HUBBELL
Premise Wiring

Emerging Technologies and Applications

Schaedler Yesco EXPO 2010

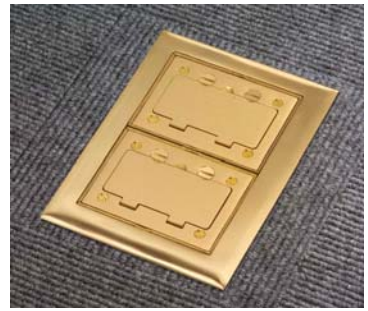
WILD, WILD West

HUBBELL
Premise Wiring

Hubbell One - Total Enterprise

In the Floor
Under the Floor





Through the Floor

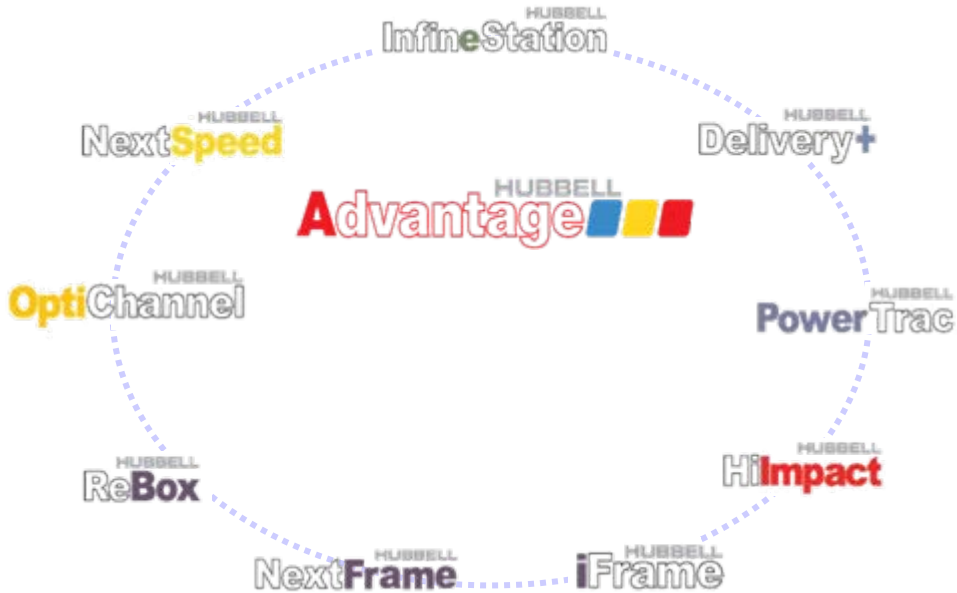


In the Data Center
In the Backbone
In the TR
In the Horizontal
At the Work area



HUBBELL
Premise Wiring

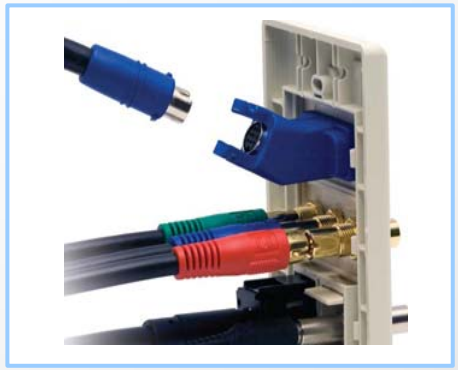
Hubbell One - Total Enterprise



- Comprehensive solution
- Seamless Systems
- Technical Leadership
- Superior Product Performance & Value
- Installation Innovations
- Reliable Termination
- Free, powerful tools make it easy to design communications systems

Design Considerations

MORE CONNECTIVITY



MORE CAPACITY

MORE APPLICATIONS

POINTS TO CONSIDER

- Bandwidth and Application Speeds
- AV
- Conduit Size
- Power Requirements

RISKS

- Reduce Building and application flexibility
- Increase costs of Moves, adds, changes
- Failure to meet technology upgrades quickly and economically

3 Dimensional Infrastructure

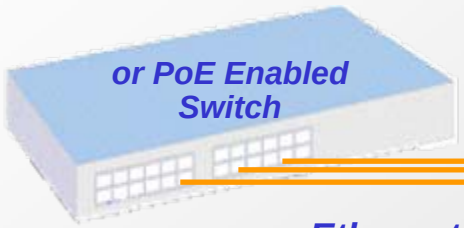
Convergence

- Convergence has taken advantage of the physical layer (UTP) as their means of transportation, adding more content to the pipeline.

- Applications such as 10GbE, VoIP, Video IP, Security, Building Automation, Asset Management, and PoE and PoE+.

HUBBELL
Premise Wiring

Power over Ethernet (PoE)



