

A photograph of a server room with rows of server racks. The racks are filled with server units, and some have blue indicator lights. The room is dimly lit, with the primary light source being the server units themselves. The floor is dark and reflective.

NORDEN DATA CENTRE SOLUTION

WHO ARE WE ?

Norden Communication specialises in the craftsmanship, manufacturing and distribution of ELV solutions. The company is headquartered in the UK and has a strong presence in Europe, North America, the Middle East, Asia Pacific, and Africa markets.



ABOUT US

Headquarters in London, UK.

- The company had its humble beginning in 1998.
- The main markets serviced by Norden are Europe, Middle East, Africa and Asia.
- Our dedicated quality assurance team operate a quality management system certified by ISO.
- NORDEN is having UL, CE, FCC, ROHS, Intertek (ETL), CPR & LPCB Certification for its different products.
- R & D wing of Norden Communication is managed by a dedicated team of highly qualified technical professionals who are working on continual upgradation and improvements in the areas of innovative product development & applications.

NORDEN GLOBAL FOOTPRINTS



PRODUCT RANGE

- ▶ Data Cables
- ▶ Networking Accessories
- ▶ Fibre Cables
- ▶ Fibre Accessories



- ▶ Telephone Cables
- ▶ Telecom
- ▶ Coaxial Cables
- ▶ Instrumentation & Audio Cables



- ▶ Fire Resistant Cables
- ▶ Cabinet & Accessories
- ▶ Data Centre Cabinets



▶ MPO/MTP Solutions

- ▶ Public Address System
- ▶ Surveillance System
- ▶ Access Control System
- ▶ Exit Sign Lights



▶ UPS

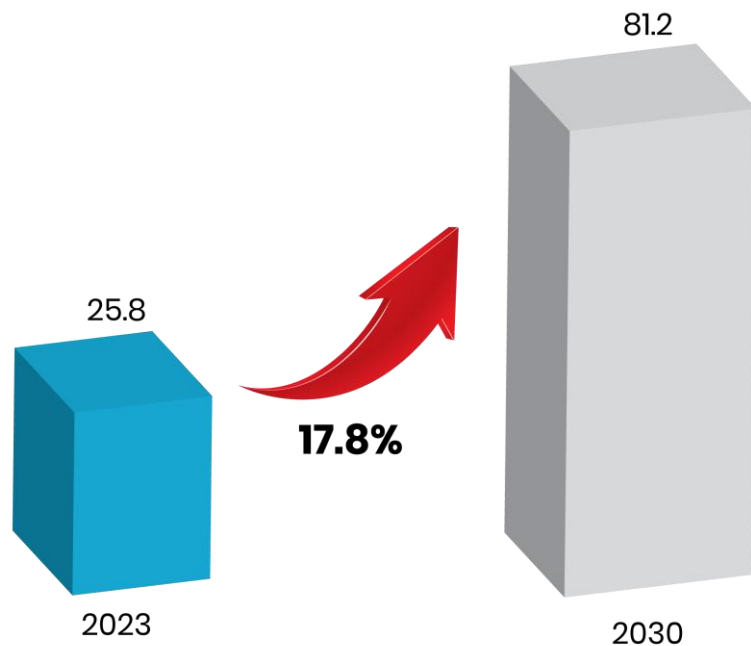
DATA CENTRE LANDSCAPE

- ▶ It is predicted that Tier 3 data centers will grow from 888.5 MW in 2022 to 3365.0 MW by 2029, at a CAGR of 16.20%. Similarly, tier 4 data centers operated at a capacity of 211.9 MW in 2021 his capacity is expected to increase from 211.9 MW in 2022 to 1380.2 MW by 2029 at a CASR of 29.54%.
- ▶ It is anticipated that the number of Indian smartphone users will increase from 794.4 million in 2022 to 1.2 billion in 2029, exhibiting o compound annual growth rate of 5.52% Government initiatives, such as the "Make in India" movement.
- ▶ The internet industry has been revolutionized by the growth of telecom operators such as Jio.
- ▶ The government encouraged digital payments and services online because of the increasing demand for data.
- ▶ Data consumption is expected to increase with the launch of the 5G network in India, as Indian users have a heavy inclination toward online OTT content. This will bolster the need for data centers.

