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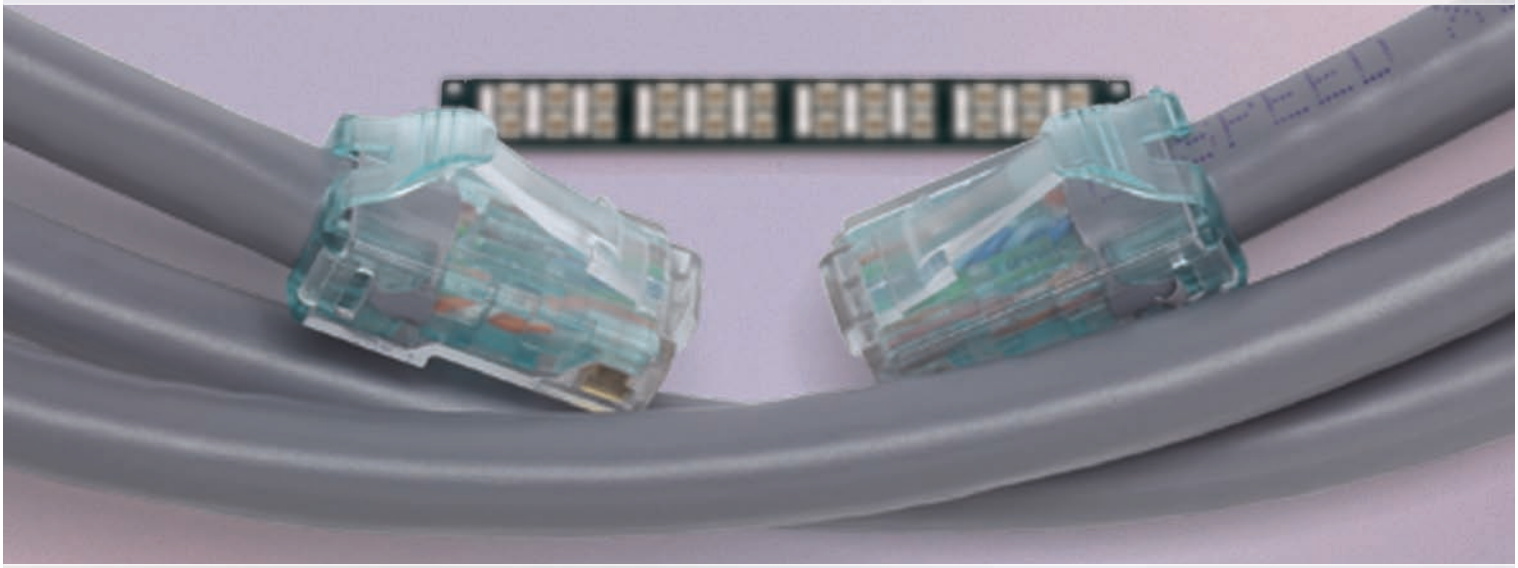
SYSTIMAX® GigaSPEED® X10D UTP Solution Guide

SYSTIMAX® GigaSPEED® X10D UTP Solution



SYSTIMAX®
SOLUTIONS

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Contents

The SYSTIMAX® GigaSPEED® X10D Solution provides unprecedented performance for key parameters such as insertion loss and all forms of crosstalk, both within and between channels, yielding improved bandwidth, data throughput and network efficiency.

The SYSTIMAX GigaSPEED X10D Solution has been specifically engineered with enhanced cable and connector performance designed to support the emerging 10 Gb/s Ethernet requirements. Using patent pending technology and the scientific capabilities of SYSTIMAX Labs, this solution exhibits far superior channel performance than legacy solutions, and innovative engineering techniques to meet the specific demands 10 Gb/s brings to the physical layer. The SYSTIMAX GigaSPEED X10D Solution delivers next generation support by providing double the bandwidth of today's Category 6 cabling channel and guaranteed Alien Crosstalk performance in worst case installation conditions.

