

# Simplify your operations with Eaton Data Center Solutions

Scalable • Modular • Efficient



*Powering Business Worldwide*



## About Eaton MDC

Edge computing is enabling new use cases by bringing the compute closure to data, thereby reducing the latency and enabling real-time analytics. From the plant floors, operation theatres to remote command and control centers, internet of things (IoT) is integrating sensors, data, and systems to help decentralized IT processing while ensuring common centralized management.

Eaton micro data center a cutting-edge solution for eco-friendly data center infrastructure. These modular data centers can be rapidly deployed and offer exceptional versatility in terms of installed configurations. Its an integrated solution to the users with high reliability, low energy consumption, easy maintenance, and high scalability.

# What Makes Eaton Micro Data Center Solution Better?

- Seamless integration with comprehensive DCIM software
- Informative 7" HMI display provides visibility and alarm notification to the site staff.
- Customizable MDC options to suit any budget and purpose
- Advanced asset management for IT and facility management
- Separate cable chambers to confine MDC cables from client cables
- Efficient capacity management for Power and Space
- Monitoring of multiple MDCs from a single interface with flexible user management
- Built-in branch circuit monitoring for enhanced efficiency and energy utilization
- Business Intelligence tool for custom reports and data analysis
- IT automation platform with digital output generation on alarm conditions and integrations with leading hypervisors
- Ability to monitor upstream facility equipment such as **DG, CCTV and ACOS**
- Integration with Third-party systems like **ITSM, CMMS, APM, BMS** etc
- Optional Electrical Power Monitoring software available to monitor Power Quality matrix
- Standard Design available for **Tier II, Tier III, and Tier IV** compliant data compliant data center solutions.