Ethernet Cable

VoIP Phone

WLAN Access Point

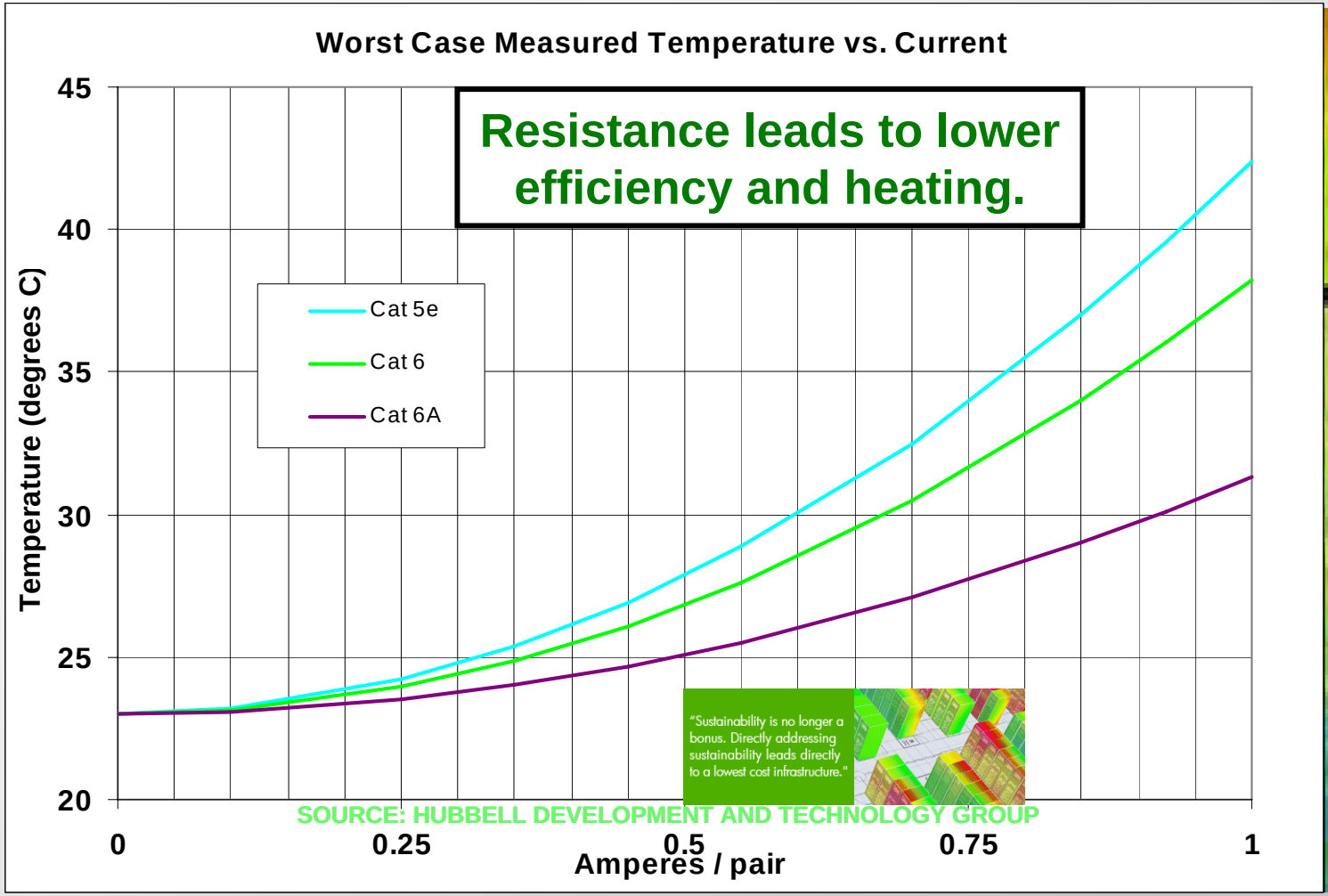
Security Devices

DRIVERS

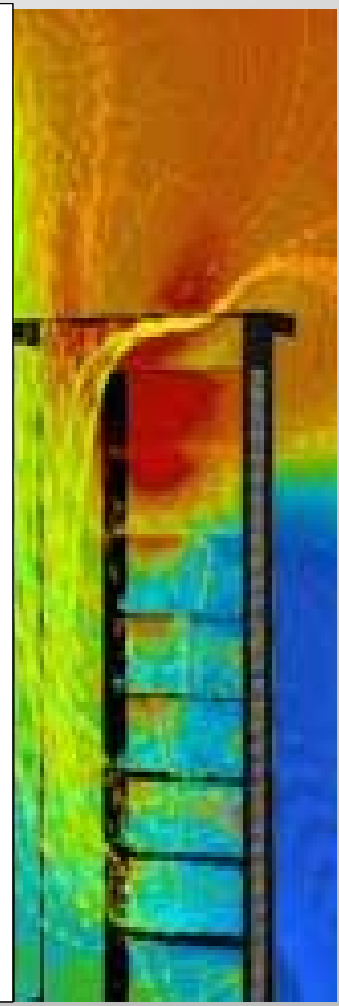
- Ratified Standard (IEEE 802.3af)
- IP Device Growth
- PoE+ (IEEE 802.3at)

HUBBELL
Premise Wiring

Power over Ethernet (PoE)

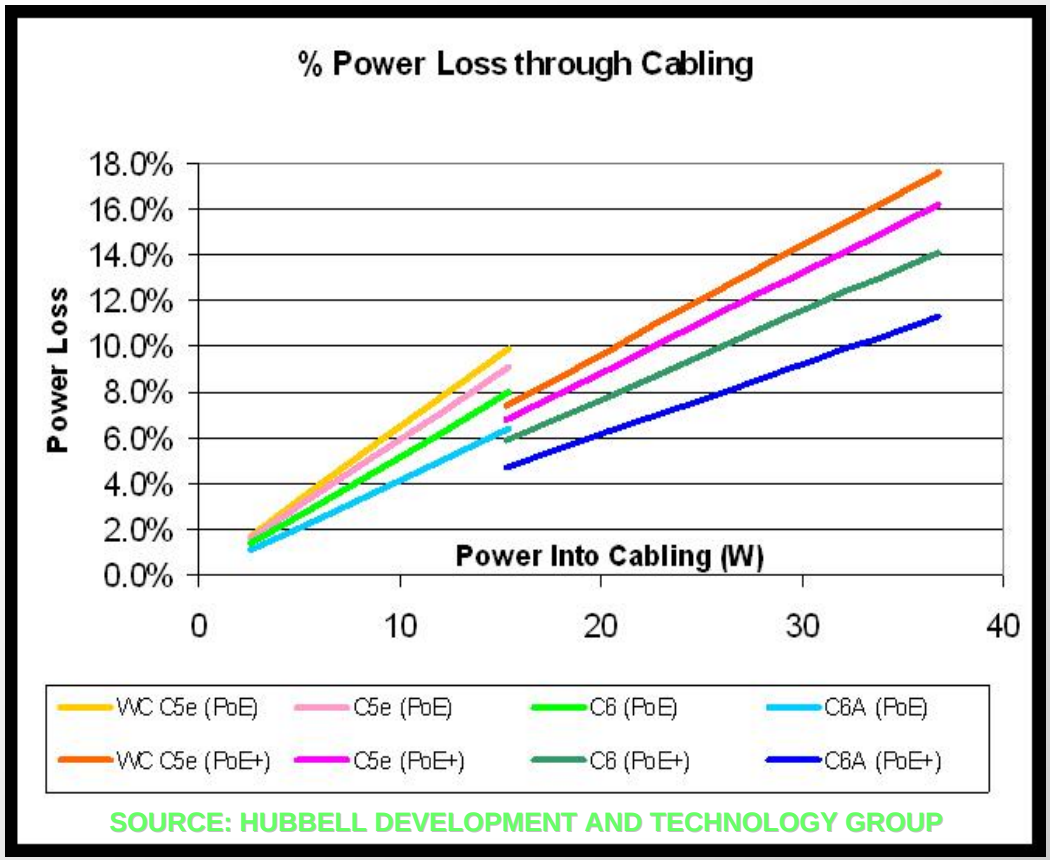


SOURCE: HUBBELL DEVELOPMENT AND TECHNOLOGY GROUP

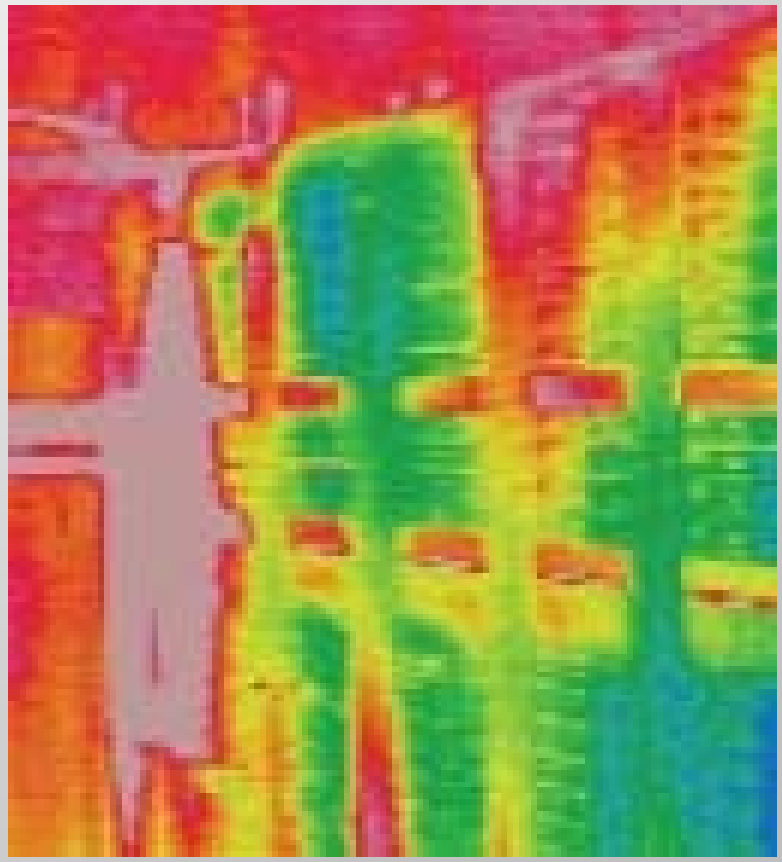


Power over Ethernet (PoE)

