

Eaton @ layer one

We make what matters work.



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Presentation: Connected

Connected,
Critical back up power applications require
low voltage distribution around 3ph UPS.
Eaton introduces a concept that will give the
best of both worlds and more.



Eaton at a glance

- Chairman & CEO – Craig Arnold
- Key locations in Cleveland, United States; Shanghai, China; Morges, Switzerland; São Paulo, Brazil
- Regional engineering teams to support products and custom solutions
- Customers in more than 175 countries
- Approximately 95,000 employees
- Sales of \$19.7 Billion USD



Dedicated to improving people's
lives and the environment

Providing power management technologies
that are more **reliable, efficient and safe**

Solving industry's toughest power management challenges around the world



Aerospace



Buildings



Data centers



Food and beverage



Government



Healthcare



Machine building



Marine



Mining, metals and minerals



Mobile machinery and equipment



Oil and gas



Pharmaceuticals



Rail



Renewables



Residential



Utilities



Vehicles



Water/wastewater

A history of **expertise** serving data centers of all sizes

Market leadership

Market leader in solutions for large data centers

Over 7 GW of transformer less UPS installed

Global network of over 2,000 support & service personnel

Heritage of innovation

B-Line

MGE Office Protection Systems

Phoenixtec

Powerware

Santak

Wright Line

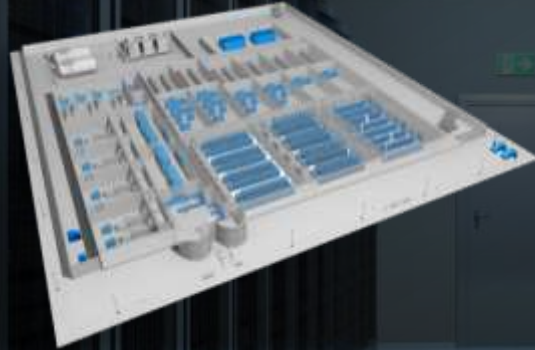
Holec

When the project is critical, turn to Eaton

Data centers and IT applications

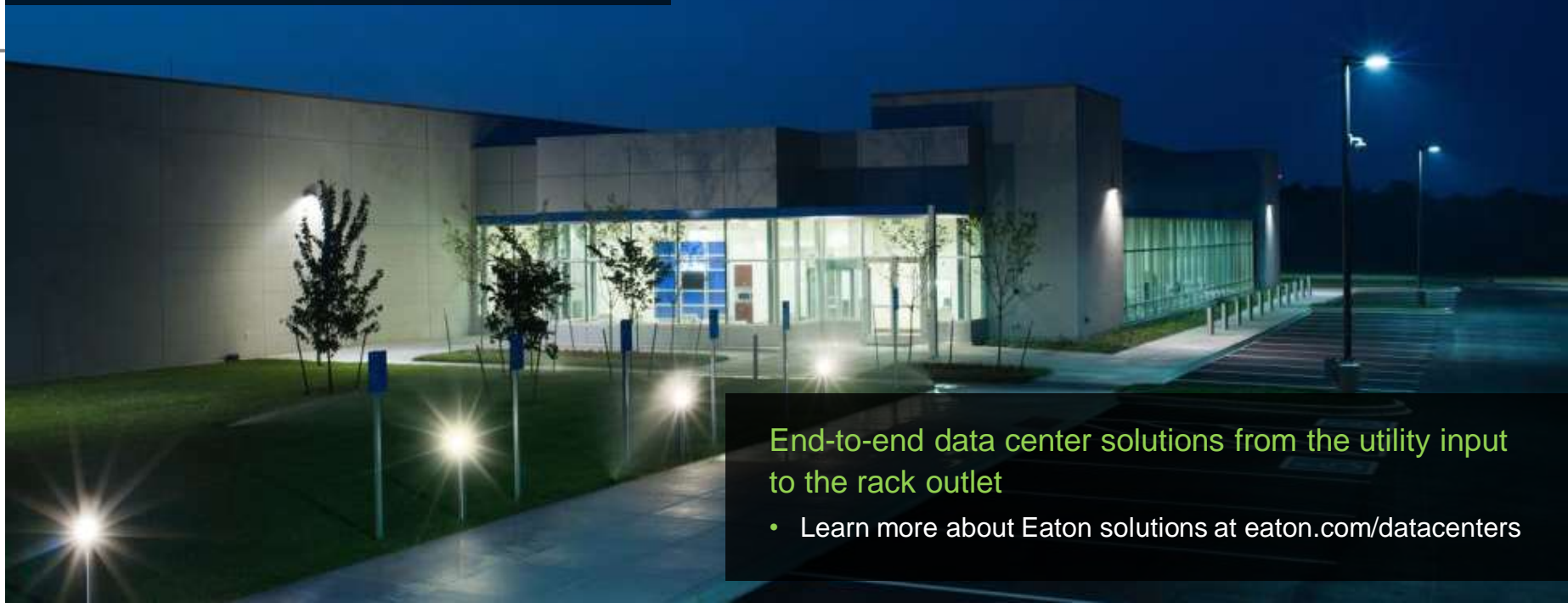
Deliver reliable and efficient end-to-end data center solutions that maximize return on investment