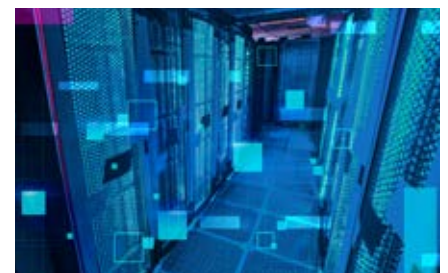
## Applications



*Finance and Insurance Securities*

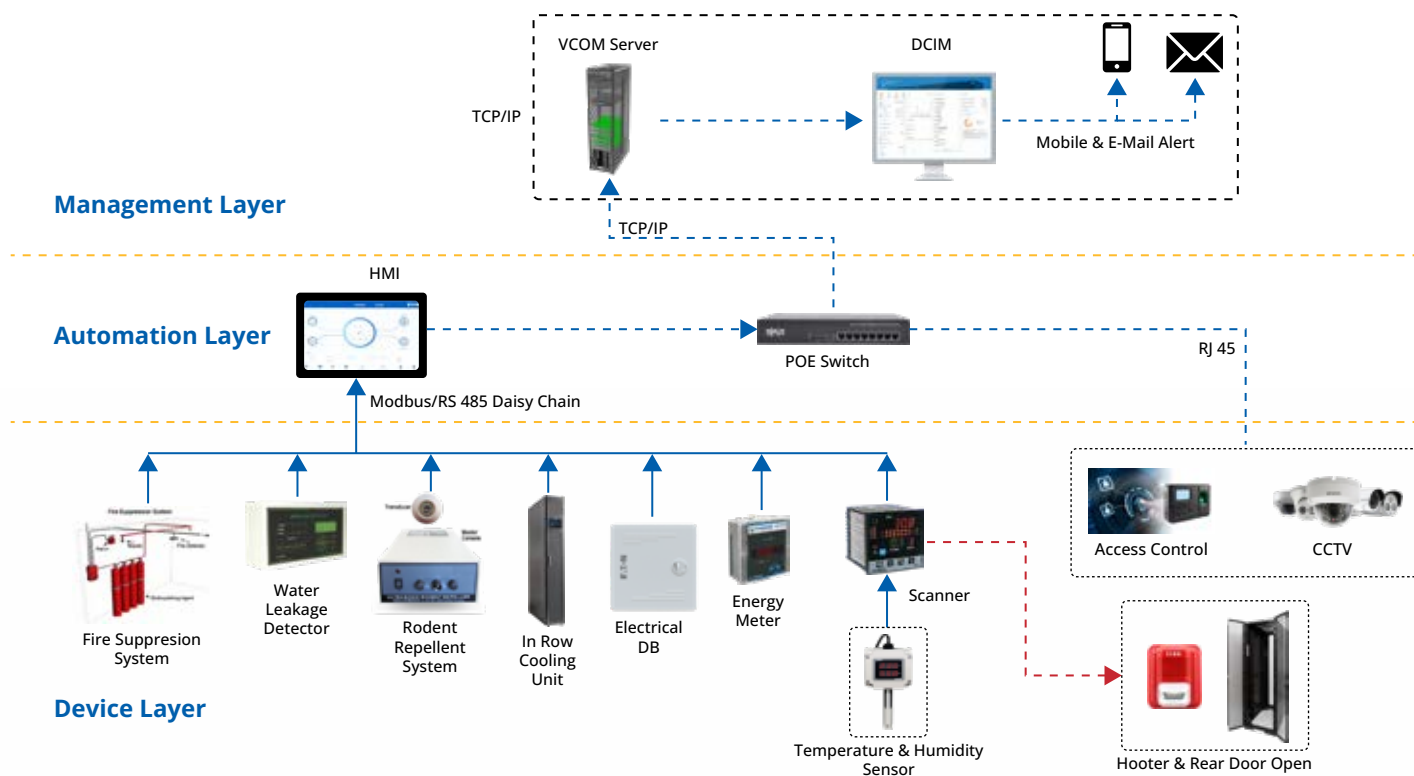


*Government digital systems & Institutions*



*Telecommunications & 5G computer rooms*

# High Level Control Architecture of Micro Data Center



# Introducing Eaton Micro Data Center



Next evolution in eco-friendly data center solutions



Innovative system integrates UPS, power distribution, air conditioning, monitoring sub-systems, and cabling into a utility cabinet



Designed for rapid deployment and flexible installation, ideal for indoor spaces with limited floor space



Represents an upgrade from previous generation products, offering users a more compact, reliable, secure, and convenient technology room experience



DCIM and HMI plays critical roles in industrial automation, enabling remote monitoring and control of devices



## Core Values of Eaton MDC

- Intelligent Management and Automation for facility and IT management
- Precision cooling for mission-critical operations
- Real-time view accessible via HMI browser, mobile, and desktop
- Advanced sensors and branch circuit monitoring
- Secure racks with Two Factor Authentication and CCTV integration
- Flexible design supported by customized engineering
- Pan India service support
- Highly reliable, sustainable, scalable, and cost-efficient

# Single Rack Micro Data Center 2.0 Version

## Common features:

- Secure Rack
- IP50 protected, thermally insulated cabinets
- Biometric and card-based access control system
- Rear door with emergency door opening system

## Fire suppression kit:

- 2U rack-mounted
- FK-5-1-12 fire suppression system
- Environmentally friendly

## Prefab power distribution:

- Infrastructure devices pre-installed and pre-wired in the cabinet (**factory assembled**)
- Intelligent PDM to track load and PUE

## Intelligent management:

- Remotely managed via web browser
- 7" touchscreen LCD display
- Data at your fingertips

## Dynamic monitoring:

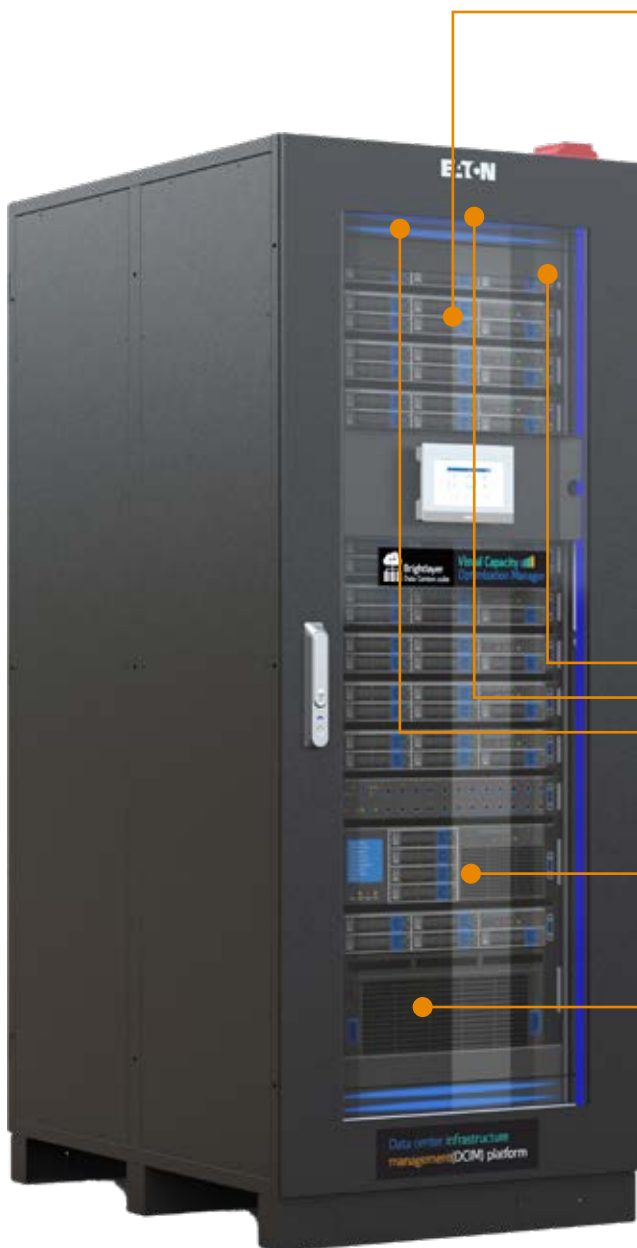
- Built-in sensors for environmental monitoring and timely alerts
- Temperature and humidity sensors
- Smoke and water leakage sensors
- Dual-color LED status indicators

