

Copper Systems Product Guide



Cabling Infrastructure for 10GBASE-T

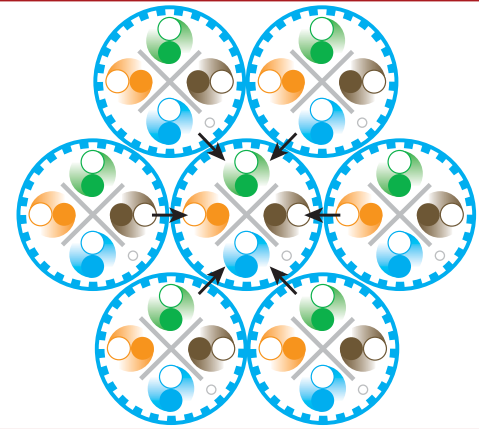


Ethernet data rates have escalated to support transmission of increasing volumes of data with larger file sizes associated with cloud computing, virtualization, streaming video and other digital media content. The increase in data rates impacts how networks and cabling infrastructure are designed and deployed. 10GBASE-T is the lowest cost method to support today's data center servers and storage devices.

The Impact of Alien Crosstalk

The IEEE, TIA and other standards groups determined the most important electrical parameter limiting the 10G performance of copper cabling systems is Alien Crosstalk (ANEXT). ANEXT is noise from one cable coupling with adjacent cables.

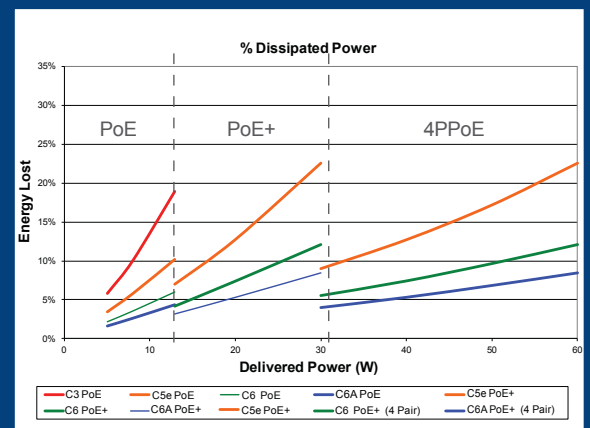
- Category 6A UTP systems increase the physical separation of adjacent cables to reduce ANEXT
- Category 6A shielded systems use electrical shielding to virtually eliminate ANEXT



Power Over Ethernet [PoE]

A higher performing category of network has a beneficial effect on energy efficiency. Installing a Category 6A cable infrastructure will consume less energy than a lower rated cable infrastructure due to power consumption savings and lower heat generation.

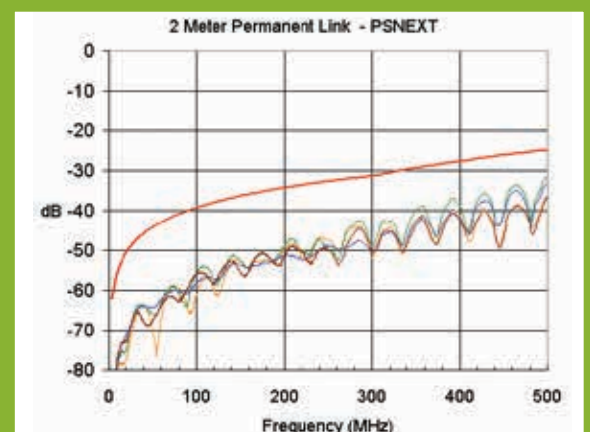
- The growing deployment of IP based PoE devices generate more heat
- IEEE 802.3 PoE+ outlines delivers 26W on two pairs
- IEEE 802.3bt 4-pair PoE (4PPoE) allows for up to 100W injected



Short Link Support

Data center deployments pose unique cabling infrastructure challenges. Up to 30% of cabling installations (or deployments) are 10 meters or less, while enterprise applications have typical link lengths of 50 to 60 meters. Even with standards compliant components, short length links can generate marginal results across key performance parameters, compromising network performance.