Facility and white space solutions
from incoming utility
to rack outlet



- **Power conditioning** including power quality and backup from desktop to data center
- **Power distribution** including low and medium voltage switchgear, transformers, busway and PDU
- **Enclosure solutions** including racks, cages and wire/cable management
- **Airflow management** including rack, aisle and room containment and in-row cooling
- **Indoor and outdoor lighting** including LED fixtures and lighting control
- **Facility management** including power monitoring and usage software
- **Services** including design, build, planning and support

Taking **the next** step



End-to-end data center solutions from the utility input to the rack outlet

- Learn more about Eaton solutions at [eaton.com/datacenters](https://www.eaton.com/datacenters)

Key business drivers

Electrical power should be :

- Simple
- Compact
- Scalable
- Efficient
- Resilience
- Rapid deployment
- High density
- Pay as you grow

Intergral (all interfacing tackeded)

Critical power supply

For critical power multiple power sources and equipments are required.



Eaton modular 3ph UPS range

Power Xpert 9395P

250-1200 kVA



300 kVA modules
96,3% efficiency

Eaton 93PM

30-500 kVA



50 kVA modules
96,7% efficiency

Eaton 93PS

8-40 kVA



15 and 20 kVA modules
96,2% efficiency



Eaton modular 3ph UPS range



Efficiency

- Minimize operational expenditure with market leading efficiency
- Higher sustainability, through reduced carbon emissions.



Scalability

- Optimize capital expenditure by the pay-as-you-grow approach
- Modular structure allows matching the UPS size and load demand



Resiliency

- It's all about availability secured by Hotsync technology
- Smooth fit to surrounding power distribution + Generator compatibility

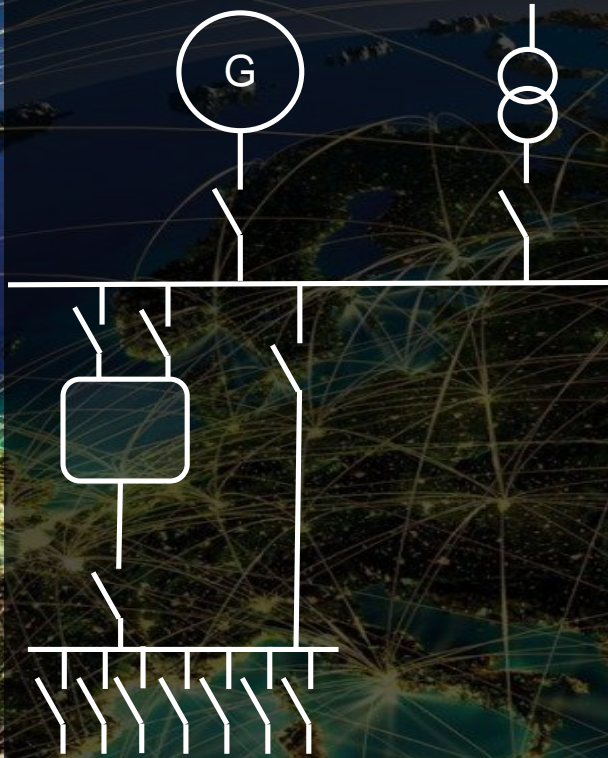


Safety

- The important safety requirements are implemented into the UPS design as standard.
- Personnel ALWAYS safe



