 | | | | |
| Jacket Color | According to Customer Request | | | | |
| Jacket Diameter (mm) | 3.5 | | | | |
| Jacket Thickness (mm) | 0.65 | | | | |
| Cable Weight (Kg/Km) | 10.7 | 10.8 | 10.9 | 11.1 | 11.3 |
| Tensile Loading (Short Term) | 600 N | | | | |
| Tensile Loading (Long Term) | 200 N | | | | |
| Crush Load (Short Term) | 1000 N/100mm | | | | |
| Crush Load (Long Term) | 200 N/100mm | | | | |
| Bend Radius (Short Term) | 20 Times of Cable Diameter | | | | |
| Bend Radius (Long Term) | 10 Times of Cable Diameter | | | | |

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Fiber Enclosure



Faceplate



Install Tools



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Cabinet & Wall Racks



Led Panel Intelligent System



19" Patch Panel



Vertical Cable Manager



Bracket

Ca18

Ca17A

Ca17

Ca16A

Ca16E

Ca16

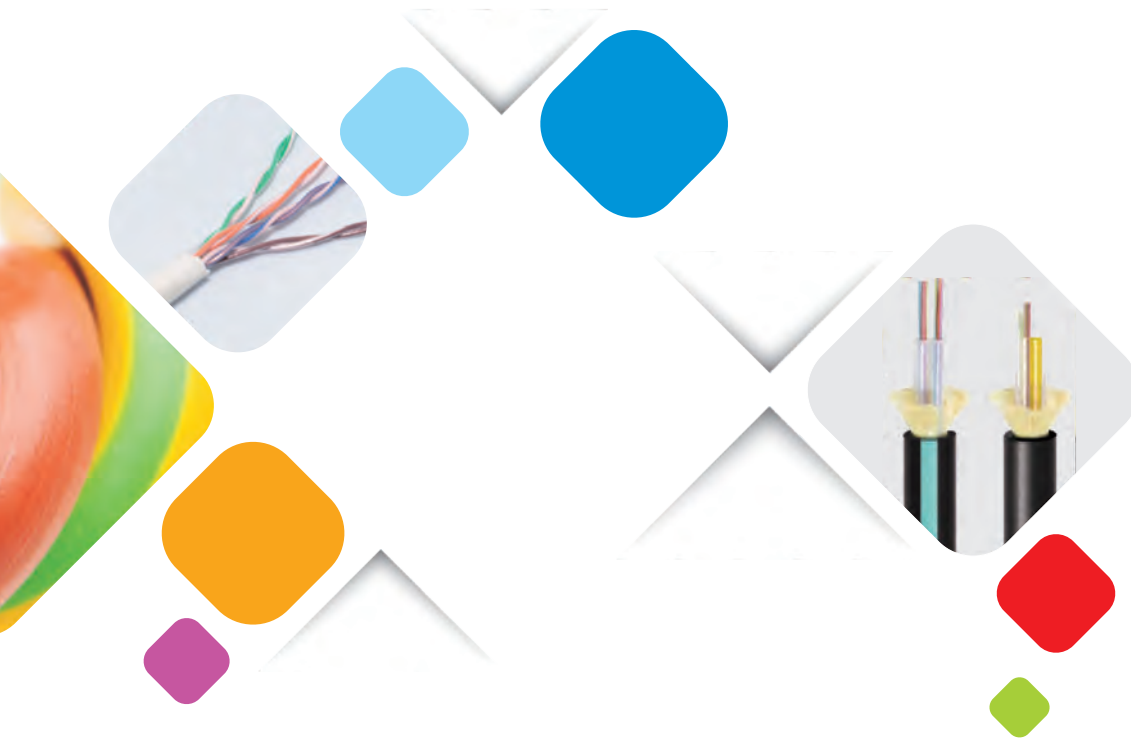
Ca15E

Ca15

Wonderful Product Packaging

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