ANHUI FEICHUN SPECIAL CABLE CO., LTD.

安徽飞纯特种电缆有限公司

CATEGORY 6 U/UTP ETHERNET CABLE

High-Performance Structured Cabling for Modern Network Infrastructure

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✓ CE MARKED • VDE CERTIFIED • EAC CERTIFIED • CPR COMPLIANT • HALOGEN-FREE

Product Overview

The Category 6 Unshielded Twisted Pair Ethernet cable represents a sophisticated solution for modern structured cabling systems, delivering reliable high-speed data transmission capabilities essential for contemporary network infrastructure demands. This cable system provides performance specifications exceeding those of its Category 5e predecessor while maintaining compatibility with established installation practices and termination hardware, enabling seamless integration into both new construction projects and upgrades of existing network installations.

The designation U/UTP identifies this cable as an unshielded twisted pair configuration where individual conductor pairs lack individual screening and the cable assembly incorporates no overall shield. This construction approach optimizes cost-effectiveness and installation flexibility while delivering performance characteristics adequate for the vast majority of commercial and industrial Ethernet applications operating in electrically benign environments where electromagnetic interference concerns do not necessitate the additional complexity and expense of shielded cable variants.

The cable construction employs halogen-free low smoke zero halogen compound materials for both core insulation and outer sheath, addressing increasingly stringent building fire safety regulations while eliminating the toxic and corrosive combustion products associated with traditional PVC cable materials. This material selection proves particularly important for installations in occupied buildings, critical infrastructure facilities, and transportation systems where fire safety represents paramount concern and regulatory compliance with European Construction Products Regulation mandates specific fire performance classifications.

1000 Mbit/s Data Rate | Gigabit Ethernet | Cat.6 Performance | PoE++ Compatible

Key Performance Characteristics and Technological Advantages

The Category 6 performance classification enables this cable to support data transmission rates up to one thousand megabits per second, commonly referenced as Gigabit Ethernet, across the full one hundred meter horizontal cabling distance specified by structured cabling standards. This capability addresses current network bandwidth requirements while providing headroom for future application demands as network-connected devices proliferate and bandwidth consumption per device increases driven by video conferencing, cloud computing, and increasingly data-intensive business applications.

The cable design incorporates enhanced pair-to-pair isolation and improved balance characteristics compared to Category 5e specifications, reducing alien crosstalk susceptibility that can degrade

transmission performance when multiple cables run in parallel through common pathways. The precision manufacturing processes controlling conductor pair geometry and twist rates ensure consistent impedance characteristics across the cable length, minimizing signal reflections that could otherwise limit achievable transmission distances or reduce system operating margins.

Support for Power over Ethernet including the latest IEEE 802.3bt Type 3 and Type 4 specifications enabling delivery of up to ninety watts at the powered device represents critical functionality for modern building systems. This capability eliminates the need for separate power wiring to network-connected devices including wireless access points, IP surveillance cameras, VoIP telephones, and building automation controllers, substantially reducing installation costs and enabling flexible device placement unconstrained by proximity to electrical outlets. The conductor sizing and insulation materials are specifically selected to handle the thermal loading associated with simultaneous data transmission and power delivery without degrading transmission performance or creating fire safety concerns.

Featured Specification: 4×2×AWG23/1 Enhanced Performance Configuration

The four-pair AWG23 solid conductor configuration represents an enhanced specification variant offering improved electrical performance characteristics compared to the standard AWG24 conductor size more commonly employed in Category 6 cable constructions. The larger conductor cross-section provides reduced DC loop resistance enabling lower insertion loss across the transmission bandwidth, particularly beneficial for installations approaching the maximum horizontal cabling distance where accumulated signal attenuation becomes a limiting factor in system performance margins.

The AWG23 conductor specification translates to a nominal wire diameter of approximately zero point five seven millimeters, representing roughly a fifteen percent increase in cross-sectional area compared to AWG24 conductors. This modest increase in conductor size delivers disproportionate benefits for Power over Ethernet applications where increased conductor resistance contributes directly to power dissipation as waste heat within the cable assembly. The reduced resistance characteristics enable more efficient power delivery with lower voltage drop along the cable length, ensuring that powered devices receive adequate voltage even when installed at maximum distance from the power sourcing equipment.