- Shorter links and channels require component compliant connections with margins beyond the standard for NEXT and return loss
- Improved return loss minimizes reflected power into the transmitter and reduces the PHY power consumption



HUBBELL Offers a *Clear Advantage*

- Performance exceeds component levels to provide a seamless open architecture
- Components designed to work together in form, fit and function as well as electrical performance
- Designed and developed to maximize cabling system performance without sacrificing reliability
- Hubbell 10G systems are designed and guaranteed to support current and future applications

Category 6A Systems

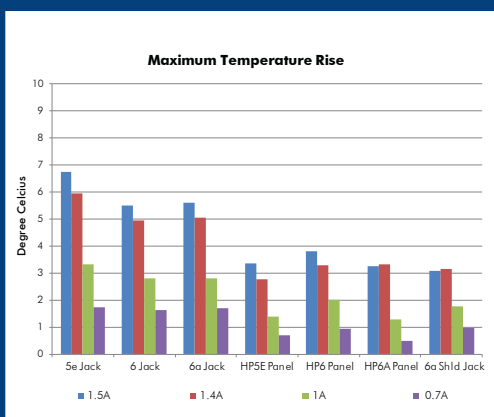
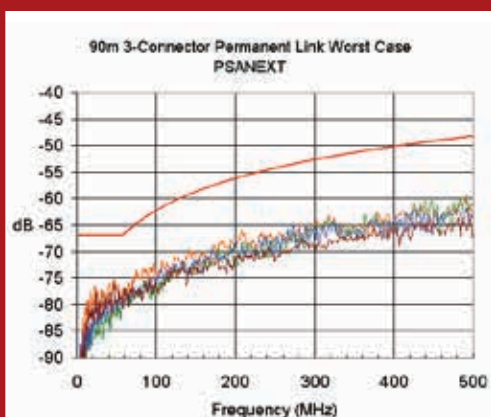
- Superior component NEXT performance yields channels and links with significant headroom throughout the frequency range
- Channel and Link Return Loss are also significantly better than the standard requirements
- Category 6A connectivity has been tested and continuously verified to exceed the TIA and ISO standards
- System NEXT performance exceeds the highest proposed industry standards by 3dB at 500MHz and performs to an extended limit clear out to 750MHz

Category 6A PoE Performance

- High power four-pair PoE ready
- Connectivity qualified to 150% of 802.3bt PoE current levels to ensure long term PoE reliability
- Verified to IEC 60512-99-001 requirements ensuring contact seating surfaces are not damaged during plug/jack mating and disconnecting under remote powering loads
- 23AWG copper in cable reduces heat rise while pair separation design improves heat dissipation

Warranty Coverage and Support

- Hubbell 25-year MISSION CRITICAL® warranty covers any current and future application designed to run over the infrastructure
- Continuous independent third party (ETL) verified production
- 4PPoE application assurance
- Backward compatibility
- Trained, qualified network of design-install partners
- Factory direct training and support services provided
- BIM models available on Autodesk® Seek



Upgrade and Deploy *Faster* with HUBBELL

Hubbell provides custom pre-terminated cable assemblies manufactured to your exact specifications. They provide a true plug and play permanent link that is 100% performance verified before leaving our factory. Eliminate excess materials, reduce deployment time, and ensure link quality with Hubbell. Contact customer support to design your solution today.



Cat 6A Shielded

NEXTSPEED® Ascent Shielded Category 6A is a tuned system of structured cabling components designed and balanced to deliver Category 6A performance and headroom greater than 500MHz. Ascent shielded provides the highest level of reliability in the industry with added protection against ANEXT, external noise and EMI.

- TIA-568-C.2 Category 6A component
- ISO 11801
- IEC 60603-7-41 6A component
- Mechanical verified to TIA-568-C.2
- 100% factory tested
- Continuous third party verification to TIA 568-C.2 and ISO/IEC 11801 Class E_A component requirements
- Suitable for links 2-90M



NEXTSPEED® Shielded Patch Panels

NEXTSPEED® Shielded Jack Patch Panels are powder coated and constructed with 16 gauge steel that provides ultimate rigidity. Each panel provides integrated bonding and comes with a cable management bar that separates individual cables and provides strain relief.