Features and Benefits

- ***Extending…*** **the usable bandwidth of the enterprise**
- ***Extending…*** **the peak performance of the enterprise**
- ***Extending…*** **the technology of copper cabling**
- ***Extending…*** **the value of the IT budget**
- ***Extending…*** **the life of the enterprise cabling infrastructure**

SYSTIMAX GigaSPEED X10D Channel Performance

The SYSTIMAX GigaSPEED X10D cabling system is designed specifically for the 10GBASE-T application but can also support other emerging multi-gigabit applications. A major breakthrough of the SYSTIMAX GigaSPEED X10D Solution is vastly improved Alien Crosstalk, which is the crosstalk from external cable or connector pairs into a victim pair. By utilizing the unique design tools available to SYSTIMAX Labs, the technologies implemented in the SYSTIMAX GigaSPEED X10D Solution are capable of suppressing the interference from the external pairs without degrading the internal channel transmission performance. Superior Alien Crosstalk performance, improved Insertion Loss performance and guaranteed channel performance up to 500 MHz are the key enhancements that set the SYSTIMAX GigaSPEED X10D Solution apart from the rest of the SYSTIMAX GigaSPEED family.

Guaranteed Performance Specifications for 4-Connection GigaSPEED X10D UTP Channels[1]

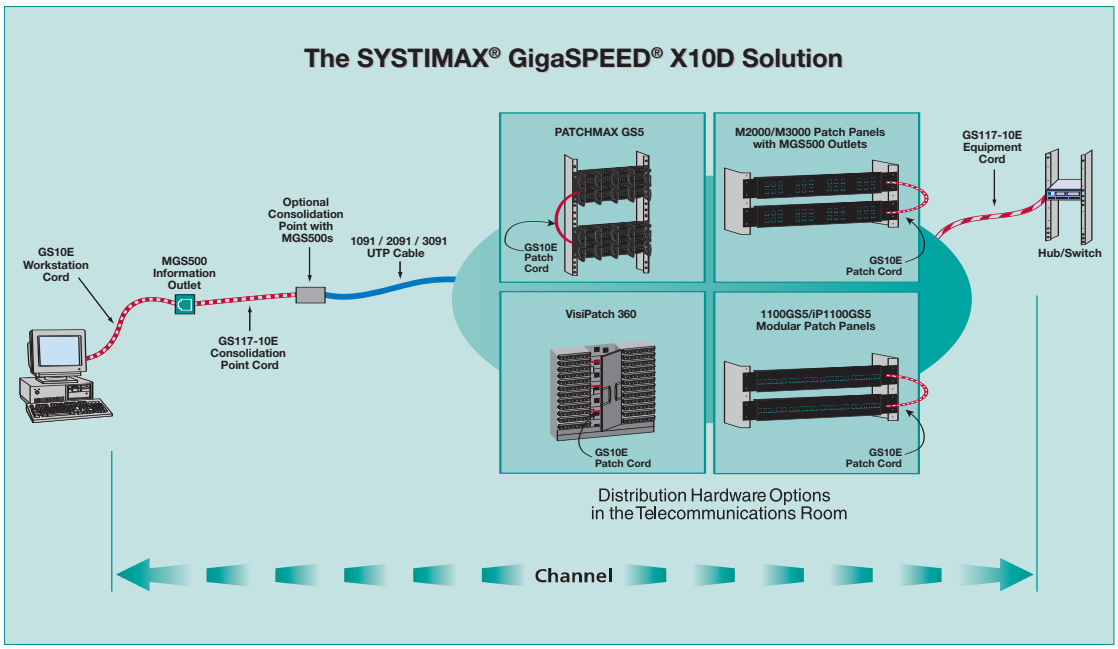
Electrical Parameter	Guaranteed Channel Margins to ISO/IEC 11801 : 2002 "Class E" (1 – 250 MHz)	Guaranteed Channel Margins to Draft ISO/IEC 11801 Edition 2.1 Class E_A (1 – 500 MHz)
Insertion Loss	5%	2%
NEXT	6 dB	1 dB
PSNEXT	7.5 dB	2.5 dB
ACR-F	6 dB	4 dB
PSACR-F	8 dB	6 dB
Return Loss	3 dB	0 dB
PSANEXT	N/A	0 dB
PSAACR-F	N/A	0 dB

[1] Insertion Loss margin is calculated based on 12m of 95 series cordage and 88m of 91A series cable plus 4 connections. If the total cord length in a 100m channel has to be greater than 12m, please refer to GigaSPEED X10D Design and Installation Guidelines for the instruction on how to scale cable and cord length properly.