Conductor Configuration and Materials

Four twisted pairs each comprising two solid bare copper conductors of AWG23 gauge providing eight individual conductors organized into balanced transmission pairs. The solid conductor construction optimizes electrical performance for permanent link applications where the cable undergoes installation then remains stationary throughout its service life, unlike stranded conductor alternatives designed for flexing applications such as patch cords connecting active equipment.

Enhanced DC Resistance Characteristics

DC loop resistance specification of one hundred seventy-two ohms per kilometer represents the combined resistance of both conductors in a pair measured over one kilometer of cable length. This value directly impacts power delivery efficiency for Power over Ethernet applications and contributes to insertion loss calculations determining maximum achievable transmission distances for specific performance margins.

Precision Impedance Control

Nominal characteristic impedance of one hundred ohms with tight tolerance maintained across the full transmission bandwidth from one megahertz through two hundred fifty megahertz ensures impedance matching with connected equipment and minimizes signal reflections that would otherwise degrade transmission quality. The impedance stability results from precise control of conductor spacing, insulation dielectric constant, and pair twist geometry throughout manufacturing.

Optimized Physical Dimensions

> Overall cable diameter of six point zero millimeters nominal with manufacturing tolerance range from five point eight to six point two millimeters balances multiple competing requirements including conductor size accommodation, adequate insulation thickness, mechanical protection, and installation flexibility. The compact diameter enables efficient utilization of pathway fill capacity while maintaining bend radius characteristics suitable for structured cabling installation practices.

Electrical Performance Parameters

The electrical characteristics of the AWG23 configuration have been optimized to meet and exceed Category 6 channel performance requirements as defined by TIA-568 and ISO/IEC 11801 structured cabling standards. These specifications establish performance benchmarks ensuring reliable operation of Gigabit Ethernet and other high-speed network protocols across diverse installation environments and varying cable lengths up to the maximum horizontal distance of ninety meters plus ten meters of stranded patch cord connections at each end.

Electrical Parameter	Specification Value	Engineering Significance
Nominal Voltage	48 V AC RMS	Standard operating voltage for Power over Ethernet systems delivering power to connected devices through data cable pairs, representing safe low-voltage level suitable for installation without special electrical qualifications
Maximum Operating Voltage	100 V	Upper voltage limit for cable insulation system not intended for power transmission purposes but addressing transient overvoltages and providing safety margin above PoE operating voltages including newer high-power variants
DC Loop Resistance at 20°C	172 Ω/km	Combined resistance of both conductors in a pair determines power delivery efficiency and contributes to overall insertion loss, with lower values enabling more efficient power transmission and reduced signal attenuation particularly important for maximum distance installations
Minimum Insulation Resistance	5 GΩ·km	Extraordinarily high insulation resistance ensures negligible leakage current between conductor pairs and from conductors to ground, maintaining signal integrity and preventing crosstalk that would degrade transmission performance in multi-pair cable assemblies
Nominal Characteristic Impedance	100 Ω ± 15 Ω	Precisely controlled impedance matching network equipment and minimizing signal reflections at impedance discontinuities, maintained across full bandwidth with tight tolerance ensuring compatibility with active equipment designed for balanced twisted pair transmission systems
Signal Propagation Speed	0.68 c (nominal)	Velocity of propagation expressed as fraction of speed of light in vacuum affects timing considerations for certain network protocols and influences maximum cable length calculations where propagation delay becomes factor in protocol operation
Maximum Data Transmission Rate	1000 Mbit/s	Gigabit Ethernet capability representing current mainstream network speed with performance margin enabling reliable operation under adverse conditions including temperature extremes, maximum distance installations, and electrically noisy environments

Power over Ethernet Capability

The cable construction fully supports the latest IEEE 802.3bt standard encompassing Type 3 and Type 4 Power over Ethernet implementations commonly referenced as PoE++ or 4PPoE. This capability enables delivery of

substantial electrical power to connected devices through the same twisted pair conductors simultaneously carrying data signals, eliminating the need for separate power wiring and enabling flexible placement of network-connected equipment independent of electrical outlet locations.