## Power protection:

High-efficiency UPS (3-10kVA)  
for superior protection of  
critical applications

## Precision cooling:

- In-rack air conditioning circulates air quickly due to proximity to heat sources
- R410A environment friendly refrigerant
- Split and integrated options with inverter compressor
- Compatible with gravity drain and condensate pump



# Single Rack Micro Data Center

## 2.0 Version

### Single Racks: Rack Mounted Cooling Specifications

|              | Cooling capacity | Form factor |
|--------------|------------------|-------------|
| Single Racks | 3.5 kW           | 4U          |
|              | 7 kW             | 6U          |



Indoor unit for split cooling



Outdoor unit

### Split cooling unit

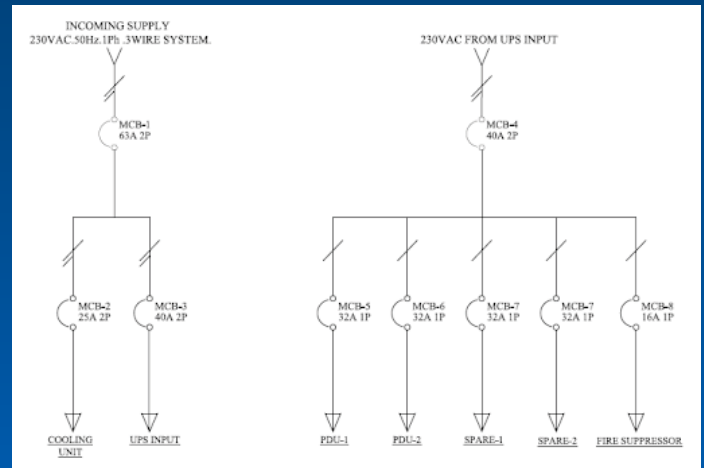
### Rack Mounted Cooling Units Features

-  3.5kW and 7kW In-rack cooling system
-  Modulate fan speed based on real time heat load
-  Fully inverter based cooling for more efficiency and longer life
-  Optional humidity control available
-  R410a environment-friendly refrigerant
-  Supports upto 15m copper piping
-  Cooling controllers placed outside the rack to avoid maintenance downtimes

# Eaton Smart Power Distribution Module (PDM) With In-Built Branch Circuit Monitoring

- Rack mount occupies 3U space
- Monitors electrical parameters at each breaker
- Eliminates the need for iPDU

| Models Available |                                             |
|------------------|---------------------------------------------|
| 7                |                                             |
| A                | Basic - Single Incomer with Single UPS      |
| B                | Basic - Single Incomer with Redundant UPS   |
| C                | Basic - Dual Incomer with Redundant UPS     |
| D                | Metered - Single Incomer with Single UPS    |
| E                | Metered - Single Incomer with Redundant UPS |
| F                | Metered - Dual Incomer with Redundant UPS   |



## Eaton Bundled DCIM Solution

Visual Capacity   
Optimization Manager

### Intelligent management through VCOM

#### MANAGE

Pure Facility & IT Asset Management Features

#### REPORTS



#### MONITOR

Data Collection with Alarms, Notifications, Dashboards & Trend Charts

#### WORKFLOW

Projects, Tasks & Work Orders, Automate change requests

# Multi Rack Micro Data Center



## Common features:

- Secure Rack with IP50 protection, thermally insulated
- Cold + Hot Aisle (contained) setup
- Glass front door + metal dual rear door
- Biometric access control system for the front door and emergency rear door opening system
- Scalability from 2 to 14 Racks

## A Fire suppression system

- Rack-based fire detection and suppression system meeting NFPA standards
- FK-5-1-12 cylinder Mounted in Utility Cabinet
- Environmentally friendly

## B Intelligent management

- Customized 7" touchscreen LCD display for easy information and control access
- Remote management via web browser
- Cybersecurity enabled
- Built-in sensors for temperature/humidity, Smoke, Water Leakage
- Dual Color LED status indicators