- Integrated connector and panel bonding
- Compatible with all Hubbell shielded jacks and couplers
- Comes with cable management bar

NEXTSPEED® Ascent Shielded Jacks

NEXTSPEED® Ascent Shielded Category 6A Jacks feature a tool-less termination body that maintains twist integrity and ensures consistent electrical performance. This allows cables to be laced in without disrupting the pairs. The jack's locking body ensures superior termination retention.

- Locking cap ensures termination retention during installation
- Tool-less termination: cap allows cable to maintain optimized performance
- Mating cycles: minimum 750
- Shielded housing: solid zinc die-cast
- Tested to 1.5A of continuous current per pair
- Universal wiring (T568A or T568B)

Shielded Jack Patch Panels, Unloaded, 19"

Ports	Height Inches (mm)	Rack Units	Type	Color	Catalog No.
24	1.75" (45)	1	Standard	Black	HPJS24
48	3.50" (89)	2	Standard	Black	HPJS48

Note: Jacks sold separately

Shielded Category 6A Jacks

Unit of Measure	Catalog No.
Single pack	SJ6A
24-pack	SJ6A24

NEXTSPEED® Ascent Shielded Category 6A system delivers headroom over TIA and ISO performance requirements and eliminates the need for ANEXT testing. The system provides a transparent 10 Gigabit signal path for current and future applications, decreasing installation time and supplying the peace of mind needed for today's data intensive applications.

- Supports IEEE 10GBASE-T (802.3an)
- IEEE 802.11ac and IEEE 802.11ax WAP deployments
- Qualified to 150% of 802.3bt PoE current levels
- UL Listed 1863
- ISO/IEC 11801 and EN 50173 second edition requirements for transfer impedance and shield effectiveness
- ISO 9001-2008 Manufacturing Process



NEXTSPEED® Shielded Patch Cords

Hubbell PC6A patch cords are constructed with specially designed patch cable and a cross pair separator delivering one of the industry's highest performing patch cords. Every patch cord is 100% performance tested, to assure high quality and reliability before it leaves the factory.

- Two-piece conductor sled design controls NEXT
- Cable tuned to deliver maximum Category 6A and 10GbE performance
- Slim boot supports side-by-side high density applications
- 10GbE application assurance
- Rated for over 2000 mating cycles

NEXTSPEED® Ascent Shielded Cable

NEXTSPEED® Category 6A FTP cable has been finely tuned to deliver component compliant category 6A performance. The cable is round with a .290 O.D. This round construction and smaller O.D. provides an advantage over Category 6A UTP allowing increased pathway capacity inside standard conduit, raceways and cable organizers.

- Category 6A component third party verified
- Round and smooth 0.29" OD improves pulling performance and pathway capacity
- High power 4PPoE support with 23AWG bare copper conductors
- Made in the USA

Shielded Category 6A Patch Cords

Length	Catalog No.
3'	PC6Axx03
5'	PC6Axx05
7'	PC6Axx07
10'	PC6Axx10
15'	PC6Axx15
20'	PC6Axx20
25'	PC6Axx25

xx = Color: **BK** (Black), **B** (Blue), **GY** (Gray) or **Y** (Yellow)

Made-to-order lengths are available from 30ft to 75ft in 5ft increments.

Category 6A Shielded Cable

Color	Riser Catalog No.	Plenum Catalog No.
Blue	C6AFTPSRB	C6AFTPSPB
Gray	C6AFTPSRGY	C6AFTSPGY
White	C6AFTPSRW	C6AFTSPW

Note: 1000' of cable per spool

Cat 6A

NEXTSPEED® Ascent Category 6A is a tuned system of structured cabling components designed and balanced to deliver bandwidth beyond 625MHz. Ascent 6A series patch panels, jacks and cable are manufactured in the USA and backed by Hubbell's 25-year application assurance warranty.