The AWG23 conductor sizing proves particularly advantageous for high-power PoE applications where conductor resistance directly impacts power delivery efficiency and available power at the powered device. The IEEE 802.3bt Type 4 specification can deliver up to ninety watts at the power sourcing equipment, with the actual power available at the powered device reduced by resistive losses in the cabling system. The lower DC loop resistance of AWG23 conductors compared to standard AWG24 sizing minimizes these losses, ensuring that powered devices receive maximum available power even when installed at or near the maximum horizontal cabling distance.

PoE Standard	Maximum Power at PSE	Typical Power at PD (90m cable)	Supported Applications
IEEE 802.3af (PoE)	15.4 W	12.95 W	VoIP phones, basic wireless access points, simple IP cameras
IEEE 802.3at (PoE+)	30 W	25.5 W	Advanced wireless access points, pan-tilt-zoom cameras, video phones
IEEE 802.3bt Type 3 (PoE++)	60 W	51 W	High-performance wireless access points, building automation controllers, LED lighting
IEEE 802.3bt Type 4 (4PPoE)	90 W	71.3 W	PTZ cameras with heaters, digital signage, thin client computers, high-power lighting

Power Delivery Considerations for Maximum Distance Installations

The power available at the powered device decreases with increasing cable length due to resistive losses in the copper conductors. For applications requiring maximum power delivery at or near the one hundred meter channel limit, the AWG23 conductor specification provides measurable advantage over AWG24 alternatives. As an example, a Type 4 PoE installation delivering ninety watts at the power sourcing equipment would lose approximately eighteen point seven watts in a ninety meter run of AWG23 cable compared to approximately twenty-three watts in equivalent AWG24 cable, representing a four watt improvement in delivered power that could prove critical for margin-constrained applications.

Product Family and Configuration Options

The Category 6 U/UTP cable series encompasses multiple configuration variants addressing diverse installation requirements and application preferences. While the AWG23 enhanced performance specification delivers optimal characteristics for demanding applications and maximum distance installations, the standard AWG24 variant provides cost-effective solution for typical installations where the additional performance margin of larger conductors is not required.

Configuration	Conductor Size	Shielding	Copper Content	Cable Weight	Primary Applications
4×2×AWG23/1	AWG23 solid	Unshielded	19.0 kg/km	54 kg/km	**Enhanced performance installations, maximum distance applications, high-power PoE systems**
4×2×AWG24/1	AWG24 solid	Unshielded	18.0 kg/km	60 kg/km	Standard horizontal cabling, general-purpose Ethernet, typical office installations

Outer Sheath Material Options

Both the AWG23 and AWG24 conductor configurations are available with choice of outer sheath materials addressing different installation environment requirements and regulatory compliance needs. The halogen-free LSZH formulation represents the premium option for installations where fire safety considerations and regulatory compliance with European Construction Products Regulation mandate specific fire performance characteristics, while PVC alternatives may be specified for installations where cost optimization takes precedence and regulatory frameworks do not mandate halogen-free materials.

The LSZH sheath material provides superior fire safety characteristics through reduced smoke generation during combustion events and elimination of halogenated combustion products that would otherwise generate corrosive acidic gases damaging electronic equipment and threatening building occupants. The material achieves flame retardant properties through non-halogenated additives and fillers that suppress combustion without generating the toxic hydrogen chloride and hydrogen bromide gases characteristic of burning PVC materials. The resulting fire performance achieves Eca classification under the European CPR testing regime, meeting requirements for general building installations while the zero halogen characteristics per IEC 60754-2 testing ensure compliance with increasingly common specifications mandating halogen-free materials in occupied buildings and critical infrastructure facilities.

