

3M

Volition™

Copper Cabling System

Category 6 Structured Cabling System





The 3M™ Volition™ Category 6 Cabling System

Our high-end copper cabling system is a complete solution consisting of patch panels, patch cords, jacks, cables and faceplates that offer superior performance.

Incorporating all the features you have come to expect from 3M, the Category 6 Copper Cabling System based on the K6 RJ45 jack offers true Category 6 hardware performance.* This goes far beyond the typically offered and limited Class E/Category 6 link performance components on the market.

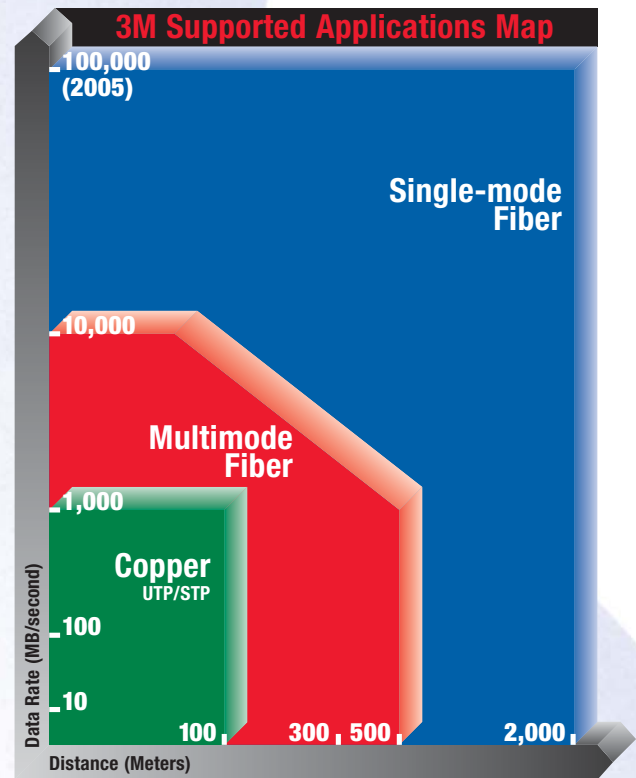
The level of performance required by the Cat. 6 hardware standard has been so high that installers needed high levels of skill and a lot of time for the system to work correctly.

Now, thanks to the technology, the 3M™ Volition™ K6 RJ45 jack can be installed quickly, without tools and meets the stringent performance requirements of Category 6.

Category 6 provides a network infrastructure that has two and a half times more bandwidth than the Category 5e standards.

Category 6 offers genuine benefits for the future. The 3M Volition Cat. 6 cabling system will give you a fully backward compatible structured cabling system, allowing you to expand your existing Cat. 5e system or build a new network for the future.

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



The new 3M K6 jack represents the fourth generation of tool-less termination jacks from 3M. With tens of millions of jacks installed since 1994, you can be assured of its reliability.

Technical support is available from 3M's worldwide technical service organization including:

- certified installer training
- network design support
- on-site installation support.

3M offers complete solutions for copper, fiber or hybrid optic networks, ensuring a clear path for broadband migration with minimal upheaval.

No matter where your network is going, 3M can get you there. Whatever your migration path to broadband networks for voice and bandwidth-intensive applications in a building or campus environment, 3M will assist you in building the most efficient, reliable and cost-effective solution.

* Compliant with the latest international cabling standards ISO/IEC 11801, EN 50173 and EIA/TIA 568B.2-1

3M™ Volition™ Category 6 K6 RJ45 Jack

The 3M Volition K6 RJ45 jack design guarantees consistent and repeatable results. The K6 jack can be reused many times.

The integral shutter protects the contacts from dirt and dust and ensures reliability.

Associated with the Volition K6 RJ45 jack are system components and accessories (e.g. cable, patch cords, outlets, patch panels...) optimized for maximum system performance and reliability.

The new K6 jack is our ultimate Cat. 6 hardware component (ISO/IEC 11801 and ANSI/TIA/EIA-568B.2-1), with Keystone mounting. The K6 jack is a core product in our system solution, which includes a comprehensive range of Keystone patch panels, sockets and faceplates, Cat. 6 patch cords and cables.



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Performance:

- Real Category 6 hardware performance.
- Significantly exceeds Category 6/CLASS E link performance requirements.

Tool-less jack:

- Easy and quick to install.
- Fast reliable connection in record time; all 8 copper conductors are effortlessly terminated in a single operation.
- Quality of connection by design; independent of tool condition or operator skill; just listen for the click.
- Consistent results. The length of untwisted pairs and the length between the end of the conductor and the IDC contacts are always kept to a minimum, by design.