Energy Waste and Efficiency



SOURCE: HUBBELL DEVELOPMENT AND TECHNOLOGY GROUP

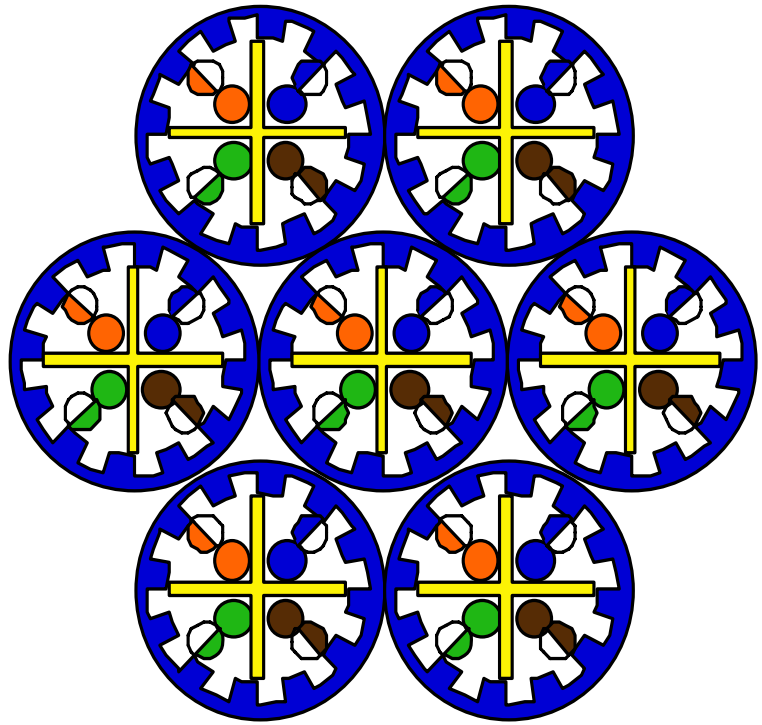


Category 6A ANEXT

(ANEXT) Alien Cross Talk is a coupled signal on a cable/port arising from a signal or signals from different neighboring cables/ports.

Worst Case: 6-around-1 PSANEXT

- Energized outer cables are the "disturbers"
- Center cable is the "victim"



Cat 6A Cable must pass:

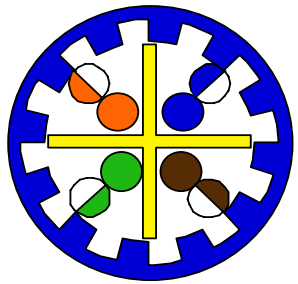
- ANEXT
- AFEXT
- PSANEXT
- PSAFEXT

HUBBELL
Premise Wiring

Category 6A Cable Design

CATEGORY 6 UTP	CATEGORY 6 Shielded	CATEGORY 6A UTP
.250 in.	.290 in.	.330 in.

- New air jacket design
- .350” max cable diameter
- New 23 AWG wire diameter
- Thicker wire insulation
- Tighter pair twists
- Thick pair separator



Cat 6A cable OD affects design and installation

- Pulling group size
- Bend radius
- Pathway fill quantity (up to 50% less than Cat. 6)
- Outlet box selection – need bigger and deeper

50 Cat 6 Cables

50 Augmented Cat 6 Cable

Conduit @ 40% Fill Ratio

Conduit Size	¾ in	1 in	1¼ in	1½ in	2 in
Cable O.D. **.25** in	**4**	**6**	**10**	**14**	**26**
.29 in	**3**	**5**	**7**	**11**	**19**
.35 in	**2**	**3**	**5**	**7**	**13**

HUBBELL Premise Wiring

10GbE Application Guide

	Category 6 UTP	Cat. 6 Shielded	Category 6A UTP	50µm Fiber
TIA Defined Bandwidth	250MHz	250MHz	500MHz	850nm
PoE	<20 W	<20 W	<60 W	N / A
Cable O.D.	.250 in.	.290 in.	.330 in.	.125 in.
Application Speed	1G* 78MHz	1G / 10G 78/417MHz	10G 417MHz	10G
Distance	37-55 m*	100 m	100 m	300 m

* Dependant Manufacture if a Category 6 infrastructure will support 10GbE or TSB-155 testing.

Note: TSB-155 is specifically for existing Category 6 performance characterization beyond 250 MHz out to 500 MHz.

Standard Category 6 cable channels:

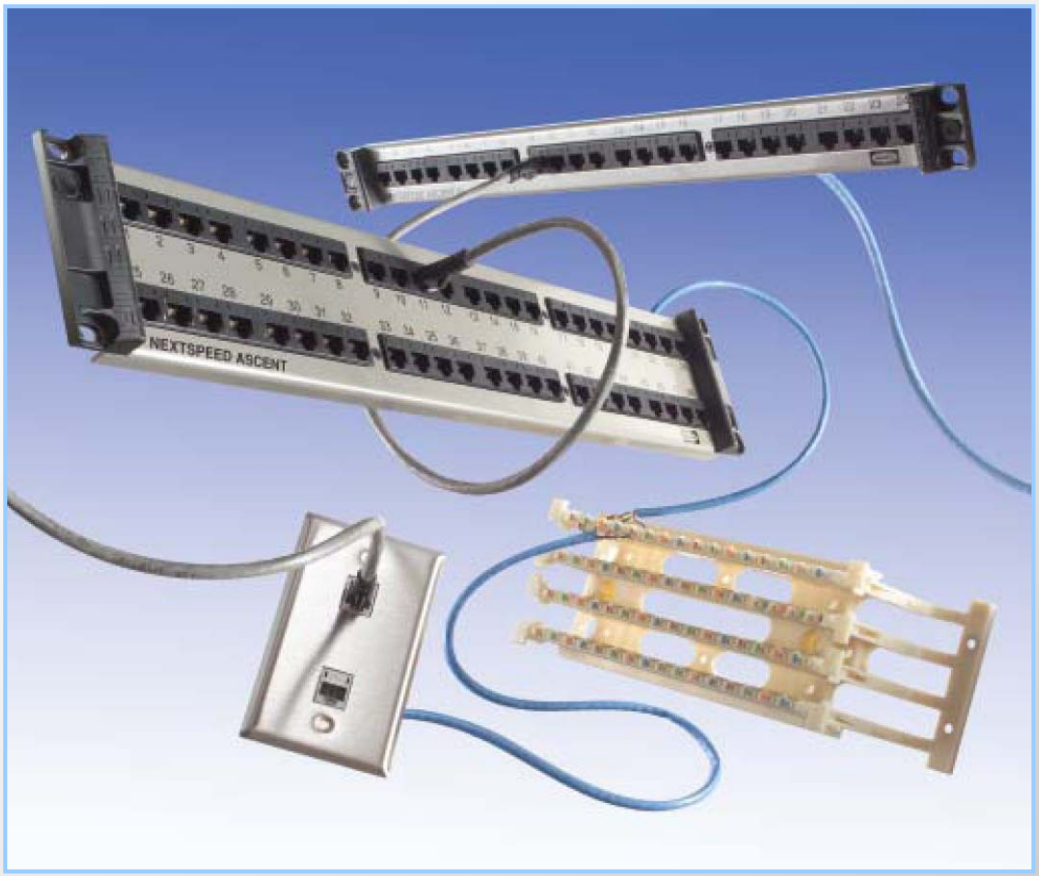
- Support 10GBASE-T only up to 37 meters
- Lengths 37 to 55 meters depend on ANEXT environment
- Lengths > 55 meters require mitigation or enhanced Cat. 6 cable

TSB-155: Cat 6 10 Gbit Mitigation procedures:

- Un-bundle cables and separate patch cords
- Use ScTP patch cords and equipment cords
- Replace jacks with Cat 6A jacks
- Replace panels with Cat 6A panels
- ANEXT field testing to 500 MHz
- Good Luck!

