

3M

Volition™

Copper Cabling System

Category 5e Structured Cabling System

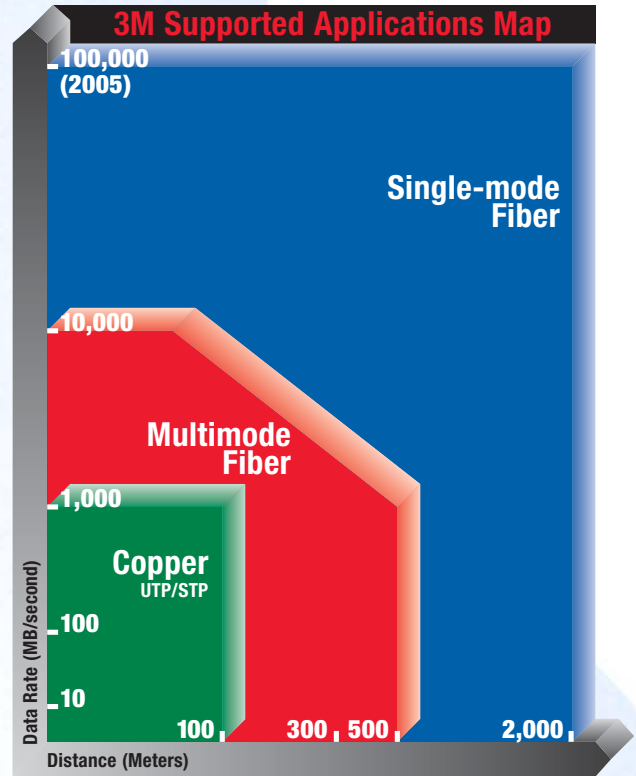




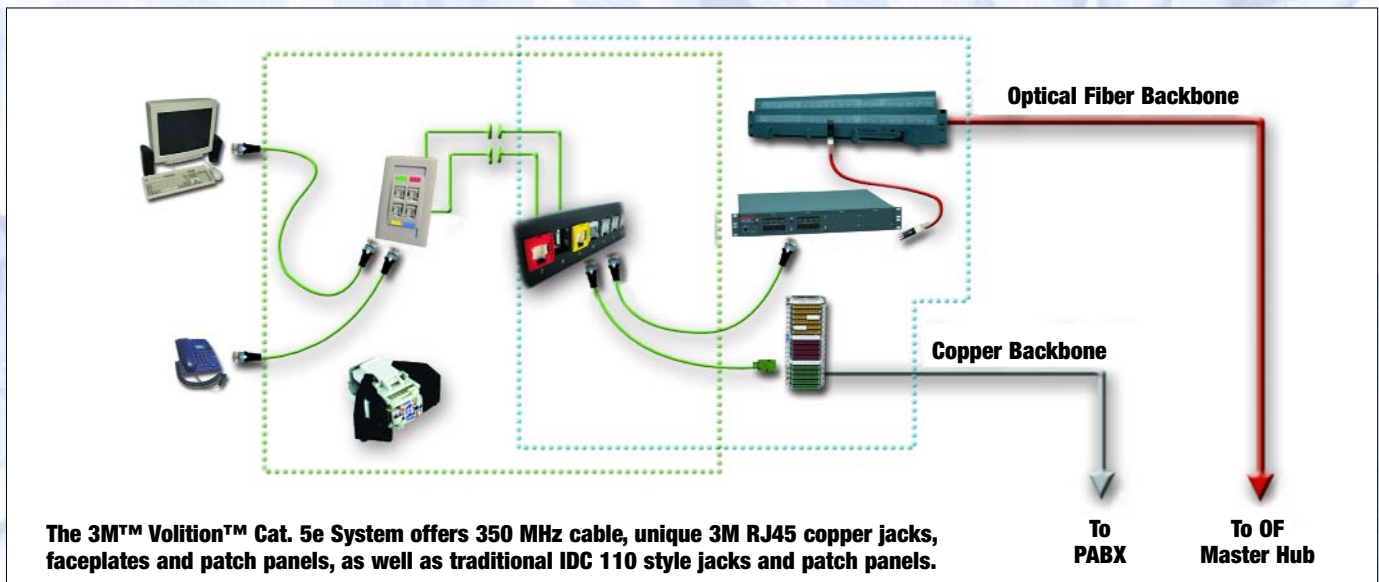
3M Volition Network Solutions introduces Category 5e (Cat. 5e) copper cabling system to complement its leading fiber optic structured cabling system. Customers can now enjoy a single source of supply and support for all their local area networking requirements.