Reusable:

- If a wiring mistake is made there is no need to use a new jack. Just open and terminate.
- No delay waiting for another delivery.

Shallow depth, cable entry from top or bottom:

- Easier cable management.
- More space and flexibility to ensure the cable minimum bend radius is never compromised.
- Allows a wide range of cable routing options.
- Can be used with low-profile raceway and boxes.

Accepts both solid and stranded conductors from 26 to 22 AWG:

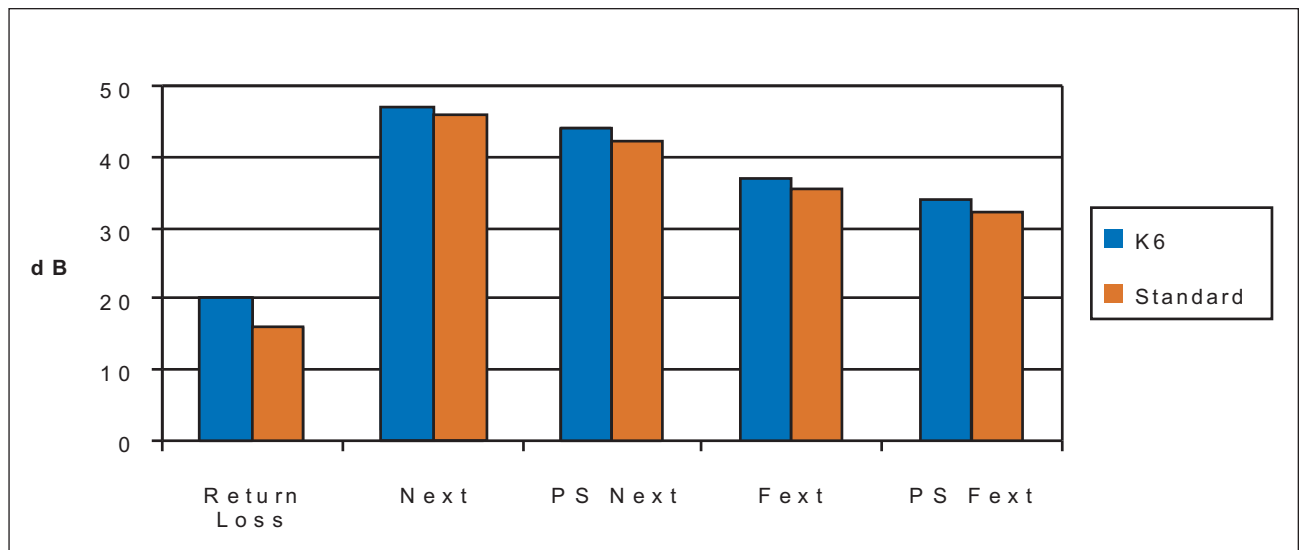
- Compatible with all cables on the market and enables 'jack to plug' cables to be manufactured using stranded conductors (for use in open office spaces).

Integral shutter:

- Increased dust protection, especially during installation or in a dirty environment.
- No additional shuttering required on faceplates.
- Higher port density.
- Allows direct mounting into floor boxes.
- Protects jacks in the patch panel.

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K6 Jack: Margin Over Standard at 250 MHz



Specifications

Technical Characteristics

RJ45 Category 6 Hardware test result (Typical values)

Lead-through resistance	17 mΩ < to <20 mΩ		
Insulation resistance	> 10 mΩ		
Frequency	100 MHz	200 MHz	250 MHz
Attenuation	< 0.2 dB	< 0.2 dB	< 0.3 dB
Return Loss	24 dB	18.5 dB	16 dB
NEXT pair to pair	58 dB	50 dB	47.5 dB
Conductor diameter	0.50 mm to 0.65 mm solid copper, 7 x 0.15 to 0.20 mm stranded cable		
Sheath diameter	1.6 mm max		

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-OCK6-U-W	K6 RJ45 Jack UTP White	1 box	96/box
VOL-OCK6-U-BL	K6 RJ45 Jack UTP Blue	1 box	96/box
VOL-OCK6-U-G	K6 RJ45 Jack UTP Green	1 box	96/box
VOL-OCK6-U-R	K6 RJ45 Jack UTP Red	1 box	96/box
VOL-OCK6-U-Y	K6 RJ45 Jack UTP Yellow	1 box	96/box
VOL-OCK6-U-BK	K6 RJ45 Jack UTP Black	1 box	96/box
VOL-OCK6-U-O	K6 RJ45 Jack UTP Orange	1 box	96/box
VOL-OCK6-U-AL	K6 RJ45 Jack UTP Almond	1 box	96/box

Outlets

3M™ Volition™ Convex Keystone Faceplate

The Volition keystone faceplate allows the Cat. 6 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 port identification.