Detailed Construction Specifications

Conductor System Design

The conductor system employs solid bare copper wires manufactured to precise dimensional tolerances ensuring consistent electrical characteristics and reliable termination performance. The solid conductor construction, in contrast to stranded alternatives used in patch cords and flexible jumper applications, optimizes electrical performance for permanent link applications where the cable undergoes installation into building pathways then remains essentially stationary throughout its operational lifetime. The solid wire geometry provides superior high-frequency transmission characteristics through reduced skin effect losses and more stable impedance profile compared to stranded conductors where individual wire interfaces introduce impedance irregularities.

The bare copper conductor specification without tinning or plating represents standard practice for structured cabling applications where the conductors terminate into insulation displacement connectors or other termination hardware specifically designed for bare copper wire. The absence of metallic coatings eliminates concerns about plating delamination or intermetallic compound formation at termination interfaces that could increase contact resistance over time, while the exposed copper surface provides optimal electrical contact with termination hardware spring contacts or insulation displacement blades.

Conductor Material Purity and Conductivity

Electrolytic copper meeting minimum ninety-nine point nine percent purity specifications ensures optimal electrical conductivity with DC resistance values meeting industry standards for the specified wire gauge. The high-purity copper provides consistent electrical characteristics across production batches and maintains stable resistance values

Conductor Diameter Precision

Nominal core diameter of zero point nine five millimeters maintained within tight manufacturing tolerances ensures consistent characteristic impedance and capacitance values critical for high-frequency transmission performance. The precision wire drawing processes employed during conductor manufacturing achieve diameter variations typically within one percent enabling

Pair Twisting Geometry

Each of the four conductor pairs incorporates specific twist rate or lay length optimized to minimize crosstalk between pairs while maintaining characteristic impedance uniformity. The twist rates vary between pairs to reduce coupling between pairs running parallel through the cable length, with the precise twist patterns representing proprietary

throughout the cable service life without degradation from oxidation or contamination.

Pair Identification System

Individual conductors within pairs are identified through color coding following industry standard color schemes, typically employing combinations of solid and striped insulation colors enabling installers to reliably identify specific conductors during termination operations. The standard TIA-568 color code assigns specific color combinations to each of the four pairs facilitating consistent termination practices across different installation teams and geographic regions.

predictable electrical characteristics across the full cable length.

manufacturing parameters contributing to overall cable performance characteristics.

Insulation and Sheath System Architecture

The cable construction employs polyethylene core insulation surrounding individual conductors, selected for its excellent dielectric properties at high frequencies and dimensional stability across the operating temperature range. Polyethylene provides low dielectric constant and minimal dielectric loss tangent ensuring signal energy remains within the conductor pairs rather than dissipating through the insulation material, critical for maintaining signal integrity across the full two hundred fifty megahertz bandwidth specified for Category 6 performance.

The halogen-free outer sheath compound employs advanced polymer formulations achieving flame retardant properties without incorporating halogenated additives, addressing fire safety requirements while eliminating the toxic and corrosive combustion products associated with traditional PVC materials. The sheath material provides mechanical protection during installation handling, resistance to environmental factors including moisture and typical building chemical exposures, and physical identification through the distinctive orange coloration specified for network cabling applications. The orange color per RAL 2003 specification provides high visibility facilitating cable identification during installation and maintenance activities while conforming to common industry practice for data communication cabling distinct from electrical power wiring.

Construction Element	Material Specification	Performance Function
Core Insulation	Polyethylene (PE)	Low dielectric constant and loss tangent for minimal signal attenuation, dimensional stability maintaining characteristic impedance, moisture resistance protecting conductor from oxidation
Outer Sheath	Halogen-Free LSZH Compound	Flame retardant properties meeting IEC 60332-1-2, zero halogen per IEC 60754-2 eliminating toxic combustion gases, mechanical protection during installation and service, environmental resistance to moisture and chemicals
Cable Geometry	Round cross-section	Uniform mechanical properties in all bending directions, efficient packing in cable pathways, compatibility with standard cable management hardware and installation practices
Identification	Orange sheath (RAL 2003)	Visual distinction from power cabling, high visibility in typical installation environments, industry standard color coding for data communication applications

Dimensional Specifications and Mechanical Properties

The overall cable dimensions represent carefully optimized compromise between multiple competing requirements including conductor accommodation, adequate insulation thickness, mechanical protection during installation handling, and efficient utilization of available pathway space in building cable distribution systems. The nominal six millimeter overall diameter with manufacturing tolerance range from five point eight to six point two millimeters provides consistent cable handling characteristics while enabling accurate pathway fill calculations for conduit and cable tray installations.