The Cat. 5e structured cabling system provides distributed horizontal cabling for SOHO, residential and other short-distance applications supporting networks up to gigabit data rates.

Volition Network Solutions includes copper, multimode and single-mode fiber products that can be used in combination for virtually every application.



Volition cabling solutions are focused on reducing the complexity and applied cost of cabling infrastructure through innovations such as the small form factor VF-45™ fiber interconnect, robust and reliable copper connectors and high performance cable to support the most demanding applications.



The 3M™ Volition™ Cat. 5e System offers 350 MHz cable, unique 3M RJ45 copper jacks, faceplates and patch panels, as well as traditional IDC 110 style jacks and patch panels.

Jacks

3M™ Volition™ K5E Cat. 5e RJ45 Jack

The latest innovation in our enterprise structured cabling portfolio, the new jack is our unique Cat. 5e hardware component utilizing the universally accepted keystone mounting.

It offers a quick and reliable Cat. 5e connection as the eight copper conductors are effortlessly terminated in a single operation without tools. The K5E is the core of our copper structured cabling solution offering superior performance over Cat. 5e link standards.



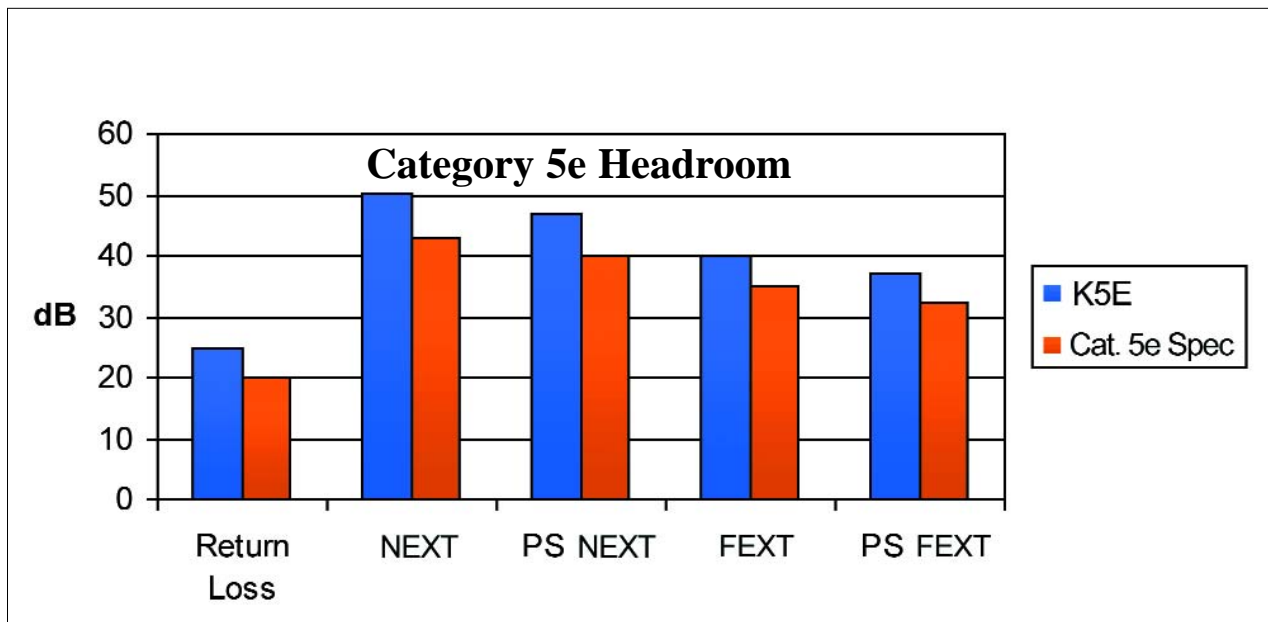
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Features