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Features

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

Benefits

- Space for RJ45 and VF-45 jacks in the same adapter
- Easy handwritten labeling
- Label protection
- Simple network identification

Ordering Information

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

3M™ Volition™ Modular Keystone Faceplates

The modular style faceplate is 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 present a smart and functional appearance (colored icons are available separately).



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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 raceway 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 raceway suitable for 45 x 45mm legrand footprint.
- No need for additional raceway or boxes to accommodate the jacks.

Ordering Information

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

Reversible Icons for Modular 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	10 Pkgs	Set of 8/Pkg
VOL-0790B	Reversible Icons (Voice/Data), for Keystone Faceplates, Bright White (pack of 8)	10 Pkgs	Set of 8/Pkg
VOL-0790BL	Reversible Icons (Voice/Data), for Keystone Faceplates, Blue (pack of 8)	10 Pkgs	Set of 8/Pkg
VOL-0790GR	Reversible Icons (Voice/Data), for Keystone Faceplates, Green (pack of 8)	10 Pkgs	Set of 8/Pkg
VOL-0790RD	Reversible Icons (Voice/Data), for Keystone Faceplates, Red (pack of 8)	10 Pkgs	Set of 8/Pkg
VOL-0790YL	Reversible Icons (Voice/Data), for Keystone Faceplates, Yellow (pack of 8)	10 Pkgs	Set of 8/Pkg

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

- Minimized inventory.
- No additional parts to stock.

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-0700	Faceplate, Single Gang, Blank, office white	1 box	25/box
VOL-0700B	Faceplate, Single Gang, Blank, bright white	1 box	25/box
VOL-0701	Faceplate, Single Gang, 1 Keystone port, office white	1 box	25/box
VOL-0701B	Faceplate, Single Gang, 1 Keystone port, bright white	1 box	25/box
VOL-0702	Faceplate, Single Gang, 2 Keystone ports, office white	1 box	25/box
VOL-0702B	Faceplate, Single Gang, 2 Keystone ports, bright white	1 box	25/box
VOL-0703	Faceplate, Single Gang, 2 Keystone ports, office white	1 box	25/box
VOL-0703B	Faceplate, Single Gang, 2 Keystone ports, bright white	1 box	25/box

3M™ Volition™ UTP Cat. 6 RJ45 Patch Cords

Cat. 6 patch cords allow you to complete your Cat. 6 system to EIA/TIA 568B.2-1 or ISO 11801 Class E.

They are compliant with Flame Retardant standard IEC 60332-1.



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Features

- 3M branded.
- ETL verified Category 6 link component.
- Molded boot.
- 4 pairs of flexible multi-stranded copper conductors.
- Polyethylene conductor insulation to NFC 32060.

Benefits

- Optimization with 3M Volition K6 RJ45 jacks.
- Offers best channel performance.
- Better mechanical protection.
- Ensures the minimum bend radius is not exceeded.
- Available in 1, 2, 3, and 5 m lengths.

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-PC601	Cat 6 Patch Cable 1 meter	1 box	12/box
VOL-PC602	Cat 6 Patch Cable 2 meters	1 box	12/box
VOL-PC603	Cat 6 Patch Cable 3 meters	1 box	12/box
VOL-PC605	Cat 6 Patch Cable 5 meters	1 box	6/box

Panels

3M™ Volition™ Keystone Patch Panel

Classic & Economic



3M™ Volition™ Classic and Economic Patch Panels are modular and allow precise mounting 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 Volition 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, meeting EIA/TIA 606 requirements.
- Delivered with screws, cage nuts and cable ties.

