



Designed for large-scale data-center storage systems, industry-leading iPass+ HD Interconnects support SAS 3.0 signaling up to 100m with low power consumption, while reducing cable-management challenges

Features and Benefits

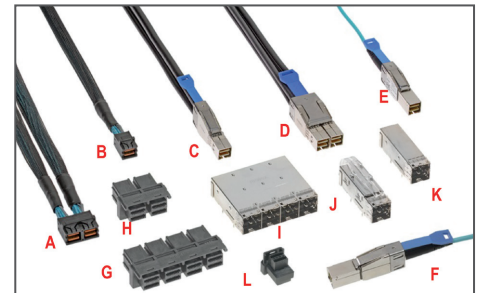
Connectors and Copper Cable Assemblies

Fully integrated press-fit receptacle design	Provides one-step placement to PCB
Integrated side bands	Provide routing control for end users
Various configurations of 4x and 8x cables can mate with 1-by-2 or 1-by-4 integrated connectors	Allow for multi-plugging functionality
Connectors mate to passive and optical cable assemblies	Provides the capability to extend copper cable reach with active cabling
I2C bus protocol and on-board EEPROM chip on external cables	Enables multiple host-management capabilities. Meets SFF-8636 specifications
Dual paddlecard cable assembly design (both internal and external)	Reduces crosstalk and improves electrical performance
Multiple wire gauge sizes available on internal and external assemblies	Offer customized solutions
Compliant with SAS 3.0 (12 Gbps) systems with optical-mode capability, InfiniBand* (10 Gbps), Ethernet (10 Gbps) and other protocols	Meets next-generation as well as many existing industry standards
Data rates scalable to 96 Gbps (24 Gbps over 4 lanes; vertical receptacles only)	Supports projected SAS 4.0 data rates

*InfiniBand is a registered trademark of the InfiniBand Trade Association

iPass+™ HD (High-Density) Interconnects

- 76866** External Right-Angle Integrated Cages and Receptacles
- 76867** Internal Right-Angle Receptacles
- 111075** 4x External Passive Copper Cable Assemblies
- 111077** 8x External Passive Copper Cable Assemblies
- 100189** 4x Internal Passive Cable Assemblies
- 100190** 8x Internal Passive Cable Assemblies
106415 Active Optical Cables (AOC)
- 170729** Internal Vertical Receptacle

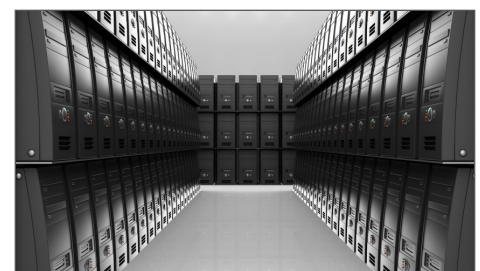


iPass+™ HD Interconnects
 A, B = Internal Passive Cable Assemblies
 C, D = External Passive Cable Assemblies
 E, F = Active Optical Cables
 G, H = Internal Receptacles
 I, J, K = External Integrated Cage and Receptacles
 L = Vertical Receptacles

Applications

Server/storage

- Data Center and Enterprise Storage Systems
- Storage racks
- JBODs
- Storage Controllers
- HBAs (Host Bus Adapters) servers
- RAIDs (Redundant Array of Individual Disks)



Data Center

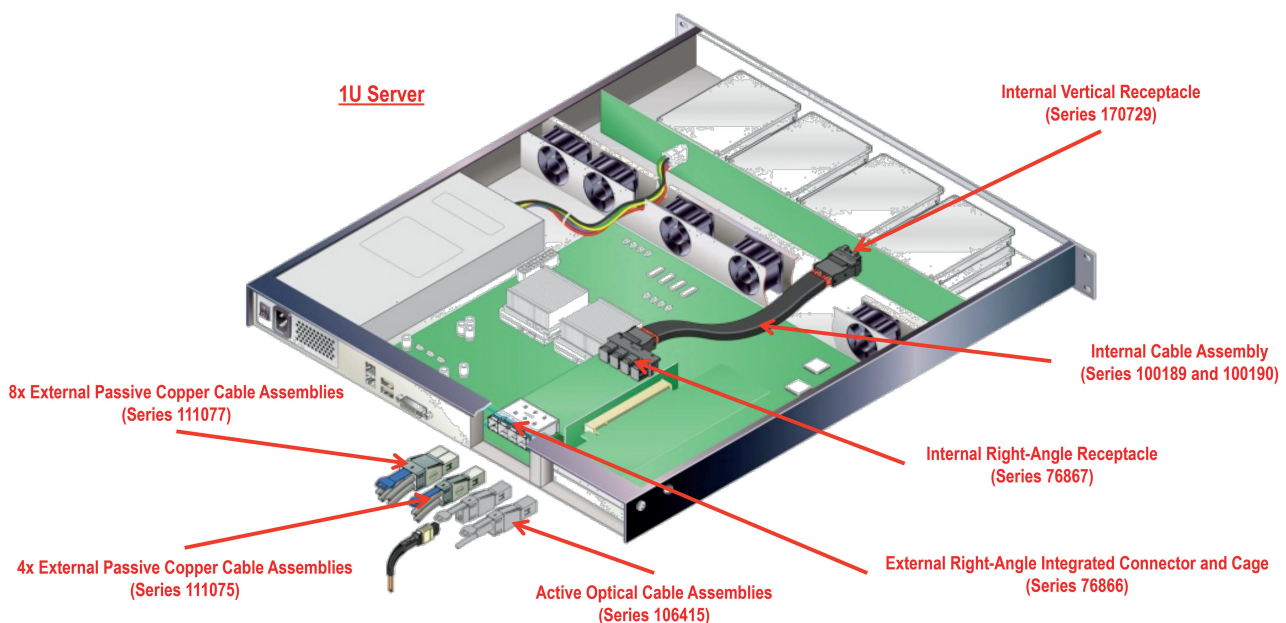
Features and Benefits

Active Optical Cables (AOCs)