***Source: Cyfuture**

DATA CENTRE LANDSCAPE

Modular Data Centre Market Global Forecast



CAGR of
17.8%

The global modular data centre market is expected to be worth USD 81.2 billion by 2030, growing at a CAGR of 17.8% during the forecast period.

BIG PLAYERS IN DATA CENTRE

	Company name	No of Data Centers	Capacity in MW
1	Tata Communications Ltd.	44	300
2	STT GDC INDIA Pvt. Ltd.	27	205
3	CtrlS Datacenters Ltd.	17	275
4	Sify Technologies Ltd.	11	100
5	Netmagic Solutions Pvt. Ltd. (Formerly NTT)	9	205
6	Web Werks India Pvt. Ltd.	6	40
7	ESDS Software Solutions Ltd.	5	50
8	NxtGen Datacenter and Cloud Technologies Pvt. Ltd.	5	50
9	GPX India Pvt. Ltd. (Equinix acquires GPX)	2	2.6
10	Yotta Data Services Pvt. Ltd.	2	250
11	Cyfuture	6	
12	Adani Connex	1	250
13	Nxtra by Airtel	12	200



INDIA: TOP STATES WITH DATA CENTRES

- ▶ Maharashtra
- ▶ Uttar Pradesh
- ▶ Tamil Nadu
- ▶ Karnataka
- ▶ Telangana
- ▶ Delhi
- ▶ West Bengal
- ▶ Haryana
- ▶ Odisha
- ▶ Gujarat
- ▶ Madhya Pradesh

THE BEST PRACTICES THAT HELP BUSINESS TO BUILD AND MAINTAIN A DATA CENTRE ARE:

- ▶ Measuring data and accurate logs of assets in the data centre
- ▶ Power usage effectiveness is a critical metric for efficiently managing data centers
Cooling or optimized airflow management techniques
- ▶ Backups for an efficient system
- ▶ Predictive and proactive maintenance
- ▶ Right deployment of DCIM (data centre infrastructure management) technology

MAIN CAUSES OF DATA CENTRE OUTAGES

- ▶ Human error. Human beings are generally the weakest link in data centre operations. The Uptime Institute estimates that human error is a factor in up to 80 percent of all outages. IDC estimates that human error costs organizations more than \$62.4 million every year, mostly attributed to mistakes in performing tedious and manual tasks.
- ▶ UPS and power failure. Almost half (44 percent) of data center outages are caused by onsite power system failure, with 40 percent of those caused by UPS failure. UPSs are indispensable to data centre operations, but they're often forgotten once installed. Battery failure is the chief cause of UPS problems, and rising data centre heat loads can reduce battery life substantially.
- ▶ Cooling system failure. Just 13 percent of outages are attributable to cooling system failure, and the number has stayed roughly the same over the past three years. Nevertheless, increasing data centre heat loads have made cooling system failure a more significant — and potentially costly — threat.



MAIN CAUSES OF DATA CENTRE OUTAGES

Cabling Issues in Network Failures:

- ▶ 70% of LAN failures linked to cabling (Gartner, PC Magazine).
- ▶ 50% of recent network failures due to poor data cabling (Fluke Networks).

Structured Cabling System (SCS) :

- ▶ Physical layer for network; 10-year lifespan.
- ▶ Despite importance, often underfunded vs. network equipment/software.

Management Inefficiencies:

10% error rate in manual data management (Watson & Fulton).

- ▶ 20-40% of ports go untracked over time (Frost & Sullivan).
- ▶ Intelligent management can cut costs by 20-30% (Gartner).

WHY NORDEN?



NORDEN INTELLIGENT SOLUTION COMPONENTS



Intelligent Copper Frame:

A cost-effective panel that supports both interconnect and cross-connect topologies.



Intelligent Copper Patch Cord:

High performance category 6A cord supporting 1 and 10 Gbps.



Intelligent Fibre Trays:

A special modular design supporting mixed cross-connect and interconnect topology. Available in single and multi-mode.