HUBBELL
Premise Wiring

NextSpeed Ascent 10GbE



- 10GbE 100m Application Assurance.
- Bandwidth beyond 625MHz.
- Traditional Jack and Panel Termination.
- Component Compliant ANEXT Performance.
- PoE and PoE+ Ready.

HUBBELL
Premise Wiring

NextSpeed Ascent 10GbE

Jacks

- Component Compliant ANEXT
- Angled towers for ANEXT suppression

Panels

- In line Termination
- 4-S ANEXT
- Shielded
- Swap
- Separate
- Stagger

Cable

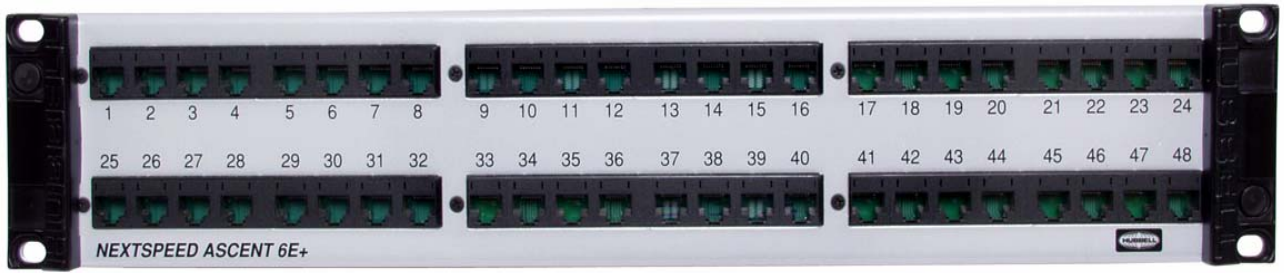
- .340 in diameter
- ANEXT suppression
- Easy to pull conventional round jacket

Patch Cords

- Plug design controls port-port ANEXT
- Precision designed patch cable

HUBBELL
Premise Wiring

NextSpeed Ascent – Patch Panel



New Adapter Construction

- Sealed PCB
- Port & Panel Identification
- In-Line Termination
- Universal Wiring
- Panel Sizes of 24-, 48-, 96-Ports

Fast and Easy Installation

- Designed to accept impact from panel 1-Punch tool
- Plastic Location Pins act as 3rd Hand

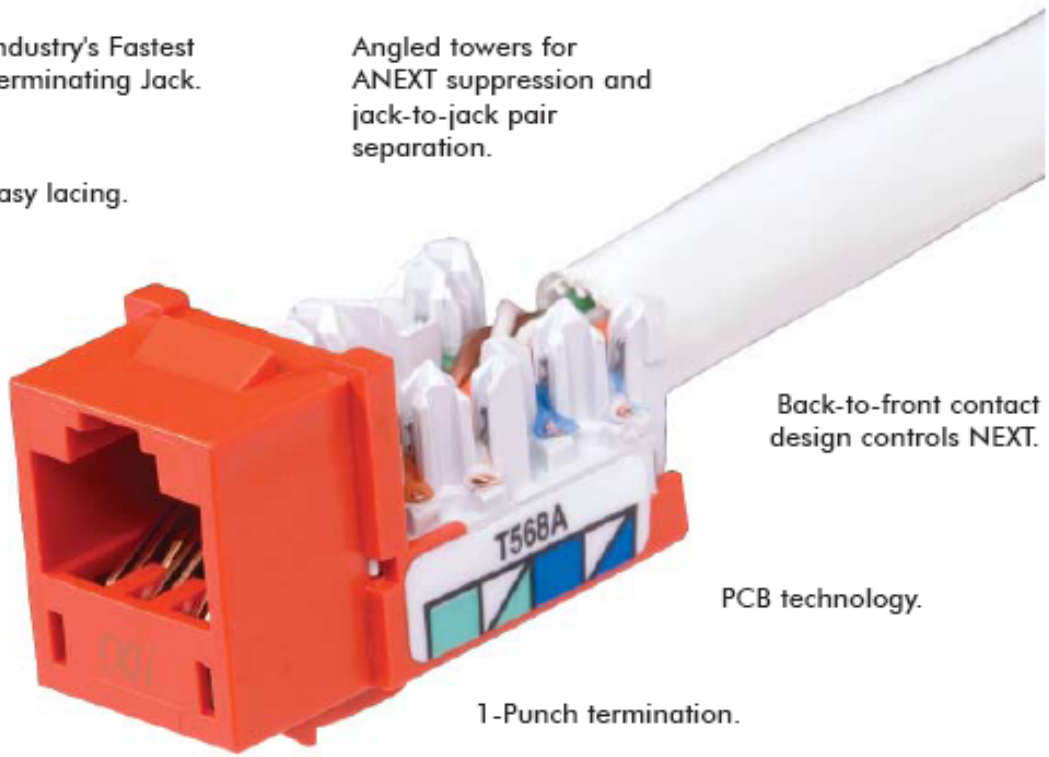
NextSpeed Ascent – Jack

HUBBELL NextSpeed **Ascent 10GbE Jacks**

Industry's Fastest Terminating Jack.

Angled towers for ANEXT suppression and jack-to-jack pair separation.

Easy lacing.

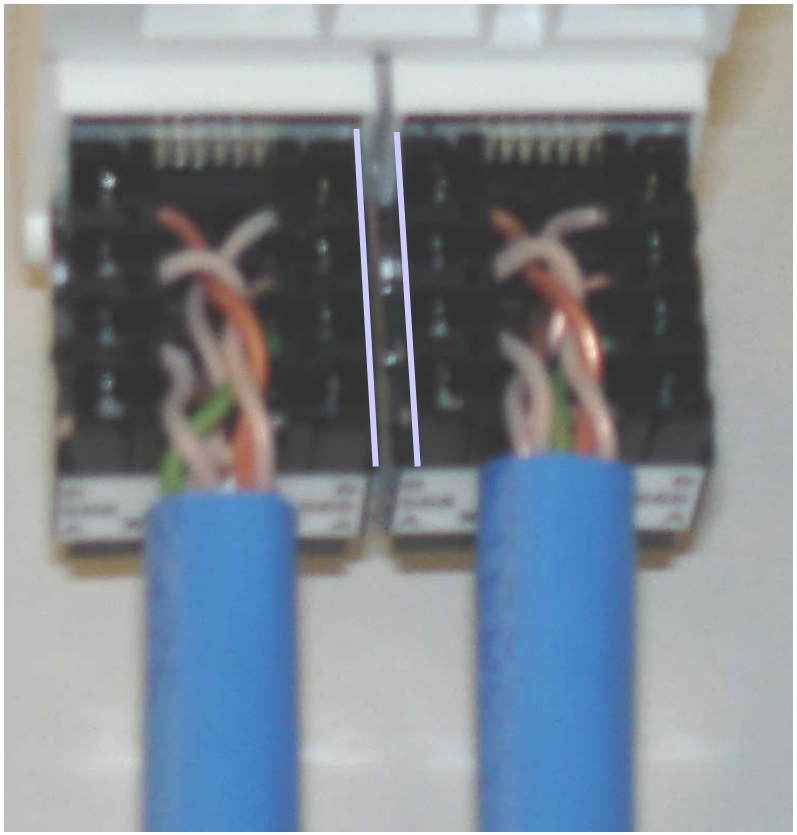


Back-to-front contact design controls NEXT.