Compliant to SAS 3.0 and SAS 2.1 (optical) up to 100m in length	Enables storage companies to deploy larger systems. Allows customers to scale up with added storage up to 100m from the controller
Small 3.00mm cable outer diameter	Decreases cable management and routing challenges by reducing bulk cable size compared to copper cable and increasing flexibility. Lower thermal mass allowing more efficient cooling vs. copper cabling
Highest-density AOC design, nearly double the density of current QSFP+ AOCs	Enables higher density port designs and data rates up to 48 Gbps
Targeted low power consumption of 0.9W per cable end	Improves overall data-center power consumption and thermal efficiency
Cables available in standard lengths up to 100m	Significantly increases reach distances over copper cables for SAS implementations. Enables larger scale multi-rack designs
Meets SAS-3 high-density parameters	Providing nearly double the density of QSFP+ ports
Cable is compliant with SAS 3.0 (12 Gbps) (systems with optical-mode capability), InfiniBand* (10 Gbps), Ethernet (10 Gbps) and other protocols	Meets next-generation as well as many existing industry standards
Cable is backward compatible with 6 Gbps SAS 2.1 optical-mode capable systems (not SAS 2.0)	Allows customers to use cables in legacy systems that support SAS 2.1 optical mode implementation

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Specifications - Connectors

Reference Information

Packaging: Tray
 UL File No.: E107635
 CSA File No.: 19980
 Mates With:
 External Copper Cables:
 Series 111075, 111077 Internal
 Copper Cables:
 Series 100189, 100190
 Active Optical Cables:
 Series 106415
 Designed In: Millimeters
 RoHS: Yes
 Halogen Free: Yes

Electrical

Data Rate:
 Right-Angle: 12 Gbps per lane
 Vertical: 24 Gbps per lane
 Voltage (max.): 30V AC (RMS) / DC
 Current (max.): 0.5A per contact

Mechanical

Insertion Force to PCB (max.):
 17.7N per pin
 Mating Force (max.): 70N
 Unmating Force (max.): 40N
 Durability (min.): 250 cycles

Physical

Housing: 94V-0 LCP
 Contact: Copper Alloy
 Plating:
 Contact Area — 0.76µm Gold
 Press-Fit Tail Area — 0.76 to 1.52µm Tin
 Underplating — 2.54µm Nickel
 PCB Thickness (min.): 1.57mm
 Operating Temperature: 0 to +80°C

Ordering Information

Order No.	Component	Orientation	Ports
76866	External Integrated Cages and Receptacles	Right-Angle	1-by-1, 1-by-2, 1-by-4
76867	Internal Receptacles		
172729		Vertical	

Specifications - Copper Cable Assemblies

Reference Information

Packaging: Bag, bulk pack
 UL File No.: E72548
 CSA File No.: LR64395
 Mates With: Series 76866, 76867
 Designed In: Millimeters
 RoHS: Yes
 Halogen Free: Contact Molex for halogen-free options

Electrical

Data Rate: 12 Gbps per lane
 Impedance: 100 ohm

Mechanical

Mating Force 4x cables (max.): 70N
 Unmating Force 4x cables (max.): 40N
 Durability (min.): 250 cycles

Physical

Housing: Zinc Die Cast
 Contact: Hard Gold
 PCB Thickness: 1.00mm
 Operating Temperature: 0 to +80°C

Ordering Information

Order No.	Shielding	Lanes	Cable Lengths
111075	External	4x	0.5 to 8.00m
111077		8x	
100189	Internal	4x	0.152 to 1.00m
100190		8x	



Specifications - Active Optical Cables

Reference Information

Packaging: Bag, Reel for 50 meter and over

UL File No.: UL 60950-1:2011

CSA File No.: CAN/CSA-C22.2 No. 60950-1:2007

Mates With:

Internal iPass+ Integrated Connector (Series 76867)

External iPass+ Integrated Connector (Series 76866)

Use With:

Copper iPass+ Interconnects: External Cable Assemblies (Series 111075, 111077)

Internal Cable Assemblies (Series 100189, 100190)

Designed In: Millimeters

RoHS: Yes

Halogen Free: No

iPass+™ HD (High-Density) Interconnects

Electrical

Data Rates: 48 Gbps (12 Gbps by 4 lanes)

Reach: 100m

Power: 0.9W

Power Supply: 3.3V

Programmable Rx Output Amplitude

Mechanical

Form Factor: iPass+ (mini-SAS)

Hot-Pluggable: Yes

Physical

Operating Temperature: -0 to +70°C

Ordering Information

Order No.	Length	Cable Outside Diameter (mm)
106415	5.00, 7.00, 10.00, 15.00, 20.00, 25.00, 50.00 and 100.00m	3.00

www.molex.com/link/ipass+hd.html