Intelligent MPO MPO Panel:

A high performance fiber cord supporting multi-mode and single-mode applications.



Intelligent Fibre Cords:

A high performance fiber cord supporting multi-mode and single-mode applications.



Intelligent Scanning Card

A pluggable device that supports physical network identification on interconnect and cross-connect topologies. Automatically detects and reads up to 24 smart ID devices present on each copper or fiber tray.



Intelligent Collector:

Provides communication between the PatchView+ Cards and the network system. New architecture saves on ports in the main switch and supports cascading architecture for unlimited network growth.



Intelligent Environment Controller:

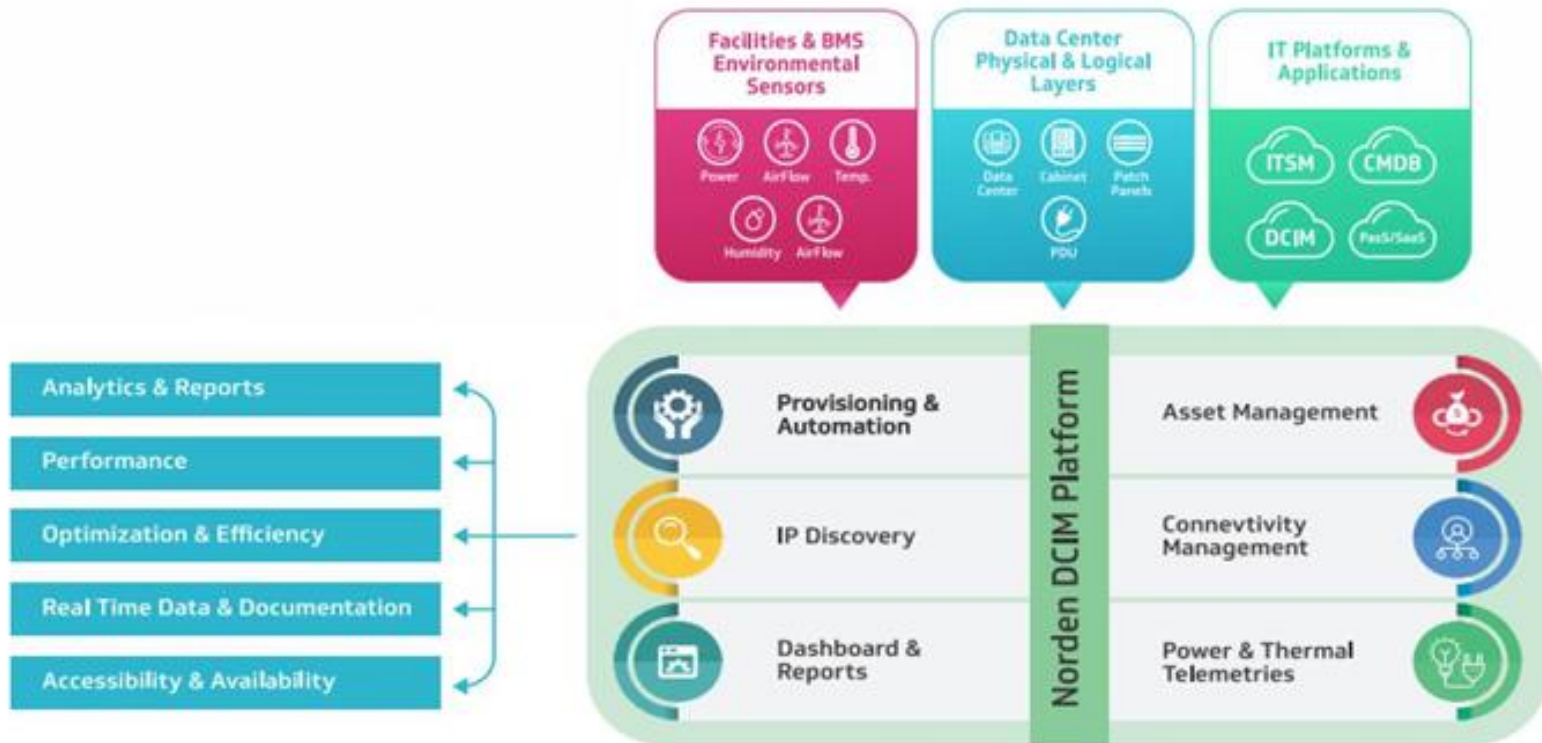
Connects the PatchView+ controller to temperature and humidity sensors. Supports also rack-indicating flashing beacons.