Critical power supply



Around an UPS an arrangement of breakers is needed. For power distribution and save maintenance



Eaton Global LV platform CX

Power Xpert CX / xEnergy

Low voltage Switchgear



High density
Small footprint

Power Xpert CX / xEnergy



50 kVA modules
96,7% efficiency

- Low Voltage switchgear and Motor Control Centers
- Global solution for IEC market
- Assembled in Eaton Factories
- Eaton protective devices
- Fixed, plug-in, removable and withdrawable technologies
- Front and rear access
- Top and Bottom cable entry

Eaton Global LV platform CX

Safe

Designs verified by testing, IEC 61439-2 compliant

Internal separation up to Form 4

Eaton Business and Quality and Systems

Compact

High Density outgoing feeders

Stacked ACB's and MCCB's

Ratings

Up to 6300A

Up to 690V

Up to 105kA/1s

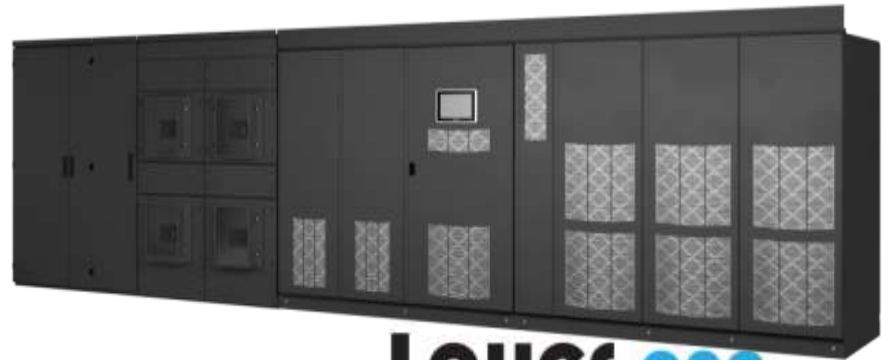
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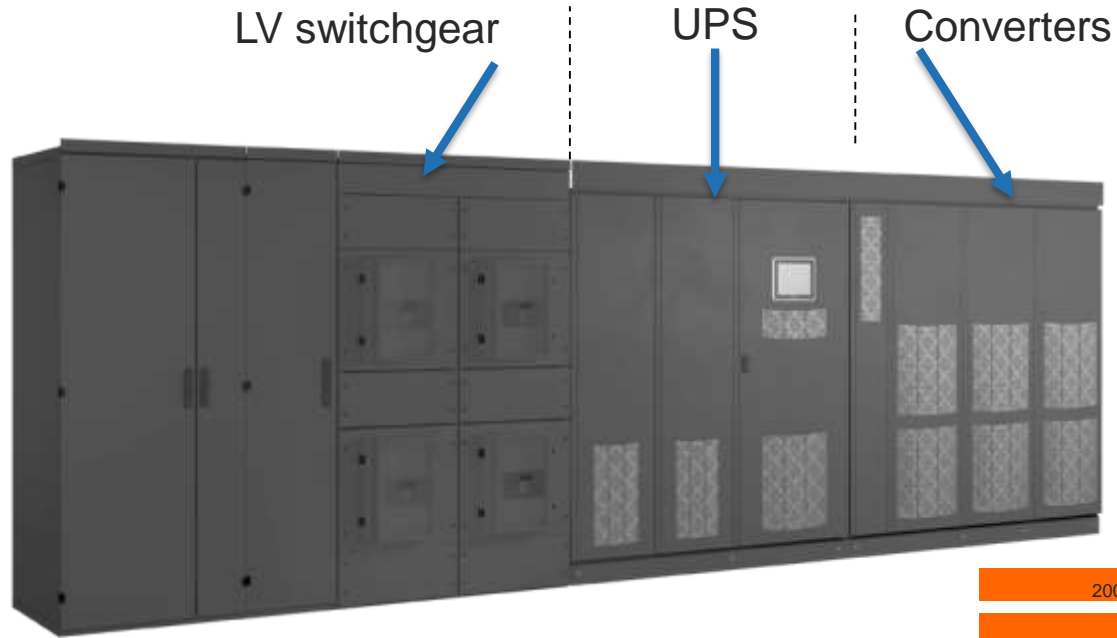
Eaton Connected