Guaranteed Channel Performance Specifications for 4-Connection GigaSPEED X10D UTP Systems

Freq (MHz)	Insertion Loss (dB)	PS ANEXT (dB)	PS AACR-F (dB)	NEXT (dB)	ACR-N (dB)	PS NEXT (dB)	PS ACR-N (dB)	ACR-F (dB)	PSACR-F F (dB)	Return Loss (dB)	Delay (ns)	Delay Skew (ns)
1.0	3.8	67.0	67.0	71.0	68.9	69.5	67.4	69.3	68.3	22.0	580	40
4.0	4.0	67.0	65.0	69.0	65.0	68.0	64.0	57.2	56.2	22.0	562	40
8.0	5.6	67.0	58.9	64.2	58.5	63.1	57.5	51.2	50.2	22.0	557	40
10.0	6.3	67.0	57.0	62.6	56.3	61.5	55.2	49.3	48.3	22.0	555	40
16.0	7.9	67.0	52.9	59.2	51.3	58.1	50.2	45.2	44.2	18.9	553	40
20.0	8.9	67.0	51.0	57.6	48.7	56.5	47.6	43.2	42.2	19.0	552	40
25.0	10.0	66.0	49.0	56.0	46.1	54.8	44.9	41.3	40.3	19.1	551	40
31.3	11.2	65.1	47.1	54.4	43.3	53.2	42.1	39.3	38.3	19.2	550	40
62.5	15.9	62.0	41.1	49.4	33.4	48.1	32.2	33.3	32.3	17.0	549	40
100.0	20.4	60.0	37.0	45.9	25.6	44.6	24.2	29.3	28.3	15.0	548	40
200.0	29.4	55.5	31.0	40.8	11.4	39.4	10.0	23.2	22.2	12.0	547	40
250.0	33.1	54.0	29.0	39.1	6.0	37.7	4.5	21.3	20.3	11.0	546	40
300.0	36.5	52.8	27.5	32.7	-3.8	31.3	-5.3	20.0	19.0	7.2	546	40
400.0	42.7	51.0	25.0	30.6	-12.2	29.1	-13.7	17.5	16.5	6.0	546	40
500.0	48.3	49.5	23.0	28.9	-19.4	27.3	-21.0	15.5	14.5	6.0	546	40

The table provides reference values only. All parameters comply with the governing equations given below over the entire frequency range. All values and equations apply to worst-case channels utilizing four-pair 91A series cables with full cross-connects, consolidation points and work area outlets (4 connections in a channel) for the length up to 100 meters.



Non-Plenum 1091 Series Slate Cable 760021709

Plenum 2091 Series Blue Cable 760024190

Low Smoke Zero Halogen 3091 Series White Cable 760023226

SYSTIMAX GigaSPEED 91 Series Cable

The SYSTIMAX GigaSPEED X10D Solution includes a new type of 4-pair cable, the 91 series. The SYSTIMAX GigaSPEED X10D Solution is designed to give channel performance exceeding Category 6A/E_A channel specifications and in addition has substantially improved Alien Crosstalk performance.

The cable design has been dramatically enhanced using the SYSTIMAX Labs Cable Twist Accuracy Technology. The 91 series cables incorporate a round smooth shape that speeds the handling and termination process and minimizes variation in Alien Crosstalk performance. The cables have been designed to withstand an aggressive 6-around-1 channel test that SYSTIMAX Labs believes to be the most challenging test configuration representative of real life installations including large cable bundles. This is a Powersum computation of the Alien Crosstalk noise from 24-pairs of 6 channels surrounding a single 4-pair channel. The 91 series cables have been specified out to 500 MHz to support high bandwidth applications operating at 10 Gb/s.