- Tool-less connector
- Integral shutter
- Reusable
- Keystone mounting
- Top or bottom cable insertion
- Accepts cables from AWG 26 to 22
- Self-stripping contacts with 1.3 μm gold plating

Benefits

- No tool needed for cable connection and connector mounting
- Increased dust protection, especially during installation phases or dirty environments
- In case of wrong wiring, the connector is reusable (several times if needed)
- Keystone mounting offers universal compatibility with face plates and patch panels
- Enhanced respect for bend radius
- Compatible with a wide range of cables
- Guaranteed high performance contact



The 3M Volition K5E jack surpasses Cat. 5e specifications

Specifications

Technical Characteristics

RJ45 Category 5e Hardware test result (worst case)

Frequency	100 MHz
Attenuation	< 0.2 dB
Return Loss	25.8 dB
Next Pair to Pair	50.8 dB
Ø of the conductors	0.50 mm < Ø < 0.65 mm
Ø of the sheath	1.60 mm maximum

Permanent Link Category 5e Test Result (worst case)

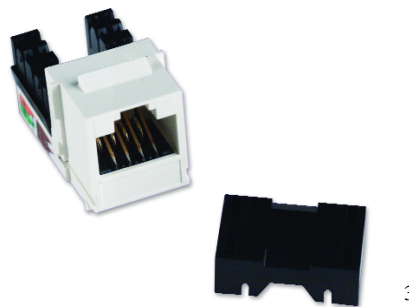
	Attenuation	NEXT	ELFEXT	Return Loss
Value	18.3 dB	51.7 dB	30.6 dB	28.6 dB
Margin	2.7	11.4	7.3	9.6
Frequency	100 MHz	32.4 MHz	58.6 MHz	4 MHz

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-OCK5E-U-W	RJ45 K5E Jack UTP, White	1 Carton	Carton of 96, 12 bags of 8 each
VOL-OCK5E-U-BU	RJ45 K5E Jack UTP, Blue	1 Carton	Carton of 96, 12 bags of 8 each
VOL-OCK5E-U-G	RJ45 K5E Jack UTP, Green	1 Carton	Carton of 96, 12 bags of 8 each
VOL-OCK5E-U-R	RJ45 K5E Jack UTP, Red	1 Carton	Carton of 96, 12 bags of 8 each
VOL-OCK5E-U-Y	RJ45 K5E Jack UTP, Yellow	1 Carton	Carton of 96, 12 bags of 8 each
VOL-OCK5E-U-BL	RJ45 K5E Jack UTP, Black	1 Carton	Carton of 96, 12 bags of 8 each
VOL-OCK5E-U-O	RJ45 K5E Jack UTP, Orange	1 Carton	Carton of 96, 12 bags of 8 each

3M™ Volition™ Cat. 5e 110 Jacks

Volition Cat. 5e 110-style jacks are available in office white, black, blue and orange. They can be wired to T568A or T568B wiring standards. The 110-style jacks utilize the keystone fixation.



Features

- Supports T568A or T568B wiring standards
- Multiple colors available

Benefits

- Standards compliant. Only one model needed for both wiring standards
- Colors can be used to identify different groups of ports for security levels, networks, work groups, etc.

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-J5EABOW	Jack, Cat. 5e Keystone, 568A, 568B, office white	1 box	50/box
VOL-J5EABB	Jack, Cat. 5e Keystone, 568A, 568B, black	1 box	50/box
VOL-J5EABU	Jack, Cat. 5e Keystone, 568A, 568B, blue	1 box	50/box
VOL-J5EABO	Jack, Cat. 5e Keystone, 568A, 568B, orange	1 box	50/box

Outlets

3M™ Volition™ Convex Keystone Faceplate



The Volition keystone faceplate allows the K5E jacks to be used with the Volition wall adapters and can even work with surface mount applications. This faceplate is available in office white and bright white in both 2 and 4 port configurations. The faceplate comes with easy to use labels, label windows and port icons for detailed port identification.