- TIA-568-C.2 Category 6A component
- ISO 11801
- IEC 60603-7-41 6A component
- Mechanical verified to TIA-568-C.2
- 100% factory tested
- Continuous third party verification to TIA 568-C.2 and ISO/IEC 11801 Class E_A component requirements
- Suitable for links 2-90M
- 4.5dB NEXT margin over TIA 568-C.2 component and 500MHz



NEXTSPEED® Ascent Patch Panels

NEXTSPEED® Ascent Category 6A panels utilize the same patented zero-crosstalk contact structure as Hubbell's Ascent jacks. This provides a very balanced system which minimizes internal and external cross talk and maximizes available bandwidth.

- Enhanced common mode design eliminates residual and reflected NEXT and ANEXT
- Integrated panel port labels and icon slots for TIA 606-B compliance
- Wide in-line panel termination towers
- Increased space for lacing and routing cable

Category 6A Component Patch Panels, 19"

Format	Color	24-Port, 1RU	48-Port, 2RU	96-Port, 4RU
Standard	Black	HP6A24	HP6A48	HP6A96
Standard	White	HP6A24W	HP6A48W	–
Angled	Black	HP6A24A*	HP6A48A*	–

*Angled panels protrude 4.46" from the plane of the rack. One extra inch of space is recommended between the door and panel angle.

Jack Patch Panels, Unloaded, 19"

Format	24-Port, 1RU	48-Port, 2RU	72-Port, 3RU	High-Density, 48-Port, 1RU
Standard	HPJ24	HPJ48	HPJ72	UDX48E1U
Angled	HPJ24A	HPJ48A	–	UDX48A1U

NEXTSPEED® Ascent Jacks

NEXTSPEED® Ascent Category 6A Jacks are one of the highest performing and most compact 6A jacks available. They provide superior ANEXT suppression, which enables ultra-high port density applications. The enhanced common mode design and superior ANEXT, NEXT and return loss parameters support today's high bandwidth, mission critical applications.

- Lowest profile 6A jack available enables installation into shallow cavities and boxes
- Jack cable exit straight or 90° provides installation flexibility
- Noise proximity suppression on jacks eliminates high density side-by-side configuration limitations
- Exclusive 1-punch termination reduces termination time by 75%

Category 6A Jacks

Color	Catalog No.	Color	Catalog No.
Black	HJ6ABK	Office White	HJ6AOW
Blue	HJ6AB	Orange	HJ6AOR
Electric Ivory	HJ6AEI	Red	HJ6AR
Gray	HJ6AGY	White	HJ6AW
Green	HJ6AGN	Yellow	HJ6AY

Note: Add **25** to Catalog Number for 25-pack.
Gold and Purple also available in 25-pack only.

NEXTSPEED® Ascent Category 6A components are continuously third-party verified to exceed all TIA and ISO component performance requirements. The balanced system design allows the NEXTSPEED Ascent system to be utilized in links under 10 meters, which is a perfect solution for the data center and provides a fully compliant solution that supports 10GBASE-T transmission from 2-100 meters.

- Bit error rate tested ($= <1 \times 10^{-13}$)
- Supports IEEE 10GBASE-T (802.3an)
- IEEE 802.11ac and IEEE 802.11ax WAP deployments
- Qualified to 150% of 802.3bt PoE current levels
- UL Listed 1863
- ISO 9001-2008 Manufacturing Process



NEXTSPEED® Ascent Patch Cords

HC6A's enhanced custom cable and unique plug design provide superior ANEXT, NEXT and return loss parameters, supporting 10GBASE-T Ethernet with zero bit error transmissions.