WHAT IS INTELLIGENT SOLUTION?

- ▶ The Norden Intelligent Solution is a fully Intelligent Product which uses CPID Technology (Connection Point Identification) which monitors point to point connectivity of Physical layer.
- ▶ Real-time visibility
- ▶ Support for inter-connect/Cross-Connect topology
- ▶ Monitoring & control of all network physical-layer components
- ▶ Reduced network downtime and improved output
- ▶ Eliminating manual errors by automating work process
- ▶ Enabling all IT assets-down to last port
- ▶ Reduced power consumption

DCIM SOFTWARE



CHALLENGES AND SOLUTIONS

Challenge 1:

- ▶ Asset Management and Security.
- ▶ With the proliferation of IoT or IP-based devices, manually tracking devices and finding new, unplanned devices connected to the network can be difficult and time-consuming.

Solution:

- ▶ AIM provides an end-to-end connectivity information
- ▶ Full physical link information can be seen in the AIM solution - starting from switch port to device connected to outlet port, showing the panels and the patching used.

CHALLENGES AND SOLUTIONS

Challenge 2: Operations / MAC.

- ▶ The status of patching, asset information, device status whether it is connected or not connected.
- ▶ If connected, whether is it idle or active is not always easy to determine.

Solution:

- ▶ The AIM View Link Capability allows the user to select an item, such as an outlet, station, or panel port, and trace a link.
- ▶ The trace provides detailed connectivity information, showing the entire path from the switch port to the connected IP device.

CHALLENGES AND SOLUTIONS

Challenge 3: Network Security.

- ▶ Port security and Network Access Control (NAC) Solution is a prime requirement for most companies and data centre environments.
- ▶ The probability of an internal threat in this case, is always higher than an external one.
- ▶ If an ill-intentioned guest connects a laptop to the LAN without proper patching – there is a possibility that malicious code could create network flood which is a potential vulnerability.
- ▶ It can be a challenge to prevent intrusion and / or locate where the intrusion was initiated.

Solution: AIM Infrastructure Security:

- ▶ An AIM system creates an event when an unauthorized device is detected, which provides easy identification of the exact physical location of unauthorized users.
- ▶ AIM provides Automatic and manual blocking of switch ports when unauthorized devices detected.
- ▶ Automatic access/blockage rules can be assigned to designated locations according to their security level.

CHALLENGES AND SOLUTIONS

Challenge 4:

- ▶ History shows that majority of time repairing intermittent network problems is spent isolating the problem.
- ▶ When an IT team doesn't know where to look or when exactly the problem started, repair times can go from hours to days.
- ▶ The user cannot always identify or differentiate between authorized or unauthorized connection or disconnection.
- ▶ When there is no information on critical servers up and downtime, this means a longer troubleshooting time.

Solution:

- ▶ AIM - Real time view of communication racks and related information.
- ▶ AIM provides capability to view any hub room from remote location and complete rack information showing real time view of servers, panels etc. in the right "U".

CHALLENGES AND SOLUTIONS

Challenge 5:

- ▶ No alerts and to monitor critical servers up/downtime.

Solution:

- ▶ AIM – Switch and Secure Links.
- ▶ The links that are critical can be set as “Secure and Switch Link”.
- ▶ An alert will be generated if any changes in Switch link. If the device or any link is tampered with, the system will indicate that there were unplanned changes to the links.

CHALLENGES AND SOLUTIONS

Challenge 6:

- ▶ Many IT teams use manual processes for network management, leading to outdated data, wasted resources, and increased costs due to poor visibility and inefficient port usage.