Features

- Convex front face
- Paper Labels
- Label Windows
- Colored port icons

Benefits

- Enables space for RJ45 and VF-45 jacks in the same Volition adapter
- Enables easy handwritten labeling
- Protect labels
- Enables Network Identification

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-0712	Face Plate 2 Module Office White	1 Carton	Carton of 50 , bag of 1 each
VOL-0712B	Face Plate 2 Module Bright White	1 Carton	Carton of 50 , bag of 1 each
VOL-0714	Face Plate 4 Module Office White	1 Carton	Carton of 50 , bag of 1 each
VOL-0714B	Face Plate 4 Module Bright White	1 Carton	Carton of 50 , bag of 1 each
VOL-0300	Blank Port Insert, Office White	1 Carton	Carton of 48 each
VOL-0300B	Blank Port Insert, Bright White	1 Carton	Carton of 48 each

3M™ Volition™ Modular Keystone Faceplates

The modular style faceplate range is a system designed to accommodate the 45x45 legrand™ style faceplate openings. The modules are available in three versions:

- 22.5x45 mm, 1 port
- 45x45 mm, 1 port
- 45x45 mm, 2 ports

A label holder and a white application icon (colored icons are available separately) presents a smart and functional appearance.



Features

- Aperture for keystone mounting jacks
- Flat surface mounting
- Shutter integrated into the jack
- Legrand™ modular design
- Mounting mechanism allows correct positioning in both vertical and horizontal trunking or boxes

Benefits

- Universally accepted mounting standard
- Reduced tension impact
- Increased dust protection, especially during installation phase or industrial environment
- Fits in all boxes and trunking suitable for 45 x 45mm legrand footprint
- No need for additional trunking or boxes to accommodate the jacks

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-FP2M-F1K	RJ45 Face Plate 22.5 x 45 For 1 Keystone jack	1 Carton	Carton of 24, bag of 8 each
VOL-FP4M-F1K	RJ45 Face Plate 45 x 45 For 1 Keystone jack	1 Carton	Carton of 24, bag of 8 each
VOL-FP4M-F2K	RJ45 Face Plate 45 x 45 For 2 Keystone jacks	1 Carton	Carton of 24, bag of 8 each

Reversible Icons for Keystone Faceplates

- Available in six colors
- Reversible icons for voice or data
- Can be used with Volition Convex or Modular Faceplates

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-0790	Reversible Icons (Voice/Data), for Keystone Faceplates, White	1 Carton	Carton of 10 bags
VOL-0790B	Reversible Icons (Voice/Data), for Keystone Faceplates, Bright White (pack of 8)	10 (sets of 8)	10 X set of 8
VOL-0790BL	Reversible Icons (Voice/Data), for Keystone Faceplates, Blue (pack of 8)	10 (sets of 8)	10 X set of 8
VOL-0790GR	Reversible Icons (Voice/Data), for Keystone Faceplates, Green (pack of 8)	10 (sets of 8)	10 X set of 8
VOL-0790RD	Reversible Icons (Voice/Data), for Keystone Faceplates, Red (pack of 8)	10 (sets of 8)	10 X set of 8
VOL-0790YL	Reversible Icons (Voice/Data), for Keystone Faceplates, Yellow (pack of 8)	10 (sets of 8)	10 X set of 8

3M™ Volition™ Keystone Faceplates

Volition keystone faceplates are available in blank, one, two and four port configurations in office white and bright white. Each faceplate comes with two paper labels, two label windows and two screws. Volition faceplates are offered in boxes of 50. Keystone faceplates must be used with keystone jacks.