Dimensional Parameter	Specification	Installation Significance
Minimum Outer Diameter	5.8 mm	Lower manufacturing tolerance limit ensuring adequate material thickness for mechanical protection and maintaining minimum spacing between conductor pairs for crosstalk control
Nominal Outer Diameter	6.0 mm	Target dimension for pathway fill calculations and cable management hardware selection, representing typical cable size for most production runs
Maximum Outer Diameter	6.2 mm	Upper manufacturing tolerance limit ensuring cable fits within standard pathway systems while accounting for normal manufacturing variations
Cable Weight	54 kg/km (AWG23) 60 kg/km (AWG24)	Weight per unit length affects cable reel capacity, shipping costs, and mechanical loading on support systems in long vertical cable runs
Copper Content	19.0 kg/km (AWG23) 18.0 kg/km (AWG24)	Pure copper mass per unit length relevant for material cost calculations, recycling value, and conductor electrical characteristics verification

Applications and Standards Compliance

Structured Cabling System Applications

The Category 6 U/UTP cable serves as the fundamental building block for horizontal cabling subsystems in structured cabling installations conforming to international standards including EN 50173 for European installations and ISO/IEC 11801 for worldwide applications. These standards establish comprehensive specifications for commercial building telecommunications infrastructure addressing cable performance characteristics, installation practices, testing requirements, and system architecture ensuring interoperability between components from different manufacturers and predictable performance across diverse installation environments.

The horizontal cabling application encompasses cable runs from telecommunications rooms or equipment closets to individual work area outlets serving desktop computers, VoIP telephones, wireless access points, and other network-connected devices distributed throughout building floor plates. The standard topology limits horizontal cable length to ninety meters of solid conductor cable with additional ten meters allocated for stranded patch cords at each end connecting the permanent link to active network equipment and user devices, establishing the total one hundred meter channel distance fundamental to Ethernet protocol specifications.

Office Network Infrastructure

Desktop connectivity for computers, phones, and

Wireless Access Point Connections

IP Surveillance Systems

Network connectivity and power delivery for IP cameras

peripherals requiring reliable Gigabit Ethernet performance with Power over Ethernet capability for device power delivery

High-bandwidth connections supporting WiFi 6 and WiFi 6E access points with PoE++ power delivery for ceiling-mounted wireless infrastructure

including pan-tilt-zoom models requiring higher power levels available through PoE++ implementations

Building Automation Systems

Integration of HVAC controllers, lighting systems, and access control hardware leveraging Ethernet connectivity and Power over Ethernet for distributed control architecture

Industrial Ethernet Applications

Support for EtherCAT, EtherNet/IP, and PROFINET industrial protocols enabling factory automation and process control network implementations

Single Pair Ethernet Systems

Infrastructure supporting emerging Single Pair Ethernet standards for IoT devices and building automation applications utilizing individual pairs from four-pair cable

International Standards and Certifications

The cable construction achieves comprehensive compliance with the relevant international standards governing structured cabling components, fire safety performance, and product safety requirements. This multi-standard certification approach ensures product acceptance across diverse geographic markets and regulatory regimes while providing specifiers and installers with confidence that installed systems will meet applicable performance and safety requirements.