## C Prefab power distribution

- Factory pre-installed and pre-wired infrastructure devices in the cabinet
- Intelligent Power Distribution system with branch Circuit Monitoring for monitoring voltage, current, and power for each distribution/breaker level

## D Precision cooling

In-Row air-conditioning for quick air circulation due to proximity to heat sources

- Environmentally friendly R410A refrigerant
- Split and Integrated options available
- Inverter compressor + EC fan
- Compatible for both gravity drain and condensate pump

# Precision air conditioning

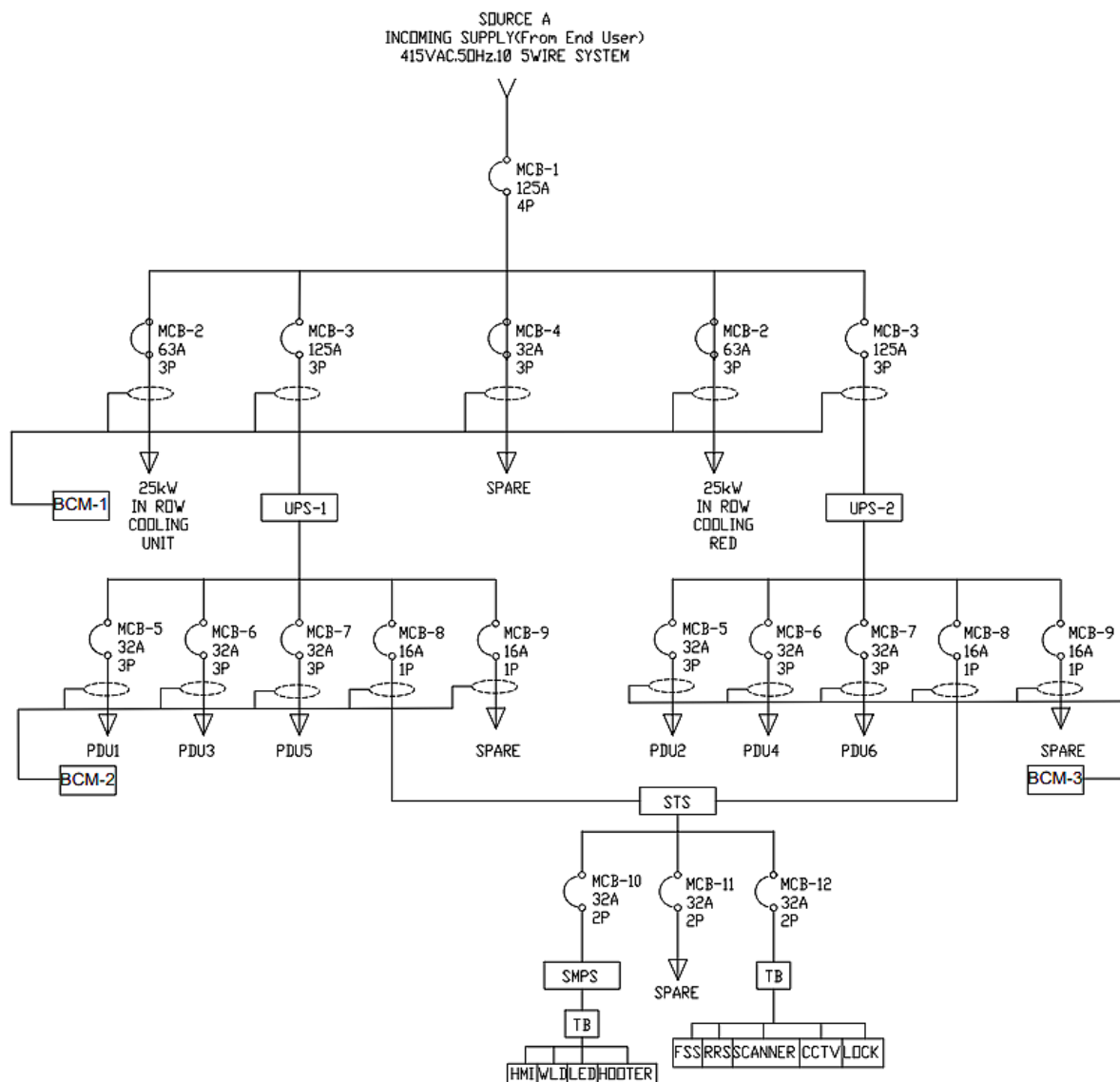
| In-row Precision Cooling Systems                                   |                                                                                   |                                                                                     |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Intelligent high-density cooling for mission-critical applications |                                                                                   |                                                                                     |
|                                                                    |  |  |
| Total Cooling - kW                                                 | 7 - 30 kW                                                                         | 40 - 90 kW                                                                          |
| Power Input                                                        | 3-Phase 415V                                                                      | 3-Phase 415V                                                                        |
|                                                                    | 50 - 60 Hz                                                                        | 50 - 60 Hz                                                                          |
| Form Factor                                                        | 300 mm wide (½ rack width)                                                        | 600mm Width for 40 kW - 65 kW<br>900mm Width for 75 kW - 90 kW                      |
| Cooling                                                            | Up to 25% more efficient                                                          | Up to 25% more efficient                                                            |
| Raised Floor Required                                              | No                                                                                | No                                                                                  |
| Heat Source                                                        | Closely coupled to heat source for highly predictable cooling                     | Closely coupled to heat source for highly predictable cooling                       |
| Inverter Compressor                                                | For infinitely adjustable cooling capacity                                        | For infinitely adjustable cooling capacity                                          |
| EC Fans                                                            | Up to 6 EC fans with automatic airflow adjustment depending on heat load          | EC Fans with automatic airflow adjustment depending on heat load                    |
| Installation Guide                                                 | Easy-to-install slim cabinet with levelers                                        | Easy-to-install slim cabinet with rolling casters                                   |
| Discharge Configurations                                           | Front and/or side air discharge configurations                                    | Front and/or side air discharge configurations                                      |
| AC Fan                                                             | Matching outdoor condenser with AC fan                                            | Matching outdoor condenser with AC fan                                              |
| Remote Management                                                  | (SNMP, MODBUS TCP/IP)                                                             | (SNMP, MODBUS TCP/IP)                                                               |
| LCD Touchscreen                                                    | Graphical Interface                                                               | Graphical Interface                                                                 |
| Humidity Control                                                   | Yes                                                                               | Yes                                                                                 |