Features

- Works with traditional outlets
- Labels, windows and screws included

Benefits

- Can be used with existing wall outlets
- Everything needed to install faceplate comes in the box

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-0700	Faceplate, Single Gang, Blank, office white	1 box	50/box
VOL-0700B	Faceplate, Single Gang, Blank, bright white	1 box	50/box
VOL-0701	Faceplate, Single Gang, 1 RJ45 port Keystone, office white	1 box	50/box
VOL-0701B	Faceplate, Single Gang, 1 RJ45 port Keystone, bright white	1 box	50/box
VOL-0702	Faceplate, Single Gang, 2 RJ45 ports Keystone, office white	1 box	50/box
VOL-0702B	Faceplate, Single Gang, 2 RJ45 ports Keystone, bright white	1 box	50/box
VOL-0703	Faceplate, Single Gang, 2 RJ45 ports Keystone, office white	1 box	50/box
VOL-0703B	Faceplate, Single Gang, 2 RJ45 ports Keystone, bright white	1 box	50/box

Cords

3M™ Volition™ Cat. 5e RJ45 Patch Cords



Part of the 3M Volition copper enterprise portfolio, patch cords allow you to complete your Cat. 5e EIA/TIA system offer. Designed to exceed the Category 5e requirements, the Volition patch cords optimize the channel performance when used in the Volition Cat.5e solution. The RJ45 patch cord range includes the versions listed in the ordering information below (UTP PVC available in 1, 2, 3 and 5 meters).

Features

- Molded boot
- Four pairs of flexible multi-strand copper conductors.

Benefits

- Better mechanical protection and support of bend radius

Ordering Information

Product Number	Description	Minimum Order Quantity	Packaging
VOL-PC5E01	PVC sheath	1 box	12/box
VOL-PC5E02	PVC sheath	1 box	12/box
VOL-PC5E03	PVC sheath	1 box	12/box
VOL-PC5E05	PVC sheath	1 box	12/box

Panels

3M™ Volition™ Keystone Patch Panel

Classic & Economic



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Part of the 3M keystone product range, the 3M™ Volition™ Classic and Economic Patch Panels are modular and allow precise and clean presentation of the keystone jack.

Classic versions:

- Include cable trays
- Automatically provide grounding connection to jack upon insertion into patch panel
- 16 and 24 ports 1U, 32 and 48 ports 2U
- Brush or black aluminum finish

Economic versions:

- 16 and 24 ports 1U, black steel
- All patch panel versions are delivered unloaded

Accessories

- Port blanking
- Color identification caps

Features

- Compatible with jacks having keystone mounting, optimized for the Volition jacks
- Dust protected ports when loaded with keystone jacks
- Compact modular patch panel with 16, 24, 32 and 48 port options
- Cable retention tray (Classic versions)
- Increased labeling facilities, port by port for black aluminum versions, according EIA/TIA 606
- Delivered with screws, cage nuts and cable ties

Benefits

- Designed fully shuttered patch panel presentation with the K5E jacks
- Increased dust protection especially during installation phases or in industrial environment
- Cost effective port/volume ratio; Easier and less expensive maintenance with port by port management and replacement
- Good cable management to ensure bending radius control
- Configurations to suit nearly any need
- Ready to install, no hidden expenses

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-PPCA-F16K	Classic Patch Panel 16 Keystone jacks Brush Alu	1 box	1 per box
VOL-PPCA-F24K	Classic Patch Panel 24 Keystone jacks Brush Alu	1 box	1 per box
VOL-PPCA-F32K	Classic Patch Panel 32 Keystone jacks Brush Alu	1 box	1 per box
VOL-PPCA-F48K	Classic Patch Panel 48 Keystone jacks Brush Alu	1 box	1 per box
VOL-PPCB-F16K	Classic Patch Panel 16 Keystone jacks Black Alu	1 box	1 per box
VOL-PPCB-F24K	Classic Patch Panel 24 Keystone jacks Black Alu	1 box	1 per box
VOL-PPCB-F32K	Classic Patch Panel 32 Keystone jacks Black Alu	1 box	1 per box
VOL-PPCB-F48K	Classic Patch Panel 48 Keystone jacks Black Alu	1 box	1 per box
VOL-PPUD-F16K	Economic Patch Panel UTP 16 Keystone jacks	1 box	1 per box
VOL-PPUD-F24K	Economic Patch Panel UTP 24 Keystone jacks	1 box	1 per box
VOL-PCC-B	Port Color Cap Blue	10 (sets of 8)	10 x set of 8
VOL-PCC-G	Port Color Cap Green	10 (sets of 8)	10 x set of 8
VOL-PCC-R	Port Color Cap Red	10 (sets of 8)	10 x set of 8
VOL-PCC-Y	Port Color Cap Yellow	10 (sets of 8)	10 x set of 8