Ordering Information

Material ID	Product Number	Pair Count	Color	Length	Package
Non-Plenum 91 Series Cable					
760021683	1091004ABL R1000	4	Blue	1,000 ft (305 m)	Reel
760021725	1091004AYL R1000	4	Yellow	1,000 ft (305 m)	Reel
760021709	1091004ASL R1000	4	Slate	1,000 ft (305 m)	Reel
760021717	1091004AWH R1000	4	White	1,000 ft (305 m)	Reel
760021733	1091004AOR R1000	4	Orange	1,000 ft (305 m)	Reel
760047597	1091004AGN R1000	4	Green	1,000 ft (305 m)	Reel
760047589	1091004ARD R1000	4	Red	1,000 ft (305 m)	Reel
760027185	1091004AOR R3000	4	Orange	3,000 ft (915 m)	Reel
760027177	1091004AYL R3000	4	Yellow	3,000 ft (915 m)	Reel
760027144	1091004ABL R3000	4	Blue	3,000 ft (915 m)	Reel
760027151	1091004ASL R3000	4	Slate	3,000 ft (915 m)	Reel
760027169	1091004AWH R3000	4	White	3,000 ft (915 m)	Reel
760024901	1091004A1BL R1000*	4	Blue	1,000 ft (305 m)	Reel
760024919	1091004A1WH R1000*	4	White	1,000 ft (305 m)	Reel
760024927	1091004A1SL R1000*	4	Slate	1,000 ft (305 m)	Reel
Plenum 91 Series Cable					
760024190	2091004ABL R1000	4	Blue	1,000 ft (305 m)	Reel
760024232	2091004AOR R1000	4	Orange	1,000 ft (305 m)	Reel
760024208	2091004ASL R1000	4	Slate	1,000 ft (305 m)	Reel
760024216	2091004AWH R1000	4	White	1,000 ft (305 m)	Reel
760024224	2091004AYL R1000	4	Yellow	1,000 ft (305 m)	Reel
760047571	2091004AGN R1000	4	Green	1,000 ft (305 m)	Reel
760042788	2091004ARD R1000	4	Red	1,000 ft (305 m)	Reel
LSZH 91 Series Cable					
760023242	3091 004ABL 4/23 R1000	4	Blue	1,000 ft (305 m)	Reel
760023275	3091 004ABL 4/23 R3000	4	Blue	3,000 ft (914 m)	Reel
760023226	3091 004AWH 4/23 R1000	4	White	1,000 ft (305 m)	Reel
760023234	3091 004AWH 4/23 R3000	4	White	3,000 ft (914 m)	Reel

SYSTIMAX GigaSPEED X10D GS10E Modular Patch Cords

These cords are for use at both ends of a SYSTIMAX GigaSPEED X10D channel. Along with cable and patching hardware, SYSTIMAX Labs has characterized the performance of these cords in thousands of different channel configurations using the Modal Decomposition Modeling (MDM) tool.

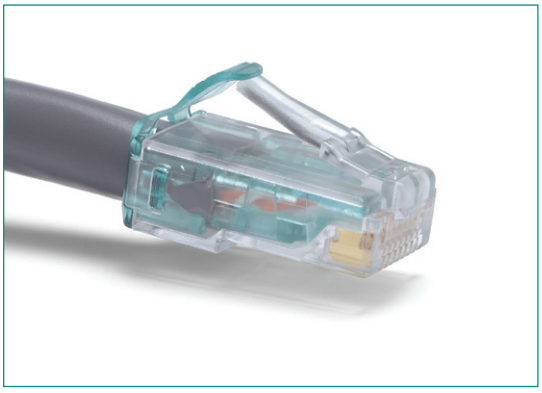
The high performance GS10E modular patch cord family has a patent pending plug design featuring a distinctive aqua sled and anti-snag latch for easy and rapid field identification. The GS10E plug exhibits dramatic reduction in performance variation via a new innovative design. Together with high precision manufacturing, this provides the electrical performance needed to deliver the SYSTIMAX GigaSPEED X10D Solution.