# Precision air conditioning - technical specification

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# Power distribution unit

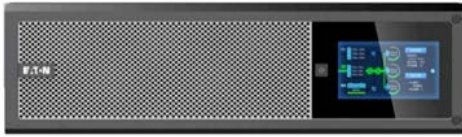
TIER-2



## Features:

- **Tailored Power Distribution:** Customize power distribution units to align with data center Tiers for optimal performance
- **Enhanced Monitoring:** Utilize branch circuit monitoring to track power, voltage, current, power factor, and frequency at every distribution level
- **Eaton Component Integration:** Benefit from the reliability of Eaton breakers, UPS, IPDU, and ATS components for seamless integration
- **Simplified Maintenance:** Perform maintenance and checks effortlessly while servers are running, ensuring minimal downtime
- **Quick Power On:** Streamlined processes for easily powering up racks, enhancing efficiency

# Rack Mountable Eaton UPS Systems



## DXRT UPS

- Power Rating: 6-20kVA, 230V, Rack/Tower, 2U/3U
- Advanced technology improves double conversion efficiency and reduces footprint, saving cost and rack space
- Robust design suitable for harsh environments



## 9PX UPS

- Power Rating: 700VA-11kVA, 230V, Rack/Tower, 2U/3U
- Bundled with Eaton Gigabit Network card compliant with UL and IEC cybersecurity standards
- Compatible with Bright layer Data Centers suite for seamless equipment management