3M™ Volition™ Cat. 5e IDC 110 Punch-Down Style Patch Panel

Volition 110 punch-down style patch panels are available in 24-port (1U) and 48-port (2U) configurations to provide high density and feature easy to use write-on labels for port labeling. T568 A/B wiring labels reduce inventories and guarantee proper terminations. The Volition panels are designed to maximize signal integrity and performance throughout the gigabit Ethernet range.



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Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-PP5E24B	Patch Panel, Cat. 5e 568A, 568B, 24 port, black	1	1
VOL-PP5E48B	Patch Panel, Cat. 5e 568A, 568B, 48 port, black	1	1

3M™ Volition™ 110 Termination Blocks

Volition 110 Terminal Blocks are available in 100 and 300 pair versions with legs. May be field terminated with 22-26 AWG solid wire. Designation strips are included with each 110 wiring block purchased. C4 110 Clips available.

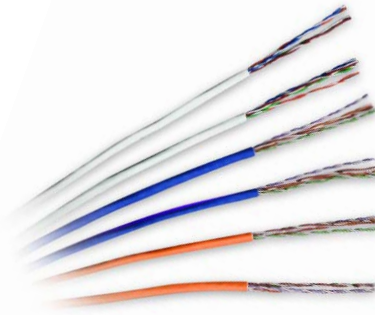
Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-0660	110 Termination block w/ legs - 100 pair	1 box	1/box
VOL-0661	110 Termination block w/ legs - 300 pair	1 box	1/box
VOL-0668	C-4 110 4 pair connector for 110 block	1 bag	1000/bag

Cable

3M™ Volition™ Cat. 5e, 350 MHz Cable

Volition Cat. 5e cable provides an alternative networking solution with a cost effective way to connect your laptops, PCs and workstations to your fiber backbone. Volition Cat. 5e, 350 MHz cable is available with both plenum and riser ratings in blue, orange and white colors. Volition Cat. 5e cable matches or exceeds bandwidth needs for Ethernet, Fast Ethernet and Gigabit Ethernet applications as well as copper FDDI, 4/16 Token Ring and 155 Mbps, 622 Mbps, 1.2 Gbps ATM.



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Features

- Cat. 5e compliant
- Tested for 350 MHz
- Multiple colors
- Footage markings
- Reel-less box

Benefits

- Works with Volition and other brands of standards based copper and fiber cabling as well as standards based NICs, media converters, hubs and switches
- Passes Cat. 5e tests to 350 MHz
- Easier identification for tracing single cables
- Easy measurements of cable lengths
- No spool to set-up; unroll and discard

Cat. 5e Standard Tests Extended to 350 MHz

Volition™ Cat. 5e, 350 MHz plenum and riser cables meet or exceed the following Cat. 5e test parameters extended to 350 MHz

Frequency	Return Loss	Attenuation	NEXT	PSNEXT	ELFEXT	PSELFEXT
1	20.0	2.0	65.3	62.3	63.8	60.8
4	23.0	4.1	56.3	53.3	51.8	48.8
8	24.5	5.8	51.8	48.8	45.7	42.7
10	25.0	6.5	50.3	47.3	43.8	40.8
16	25.0	8.2	47.2	44.2	39.7	36.7
20	25.0	9.3	45.8	42.8	37.8	34.8
25	24.3	10.4	44.3	41.3	35.8	32.8
31.25	23.6	11.7	42.9	39.9	33.9	30.9
62.50	21.5	17.0	38.4	35.4	27.9	24.9
100	20.1	22.0	35.3	32.3	23.8	20.8
155	18.8	28.1	32.4	29.4	20.0	17.0
200	18.0	32.4	30.8	27.8	17.8	14.8
300	-	41.0	28.1	25.1	14.3	11.3
350	-	44.9	27.1	24.1	12.9	9.9

Note: This table is for reference only. If discrepancies exist, TIA/EIA-568B overrules this document.