- Easy depression latch boot provides a snagless design that is still easy to operate
- Slim boot supports side-by-side high density applications
- Customized patch cable design for optimized IL and ANEXT
- Ascent sled compartmentalizes conductors to reduce NEXT and improve balance
- Soft flexible cable for easy cable management

Category 6A Patch Cords

Length	Plenum Catalog No.	Standard Catalog No.	28AWG Low Diameter* Catalog No.
1'	HC6App01P	HC6Axx01	HCL6Add01
3'	HC6App03P	HC6Axx03	HCL6Add03
5'	HC6App05P	HC6Axx05	HCL6Add05
7'	HC6App07P	HC6Axx07	HCL6Add07
10'	HC6App10P	HC6Axx10	HCL6Add10
15'	HC6App15P	HC6Axx15	HCL6Add15
20'	–	HC6Axx20	HCL6Add20
25'	–	–	HCL6Add25
30'	–	–	HCL6Add30

PP = Plenum Colors: **BK** (Black), **B** (Blue), **GY** (Gray), **GN** (Green), **P** (Purple), **W** (White) or **Y** (Yellow)

xx = Standard Colors: **BK** (Black), **B** (Blue), **GY** (Gray), **GN** (Green), **OR** (Orange), **P** (Purple), **R** (Red), **W** (White) or **Y** (Yellow)

dd = Low Diameter Colors: **BK** (Black), **B** (Blue), **GY** (Gray), **W** (White)

NEXTSPEED® Ascent Cable

NEXTSPEED® Ascent 10GbE cable features innovative ANEXT reduction techniques in internal jacket construction and individual pair separation. Sweep testing from 1 to 750MHz ensures the highest performance guarantee.

- Third party verified to exceed component compliance limits including ANEXT performance
- Sweep tested to 750MHz to ensure ample bandwidth headroom over the standard
- High power 4PPoE supported for 802.3bt compliant devices
- Smooth and round 0.3" outer diameter improves pulling performance

Category 6A UTP Cable

Color	Riser Catalog No.	Plenum Catalog No.
Black	C6ASRBK	C6ASPBK
Blue	C6ASRB	C6ASPB
Gray	C6ASRGY	C6ASPGY
Green	C6ASRGN	C6ASPGN
Orange	C6ASROR	C6ASPOR
Purple	–	C6ASPP
White	C6ASRW	C6ASPW
Yellow	C6ASRY	C6ASPY

Note: 1000' of cable per spool box

Cat 6 Shielded

Hubbell's NEXTSPEED® Shielded Category 6 system is a tuned system of structured cabling components designed and center balanced to work together to support 10GBASE-T transmission over 100 meters. The system provides headroom beyond 500MHz, and protections against ANEXT and EMI.

- TIA-568-C.2 Category 6 component
- ISO 11801
- IEC 60603-7-41 6 component
- Mechanical verified to TIA-568-C.2
- 100% factory tested
- Continuous third party verification to TIA 568-C.2 and ISO/IEC 11801 Class E_A component requirements



NEXTSPEED® Shielded Patch Panels

NEXTSPEED® Shielded Jack Patch Panels are powder coated and constructed with 16 gauge steel that provides ultimate rigidity. Each panel provides integrated grounding and comes with a cable management bar that separates individual cables and provides strain relief.

- Integrated connector and panel bonding
- Compatible with all Hubbell shielded jacks and couplers
- Comes with cable management bar

NEXTSPEED® Shielded Jacks

NEXTSPEED® Ascent Shielded Category 6 Jacks feature a tool-less termination body that maintains twist integrity and ensures consistent electrical performance. This allows cables to be laced in without disrupting the pairs. The jack's locking body ensures superior termination retention.

- Locking cap ensures termination retention during installation
- Tool-less termination: cap allows cable to maintain optimized performance
- Mating cycles: minimum 750
- Shielded housing: solid zinc die-cast
- Exceeds Category 6 component performance

Shielded Jack Patch Panels, Unloaded, 19"

Ports	Height Inches (mm)	Rack Units	Type	Color	Catalog No.
24	1.75" (45)	1	Standard	Black	HPJS24
48	3.50" (89)	2	Standard	Black	HPJS48

Note: Jacks sold separately

Shielded Category 6 Jacks

Unit of Measure	Catalog No.
Single pack	SJ6
24-pack	SJ624

NEXTSPEED SJ6 has the durability and rigidity needed for any shielded installation. The SJ6 easily installs into any Hubbell iSTATION product, including rear-loading plates, front-loading modules and frames. SJ6 jacks can be used in multimedia configurations with Hubbell Premise Wiring AV connectors that customize all workstations, consolidation points and telecommunication closets.

