ANHUI FEICHUN SPECIAL CABLE CO., LTD.
安徽飞纯特种电缆有限公司
COMMUNICATION & NETWORK CABLE SOLUTIONS · WWW.FEICHUNCABLES.COM

PRODUCT SPECIFICATION – ALUMINUM FOIL SHIELDED TWISTED PAIR NETWORK CABLE FOR EMI-SENSITIVE ENVIRONMENTS

FTP CAT 5E 4×2×0.52

F/UTP Enhanced Category 5e Shielded Network Cable | 4 Pairs × 0.52 mm Solid Copper (24 AWG)
Aluminum Foil Shield with Drain Wire | 100 MHz Bandwidth | 100 Ω Impedance | PoE++ Capable
PE Insulation | Indoor/Outdoor Variants Available | EMC Compatible for High-Interference Environments

Contact: Tech@feichuncables.com | +86 138 5512 3218 | www.feichuncables.com

F/U CAT 5E | 100 MHz | FOIL SHIELDED | 24 AWG | PoE++ | EMI PROTECTION

DOCUMENT FC-PDS-FTP-CAT5E-2026-001
REVISION Rev. A1 | **DATE** 2026-02-11
CLASS Product Data Sheet | Shielded Network Cable
STANDARD ISO/IEC 11801 | TIA/EIA-568-B | EN 50173

★ HIGHLIGHTED SPECIFICATION
FTP CAT 5E 4×2×0.52
F/UTP · 24 AWG · Al-Foil Shield
100 Ω · 100 MHz · PoE++ Ready

🛡 SHIELDED NETWORK CABLE FOR EMI PROTECTION

The FTP CAT 5E 4×2×0.52 represents a foil-shielded twisted pair network cable engineered specifically for installations where electromagnetic interference presents challenges to data transmission reliability. The designation F/UTP indicates an overall aluminum foil shield surrounding all four twisted pairs, providing comprehensive protection against external electromagnetic fields while maintaining the standard one hundred megahertz bandwidth and one hundred ohm characteristic impedance required by Enhanced Category five specifications. This cable construction delivers superior performance in electrically noisy environments including hospitals with medical imaging equipment, industrial facilities with variable frequency drives and welding apparatus, broadcast studios with radio frequency equipment, and commercial installations where network cables must route in proximity to power distribution systems.

FEATURED SPECIFICATION

PRODUCT PARAMETERS – FTP CAT 5E 4×2×0.52	
Type designation	**FTP CAT 5E / F/UTP CAT 5E**
Category performance	Enhanced Category 5e (100 MHz)
Pair configuration	**4 pairs × 2 conductors (8 cores)**
Conductor specification	**0.52 mm diameter (24 AWG)**
Conductor cross-section	**≈ 0.21 mm² per core**
Conductor material	Solid bare copper
Insulation material	**Polyethylene (PE)**
Shield configuration	Al-foil (Alumoflex) + drain wire
Drain wire specification	**0.4 – 0.5 mm tinned copper**
Characteristic impedance	**100 ± 15 Ω (1–100 MHz)**
DC resistance @ 20°C	**≤ 9.38 Ω / 100 m**
Current capacity per core	**0.577 A (PoE applications)**
Outer diameter (indoor)	**5.8 – 6.3 mm (PVC/LSZH)**
Outer diameter (outdoor)	**7.0 – 7.6 mm (PE jacket)**
Copper weight	**16.5 – 18.0 kg/km**
Total weight (indoor)	**38 – 45 kg/km**
Total weight (outdoor)	**50 – 55 kg/km**

CABLE CONSTRUCTION

- **Conductor specification:** Solid bare copper conductors with diameter of zero point five two millimeters, corresponding to American Wire Gauge twenty-four. The solid conductor construction provides superior mechanical stability and consistent impedance characteristics compared to stranded wire, making this cable suitable for permanent structured cabling installations per ISO/IEC eleven eight zero one standards.
- **Core insulation:** High-density polyethylene insulation provides excellent dielectric properties with minimal capacitance and stable electrical characteristics across the operational frequency range from one to one hundred megahertz. The insulation thickness is precision-controlled to maintain the required one hundred ohm characteristic impedance.
- **Pair geometry:** The four pairs are twisted with different lay lengths to minimize crosstalk between pairs. Each pair consists of two conductors twisted together, with color-coded insulation following standard conventions including orange, green, blue, and brown pairs with corresponding white-striped mates for conductor identification during termination.
- **Shield construction:** An aluminum-polyester composite foil wraps around all four twisted pairs with the aluminum face oriented inward toward the conductors. The polyester backing provides mechanical strength and prevents the aluminum from tearing during installation. A bare or tinned copper drain wire runs longitudinally alongside the foil to facilitate shield termination.
- **Outer jacket:** The cable is available with multiple jacket options depending on installation environment. Indoor variants utilize PVC or Low Smoke Zero Halogen compounds meeting flame propagation requirements per IEC sixty thousand three hundred thirty-two. Outdoor variants employ black polyethylene with UV stabilizers for direct sunlight exposure and moisture resistance.
- **Physical characteristics:** The overall shield increases the cable outer diameter by approximately zero point five to one point zero millimeter compared to unshielded UTP Category five e cables. The additional weight from the aluminum foil and drain wire is minimal, with total cable weight remaining suitable for standard installation practices in cable trays, conduits, and horizontal pathways.

