

HDCi[®] LX3 Panels & Solution

White paper

Introduction

Today, converged infrastructure aims to unify powerful data centre resources and introduce new levels of economics for the business. It's important to see just how much we're advancing when it comes to data delivery, new types of devices connecting into the data centre, and how it's impacting your business.

Data centre and telecommunications rooms are rapidly outgrowing their footprints to meet increasing network demands. Keeping costs low and getting higher density are always the goals of data centre managers. The modular system allows for rapid deployment of high density data centre infrastructure as well as improved troubleshooting and re-configuration during moves, adds and changes.

Today's data centre and telecommunications environments heavily depend on the foundations of the optical network – communicating, transmitting, and protecting the data upon which your business relies. Our "High Density Converged Infrastructure – HDCI" series is a blend of high performance products, which focuses on minimising cost and increasing efficiency. An essential line of products for your business, which will ensure that your data centre infrastructure can meet future challenges.

So what makes your optical network different to your competitor's network? How can the design and performance of your data / telecom environment contribute more to the bottom-line, while at the same time be mindful of reliability and uptime? It's achievable with High Density LX series Solutions, industry engineered pre-terminated optical cabling systems manufactured by OptronicsPlus that take your data/telecommunications environments beyond the next level. This white paper illustrates OptronicsPlus HDCi® LX3 High Density Panels & Solutions and the related options.

Why Data centres are Shifting Towards Converged Infrastructures?

With more virtualisation, IT consumerisation and a lot more data – the data centre needs a new way of deploying high-density computing platforms.

Converged infrastructure is the combination of storage and compute on one physical appliance. Yes, networking is integrated to some extent, but this is usually through a hypervisor. There isn't usually a networking piece of hardware involved. Here is where some of the confusion takes place. In some cases, unified architecture is sometimes interchanged with converged infrastructure. However, a good way to look at it is unified architecture does involve the bigger spectrum of data centre technologies like network, storage, and compute. Conversely, converged infrastructure is usually just storage and compute. These kinds of platforms are small, powerful, and dynamic in terms of applicable use cases.

Converged infrastructure allows you to integrate with hypervisor technologies and abstract services as they integrate with the underlying physical architecture. One use case is a very specific virtual

application delivery project. Let's say, if you launch a new branch location with a few hundred users, you require that location to have locally accessible resources for virtual applications and a few hosted desktops. Instead of a traditional server and storage architecture, you deploy a multi-node converged system to meet business demands. You can save time with deployment, costs for deploying a less expensive platform, and simplify management by unifying data centre controls.

Benefits of Converged Infrastructure

An effective converged infrastructure solution consists of a single pool of resources, greatly reducing management complexities and improving overall IT efficiency. Several compelling benefits of converged infrastructure include:

- **IT agility and responsiveness**
 - Ensure high availability of applications, services and essential data.
 - Easier integration of new technology without compatibility glitches.

- Quickly spin up applications to leave no revenue behind
- **Resource efficiency**
 - Manage open architecture best-of-breed technologies such as servers, storage, networking and application services centrally.
 - Balance processing power, bandwidth and capacity planning across application workloads.
- **Cost savings**
 - Decrease hardware/software overhead.
 - Outsource logical IT services while maintaining control over mission-critical workloads.
 - When architected with Facebook-inspired Open Compute Project (OCP) hardware, significant power/cooling savings can be achieved

Fibre Optic Patch Panel & Its Types

Fibre optic patch panel, or fibre optic patch bay, is common cable management facilities. It includes a series of connection points of electronic equipment and the mainly connections are fibre optic patch cables. The patch panel allows circuits to be easily arranged and rearranged by simply plugging and unplugging the patch cables, or changing the circuit of select signals without the use of expensive dedicated switching equipment. It can be an opened box used to protect the bare fibre and the optical fibre cables, meanwhile it protects spaces for fusion splicing and components connections by fibre adapters. During the unused condition, all fibre optic connectors, fibre patch cables and adapters should be kept away from dust. Fibre optic patch panels help with the installation density of the fibre optic cabling and provide more convenient organization and management.

A typical fibre optic patch panel has some jacket on the front side to receive short patch cables while on the back of the panel. There are either jacks or punch down blocks that receive the connections of longer and more permanent cables. The patch panels are often used to connect several computers by linking them via the panel, which enables the LAN to connect to the Internet or another WAN.