- EN 50173 European Cabling Standard
- ISO/IEC 11801 International Cabling
- TIA-568 Commercial Building
- IEEE 802.3 Ethernet Standards
- IEEE 802.3bt Power over Ethernet
- IEC 60332-1-2 Flame Retardancy
- IEC 60754-2 Zero Halogen
- CPR Eca Class Fire Classification

Standard Reference	Scope and Requirements	Compliance Verification
EN 50173 / ISO/IEC 11801	Structured Cabling Standards	Comprehensive specifications for commercial building cabling systems addressing topology, cable performance, installation practices, testing requirements, and component interoperability ensuring Category 6 channel performance across one hundred meter maximum distance
IEEE 802.3 10/100/1000Base-T	Ethernet Protocol Specifications	Physical layer requirements for ten megabit, one hundred megabit, and one thousand megabit Ethernet implementations over twisted pair cabling ensuring reliable data transmission and interoperability between equipment from different manufacturers
IEEE 802.3bt Type 3 and Type 4	Power over Ethernet Standards	Specifications for delivery of electrical power through twisted pair data cables including voltage levels, current limits, detection protocols, and power classification ensuring safe and reliable operation of powered devices at distances up to one hundred meters
IEC 60332-1-2	Flame Retardancy Testing	Standardized vertical flame test evaluating cable flame propagation characteristics ensuring self-extinguishing properties and limited flame spread essential for building safety and fire code compliance
IEC 60754-2	Halogen Content Testing	Chemical analysis procedures verifying absence of halogenated compounds in cable materials ensuring zero halogen classification and elimination of corrosive acidic combustion products during fire events

Standard Reference	Scope and Requirements	Compliance Verification
EU CPR 305/2011	Construction Products Regulation	European regulatory framework establishing fire performance classifications for building products including cables, with Eca classification representing entry-level compliance for general building installations without special fire safety requirements

Installation Guidelines and Performance Optimization

Installation Environment and Temperature Considerations

The cable has been designed and tested for reliable operation across a comprehensive range of environmental conditions typical of commercial building installations. The specified temperature ranges address both fixed installations where cables remain essentially stationary following installation and applications involving occasional cable movement during maintenance or reconfiguration activities. Adherence to these temperature specifications ensures that cable mechanical and electrical properties remain within acceptable limits preventing installation damage or degraded long-term performance.

Installation Condition	Temperature Range	Application Guidelines
Fixed Installation (Permanent)	-20°C to +60°C	Operating temperature range for cables installed in building pathways, ceiling spaces, and equipment rooms where cables remain stationary after installation. The wide temperature range accommodates diverse geographic locations and seasonal variations without requiring specialized cable variants for different climates.
Occasionally Moved	0°C to +50°C	Temperature limitations for applications where cables may be moved during maintenance activities or system reconfigurations. The reduced low-temperature limit accounts for decreased material flexibility at cold temperatures where bending could cause permanent cable damage.
Installation Temperature	Maximum +50°C	Temperature limit during cable pulling and termination operations when cables experience mechanical stress from installation forces. Installation should be postponed if ambient temperatures approach this limit to prevent material damage from combined thermal and mechanical stress.

Mechanical Installation Parameters

Proper installation technique requires careful attention to mechanical stress limitations during cable pulling operations and throughout the cable's service life. The specified bending radius requirements represent minimum values that should not be exceeded to prevent conductor damage, insulation compression, or geometric distortions that could degrade electrical performance through impedance discontinuities or increased crosstalk between conductor pairs. Installation practices should maintain more generous bend radii where space permits, recognizing that these specifications establish limits rather than targets for installation geometry.

Installation Parameter	Specification	Critical Considerations
Minimum Bending Radius (Fixed)	4 × outer diameter (24.8 mm minimum)	Permanent installations where cable routing remains unchanged throughout service life. The four-times-diameter specification enables routing through standard cable management hardware and building pathways while preventing geometric distortions that could compromise electrical performance characteristics.

Installation Parameter	Specification	Critical Considerations
Minimum Bending Radius (Occasional Movement)	8 × outer diameter (49.6 mm minimum)	Applications where cables may be moved during maintenance or reconfiguration activities. The increased bending radius requirement accounts for accumulated mechanical fatigue from repeated bending cycles that could eventually cause conductor work hardening or insulation damage.
Maximum Pulling Tension	Per installation standards	Excessive pulling forces during installation can stretch conductors causing permanent elongation, compromise insulation integrity through compression, or damage termination points. Tension should be monitored during long pulls through conduit or complex cable pathways to ensure forces remain within acceptable limits.