- Supports IEEE 1000BASE-T (802.3ab)
- Supports IEEE 10GBASE-T (802.3an)
- Supports IEEE 2.5/5GBASE-T (802.3bz)
- IEEE 802.11ac and IEEE 802.11ax WAP deployments
- Qualified to 150% of 802.3bt PoE current levels
- UL Listed 1863
- ISO/IEC 11801 and EN 50173 second edition requirements for transfer impedance and shield effectiveness
- ISO 9001-2008 Manufacturing Process



NEXTSPEED® Shielded Patch Cords

PS6 patch cords are constructed with specially designed patch cable and a cross pair separator delivering one of the industry's highest performing patch cords. Every PS6 patch cord is 100% performance tested, to assure high quality and reliability before it leaves the factory.

- Two-piece conductor sled design controls NEXT
- Third party verified compliment compliant
- 100% factory performance tested
- Slim boot supports side-by-side high density applications
- 10GbE application assurance
- Rated for over 2000 mating cycles

Shielded Category 6 Patch Cords

Length	Catalog No.
3'	PS6xx03
5'	PS6xx05
7'	PS6xx07
10'	PS6xx10
15'	PS6xx15
20'	PS6xx20
25'	PS6xx25

xx = Color: **BK** (Black), **B** (Blue), **GY** (Gray), **GN** (Green), **OR** (Orange), **P** (Purple), **R** (Red), **W** (White) or **Y** (Yellow)

NEXTSPEED® Shielded Cable

NEXTSPEED® Category 6 FTP cable has been finely tuned to work with Hubbell's SJ6 jacks and PS6 patch cords to deliver maximum category 10GbE channel performance. NEXTSPEED Category 6 FTP cable is constructed with polyester backed aluminum foil shield, which protects the twisted pairs from ANEXT and EMI.

- Category 6 component third party verified
- 10GBASE-T application assurance over 100 meters
- Round and smooth 0.28" OD on plenum improves pulling performance and pathway capacity
- High power 4PPoE support with 23AWG bare copper conductors

Category 6 Shielded Cable

Color	Riser Catalog No.	Plenum Catalog No.
Blue	C6FTPSRB	C6FTSPPB
Gray	C6FTPSRGY	C6FTSPGY
White	C6FTPSRW	C6FTSPW

Note: 1000' of cable per spool box

Cat 6

NEXTSPEED® Category 6 components exceed ANSI/TIA/EIA 568-C.2 component specifications. This ensures interoperability, provides higher bandwidth to transmit data in excess of 250MHz, and gives your structured cabling system an error-free transmission path.

- TIA-568-C.2 Category 6 component
- ISO 11801
- IEC 60603-7-41 6 component
- Mechanical verified to TIA-568-C.2
- 100% factory tested
- Continuous third party verification to TIA 568-C.2 and ISO/IEC 11801 Class E_A component requirements



NEXTSPEED® Patch Panels

Patch panels are supplied with labeling for T5688 wiring. The 8-port adapter's fully enclosed shell protects the PCB from contaminants and errant terminations, and also allows icons to be installed on each jack port for identification.

- NEXT margin over TIA 568-C.2 and ISO 11801 Class E channel specifications 1-250MHz
- Allows for 1.5A of continuous current per pair
- Universal wiring (T568A or T568B)
- Integrated icon slots for 606-B compliance

Category 6 Patch Panels, 19"

Format	Color	24-Port, 1RU	48-Port, 2RU	96-Port, 4RU
Standard	Black	HP624	HP648	HP696
Standard	White	HP624W	HP648W	HP696W
Angled	Black	HP624A*	HP648A*	–

*Angled panels protrude 4.46" from the plane of the rack. One extra inch of space is recommended between the door and panel angle.