ELECTRICAL PERFORMANCE

TRANSMISSION PARAMETERS	
Characteristic impedance	100 ± 15 Ω (1–100 MHz)
DC resistance @ 20°C	≤ 9.38 Ω / 100 m
DC resistance unbalance	≤ 5%
Mutual capacitance	≤ 5.6 nF / 100 m
Capacitance unbalance	≤ 330 pF / 100 m
Velocity of propagation	≥ 69% (NVP)

CRITICAL GROUNDING REQUIREMENTS

⚠ MANDATORY SHIELD TERMINATION

The electromagnetic interference protection provided by the aluminum foil shield depends entirely upon proper grounding implementation at all termination points throughout the structured cabling system. The drain wire must be connected to the metal shell of shielded RJ-forty-five connectors, patch panels, or consolidation points to establish a continuous low-impedance path to protective earth. Both ends of the cable shield should be grounded in structured cabling installations, with proper bonding between equipment racks and telecommunications rooms to prevent ground loops. Failure to properly terminate the shield results in the foil acting as an antenna that captures electromagnetic interference rather than rejecting it, potentially degrading network performance below that of unshielded cable. Network equipment at both ends must support shielded connectivity with metal connector housings that mate with shielded patch cords to maintain end-to-end shield continuity.

✓ SHIELDED COMPONENT REQUIREMENTS

All components in the channel must maintain shield continuity to achieve the electromagnetic compatibility benefits of foil-shielded cable. This includes shielded RJ-forty-five connectors with metal housings, shielded patch panels with bonding to rack ground, shielded patch cords connecting equipment to outlets, and proper bonding between telecommunications equipment racks and building ground systems. The shielding effectiveness degrades significantly if any connection in the channel uses unshielded components, as electromagnetic interference can enter the system at these discontinuities. When transitioning between shielded and unshielded zones, the shield should be terminated to ground at the transition point to prevent the shielded section from radiating interference collected by the unshielded portion.

INSTALLATION PARAMETERS

MECHANICAL SPECIFICATIONS	
Min. bending radius (install)	8 × outer diameter
Min. bending radius (fixed)	4 × outer diameter
Maximum tensile load	110 N (during installation)
Temperature range (indoor)	−20°C to +60°C
Temperature range (outdoor)	−40°C to +70°C
Installation temperature	≥ 0°C minimum

−40 °C +70 °C

TYPICAL APPLICATIONS

TYPE DESIGNATION DECODE

FTP	**Foiled Twisted Pair:** Overall aluminum foil shield surrounding all four twisted pairs with drain wire for ground connection
F/UTP	ISO/IEC designation: **F** indicates overall foil shield, **UTP** indicates unshielded individual pairs beneath the overall shield
CAT 5E	**Enhanced Category 5:** One hundred megahertz bandwidth supporting Gigabit Ethernet with improved specifications over original Category five
4×2×0.52	**4 pairs**, **2 conductors** per pair, **0.52 mm** diameter each (24 AWG solid copper)

SHIELD CONSTRUCTION

- **Conductor:** 0.52 mm solid bare copper (24 AWG)
- **Insulation:** Polyethylene (PE) compound
- **Overall Shield:** Aluminum-polyester foil (Al face inward)

DRAIN WIRE FUNCTION

The drain wire provides a low-resistance conductive path for terminating the aluminum foil shield to protective earth. This tinned copper wire with diameter of zero point four to zero point five millimeters must be connected to the metal shell of shielded connectors or patch panels to establish proper electromagnetic compatibility grounding. The drain wire ensures consistent electrical contact with the foil shield throughout the cable length, compensating for the relatively high resistance of the thin aluminum layer. Proper drain wire termination is essential for the shield to function effectively in suppressing electromagnetic interference.