Eaton Connected offers a complete solution combining UPS and low voltage switchgear. This allows the customer to build a back up power solution that:

- Connects **reliability and safety** with design
- **Maximizes the availability of back up power**
- Gets **faster** to market, on **schedule**, on **budget**
- **Minimizes the design overheads**
- Meets changing needs with **minimized upfront investment**



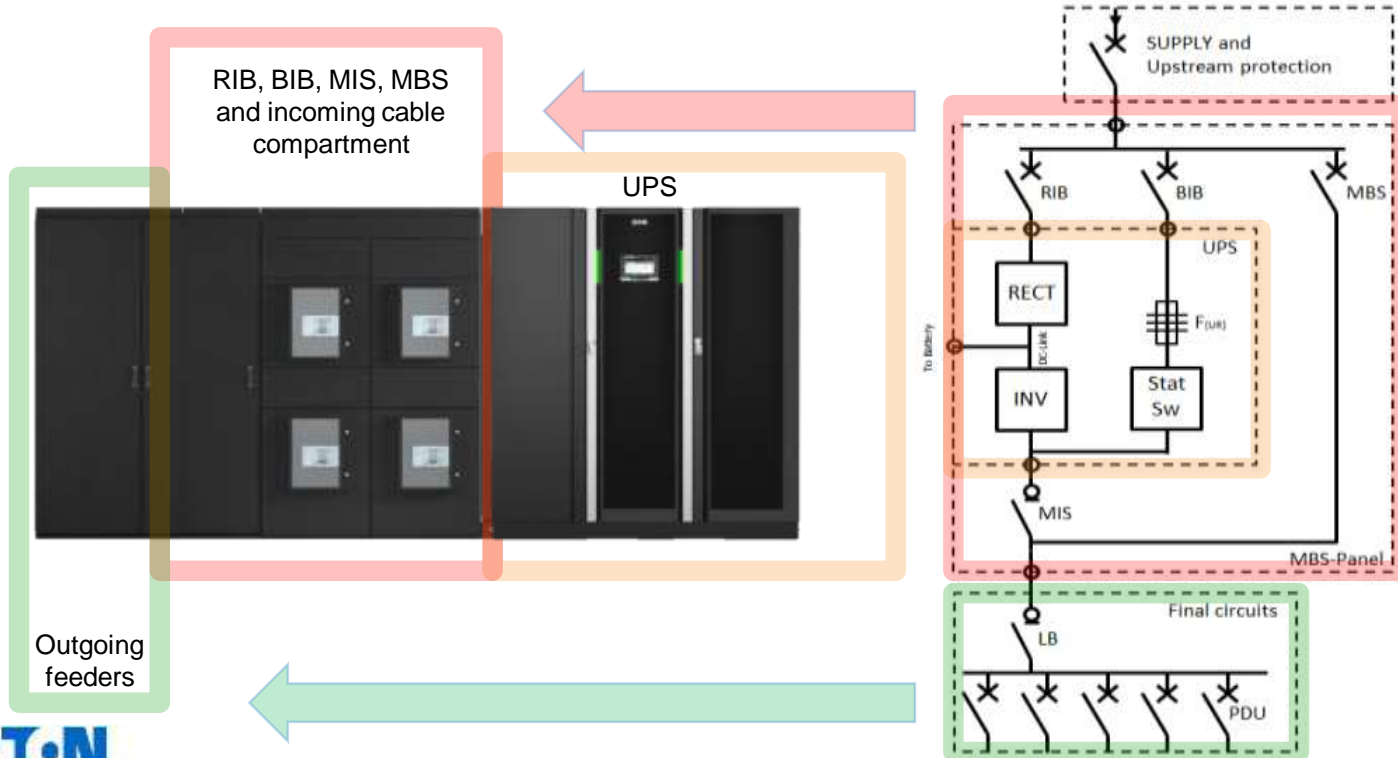
Eaton Connected UPS



Integrated solution



Eaton Connected

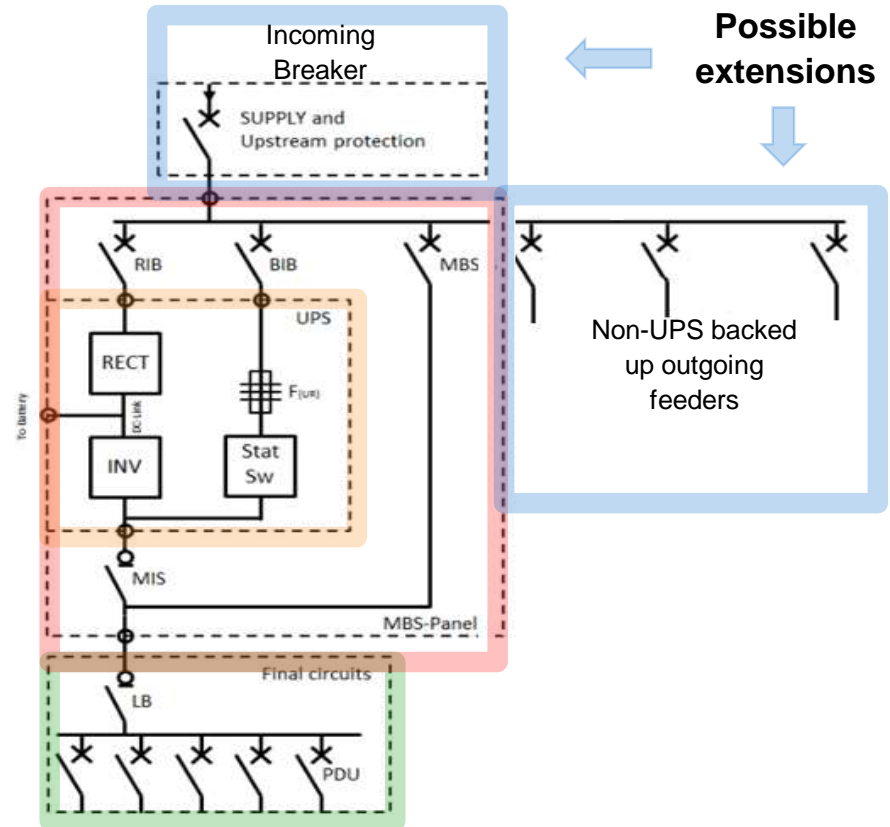


What is Connected?