PCB technology.

1-Punch termination.

NextSpeed Ascent – Jack

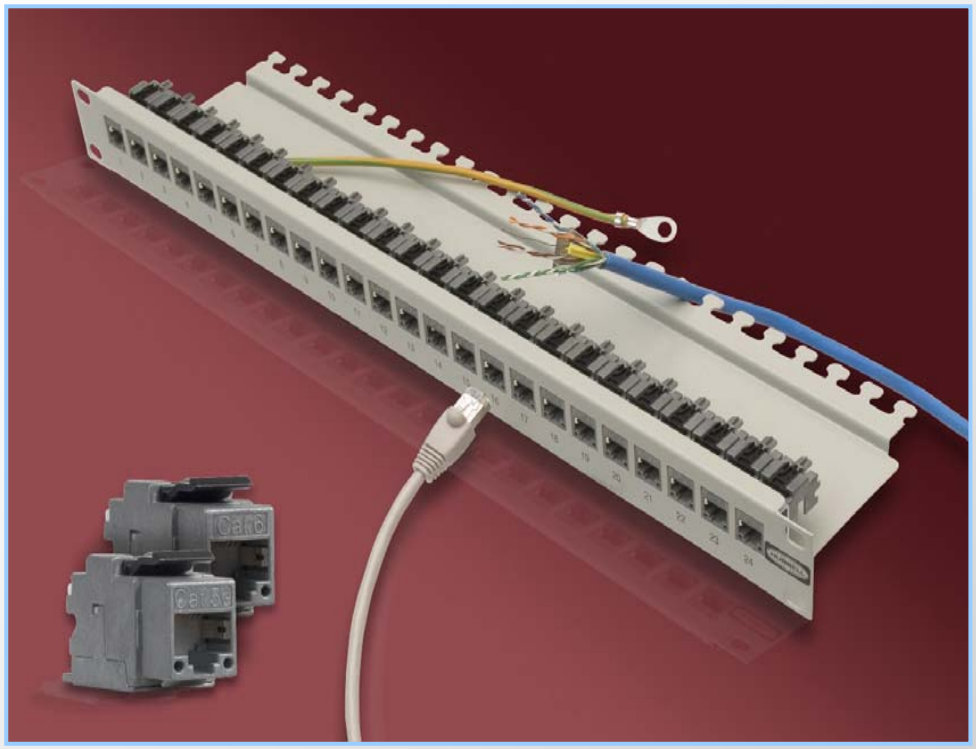


Product with pairs aligned and in close proximity

Hubbell Xcelerator with IDC's with angled offset spacing, designed for separation, thus reducing ANEXT

HUBBELL
Premise Wiring

NextSpeed Shielded 10GbE



- 10GbE 100m Application Assurance.
- Tool-Less Jack Termination
- Protected from External Noise
- Bandwidth beyond 500MHz
- PoE and PoE+ Ready.

HUBBELL
Premise Wiring

NextSpeed Shielded 10GbE

Jacks

- Tool-less termination
- Inversely oriented right angle contacts
- Die cast construction

Panels

- 24 port 1U
- Rugged 14ga construction
- Integral strain relief shelf
- Pre-installed UL ground strap

Cable

- Finely tuned performance
- Protected from external noise
- .290 in dia. round cable

Patch Cords

- Two piece conductor sled
- 100% performance tested

NextSpeed Shielded 10GbE

Advantages of FTP cabling

- Zero Alien Crosstalk **
- Cable diameter =.290” (<< .350” Cat 6A max. diameter)
- Immune to EMI **
- Close pack cable bundling is permitted

FTP

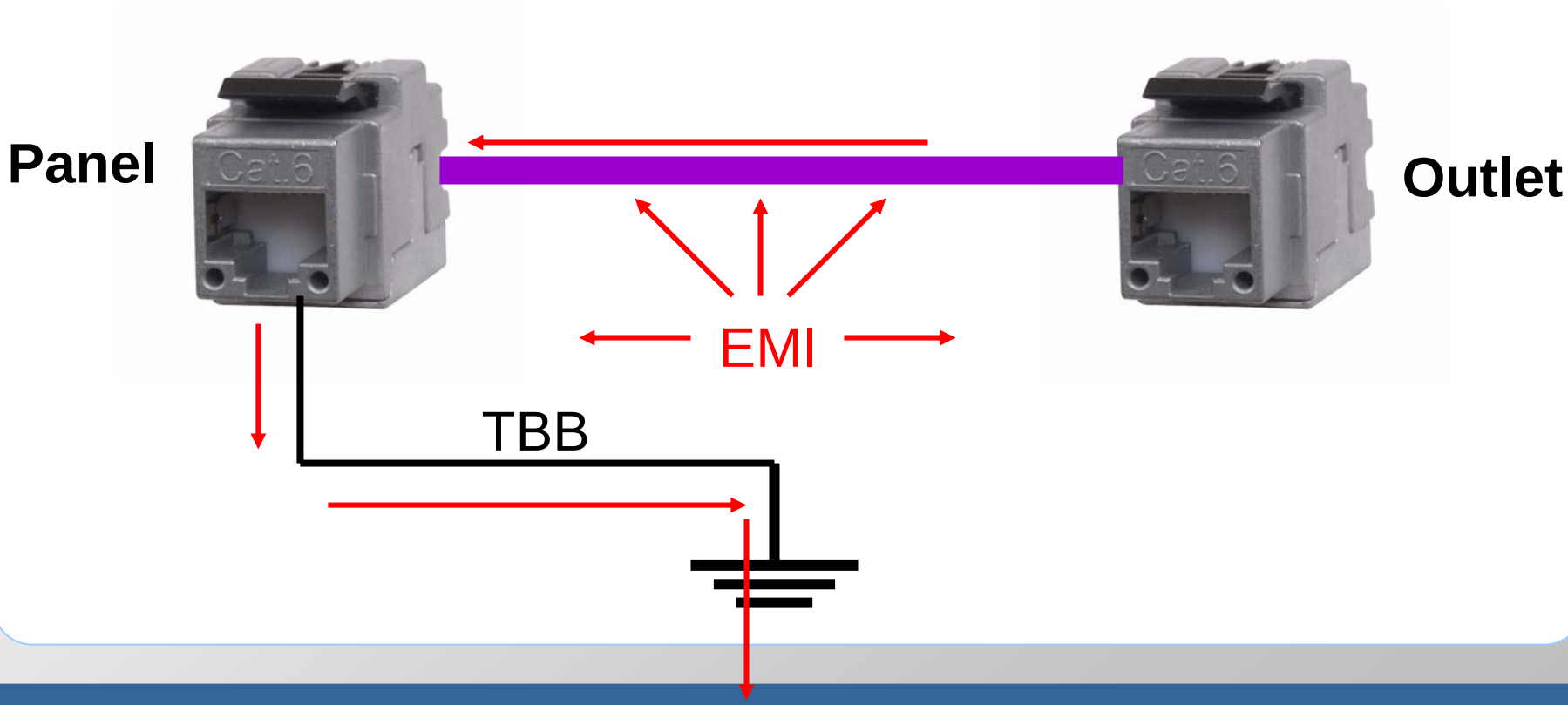
UTP

Disadvantages of FTP cabling

- Larger bend radius requirement: 8 X Cable O.D.
- Increased termination labor
- More outlet restrictions than Cat 6A cabling
- More sensitive to bending failures
- Higher cost of cable and components
- Grounding and bonding infrastructure is mandatory

NextSpeed Shielded 10GbE

- EMI and ANEXT is absorbed into the foil
- Noise is “drained” off safely to ground through the panel



HUBBELL
Premise Wiring

BIDnet™ Cable Assemblies

- MISSION CRITICAL Warranty
- TIA and ISO Category 6A Channel Compliance
- 100% Factory Terminated and Tested
- Reduces Installation Time by more than 70%
- PoE and PoE+ Ready.
- Reduces material and packaging waste a “Green” product.