## High-capacity Floor Mounted Eaton Ups Systems



## 93PR UPS

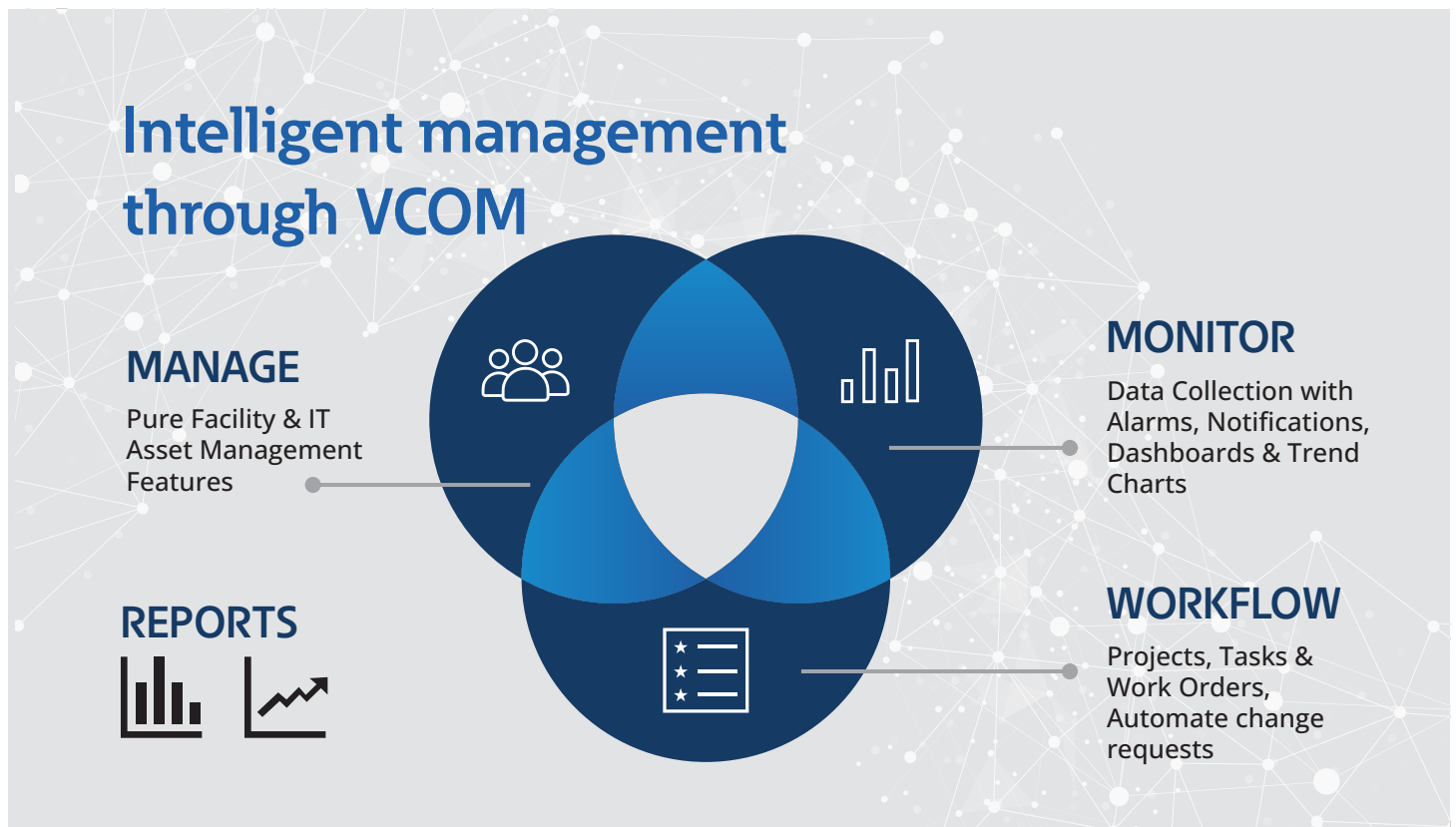
- Power Rating: 25-200kW
- Type: Modular-Hot Swappable
- Provides efficiency up to 97% in double-conversion mode, and 99%+ in ESS mode
- Improves efficiency, reduces energy consumption, and cooling requirements with VMMS intelligent module sleep function as an environmentally friendly solution



## 93T UPS

- Power Rating: 15-200kW
- Type: Modular (*Non-Hot Swappable*)
- Ideal for IT applications like small data centers, server rooms, and mission-critical applications
- Offers more than 96% online efficiency and pays back in 3 years
- Maximizes available power while requiring 20% smaller space compared to UPSs in its class

# DCIM Integration



## DCIM integration

- Control and monitor environmental conditions with self-service setup, analyzing the impact and root causes while tracking PUE
- Dashboards and reports can display actual values at any given moment

## Use case for the DCIM

- Command and Control
- Tracking PUE
- Environmental Monitoring
- Root Cause/Impact Analysis and Capacity Management
- Self-Service Setup
- Dashboards and Reports

## Power

- Power capacity and utilization
- Run rates and resource exhaustion
- Cross charging and billing

## Space

- Floorplan usage and analysis
- Rack space utilization and reservations
- Power/network port utilization

## Cooling

- Cooling infrastructure capacity and utilization
- Cooling related cost tracking
- Thermal imaging views and history

## IT devices

- Rackmount devices (server, switches, chassis, rack PDU, rack UPS)
- Environmental sensors (temperature, humidity, contacts)

## Facility

- Power delivery (switchgear, generator, transfer switch, UPS, PDU, RPP, Power Bus)
- Cooling infrastructure (chiller, CRAC, CRAH, in-row cooling)

## Security

- Cameras with streaming video views
- Electronics rack locks with mobile unlock features
- Access control system integrations

# HMI Integration



## Features

- **CPU:** A35 1.2GHz, 128M Flash, 128M DDRAM
- **Display:** 7 inches; Resolution: 800\*480; Display color: 16,000k colors
- **Interfaces:** Serial port - COM1: RS232, RS422, or RS485 (choose one of two), RS485
- **USB interfaces:** USB Host/USB Client

## Device management

- Multi-device management
- Multi-authority account

## Alarm management

- Alarm SMS push (4G models)
- Upload and download alarm records

## Email alerts

- Configuration of emails for real-time critical alarm alerts

## User permission

- User permission and usage permission settings for different users to protect device operation