The GS10E patch cords are available in a variety of colors, and in plenum, non-plenum and low smoke zero halogen versions.

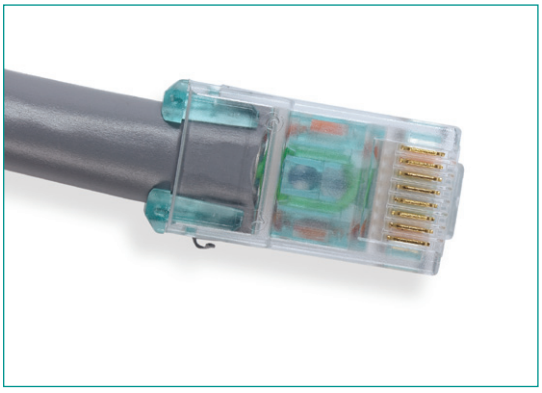
SYSTIMAX Solutions also provide a GS117-10E variation of the GS10E patch cord. The GS117-10E supports both equipment cord and consolidation point applications.

Ordering Information

Material ID	Product	Description
CPC7732	GS10E	Double ended non-plenum
CPC7432	GS117-10E	Single ended non-plenum
CPC77F2	GS10E-P	Double ended plenum
CPC74F2	GS117-10E-P	Single ended plenum
CPC77D2	GS10E-L	Double ended LSZH
CPC74D2	GS117-10E-L	Single ended LSZH



GS10E Patch Cord Plug



GS10E translucent aqua sled

SYSTIMAX GigaSPEED X10D MGS500 Information Outlets

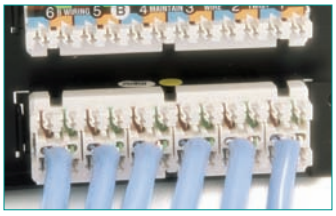
The MGS500 information outlet is the latest result of many years of continuous product development at SYSTIMAX Labs and features patent pending crosstalk cancellation and compensation techniques and a unique opaque aqua colored inner tab that identifies it as a SYSTIMAX GigaSPEED X10D component.

The MGS500 information outlet, used throughout the channel, exhibits high frequency internal and crosstalk suppression enabled via new Printed Wiring Board (PWB) materials and compensation technology. The MGS500 incorporates techniques that reduce channel to channel Alien crosstalk, a parameter that becomes very critical at high frequencies (beyond Category 6).

SYSTIMAX GigaSPEED X10D MGS500 Outlets Colour Range

Ordering Information

Material ID	Product	Color	Packaging
760023556	MGS500-003	Black	1/Pkg
760023606	MGS500-246	Ivory	1/Pkg
760023614	MGS500-262	White	1/Pkg
760023648	MGS500-318	Blue	1/Pkg
760023564	MGS500-112	Orange	1/Pkg
760023572	MGS500-123	Yellow	1/Pkg
760023580	MGS500-215	Creme	1/Pkg
760023598	MGS500-226	Green	1/Pkg
760023622	MGS500-270	Gray	1/Pkg
760023630	MGS500-361	Red	1/Pkg
760023655	MGS500-361	Violet	1/Pkg
760042002	MGS500-BLK-003	Black	100/Pkg
760042010	MGS500-BLK-246	Ivory	100/Pkg
760042028	MGS500-BLK-262	White	100/Pkg
760042036	MGS500-BLK-318	Blue	100/Pkg