HUBBELL Premise Wiring

BIDnet™ Cable Assemblies

BIDnet Applications

- Data centers
- Telecommunications Room
- Switch and Servers
- Open office
- Modular Furniture
- Raised Access Flooring
- Disaster Recovery Sites

HUBBELL
Premise Wiring

BIDnet™ Cable Assemblies

BIDnet Panel Options

- BIDnet Assemblies Mount in all UDX Style Panels
- Angled Jack Panels
- Standard Jack Panels
- High Capacity (1U 48-Port)

More Capacity

More Configurations

HUBBELL
Premise Wiring

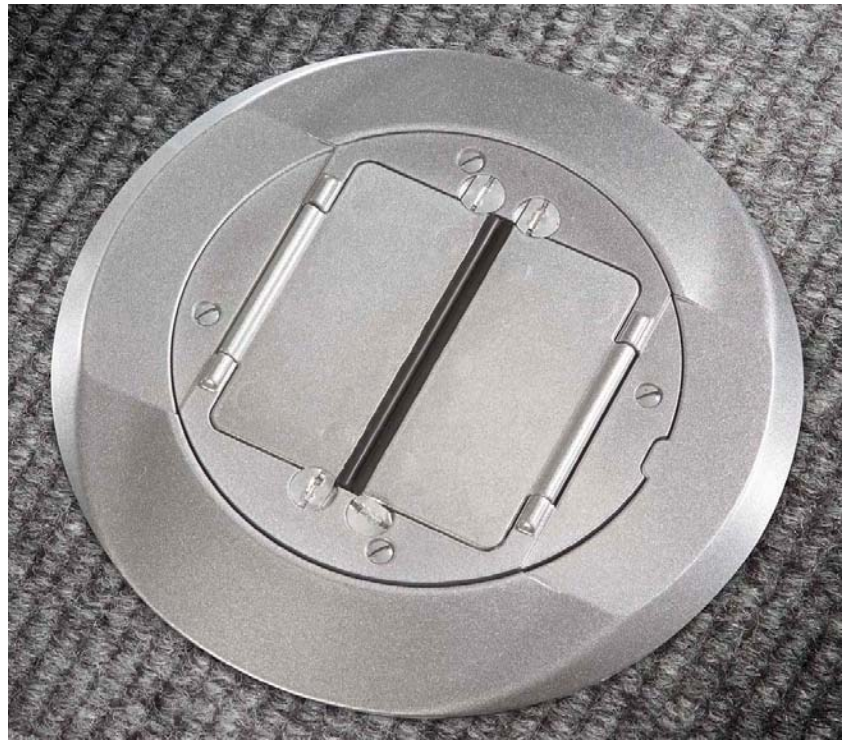
Hubbell SystemOne

Two Delivery Systems

Floor Box

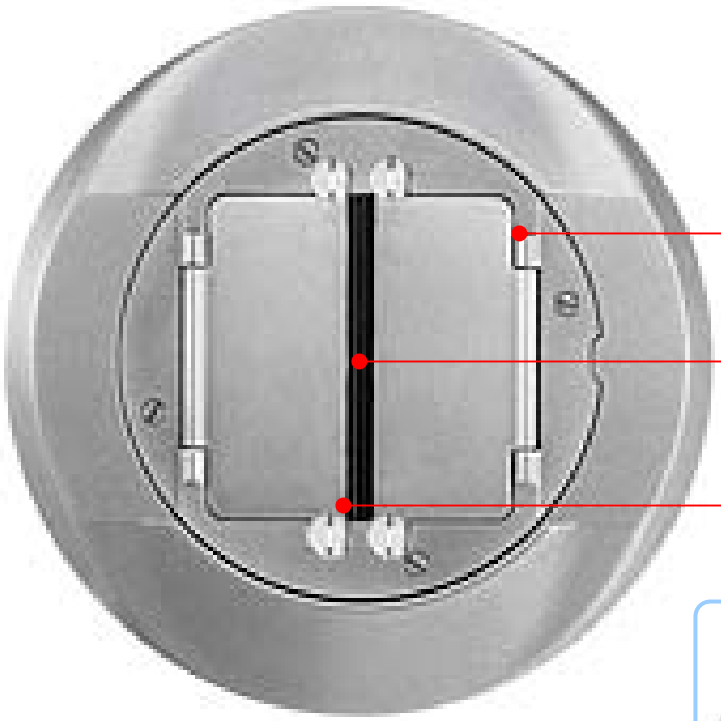
Poke Through

One universal cover



HUBBELL
Premise Wiring

Hubbell SystemOne



- Installs on SystemOne round PVC floor box and fire rated poke-throughs
- Solutions for carpet and tile applications
- Entire universal cover assembly is constructed of durable cast Aluminum
- Powder Coated Finish
  Brass
  Aluminum
  Gray, Ivory, Black
- Unique over molded Santoprene doors exceed UL514A and UL514C scrub water exclusion tests

HUBBELL Premise Wiring

Hubbell SystemOne

PVC Round Floor Box

Universal cover mounts directly to included mounting clips.

Simple saw cut after pour adjustment.