## Multi-Language Display

- Support for up to 8 languages, facilitating HMI use in multiple countries

## Remote maintenance

- Remote access
- Remote debugging

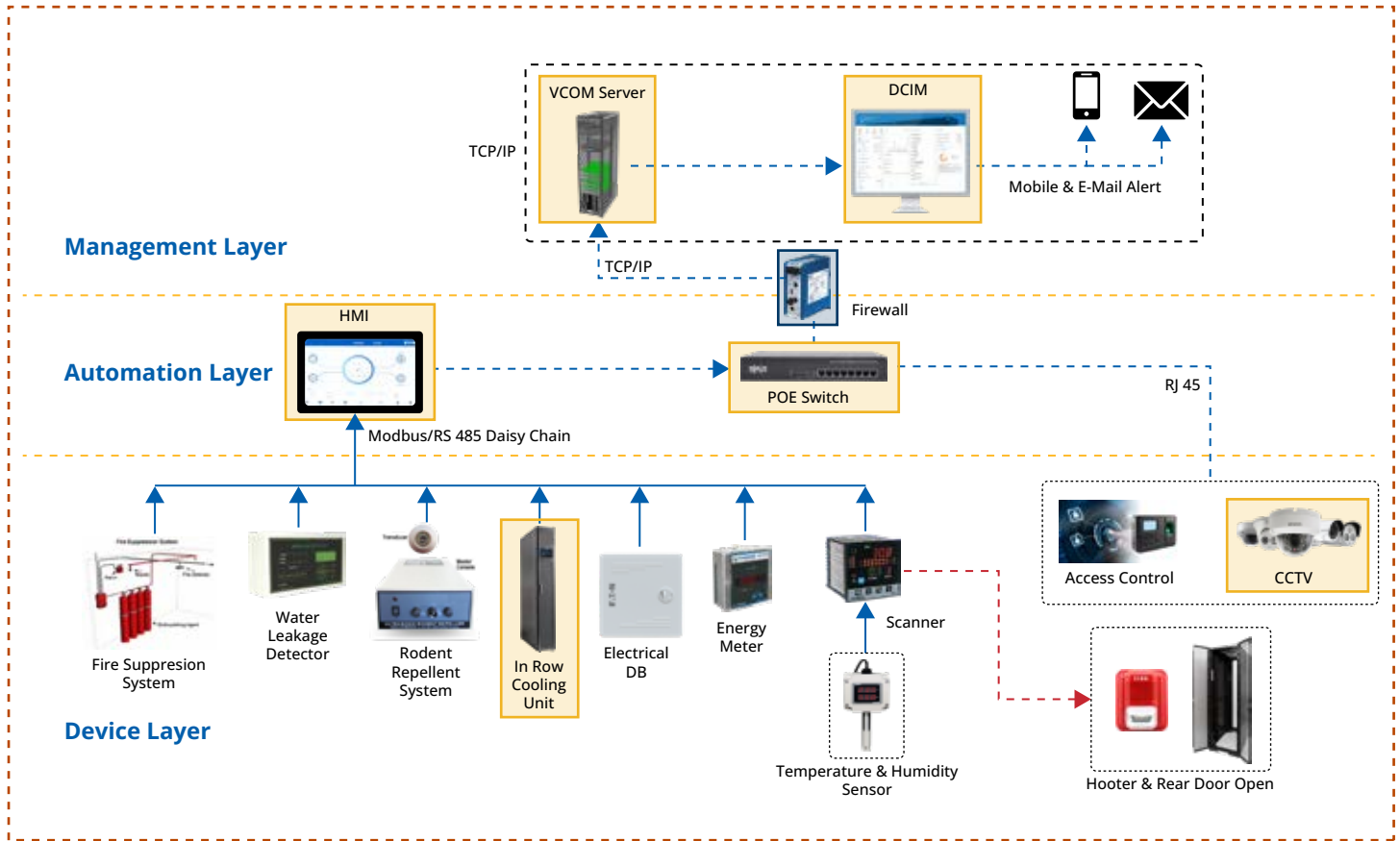
## System integration

- Big screen display
- Equipment connection

# Technical Specifications

| Cabinet Type                                  | Single Rack                                                                     | Multi Rack                               |
|-----------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------|
| Power Management                              |                                                                                 |                                          |
| UPS Type                                      | Rack Mount/Floor Mounted (External)                                             |                                          |
| UPS Variant                                   | DXRT 9PX, 9EIN, 93PR,93T                                                        |                                          |
| Voltage Range                                 | 1 phase 220/230/240V; 3 phase 380/400/415V                                      |                                          |
| Available U Space                             | ~28 U                                                                           | U Space allocation based on racks design |
| Interface                                     | RJ45, SNMP                                                                      |                                          |
| Rack management                               |                                                                                 |                                          |
| Dimension (H * W * D, mm)                     | 2100 * 800 * 1200                                                               | 2100 * 600 / 800 * 1400                  |
| Weight (kgs)                                  | 300 kgs                                                                         | 180 kgs (Server) / 250 kgs (utility)     |
| Sensors                                       | 2 No. Temperature & 1 No. Temp+ Humidity per Rack                               |                                          |
| Water Leakage Detector                        | Single Zone per Rack, RS 485                                                    |                                          |
| Rodent Repellent System                       | Two transducers per Rack, RS 485                                                |                                          |
| Beacon alarm                                  | 110DB                                                                           |                                          |
| LED                                           | Dual color LED                                                                  |                                          |
| Emergency Ventilation System                  | Included                                                                        |                                          |
| Door Lock Type                                | Biometric Lock + RFID+ Override key                                             |                                          |
| Thermal Management System                     |                                                                                 |                                          |
| Cooling Capacity                              | 3.5 to 7 kW                                                                     | 5 to 90 kW                               |
| Max Airflow                                   | 480m³/h (or) 700m³/h                                                            | 5000 m³/h to 16000m³/h                   |
| Cooling Mode                                  | Air- cooled, In-rack Cooling                                                    | Air- cooled, In-row Cooling              |
| Electrical Power                              | 230V/1Ph/50 - 60 Hz                                                             | 230V/1Ph/50 - 60 Hz                      |
| Door Lock                                     | Lock and key                                                                    |                                          |