Solution:

- ▶ The AIM switch port utilization module identifies unused ports, enables removal of excess patch cords with LED guidance, and provides detailed connectivity reports. It also offers customized reporting options, including devices added or removed from the network.

CHALLENGES AND SOLUTIONS

Challenge 7:

- ▶ Identifying crucial implementation requirements for server provisioning, such as power required, VLAN, patch cable length etc.
- ▶ Matching this quickly to available capacity within the data centre is normally a manual process and can be time-consuming.

Solution:

- ▶ To move a device from one location to another by a simple drag and drop operation.
- ▶ The system will check the required availability of ports/VLAN info and will provide necessary patching information by creating a work order.
- ▶ This process is called provisioning. Data Centre provisioning will also take into account the U space availability and the rated power information to provision a device inside a Server rack.
- ▶ Capability to integrate with IP power strip and various environmental sensors provides information about power, humidity and temperature in real time.
- ▶ AIM Provisioning – fully automated device movement using a simple drag & drop operation.

CAT 8 SOLUTIONS

CAT8 S/FTP 4 PAIR 22 AWG CABLE

- ▶ Norden Category 8 S/FTP cables exceed Category 8/ Class II specification, maximizing the user's return on investment, by extending the life of the system.
- ▶ It is tested to 2000 MHZ frequency range and designed to support networking application up to 40 Gbps.
- ▶ The cable is made of bare copper conductor, Foam PE insulation, and LSZH jacket for indoor & PE for outdoor applications.
- ▶ Complies standards: ISO/IEC 11801 (1-6):2017 Class II; ANSI/TIA 568 C.2-1; LSZH: IEC 60332-1 / IEC 60754 / IEC 61034.



CAT8 ACCESSORIES

- ▶ Cat8 accessories suitable for fastest Ethernet applications are also available. Mainly is used in data centres and server rooms
- ▶ Norden Cat 8 Tool less Shielded Keystone Jack.
- ▶ Cat 8 shielded patch panel 24 port
- ▶ Cat 8 Patch cords & Cat 8 RJ45 Toolless connectors



MTP/MPO PATCH PANELS

- ▶ MTP/MPO high-capacity fibre optic Patch Panel supports fibre cable fast connection and distribution.
- ▶ It loads MTP/MPO and ribbons fibre cable inside, easy to use by connector plug.
- ▶ It is an ideal equipment for supporting fibre distribution in the high-density capacity data centre.
- ▶ Standard 1U height, 19inch rack mounted, suitable for cabinet, rack installation
- ▶ The panel support max 96 fibre connection and distribution
- ▶ The mounting hanger can be adjusted forward and backwards For convenient operation
- ▶ Cable management rings at front side of patch panel to proper cable patching.
- ▶ The panel comes with front and rear metal doors for smooth operation



Supported Cassettes	Fibre Capacity
MTP/MPO	96F

HIGH-DENSITY RACK MOUNT FIBRE PATCH PANEL- SNAP-IN SUB-MODULE TYPE

- ▶ High-density Rack mount Snap-in Sub type Fibre patch panels are ideal for plug-and-play data centre systems. The panel Support HD LC/SC & MTP/MPO Snap-in Sub Modules.
- ▶ Rack mount drawer-type patch panel of 1U size.
- ▶ Lockable front panel.
- ▶ Cable managers are available to route the Patch cables.
- ▶ Panel is compatible with splicing and pass-through solutions.
- ▶ 3 Rear cable entry holes (1 for pass-through cable entry, 2 for Fibre cable entry).
- ▶ 2 X 48 F Splice Tray.