Specifications

Category 5e, ETL verified

Unshielded twisted pair (UTP)

Four pairs of #24 AWG (.5mm) solid bare copper insulated conductors

Plenum and riser ratings in accordance with Article 800 of the National Electric Code

Insulation All FEP

Specifications (continued)

Sequential footage markings every two feet (starting at 1000 feet)

Pair 1	White-Blue and Blue
Pair 2	White-Orange and Orange
Pair 3	White-Green and Green
Pair 4	White-Brown and Brown
Pair Assembly	Two primaries twisted varied lays
Cable Assembly	Four pairs cabled together
Ripcord	Built-in
Maximum pulling tension	25 lbf (110 N)
Jacket	Plenum and riser rated thermoplastic
Nominal Cable OD	Plenum - 0.188 in. (4.77 mm); Riser - 0.203 in. (5.16 mm)
Bend Radius	1 in. (25.4 mm) minimum
Jacket Colors Available	Blue, white or orange
Package	Reel-less
Operating Temperature	-20° to 60° C (-4° to 140° F)
Storage Temperature	-20° to 75° C (-4° to 167° F)
Installation Temperature	0° to 60° C (32° to 140° F)
Listed	UL/cUL

Electrical Characteristics

Standards	Exceeds TIA/EIA 568-B Cat.5e
Conductor DCR	9.38 Ω /100 m (28.6/Mft) maximum
DCR Unbalance	5% maximum
Mutual Capacitance	5.6 nF/100 m maximum
Capacitance Unbalance Pair/Ground	330 pF/100 m maximum
Characteristic Impedance	100 +/- 15% (1-100 MHz) maximum
Return Loss	20 + 5 log(f) (1 < or = f < 10); 25 (10 < or = f < 20); 25-7log (f/20) (f > 20 MHz)
Attenuation	1.967 \sqrt{f} + 0.023f + 0.050 \sqrt{f} dB/100 m maximum
Near End Cross-talk (NEXT)	35.3 - 15 log (f/100) dB/100 m minimum
Power Sum Near End Cross-talk (PS-NEXT)	32.3 - 15 log (f/100) dB/100 m minimum
Equal Level Far End Cross-talk (ELFEXT)	23.8 - 20 log (f/100) dB/100 m minimum
Power Sum Equal Level Far End Cross-talk (PS-ELFEXT)	20.8 - 20 log (f/100) dB/100 m minimum
Propagation Delay	534 + 36/ \sqrt{f} ns/100 m maximum
Delta Delay (Skew)	45 ns/100 m maximum
Nominal Velocity of Propagation (NVP)	68% (Riser), 72% (Plenum)

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-C5E35OPW	Plenum, white 1,000 ft. roll	1	1roll/box
VOL-C5E35OPU	Plenum, blue 1,000 ft. roll	1	1roll/box
VOL-C5E35OPO	Plenum, orange 1,000 ft. roll	1	1roll/box
VOL-C5E35ORW	Riser, white 1,000 ft. roll	1	1roll/box
VOL-C5E35ORU	Riser, blue 1,000 ft. roll	1	1roll/box
VOL-C5E35ORO	Riser, orange 1,000 ft. roll	1	1roll/box

Note: Other colors are available upon request.



A CENTURY
of INNOVATION

Important Notice

Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

Warranty; Limited Remedy; Limited Liability.

This product will be free from defects in material and manufacture for a period of one year from the date of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY**




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