Rear View of SYSTIMAX GigaSPEED X10D 1100GS5 Panel with Termination Manager

SYSTIMAX GigaSPEED X10D 1100AGS5 Patch Panel

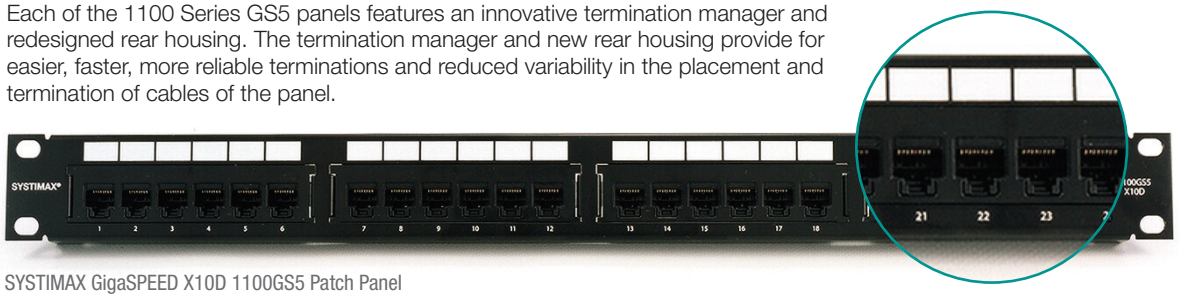
SYSTIMAX GigaSPEED X10D 1100GS5/1100AGS5/iP1100GS5 Patch Panel

The SYSTIMAX GigaSPEED X10D 1100 series modular patch panels are 19-inch rack or wall mountable 8-pin modular jack panels that accommodate repeated line moves, adds and changes. Installation is simple, using proven 110 IDC gas tight terminations in the back with easy to read labeling guides.

The base panel is the 1100GS5, which is available in 24- and 48-port versions. The 1100AGS5 panel is angled to allow the cable to flow to each side of the rack. This enables the patch cords to be routed directly into vertical cable managers. It also allows the labeling scheme and port identification to be visible at all times.

The iP1100GS5 panels are intelligent panels at the heart of the iPatch Real-Time Infrastructure Management System. The Intelligent Panel's one-button tracing feature allows technicians to trace patch connections instantly. By pressing the button above one of the ports, LEDs light up at both ends of the connection, making moves, adds and changes faster and more reliable.

Each of the 1100 Series GS5 panels features an innovative termination manager and redesigned rear housing. The termination manager and new rear housing provide for easier, faster, more reliable terminations and reduced variability in the placement and termination of cables of the panel.



SYSTIMAX GigaSPEED X10D 1100GS5 Patch Panel

Physical Specifications

1100GS5-24	19.0 x 1.75 x 1.60 in (48.26 x 4.44 x 4.06 cm) - Universal A/B labeling
1100GS5-48	19.0 x 3.50 x 1.60 in (48.26 x 8.89 x 4.06 cm) - Universal A/B labeling
1100AGS5-24	19.0 x 1.75 x 4.10 in (48.26 x 8.44 x 10.41 cm) - Angled Universal A/B labeling
1100AGS5-48	19.0 x 3.50 x 4.10 in (48.26 x 8.89 x 10.41 cm) - Angled Universal A/B labeling
iP1100GS5-24	19.0 x 1.75 x 1.60 in (48.26 x 4.44 x 4.06 cm) - Universal A/B labeling
iP1100GS5-48	19.0 x 3.50 x 1.60 in (48.26 x 8.89 x 4.06 cm) - Universal A/B labeling

Ordering Information

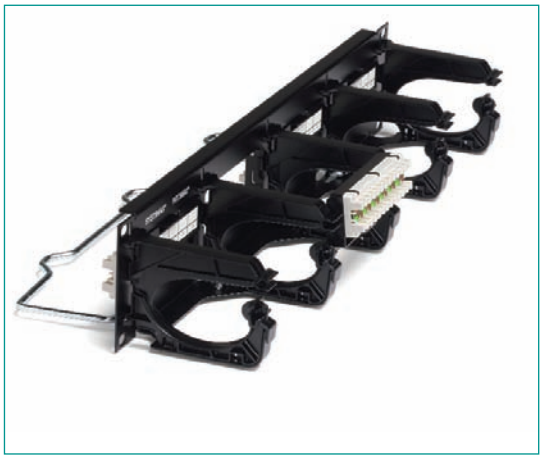
Material ID	Product	Number of Ports	Packaging
760051151	1100GS5-24	24	Flat
760051169	1100GS5-48	48	Flat
760051177	1100AGS5-24	24	Angled
760051185	1100AGS5-48	48	Angled
760051193	1100GS5-DM	6	NA
760051003	iP1100GS5-24	24	Flat
760051011	iP1100GS5-48	48	Flat