Delay skew	≤ 45 ns / 100 m
Frequency bandwidth	1 – 100 MHz

MAX SEGMENT LENGTH	DATA RATE SUPPORT
100 m	1000 Mbps
Channel permanent link	Gigabit Ethernet

POWER OVER ETHERNET SUPPORT

POE SPECIFICATIONS	
Current capacity per conductor	0.577 A (IEEE standard)
PoE (IEEE 802.3af)	15.4 W (2 pairs)
PoE+ (IEEE 802.3at)	30 W (2 pairs)
PoE++ Type 3 (IEEE 802.3bt)	60 W (4 pairs)
PoE++ Type 4 (IEEE 802.3bt)	100 W (4 pairs, limited)
Voltage drop consideration	Calculate for runs exceeding 75 m

✓ POE++ COMPATIBILITY

The zero point five two millimeter conductor diameter fully supports Power over Ethernet Plus Plus applications delivering up to sixty watts at the powered device when utilizing all four pairs for power transmission per IEEE eight zero two point three bt Type three specifications. For installations approaching the maximum channel length of one hundred meters with high-power PoE requirements, engineers should calculate voltage drop to ensure adequate voltage remains at the powered device. The solid copper conductor construction provides lower DC resistance compared to stranded alternatives, minimizing power loss in extended cable runs. Applications include high-power wireless access points, PTZ surveillance cameras with heaters, LED lighting systems, and building automation controllers requiring substantial power delivery over the network infrastructure.

INDOOR VS OUTDOOR VARIANTS

INDOOR (PVC)	OUTDOOR (PE)	INDOOR WEIGHT	OUTDOOR WEIGHT
Ø 5.8–6.3	Ø 7.0–7.6	≈ 42 kg	≈ 53 kg
Flame retardant	UV resistant	Per kilometer	Per kilometer

PVC Indoor (-20 to +60°C)	PE Outdoor (-40 to +70°C)
LSZH Available	UV Stabilized (PE)

MEDICAL FACILITIES

Hospitals and medical imaging centers generate substantial electromagnetic fields from MRI scanners, X-ray equipment, and electrosurgical devices. Shielded network cabling prevents interference from disrupting critical hospital information systems including electronic health records, picture archiving and communication systems, and nurse call platforms. The foil shield also prevents network cables from radiating interference that could affect sensitive medical monitoring equipment. Proper grounding is essential in medical environments to maintain both electromagnetic compatibility and electrical safety.

INDUSTRIAL ENVIRONMENTS

Manufacturing facilities contain variable frequency drives for motor control, induction heating equipment, arc welding apparatus, and high-power machinery that generate significant electromagnetic interference across broad frequency spectrums. Shielded network cables maintain reliable Gigabit Ethernet connectivity for industrial control systems, manufacturing execution systems, and automated production equipment in these challenging environments. The cable should be routed away from high-current power cables when possible, but the shield provides protection when separation distances are constrained by facility layout.

BROADCAST AND RADIO FACILITIES

Radio and television broadcast facilities, recording studios, and telecommunications switching centers contain radio frequency transmitters and sensitive reception equipment. Shielded network infrastructure prevents broadcast signals from coupling into data cables and disrupting network traffic, while also preventing network cables from radiating interference that could affect broadcast operations. The comprehensive foil shield provides superior protection compared to unshielded twisted pair in these radio frequency environments.

APPLICABLE STANDARDS & PROPERTIES

- `ISO/IEC 11801` – Information technology, generic cabling for customer premises
- `TIA/EIA-568-B.2` – Category 5e balanced twisted-pair cabling (North America)
- `EN 50173` series – Generic cabling systems (Europe)
- `IEC 61156-5` – Multicore and symmetrical pair cables, Category 5e specifications
- `IEEE 802.3` – Ethernet standards including PoE, PoE+, and PoE++
- `IEC 60332-1-2` – Flame propagation (single cable vertical test)

CAT 5E	100 MHz	F/UTP	24 AWG
100 Ω	1000BASE-T	PoE++	EMI Protected

ORDER REFERENCE & CONTACT

For inquiries and orders, please specify jacket type and reference:

`FTP CAT 5E 4×2×0.52 (PVC Indoor)`
`FTP CAT 5E 4×2×0.52 (PE Outdoor)`
`FTP CAT 5E 4×2×0.52 (LSZH Indoor)`

Configuration: **F/UTP** | Shield: **Al-Foil + Drain Wire** | **24 AWG Solid**
Contact: **Tech@feichuncables.com** | **+86 138 5512 3218**
Also available: CAT 6 and CAT 6A shielded variants · Custom lengths · Armored outdoor versions · Consult for special requirements.

All electrical specifications are measured per ISO/IEC and TIA standards at twenty degrees Celsius. Performance parameters may vary with temperature. Installation must comply with applicable building codes and structured cabling standards. Proper shield grounding is mandatory for electromagnetic compatibility performance. Use only with shielded connectivity components rated for Category five e or