	LC	SC	MTP/MPO
Splice Capacity	96F	48F	-
Pass - Through Capacity	96F	48F	48

HIGH-DENSITY MODULAR FIBRE OPTIC PANEL

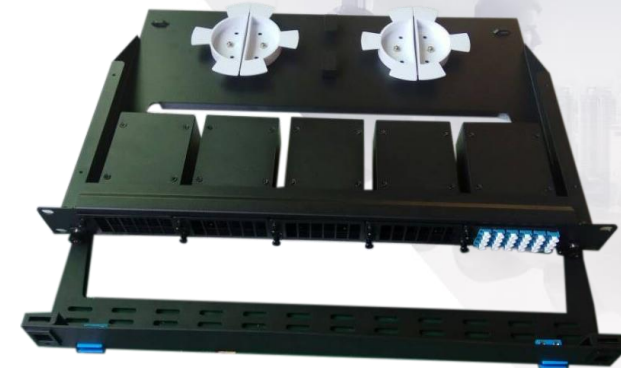
- ▶ High-density Modular Fibre Optic panels can be custom configured with cassettes & pre-terminated solutions.
- ▶ Systems can deliver an exceptional link length of 300 meter for 40 GbE connections.
- ▶ It's Ideal for data centres, enterprise networks, and indoor applications.
- ▶ Rack mount Ultra-high density 1U patch panel, supporting up to 144 Fibres.
- ▶ Support max. of 12 Modular Cassettes (LC, SC, MTP, LC & SC Splice & Pass-Through Cassettes).
- ▶ Equipped with 3 sliding trays, with each drawer can load 4 PCS of modular Cassettes.



Specifications	Modular Cassette Type				
	LC	SC	MTP/MPO	LC-MPO/MTP	LC (Splice Cassette)
No. of adaptors	3	3	3	3	3
Adaptor Type	LC Quad	SC Duplex	MTP/MPO Duplex	LC-MPO/MTP	LC Quad
Max. Fibre Capacity	12	6	72 (12 of MTP/MPO)	12	12

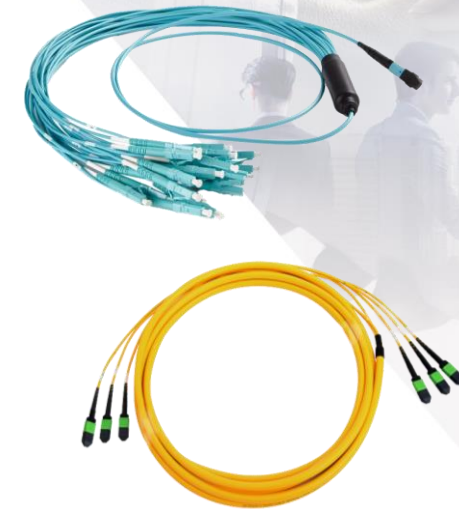
HYBRID HIGH-DENSITY MODULAR FIXED PANEL

- ▶ Hybrid high-density modular fixed panel, custom-configurable with modules and adaptor plates.
- ▶ Ideal for data centres, enterprise networks, and indoor applications.
- ▶ Supports adaptor plates (LC, SC, MTP/MPO, Keystone Jacks) and cassette modules (LC/SC-MTP/MPO, passthrough, splice).
- ▶ Panel supports configurations of 96 fibres in LC, 48 fibres in SC, 48 fibres in MTP/MPO, and 24 Keystone jacks.
- ▶ Copper cassettes available in Category 5E, Category 6, and Category 6A (Screened/Unscreened).
- ▶ Fibre cassettes available in 24/12-port LC or SC and MPO/MTP options.
- ▶ Patch panel can hold up to 4 cassettes.
- ▶ Customizable pre-terminated solutions with different cable types and lengths.



MTP/MPO TRUNK & FAN-OUT HYDRA CABLE

- ▶ Designed for quick deployment of high-density backbone cabling in data centres and similar environments.
- ▶ Used to connect cassettes, panels, or ruggedized MTP®/MPO fanouts across various network zones, including MDA (Main Distribution Area), HAD (Horizontal Distribution Area), and EDA (Equipment Distribution Area).
- ▶ Available in OM3, OM4, OM5 & SM assemblies.
- ▶ Easy to deploy and can save installation and network reconfiguration time.
- ▶ Provide an efficient way to install many cables quickly.
- ▶ Fan-out cables have one MTP/MPO connector on one end and multiple single-fibre connectors (LC, SC, FC) on the other end.