The fibre patch panel, or fibre enclosure, is built and designed for efficient cable organization, management and protection within the racks.

High-density fibre patch panel consists of a panel enclosure and modular HD cassettes, which can connect a 40G/100G fibre network feed (using MTP cable) and segment it into standard LC connections in order to interface with 10G devices. The cassettes are housed in a space-saving, rack-mountable, panel enclosure that can hold different amounts of cassettes, depending on the installation requirements.

According to the installation ways, there are mainly two types of fibre optic patch panels: wall-mounted patch panels and rack-mounted patch panels.

- High Density LX patch panels
- Swivel patch panels
- Sliding patch panels
- Termination boxes

What Can High-density Fibre Patch Panel Achieve?

The high-density patch panel can provide fast and easy deployment of high-density interconnects and cross-connect in data centres. The following are some advantages of using high-density fibre patch panels.

- Simplify Cabling Deployment
- Saves Space
- Increase Port Density
- Ease of Installation:
- Flexibility and Adjustability
- Cost-effective Solution for 40G/100G Network

HDCi® LX High Density Patch Panels

Fibre patch panels offer the highest level of scalability and density. High-density fibre patch panel or enclosure is an ideal solution for installation with space constraints.

High-density fibre optic patch panels have been engineered to be able to significantly increase density for both patching and splicing. High-density patch panels maximize the amount of adapter panels per rack unit of height. There are several features that make a high density fibre patch panel in an exceptionally nice product to work with. The sliding

tray has locking positions to prevent over-extending the fibres. High-density patch panels also have a split top design which allows for easier cable management, and improved strain relief for the cable ingress.

LX fibre optic patch panels are rack-mountable patch panels designed to support the storage of splice trays. They provide high-density fibre connectivity solutions. LX patch panels have universal mounting hardware to hold fully terminated cassette modules. This maximizes the performance of networking space while saving valuable installation time.

- **HDCi® LX3 High Density Patch Panels**

An innovative 1U, 2U, 3U and 4U, 19" rack mountable patch panel, designed for use in high density applications. Respectively, it offers management of up to 144, 288, 432 and 576 fibres using MTP® optical cassette modules with 24 fibres each and is fully compatible with a variety of alternative module options.

This panel allows advanced cable management, providing an enhanced cable routing exiting the panel to the left or right and allowing cable assemblies to be routed up and across the front of the panel.

The MLX3 MTP® modules which are compatible with LX3 panel are designed for the transition between MTP® and standard LC/SC connectors. They have a small form factor design and LX3 panel can house up to 6, 12, 18, 24 MLX3 modules in 1U, 2U, 3U and 4U height respectively. They come with 6 low loss LC quad / SC Duplex flangeless adaptors on the front and 2 MTP® on the back side. They contain 100% factory terminated and tested LC/SC to MTP® fanouts.

HDCi® LX3 High Density Patch Panels & MLX3 MTP® Cassette Module

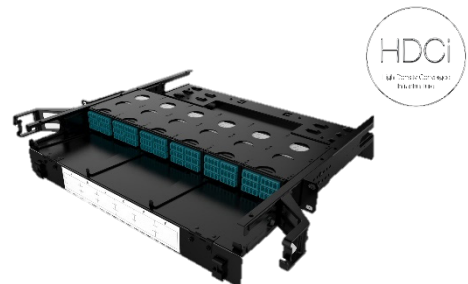
The high-density (HD) MTP® cassette module is a type of MTP® cassette exclusively designed for high-density applications.

Though the HD MTP® cassette is also used for secure transition between MTP and LC or SC discreet connectors, it is more compact than the traditional MTP® cassette, so that it can be more suitable for high-density applications, helping users saving more spaces.

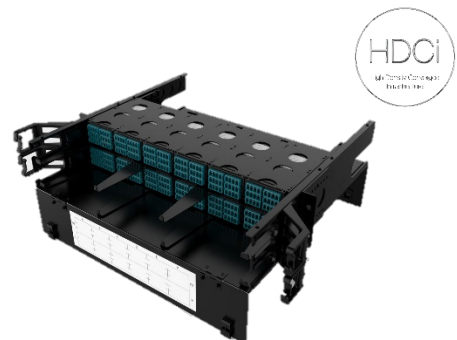
Below are the features of the OptronicsPlus HDCi® LX3 high density patch panels:

- 1U height
- 19" rack mountable
- Metal construction
- Can house up to 6, 12, 18, 24 MLX3 modules allowing management for up to 144, 288, 432 and 576 fibres
- Saves installation and reconfiguration time
- MLX3 MTP® cassette modules are 100% factory terminated and tested offering low loss performance

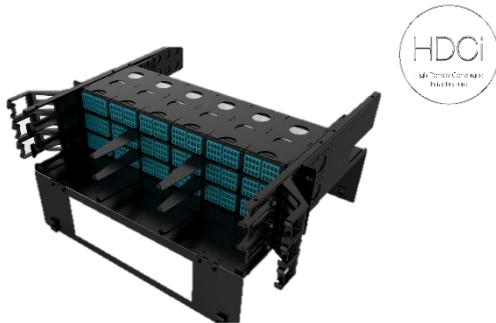
A. HDCi® LX3 High Density 1U Patch Panel and Cassette module (housing up to 6 MLX3 modules allowing management for up to 144 fibres)



B. HDCi® LX3 High Density 2U Patch Panel and Cassette module (housing up to 12 MLX3 modules allowing management for up to 288 fibres)



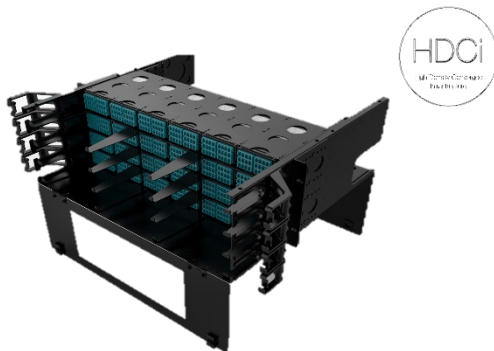
C. HDCi® LX3 High Density 3U Patch Panel and Cassette module (housing up to 18 MLX3 modules allowing management for up to 432 fibres)



HDCi® LX3 Patch Panel Specification

ELEMENT	1U	2U	3U	4U
Depth (mm)	420mm	420mm	420mm	420mm
Width (mm)	437mm	437mm	437mm	437mm
Height (mm)	44.2mm	88.7mm	132.5mm	176.8mm
Rack Units	1U	2U	3U	4U
Capacity	6 x HDCi modules	12 x HDCi modules	18 x HDCi modules	24 x HDCi modules

D. HDCi® LX3 High Density 4U Patch Panel and Cassette module (housing up to 24 MLX3 modules allowing management for up to 576 fibres)



Standards Compliance

All LX series patch panels comply to the below standards:

- TIA/EIA-568-C.3 and ISO/IEC 11801 - cable
- IEC-61754-7 & EIA/TIA-604-5 - MTP®
- Compliant to Directive 2002/95/EC (RoHS) and REACH SvHC
- IEC-61754-20 (LC) & IEC-61754-14 (SC)
- IEC-60793

The combination of LX3 panel and MLX3 cassette modules is an ideal solution for high density applications. Their plug and play design meets all requirements for rapid deployment in high demand data centre environments.

Conclusion

Converged infrastructure, (also known as integrated systems or unified computing), is an approach to data centre management that integrates multiple IT components (such as storage, networking and compute) into a single, optimized computing solution. When these components are combined, including servers, data storage devices, networking equipment, etc., management of these resources is centralized and simplified, thus achieving better effectiveness and efficiency.

In today's data centres and SAN environments, space is often at a premium, making density more critical than ever. High-density fibre optic solutions offer the users performance and reliability. Using a comprehensive solution of high-density fibre enclosures or patch panels with either adapter panels or pre-terminated cassettes provides a complete fibre cross connect patching solution for applications where maximum density is required.

Employing a high-density fibre patch panel is the most effective solution for overcoming cabling congestion associated with 40G/100G network connections as the plug-and-play cassette modules can be changed when higher bandwidth becomes needed. It can manage, allocate and control the connections of network equipment of varying bandwidths. Cable management is simplified because the fibre patch panel can be changed or expanded by installing a new cassette module instead of running new cables. By simply patching the 40G MTP cables at the back and the standard LC cables to devices in the front of the cassette, the IT staff don't need to pull a new fan-out cable each time they need a new connection. Cassette Modules allow to expand whenever you need to accommodate the necessary bandwidth and connectors.

The modular system is the choice to ease future expansion and for quick and easy system re-configuration, which can save space and meet the demand for high-density network infrastructure.

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