Material ID	Product	Description
760072116	1100PM Panel Label Kit	5 Sheets (32 labels/sheet) = GigaSPEED 1100GS3 and 1100GS5 1 PK (160 labels) (1 label = 6 ports)

SYSTIMAX PATCHMAX GS5 Patch Panel

The SYSTIMAX GigaSPEED X10D PATCHMAX® GS5 panel is a 19-inch rack mountable patch panel, designed to accept 4 or 8 six-port GS3 or GS5 Distribution Modules (DM), which can be rotated forward, allowing front-access to the 110 type IDC terminals for easy cable termination. Built-in horizontal patch cord management brackets provide support for patch cords as well as a holder for the DM modules during installation. This modular approach gives the customer total flexibility in selecting the required copper and fiber adapters. In addition it provides for fiber and SYSTIMAX GigaSPEED® X10D and XL copper solutions, since both fiber and copper modules can fit into the same panel kit.

The PATCHMAX GS5 Distribution Modules features an innovative termination manager and redesigned rear housing. The termination manager and new rear housing provide for easier, faster, more reliable terminations and reduced variability in the placement and termination of cables to the panel.



24 Port

48 Port

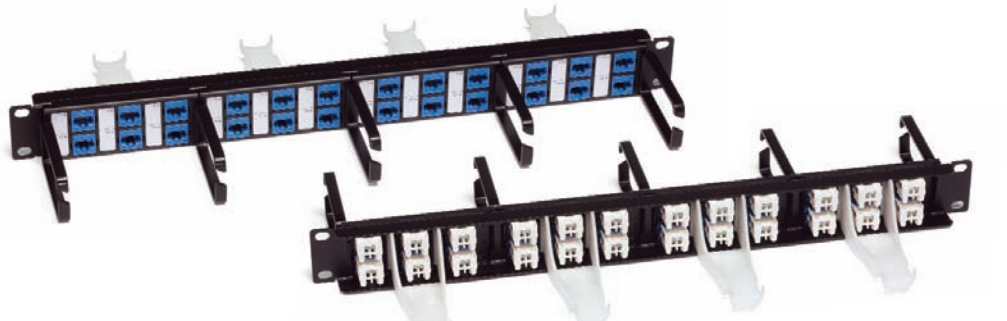
Physical Specifications

PM-GS5-24:	19.0 x 3.53 x 8.13 in (48.26 x 8.90 x 20.5 cm) - 2 Rack Unit Universal A/B labeling
PM-GS5-48:	19.0 x 5.29 x 8.13 in (48.26 x 13.34 x 20.5 cm) - 3 Rack Unit Universal A/B labeling

Ordering Information

Material ID	Description
760060913	PM-GS5-24 Port Patch Panel
760060921	PM-GS5-48 Port Patch Panel
760060939	PM-GS5 2U Blank Panel Kit
760060947	PM-GS5 3U Blank Panel Kit
760060954	PM-GS5 Distribution Module

Material ID	Product	Description
107656977	PATCHMAX Custom Label Kit	3 Sheets (32 labels/sheet) = - White L2200-WH (MID's available for various colors) 1 PK (96 labels) (1 label = 6 ports)



SYSTIMAX GigaSPEED X10D M2000 Modular Patch Panel with Cable Managers and Cord Management Rings

SYSTIMAX GigaSPEED X10D M2000 and M3000 Modular Patch Panels

The SYSTIMAX GigaSPEED X10D M2000 and M3000 Modular Patch Panels are patch panels for M-series outlets that can be configured for copper, fiber, or both. The M2000 and M3000 panels are available in 24-port versions, and the M2000 additionally has a 48-port version. Both the M2000 and M3000 panels mount in a 19-inch (483 mm) rack with universal hole spacing.

The M3000 panel incorporates rear cable management as part of the panel for consistent cable routing and management.