Installation Best Practices for Performance Assurance

Successful Category 6 channel performance depends critically on proper installation practices beyond simply using compliant cable. Installers should avoid untwisting conductor pairs more than one-half inch at termination points where pair geometry must be disturbed to make electrical connections, as excessive untwisting creates impedance discontinuities and degrades crosstalk performance. Cable ties and bundling should not compress cables excessively as this can deform the cross-sectional geometry causing impedance variations and increased crosstalk. Sharp bends should be avoided even if they technically exceed the minimum bending radius specification, as gradual curves provide superior performance compared to abrupt direction changes that concentrate mechanical stress and create potential impedance discontinuities affecting high-frequency transmission characteristics.

Testing and Verification Requirements

Installed cabling channels should undergo comprehensive testing following installation completion to verify compliance with Category 6 performance specifications before the system is placed into service. The testing process employs specialized test equipment measuring numerous electrical parameters across the full transmission bandwidth, comparing measured values against specification limits established by relevant standards. This verification process provides documented evidence that installed cabling will reliably support intended network applications while identifying any installation defects requiring correction before active network equipment deployment.

Modern automated cable testers evaluate parameters including wire map verifying proper pin-to-pin connectivity, length measurements confirming channel distances remain within specification limits, insertion loss characterizing signal attenuation across the bandwidth, near-end crosstalk measuring signal coupling between pairs at the same cable end, and return loss quantifying impedance uniformity through the channel. The test results compared against Category 6 channel limits determine whether the installed cabling achieves pass status warranting system acceptance or requires remediation to address performance deficiencies before the installation can be accepted as meeting specifications.

Quality Assurance and Manufacturing Excellence

Every production reel of Category 6 U/UTP cable manufactured by Anhui Feichun Special Cable Company undergoes comprehensive quality control testing verifying compliance with electrical performance specifications, mechanical characteristics, and material requirements before release for customer delivery. The quality management system maintains certification to ISO 9001 international standards, implementing

documented procedures, systematic verification processes, and continuous improvement methodologies ensuring consistent product quality across all manufacturing operations.

Manufacturing Process Controls

The manufacturing process incorporates multiple quality checkpoints throughout production operations. Incoming copper wire rod undergoes receiving inspection verifying conformance to purity and dimensional specifications. During conductor drawing operations, continuous diameter measurement systems monitor wire size ensuring compliance with tight tolerances essential for consistent electrical characteristics. The insulation extrusion process employs online capacitance measurement verifying proper insulation thickness and dielectric properties for each conductor before pairs are formed and cabled together into the final assembly.

Final product testing evaluates finished cable electrical characteristics including characteristic impedance, DC loop resistance, insulation resistance, and high-frequency transmission parameters verifying Category 6 performance compliance. Mechanical testing confirms dimensional accuracy, minimum bending radius capability, and tensile strength specifications. Sample testing for flame retardancy and halogen content on periodic basis representing each major production run ensures continued compliance with fire safety specifications. Test data is documented and retained establishing traceability from finished product through manufacturing processes to raw material lots, supporting any future performance investigations or quality inquiries from customers.

Warranty and Technical Support

Anhui Feichun Special Cable Company provides comprehensive warranty coverage protecting customers against manufacturing defects for twenty-four months from delivery date when cables are installed and operated according to specifications and applicable installation standards. The warranty encompasses material and workmanship defects but excludes failures resulting from improper installation practices, mechanical damage during handling, exposure to environmental conditions exceeding specifications, or modifications to the cable construction after leaving the factory.

Technical support services are available to assist customers with cable selection for specific applications, installation guidance addressing challenging pathway routing or termination scenarios, troubleshooting consultation for performance issues encountered during testing or operation, and training for installation personnel on proper handling and termination techniques. The technical support team maintains expertise in structured cabling standards, Ethernet protocols, and Power over Ethernet implementations enabling comprehensive assistance across the full range of applications served by Category 6 cabling infrastructure.