Oversized Parallel conduit hubs 1 ½" Data & 1" Power

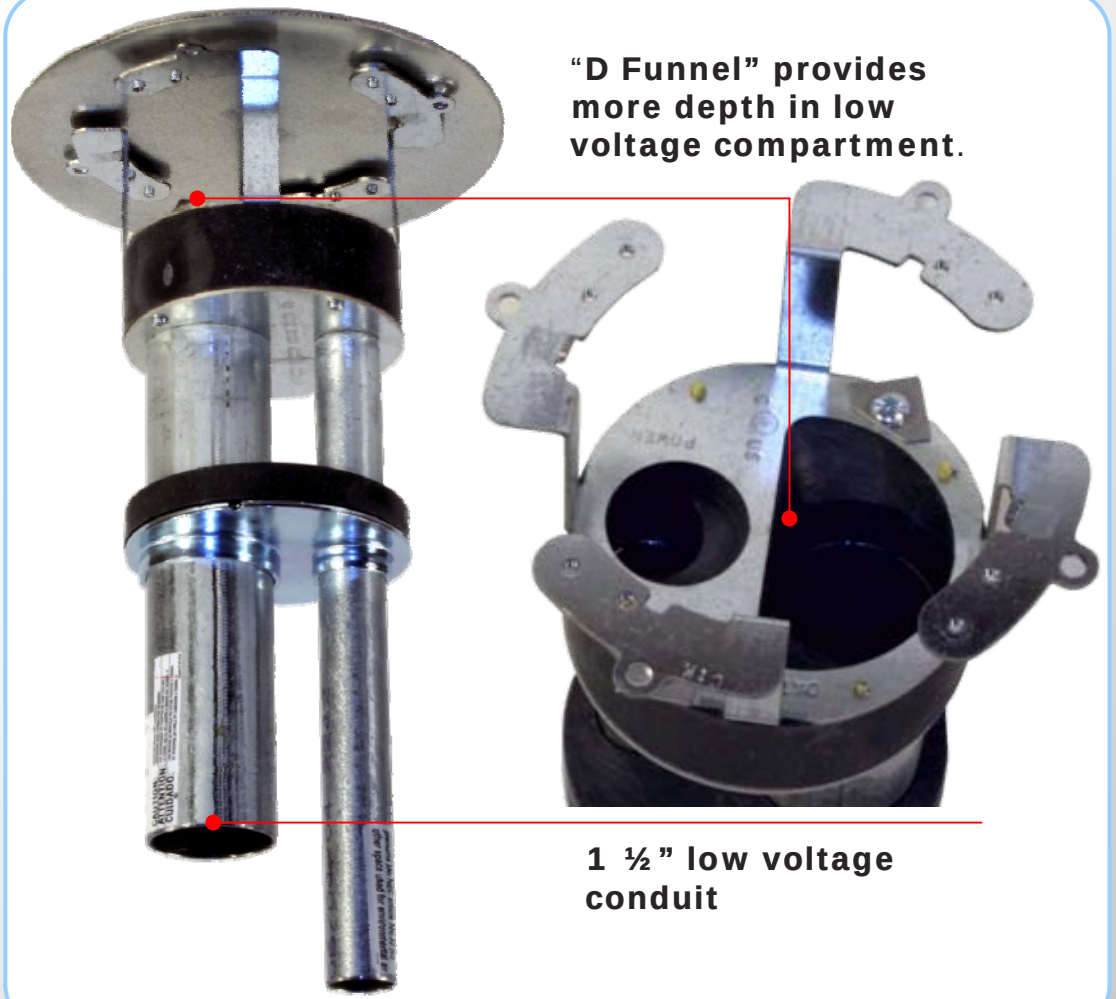
- Accepts Hubbell SystemOne universal cover for both carpet and tile applications
- Suitable for on or above grade applications
- Dual service min depth of pour 3"
- Features four parallel entry hubs two 1½" & two 1"
- Divider for S1SP included with floor box.
- (2) 1.5" to 1" & (2) 1 ½" to ¾" conduit reducers
- (2) 1 ½" & (2) 1" conduit plugs

SystemOne Metallic Floor Box

Catalog	Min. Depth of Pour	Power Conduit	LV Conduit
S1CFB SystemOne Cast Iron Floor Box	3 ½ Inch	1” N.P.T.	1 ½ “ N.P.T.
S1SFB SystemOne Steel Floor Box	3 ½ Inch	¾”, 1” Concentric K.O.	¾”, 1”, 1 ¼” Concentric K.O.
S1SFBAV SystemOne Steel Floor Box – A/V	3 ½ Inch	¾”, 1” Concentric K.O.	1 ½” Threaded Hub

HUBBELL
Premise Wiring

Hubbell SystemOne



- Accepts universal carpet, tile, and furniture feed covers.
- For use with all sub plates except S1SP4X4, S1SP, S1SPTL
- One 3/4" power & one 1 ½" data E.M.T. conduit tubes
- Step down installation clips
- Installs in 4" cored hole
- UL Listed for use in 1-4 hour rated floors
- Available in one-piece catalog number (S1PT3IMAL)

HUBBELL
Premise Wiring

Hubbell SystemOne

Carpet

Tile

+

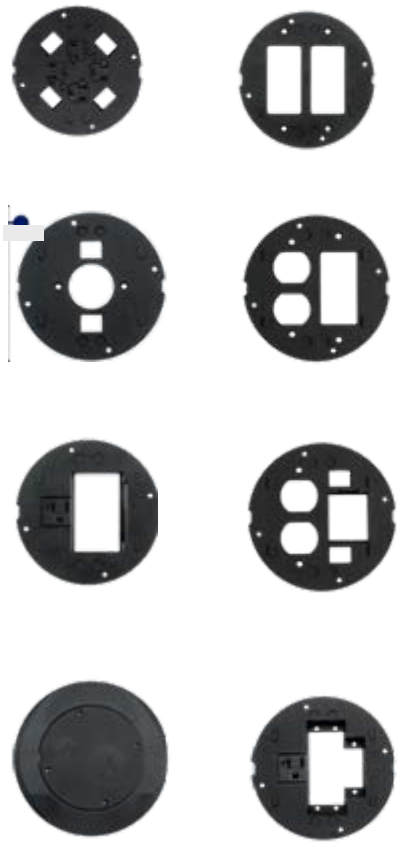
Non-metallic Floor Box

Metal Floor Box

Poke Through

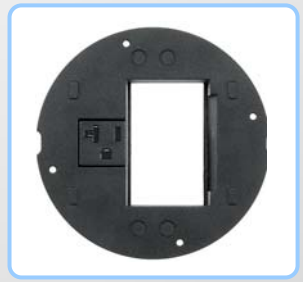
+

Application Sub-plates

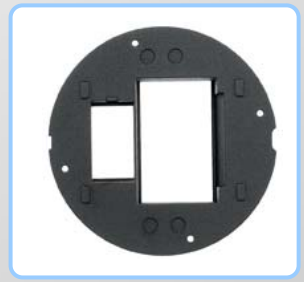


S1PTAVFIT + INFINeSTATION

S1SP3IM



S1SP4IM

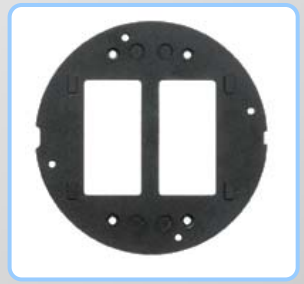


- S1SP3IM supplied with one 20A, 125V pre-wired receptacle.
- Pre-wired with three #12 AWG THHN 24” long stranded copper power conductors.
- S1SP3IM accepts three recessed Hubbell 1U INFINeSTATION modules for up to 6-ports.
- S1SP4IM Sub plate accepts four recessed Hubbell 1U INFINeSTATION modules for up to 8-ports.
- Recommended for S1PTAVFIT fitting.

Hubbell SystemOne

S1PTAVFIT
+
DUAL STYLE LINE

S1SP



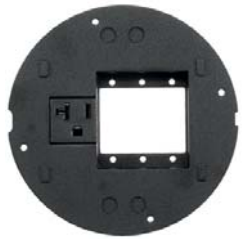
- Supplied with two rectangular style Line openings
- Features two rectangular Style Line openings to accommodate 15 or 20A standard or IG Style Line, GFCI, and surge receptacles.
- Low voltage Style Line outlet frames provide 2-, 3-, 4-, or 6-ports communication connectivity.

HUBBELL
Premise Wiring

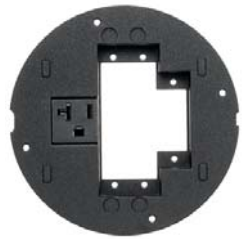
Hubbell SystemOne

S1PTAVFIT
+
EXTRON

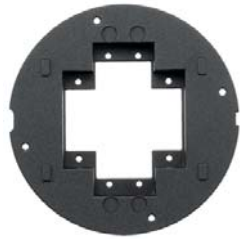
S1SPEXT1



S1SPEXT2



S1SPEXT3



- EXT1 accepts 3 Extron MAAP Plates.
- EXT2 accepts 1 MAAP & 2 AAP Extron Plates.
- EXT3 accepts 2 MAAP & 2 AAP Extron Plates for all communications applications.
- For use with S1PTAVFIT poke through floor fitting.