Benefits

- Fully shuttered patch panel presentation with the Cat. 6 jacks.
- Increased dust protection especially during installation phases or in industrial environments.
- Cost effective with high port density. 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 Pkgs	Set of 8/Pkg
VOL-PCC-G	Port Color Cap Green	10 Pkgs	Set of 8/Pkg
VOL-PCC-R	Port Color Cap Red	10 Pkgs	Set of 8/Pkg
VOL-PCC-Y	Port Color Cap Yellow	10 Pkgs	Set of 8/Pkg

3M™ Volition™ Cat. 6 110 Punch-Down Patch Panels

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 eliminate improper 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-PP624B	Patch Panel Cat. 6 110 Contact UTP 568A/B 24 Port Black	1	1
VOL-PP648B	Patch Panel Cat. 6 110 Contact UTP 568A/B 48 Port Black	1	1

3M™ Volition™ Cat. 6 Cable

Part of the 3M™ Volition™ Category 6 Cabling System, this Cat. 6 cable meets the TIA/EIA 568-B .2-1 requirements for Category 6. Volition Cat. 6, cable is available with both plenum and riser ratings in blue, orange and white colors. Volition Cat. 6 cable matches or exceeds bandwidth needs for Ethernet, fast Ethernet and gigabit Ethernet applications as well as copper legacy system and 155 Mbps, 622 Mbps and 1.2 Gbps ATM.



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Features

- Cat. 6 compliant
- CMP and CMR rated
- Cross-separator for improved performance
- Multiple colors (white, blue, orange)
- Footage markings
- Reel-in-a-box

Electrical Characteristics

FREQ. (MHz)	Attenuation (dB/100 m)		NEXT (dB)		PSNEXT (dB)		ACR (dB/100 m)		PSACR (dB/100 m)		ELFEXT (dB/100 m)		PSELFEXT (dB/100 m)		RL (dB)
	Typical	Max	Typical	min.	Typical	min.	Typical	min.	Typical	min.	Typical	min.	Typical	min.	min
0.772	1.5	1.8	97.7	76.0	91.5	74.0	96.2	74.2	90.0	72.2	87.8	70.0	81.3	67.0	-
1	1.7	2.0	94.5	74.3	88.5	72.3	92.8	72.3	86.8	70.3	89.6	67.8	80.8	64.8	20.0
4	3.3	3.8	86.1	65.3	78.3	63.3	82.9	61.5	75.0	59.5	76.8	55.7	69.1	52.7	23.0
8	4.6	5.3	80.9	60.8	73.6	58.8	76.3	55.5	69.0	53.5	73.0	49.7	63.5	46.7	24.5
10	5.1	6.0	76.2	59.3	70.7	57.3	71.1	53.3	65.6	51.3	70.0	47.8	61.5	44.8	25.0
16	6.4	7.6	75.5	56.3	69.1	54.3	69.1	48.7	62.7	46.7	66.0	43.7	57.9	40.7	25.0
20	7.2	8.5	74.7	54.8	69.2	52.8	67.6	46.3	62.0	44.3	66.0	41.7	56.0	38.7	25.0
25	8.0	9.5	74.0	53.3	64.5	51.3	66.0	43.8	56.5	41.8	63.9	39.8	54.7	36.8	24.3
31.25	9.0	10.7	72.8	51.9	66.6	49.9	63.9	41.2	57.6	39.2	61.9	37.9	52.6	34.9	23.6
62.5	12.7	15.4	68.1	47.4	62.2	45.4	55.4	32.0	49.5	30.0	55.2	31.8	47.8	28.8	21.5
100	16.1	19.8	62.6	44.3	55.4	42.3	46.5	24.5	39.4	22.5	51.6	27.8	44.9	24.8	20.1
155	20.3	25.2	62.9	41.5	53.1	39.5	42.6	16.3	32.8	14.3	48.4	23.9	42.0	20.9	18.8
200	23.2	29.0	58.5	39.8	50.9	37.8	35.3	10.8	27.7	8.8	46.4	21.7	39.5	18.7	18.0
250	26.1	32.8	58.0	38.3	51.4	36.3	32.0	5.5	25.3	3.5	47.4	19.8	37.9	16.8	17.3

Technical Characteristics

Standards	Meets TIA/EIA 568-B .2 -1 Cat. 6
Conductor DCR	9.38 Ω/100 m maximum (28.6 Ω/1000 ft.)
DCR Unbalance	3% maximum
Mutual Capacitance	55.8pF/m (17pF/ft.) maximum
Capacitance Unbalance Pair/Ground	330 pF/100 m maximum
Characteristic Impedance	100 +/- 15% (1-250 MHz)
Delta Delay (Skew)	18 ns/100 m maximum
Nominal Velocity of Propagation (NVP)	69% (Riser), 72% (Plenum)