Jack Patch Panels, Unloaded, 19"

Format	24-Port, 1RU	48-Port, 2RU	72-Port, 3RU	High-Density, 48-Port, 1RU
Standard	HPJ24	HPJ48	HPJ72	UDX48E1U
Angled	HPJ24A	HPJ48A	–	UDX48A1U



NEXTSPEED® Ascent Jacks

NEXTSPEED® Category 6 modular jacks (HJ6) deliver industry unmatched component performance. The XJ6 is the first modular jack to undergo extreme DTE Power testing to 4x the standard handling continuous DTE Power, exceeding the IEEE PoE standard without failure or any substantial increase in temperature.

- Nose contacts made of beryllium copper with a minimum of 50 micro-inch precious metal plating over nickel under plating
- Accepts FCC compliant 6-position plugs
- Material: engineered alloy with RoHS compliant lead-free plating
- Accommodates 22 to 26AWG/solid

Category 6 Jacks

Color	Catalog No.	Color	Catalog No.
Black	HXJ6BK	Office White	HXJ6OW
Blue	HXJ6B	Orange	HXJ6OR
Electric Ivory	HXJ6EI	Red	HXJ6R
Gray	HXJ6GY	White	HXJ6W
Green	HXJ6GN	Yellow	HXJ6Y

Note: Add **25** to Catalog Number for 25-pack.
Gold and Purple also available in 25-pack only.

NEXTSPEED Category 6 components are center balanced to maximize channel performance. NEXTSPEED® Category 6 series patch panels, jacks and cable are manufactured in the USA and backed by Hubbell's 25-year applications assurance warranty. They provide a rugged and reliable solution that supports today's high bandwidth mission critical applications.

- Supports IEEE 1000BASE-T (802.3ab)
- Supports IEEE 2.5/5GBASE-T (802.3bz)
- TSB-155 10GbE support
- Qualified to 150% of 802.3bt PoE current levels
- UL Listed 1863
- ISO 9001-2008 Manufacturing Process



NEXTSPEED® Ascent Patch Cords

HC6's enhanced custom cable and unique plug design provides superior NEXT and Return Loss parameters supporting TSB-155 10 Gigabit Ethernet zero bit error transmission.

- Third party verified to exceed TIA Category 6 limits
- TSB-155 10GbE support
- Easy depression latch boot provides a snagless design that is still easy to operate
- Slim boot supports side-by-side high density applications

NEXTSPEED® Enhanced Cable

Hubbell's NEXTSPEED® Cat 6 Enhanced cable provides substantial margin above all TIA and ISO electrical transmission performance requirements. The cable is sweep tested to 500MHz to guarantee bandwidth headroom.

- Category 6 component third party verified
- TSB-155 10GbE application support
- Thin, round, and smooth 0.23" OD
- High power 4PPoE support with 23AWG bare copper conductors

Category 6 Patch Cords

Length	Plenum Catalog No.	Standard Catalog No.	28AWG Low Diameter Catalog No.
1'	HC6pp01P	HC6xx01	HCL6dd01
3'	HC6pp03P	HC6xx03	HCL6dd03
5'	HC6pp05P	HC6xx05	HCL6dd05
7'	HC6pp07P	HC6xx07	HCL6dd07
10'	HC6pp10P	HC6xx10	HCL6dd10
15'	HC6pp15P	HC6xx15	HCL6dd15
20'	—	HC6xx20	HCL6dd20
25'	—	—	HCL6dd25
30'	—	—	HCL6dd30

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xx = Standard Colors: **BK** (Black), **B** (Blue), **GY** (Gray), **GN** (Green), **OR** (Orange), **P** (Purple), **R** (Red), **W** (White) or **Y** (Yellow)

dd = Low Diameter Colors: **BK** (Black), **B** (Blue), **GY** (Gray), **W** (White)

Category 6 Enhanced Cable

Color	Riser Catalog No.	Plenum Catalog No.
Black	—	C6ESPBK
Blue	C6ESRB	C6ESPB
Gray	C6ESRGY	C6ESPGY
Green	C6ESRGN	C6ESPGN
Orange	C6ESROR	C6ESPOR
Purple	C6ESRP	C6ESPP
White	C6ESRW	C6ESPW
Yellow	C6ESRY	C6ESPY

Note: 1000' of cable per spool box

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