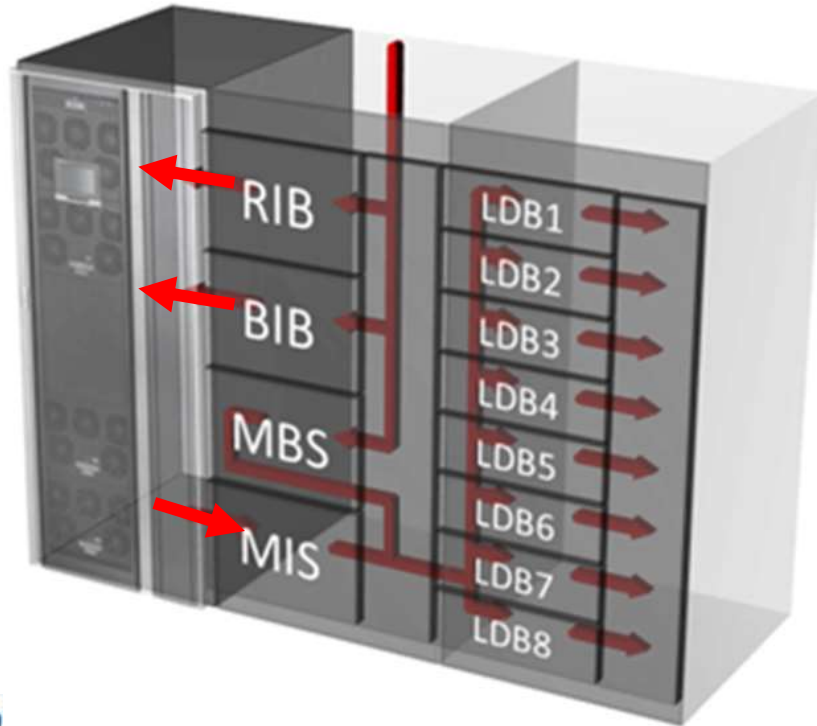
The design in Eaton Connected is **flexible**.

It can be extended to many directions:

- Incoming breaker to upstream bus can be added
- Extra outgoing feeders to upstream bus can be added to feed non-UPS protected loads
- Outgoing feeders for UPS protected loads can be added as per customer need



Pre designed connection



Connection

- Pre designed
- Tested
 - Mechanical
 - Current
 - Temperature
 - Short circuit
- Reduced losses
- Less site work
- Fit for purpose

Connected Modular

Minimize the design overheads

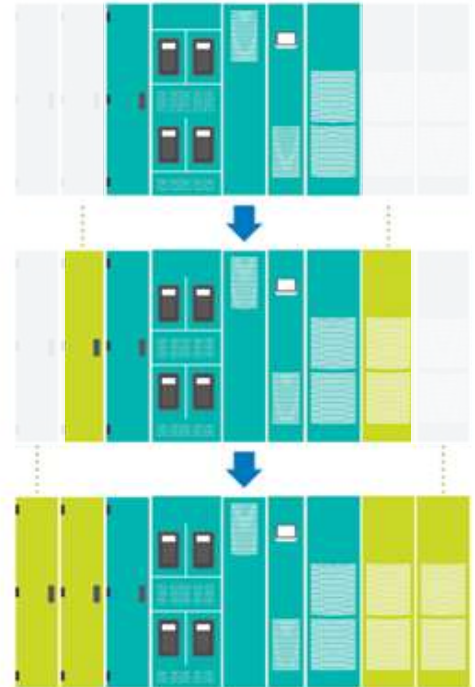
with a solution which precisely and efficiently meets the customer needs.

- Modular UPS allows optimal UPS sizing towards the customer requirement
- Modular Switchgear can be built to meet project specific needs

Meet changing needs with **minimized upfront investment**,

with a possibility to quickly scale up.

- Both, the UPS and the outgoing feeders can be scaled up in the later day.
- UPS static bypass needs to be sized towards the final capacity requirement.