| Dimension (H * W * D, mm)                     | 177.8(4U)/266.7(6U) *440*900                                                    | 2100 *300/600/900*1400                   |
| Copper Piping Distance from Indoor to Outdoor | Max. 15 Meter                                                                   | Max. 50 meter                            |
| Rack Power Distribution Unit                  |                                                                                 |                                          |
| Intelligent PDU                               | Basic/Switched/Metered                                                          |                                          |
| Monitoring Module                             |                                                                                 |                                          |
| HMI                                           | 7" HMI display mounted on Utility Cabinet                                       |                                          |
| VCOM                                          | VCOM software appliance                                                         |                                          |
| IP Camera                                     | CCTV system with 1 TB hard disc                                                 |                                          |
| IT Server Monitoring                          | Yes                                                                             |                                          |
| Security Management                           | Biometric & Camera                                                              |                                          |
| Safety Management                             | Rack based fire Detection and suppression based on FK-5-1-12 Gas (Customizable) |                                          |

# India's First MDC addressing OT Cyber Security challenges



## SECURITY HARDENING



Apply latest patches



Select secure configurations

## FIREWALLS



Restrict unnecessary communications



Secure to remote access

## CYBERSECURITY LIFECYCLE MAINTENANCE



Secure by design



Manage threat vectors

- First-ever application of content inspection technology to industrial protocols
- Control specialist defines list of allowed Modbus commands, registers and coils
- Automatically blocks and reports any traffic that does not match the rules
- Protocol '**Sanity Check**' blocks any traffic not conforming to the Modbus standard
- Simple configuration and monitoring using the MTL Tofino Configurator GUI
- Certified Modbus compliant by Modbus-IDA
- Facilitates secure connectivity between IT and OT networks

# Notes

[illegible]

# Notes

[illegible]



**12 Acres**  
**World - class Manufacturing**  
**Facility in Pondicherry**

# About **EAT•N**

Eaton's mission is to improve the quality of life and the environment through the use of power management technologies and services. Eaton provides sustainable solutions that help its customers effectively manage electrical and mechanical power – more safely, more efficiently, and more reliably. Eaton's 2023 revenues were \$23.2 billion, and the company sells products to customers in more than 175 countries. Eaton has approximately 92,000 employees. Eaton firstly established a presence in the Asia Pacific region during the 1970s. Since then, the company's presence has grown significantly with a fast-growing network of sales and marketing offices, manufacturing plants, service centers and research facilities in the region.

Today, we have nearly 17,000 employees, 6 R&D centers and manufacture in 34 manufacturing facilities in countries and regions including China, India, Japan, South Korea, Singapore, Indonesia, Thailand, Philippines and Australia for all of Eaton's distinct business.

Eaton Power Quality Private Limited, India is a 100% subsidiary and a part of electrical sector of Eaton Corporation. We are catering to every industrial segment with versatile solutions which includes Switchgear: LV & MV Solutions, Fusegear: LV & MV solutions, UPSs and software solutions.

Operating in  
**175**  
countries

**92,000+**  
employees

**100+**  
years of  
experience

**\$23.2**  
BILLION IN  
SALES 2023

**18,000+**  
patents



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Powering Business Worldwide

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