Specifications

Category 6, ETL verified	
Unshielded twisted pair (UTP)	
Four pairs of 23 AWG solid bare copper insulated conductors	
Plenum and riser ratings in accordance with Article 800 of the National Electric Code	
Insulation = Plenum rated Thermoplastics (plenum); Polyethylene (riser)	
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 around a central separator
Ripcord	High strength nylon ripcord
Jacket	*
Nominal cable OD	Plenum - 0.210 in.; Riser - 0.240 in.
Jacket colors available	Blue, white or orange
Package	Reel-in-a-box
Temperature rating	Plenum: -10° to 75° C (14° to 167° F); Riser: -20° to 75° C (-4° to 167° F)
Listed	UL/cUL

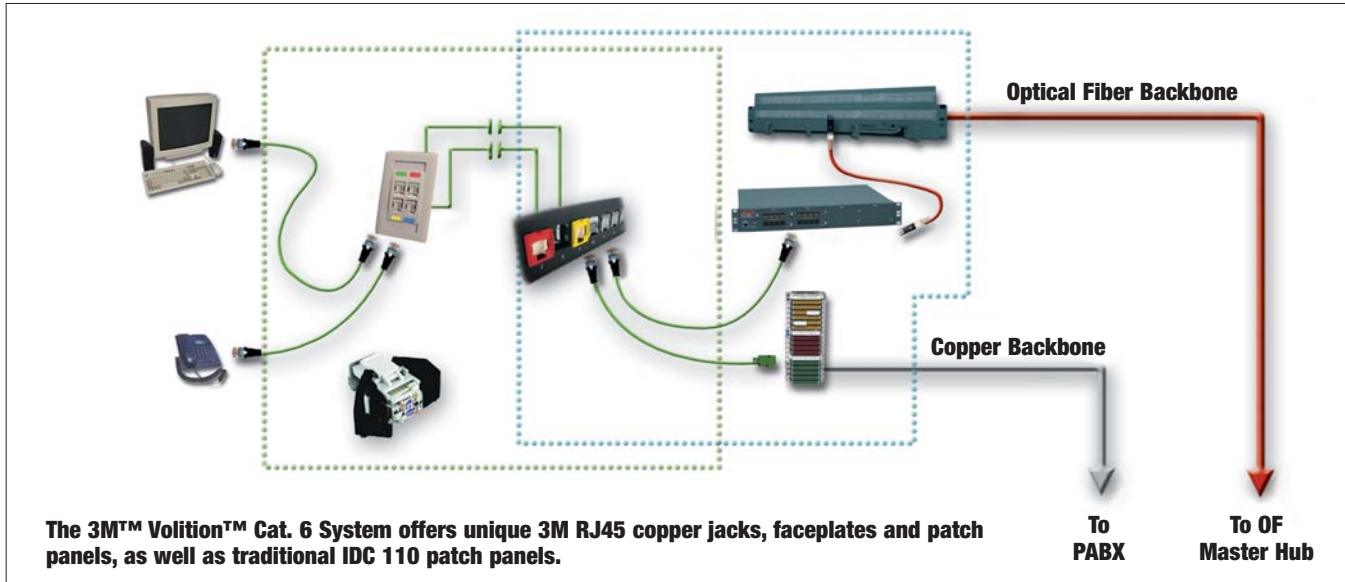
*Plenum: Hiflex - plus plenum; Riser-flame retardant PVC

Ordering Information

Model Number	Description	Minimum Order Quantity	Packaging
VOL-C6PW	Cat. 6 4 Pair 23 AWG UTP Plenum, white	1 reel	1000 ft. reel
VOL-C6PU	Cat. 6 4 Pair 23 AWG UTP Plenum, blue	1 reel	1000 ft. reel
VOL-C6PO	Cat. 6 4 Pair 23 AWG UTP Plenum, orange	1 reel	1000 ft. reel
VOL-C6RW	Cat. 6 4 Pair 23 AWG UTP Riser, white	1 reel	1000 ft. reel
VOL-C6RU	Cat. 6 4 Pair 23 AWG UTP Riser, blue	1 reel	1000 ft. reel
VOL-C6RO	Cat. 6 4 Pair 23 AWG UTP Riser, orange	1 reel	1000 ft. reel

The Full Volition™ Copper Cabling System

With complete solutions for copper, hybrid or fiber optic networks, 3M ensures a clear path for broadband migration. The Volition Cabling System is the most comprehensive structured cabling system on the market today.



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**

IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS

FOR A PARTICULAR PURPOSE. If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product. **Except where prohibited by law, 3M will not be liable for any loss or damage arising from this 3M product, whether direct, indirect, special, incidental or consequential regardless of the legal theory asserted.**



Telecom Enterprise Department
3M Telecommunications

6801 River Place Blvd.
Austin, TX 78726-9000
800-695-0447
FAX 512-990-7962
www.3M.com/volition

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