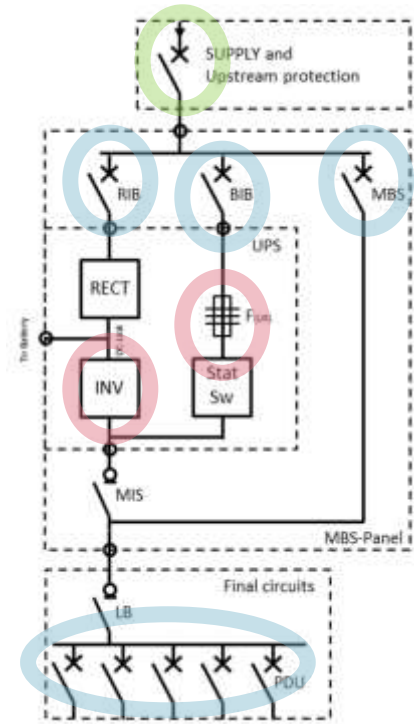
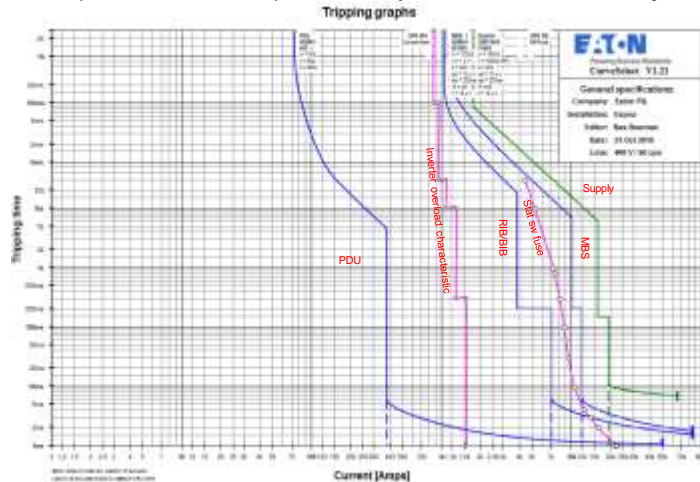


Selectivity: Supply/MBS-panel/UPS/Load

For selectivity the following overcurrent protected current paths are critical:

- Input circuit breakers (RIB/BIB/MBS) against grid and emergency supply,
- Static switch bypass fuse,
- Final and distribution circuits in the load side of the UPS system against the static switch protection and the MBS.

The input circuit breakers (RIB/BIB/MBS) should protect the UPS-system.



Example for 600 kVA UPS

Predesigned and integrated solutions

Get faster to market

Predesigned and integrated solutions allow customers to reduce time for:

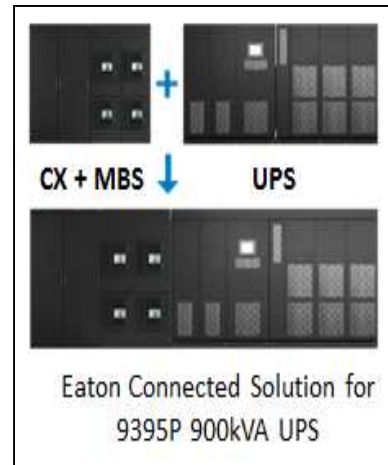
- Design and planning
- Installation
- Commissioning

On schedule, on budget

- Simplified sourcing process
- Easier on site installation
- Efficient commissioning

*Protections (settings)
Reduced foot print
Rapid deployment*

*Back feed protection
Selectivity
Coordination
3 pole 4 pole breakers*



Certified interconnection

- *Overload and temperature behavior*
- *Short-circuit behavior*

Verified by testing

Benefits

- On **schedule**, on **budget**
- The more components in the system the higher risk for delays or budget overshoots
- The project risks can be managed by simplifying the
 - Sourcing process
 - Installation on site
 - commissioning stage
- Eaton Connected will **minimize the risks** related to project schedule and budget by providing a predesigned solution instead of loose components.

Energize your data center, maximize the value of your investment

Eaton connect:

- ensures minimized unplanned downtime and high availability. Pre-designed, integrated and IEC 61439 tested.
- is the integration of Low Voltage switchgear and UPS's providing a Power Distribution and Maintenance Bypass System (MBS) in one solution: Incoming and Outgoing feeders, Maintenance Bypass for UPS and Short Circuit protection to UPS.
- makes it quicker and easier for customer to plan and install a system compared to a conventional component-based system

Data centers require innovative, mission-critical power and thermal management solutions that drive efficiency, quickly scale and ensure optimization of IT assets.



Powering Business Worldwide

[Eaton.com/DataCenters](https://www.eaton.com/DataCenters)

Layer one