S1PTAVFIT + FURNITURE FEED

S1SPFFBL
S1SPFFAL
S1SPFFGY
S1SPFFBRS

- One ¾” screw plug opening for Power.
- One 1 ½” screw plug opening for Data
- UL Listed for use in 1-4 hour rated floors
- UL Fire listed for 100% low voltage cable capacity.
- Includes matching carpet flange
- Available in AL, BRS, BL, and GY powder coat finishes.

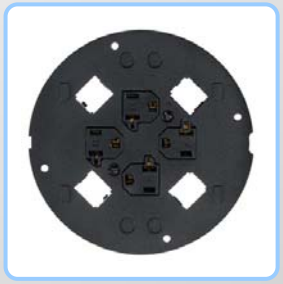
HUBBELL
Premise Wiring

Hubbell SystemOne

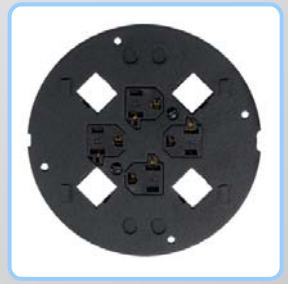
S1PT4X4FIT
+
4X4

S1SP4X4

S1SP4X4PA



S1SP4X4SYS



- Supplied with four 20A, 125V receptacles
- Receptacles are pre-wired with six #14 AWG THHN 24” long stranded copper power conductors.
- Accepts four Hubbell UTP jacks or snap-fit multi-media connectors.
- For use with S1PFB floor box and S1PT4X4FIT poke through floor fitting.

Hubbell SystemOne

S1PT4X4FIT
+
TWIST LOCK

S1SPTL

- One 1.56” OD opening for Hubbell 20 or 30AMP Twist Lock receptacles.
- Two openings for Hubbell jacks and/or flush multimedia snap in connectors.
- For use with S1PFB floor box and S1PT4X4FIT poke through floor fitting.

HUBBELL
Premise Wiring

Endless Applications

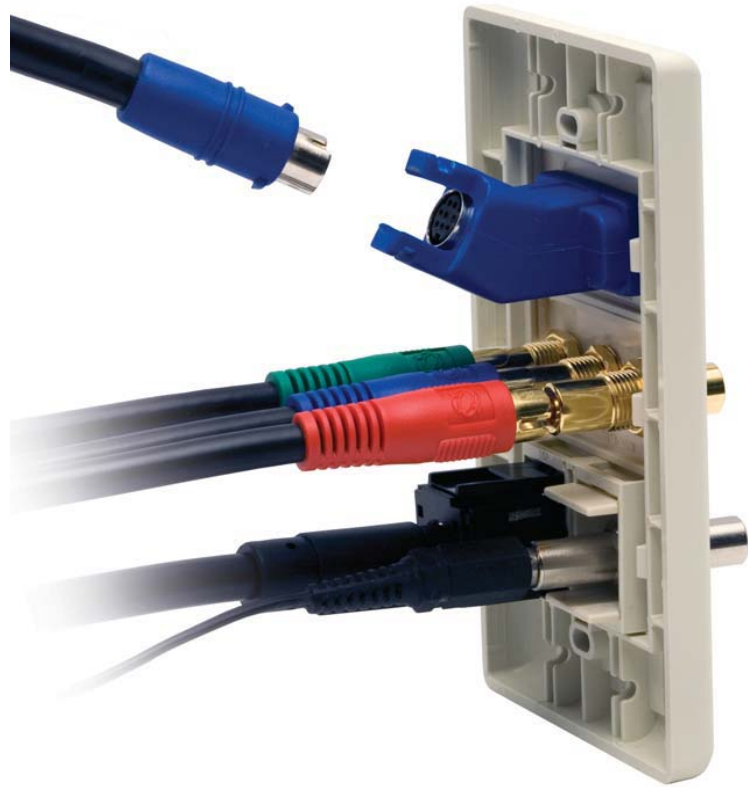
Schaedler Yesco
EXPO 2010

WILD WILD West

HUBBELL
Premise Wiring

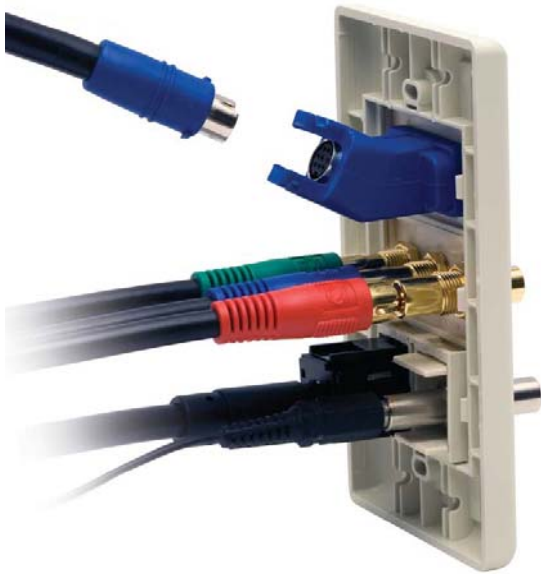
Plug and Play AV

- 100% factory terminated and tested
- Easy to Specify.
- Saves valuable installation and testing time in the field.
- Allows the user to swap out application patch cords utilizing the same connection without changing the horizontal runs.
- 28AWG, 75 Ohm horizontal cable runs can easily be pulled through ¾" conduit.
- Allows up to 6 keystone connections or 3-1 Unit modules in a single gang delivering the equivalent of up to 30 connectors in a single plate.



HUBBELL
Premise Wiring

Plug and Play AV – HD 15 (SVGA)



- Plenum and Non-Plenum
- 5’ to 100’ in 5’ increments

Straight 180°

Angled 45°

Angled 90°

HUBBELL Premise Wiring

Plug and Play AV – 8-Pin Modules

- Each Module is connected to a 4” Non-Plenum Female 8-Pin Whip.
- One horizontal 8-Pin modular cable will support each module.
- No need for special cables for each application.
- Easy to change applications at the device without pulling out and discarding horizontal cabling.
- Installs into Hubbell front loading InfineStation Faceplates, and delivery Systems.
- Uses standard device patch cords

HUBBELL Premise Wiring

Plug and Play AV – 8-Pin Connector

The key to the system is the small form factor X-END™ interface. The interlocking 8-Pin Din Connection provides a simple way to connect and disconnect 13 different Analog AV applications utilizing one common horizontal run.

8-Pin Connectors

AV 8-Pin Cable Whips

Lets Talk Configurations

Option 1

Transmitting Signal

Horizontal Run

Receiving Signal

Lets Talk Configurations

Option 2

Transmitting Signal

Horizontal Run

Receiving Signal

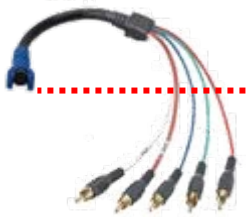
Lets Talk Configurations

Option 3



Transmitting Signal





Horizontal Run

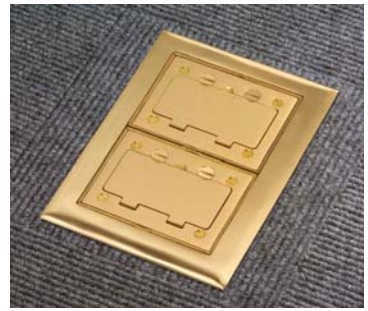

Receiving Signal


HUBBELL
Premise Wiring

Hubbell One - Total Enterprise

In the Floor
Under the Floor





Through the Floor



In the Data Center
In the Backbone
In the TR
In the Horizontal
At the Work area