The M2000-1U and M2000-2U Panels include M2000 Cable Organizers. The M2000 Cable Organizer is a molded plastic design that is mounted to each 6-port bezel. The 24 port 1U panel includes 4 cable organizers and the 48 port 2U panel includes 8 cable organizers. The 6 4-pair cables from each bezel are routed and positioned to the cable organizer. Cable ties are included to secure the cables.

The M2000A-1U and M2000A-2U include an attachable cable management bar for cable routing and management.

The M2000 and M3000 include a label sheet and clear label holders. A label area is provided to the left of each port. Port designations can be printed on the label sheet and individual port labels are trimmed from the label sheet and placed in the label area and secured by the clear label holder. If adhesive labelling is desired, adhesive labels can be applied to the label holder.

GigaSPEED M3000 Patch Panel
M-Series Outlets Sold Separately

M2000 Physical Specifications

Height:	24 Port: 1.75 inches (44.1mm) 48 Port: 3.5 inches (88.9mm)
Width:	19 inches (483 mm)
Depth:	1.2 inches (30.48 mm)

Ordering Information

Material ID	Product	Number of Ports
760049932	M2000-24 1U 24 Port Panel	24
760049940	M2000-48 2U 48 Port Panel	48
760049957	M2000A-24 1U (Angled)	24
760049965	M2000A-48 2U (Angled)	48
760054627	M2000 Cable Mgt Bar	
760056408	MGS Cover with Strain Relief, 1000/Kit	
760069278	M2000 1U Cord Manager Kit	
760073486	M2000 2U Cord Manager Kit	

M3000 Physical Specifications

Height:	24 Port: 1.75 inches (44.1mm)
Width:	19 inches (483 mm)
Depth:	3.7 inches (93.9 mm)

Ordering Information

Material ID	Product	Number of Ports
760065391	M3000-24 1U 24 Port Panel	24

Material ID	Product	Description
760060392	M2000/M3000 Custom Label Kit	8.5x11 6 rows of 12 labels, supports 6U of labelling

SYSTIMAX VisiPatch 360 System

The SYSTIMAX® VisiPatch® 360 System is a new generation of patching systems that seamlessly incorporates patching and integrated cable management to deliver an ergonomically designed and aesthetically pleasing solution that saves time, space and money.

The VisiPatch 360 System utilizes a unique reverse patching technology that allows the patch cord to be projected away from the user and into the patching field. This design improves cord management by reducing the "spaghetti"cord clutter associated with poorly installed RJ-45 systems and makes reading the labeling information easy, facilitating future moves, adds and changes.

Both port density and usable density are increased in the VisiPatch 360 System. Because of cable and patch cord congestion in traditional RJ-45 systems, the usable density is lower than the port density. The new VisiPatch 360 System, however, is designed to maximize usable density by minimizing cable and cord congestion. The new VisiPatch 360 System is available for wallmount as well as rack-mount and cabinet installations. Plus, its modular design means that it is available for small and large installation needs.

Ordering Information

Material ID	Description
Field Termination Kits	
760049445	VP360 4U (32 Ports) Kit
760049452	VP360 12U (96 ports) Kit
Patch Cords	
CPCFF32	VP360-VP360-4PC-GS10E VisiPatch 360 X10D Patch Cord
CPCFF62	VP360-VP360-1PC VisiPatch 360 1-pair Patch Cord
CPCF732	VP360-MGS-4PC-GS10E VisiPatch 360 -GS10E Hybrid Patch Cord
CPCF312	VP360-GS8E-4PC-XL VisiPatch 360 GS8E XL Hybrid Patch Cord
CPCFF12	VP360-VP360-4PC-XL VisiPatch 360 XL 4-Pair Patch Cord
Cable Manager Kits	
760060285	VP360 12U Vertical Trough Cable Manager Kit e/w Door, 10"
760060301	VP360 Horizontal Cable Manager Kit 27"
760060871	VP360 Horizontal Cable Manager Kit 37"
760060343	VP360 Horizontal Cable Manager Kit 19"
760060863	VP360 Horizontal Cable Manager Kit 29"
Accessories	
760060327	VP360 19" Rack Mount Bracket

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