MTP CONNECTOR & ADAPTOR

MTP connectors & Adaptors are well-suited for high-density, high-traffic 10/40/100 Gbps applications including data centres and central offices

MTP Connector Features

- ▶ Lower Insertion loss on SM Typical 0.1dB
- ▶ Removable Housing
- ▶ Polarity change in the field without any tool
- ▶ Simple gender change without taking off the housing
- ▶ Various boots types available
- ▶ Complies with MPO IEC and TIA/EIA Requirements



HIGH-DENSITY FIBRE OPTIC DISTRIBUTION FRAME

- ▶ The high-Density Fibre optic distribution frames are used in MDA to consolidate patching and reduce footprint, freeing up valuable space.
- ▶ This frame offers Modularity, easy Installation, and flexibility of configuration with Front & Side access. It's Ideal for data centres.
- ▶ Maximum fibre density of 2016 ports (splice & patch) and superior cable management
- ▶ Bend radius protection of 35 mm throughout the entire frame and all modules
- ▶ Compatible with Micro splitter.

ODF Max. Capacity	LC : 2016 Port(Splice & Patch) SC : 1008 Port (Splice & Patch)
Max. Supported Sub Racks	14 X 3U Patch Panel
Frame Size	47U
Sub-Rack Size	3U
Panel Capacity(One Sub-Rack)	SC:72 Core , LC : 144 Core
Adaptor	SC-Simplex , LC-Duplex
Terminal on Tray	Max.6 pcs



FIBRE OPTIC DISTRIBUTION FRAME

- ▶ High-capacity, high- density fibre distribution frame.
- ▶ Operation: Fully front-side for convenient maintenance.
- ▶ Cable Protection: Reliable fixture cover and earth protection device.
- ▶ Structure: Fully-closed, dust-proof performance.
- ▶ Adapters: Installed at a 40-degree incline for easier connection and to protect installers' eyes from lights.



SENSORS

WATER SENSOR

- ▶ Sensor provides an output signal When the water logging is high enough to reach at the sensor probes (about 1mm above the test surface).

TEMPERATURE AND HUMIDITY SENSOR

- ▶ The T/H (Temperature/Humidity) sensor can monitor the temperature and humidity in working environment.
- ▶ It can also convert the information into digital signals and display them on the screen of host device.



SENSORS

SMOKE SENSOR

- ▶ The smoke sensor connects to the host device and directly monitors smoky statuses.
- ▶ When it exceeds the limiting value, an alarm will be sent.

DOOR SENSOR

- ▶ The door sensor contacts to the host device and directly monitors the open/close statuses of door in the equipment room.
- ▶ An alarm will be sent when the door is open.



INTELLIGENT PDU

- ▶ Norden Power Distribution Units are designed to improve uptime and energy efficiency while reducing operating costs.
- ▶ Designed based on the sustainable, upgradeable, and maintainable concept. Unique screw-free hot swap controller design allows quick and easy replacement of PDU modules.
- ▶ User's can upgrade the PDU firmware features and performance with time.
- ▶ Replacing the output modules allows the user to upgrade an input monitored PDU to a switched one.
- ▶ Two types of Intelligent PDU : NIPDU and NEZPDU

INTELLIGENT PDU

▶ Customizable outlet combination with outlet types

IEC C13, C19, Shuko, UK, Universal, NEMA etc. and with UK or IEC 60309 plug type.

NIPDU	
BM Series	MP Series
Locally Monitored	Remotely Monitored
Phase Level Monitoring	Phase Level Monitoring
Voltage, Current, Power, Energy measured	Voltage, Current, Power, Energy measured
	Support Http/Https, SNMP, Daisy Chain
	Alerts for voltage , current variation



INTELLIGENT PDU

	NEZPDU			
	A Series (Basic Input Monitored)	B Series (Input & Output Monitored , No Outlet Controlling)	C Series (Input Monitored & Outlet Control , No Output Monitoring)	D Series (Total Monitor & Outlet Control)
Rack Environment Monitoring	Yes	Yes	Yes	Yes
Historical Data & Graph	Yes	Yes	Yes	Yes
Network Services (Http , Telnet , SNMP etc.)	Yes	Yes	Yes	Yes
System Maintenance	Yes	Yes	Yes	Yes



THANK YOU

www.nordencommunication.com