APPLICATION NOTE

The Role of Remote Power Panel in High-Density Data Centers

Maximizing Uptime

Artificial intelligence (AI) has become an essential tool for organizations seeking to harness the full potential of their data. As AI applications increase in complexity and scale, the need for reliable and efficient data center infrastructure is becoming increasingly important.

Traditional data centers may not be designed to handle the unique demands of AI workloads. AI models require vast amounts of data and processing power, resulting in higher power densities and greater cooling requirements than what traditional data centers can typically provide. This is where an AI focused data center comes into play.

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1. Introduction

In this document, we examine the requirements for an AI focused data center, with focus on power distribution systems close to IT racks. We propose solutions for power distribution units that meet the requirements of AI workloads, suggesting which ABB products can be used to build the optimal system.

Key advantages

01

Facilitates the creation and deployment of a power distribution unit including monitoring system in a data center.

02

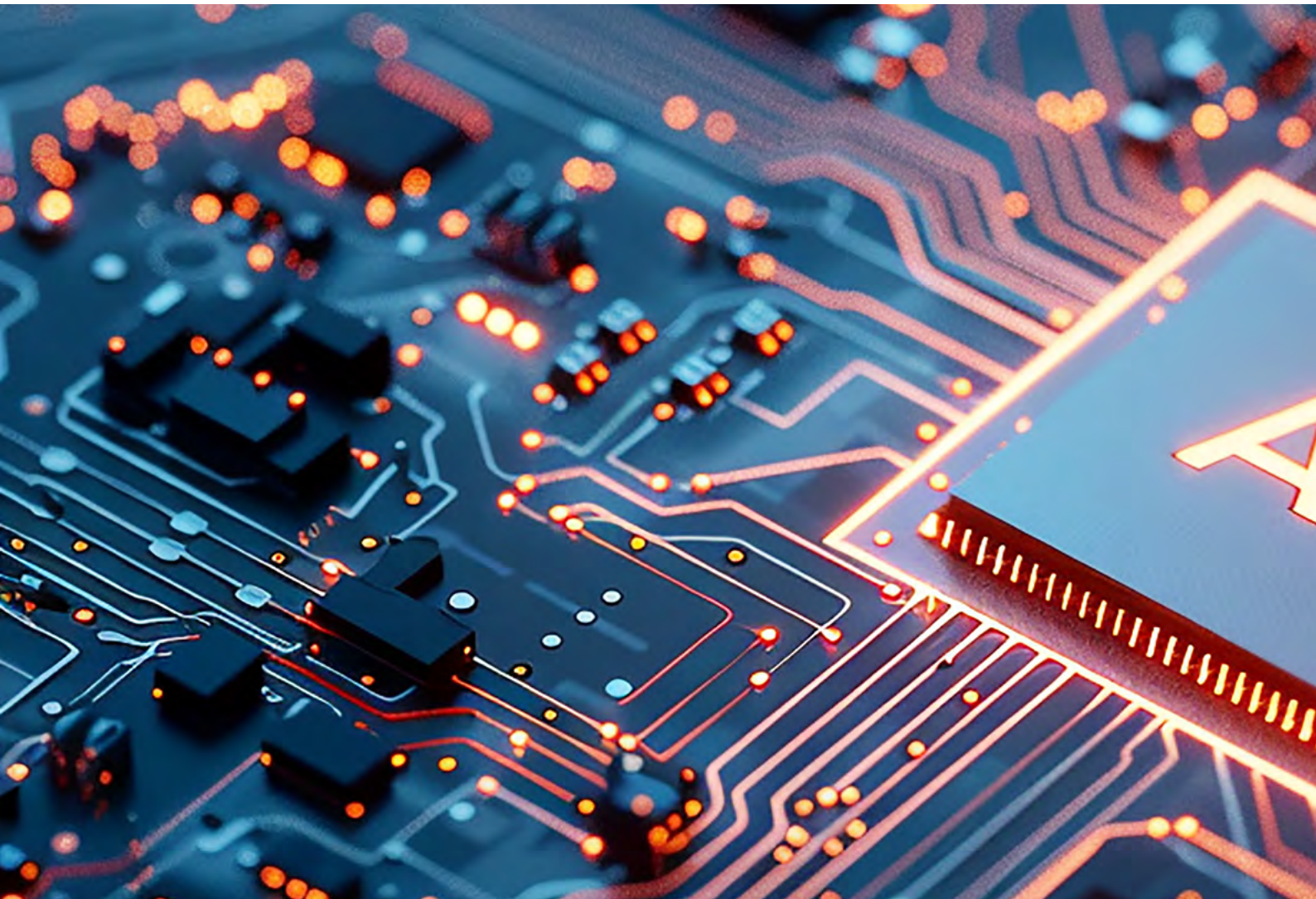
Modular reference design reduces design time and can be adjusted to specific needs.

03

Relies on best practices for fast recovery from outages and reduced downtime.

04

Helps organizations easily choose hardware and software for an efficient data center.



AI-focused Data Center
Introduction

Artificial Intelligence is the technology enabling computers and machine to get problem solving ability simulating human intelligence, applied in many different field allow the perform of complex tasks without the need of human intervention.

Some examples of AI are digital assistance, autonomous vehicles, preventive maintenance, generative AI (like ChatGPT, Copilot…), only to mention the most used. All these AI models require to work a large amount of data analyzed during a “training” phase; the storage of the dataset and the complex models require significant computational resources. Data center shall provide high performing computers (HPC) and specialized hardware such as GPUs and TPUs to cope with AI requirements for storing and processing vast amount of data.

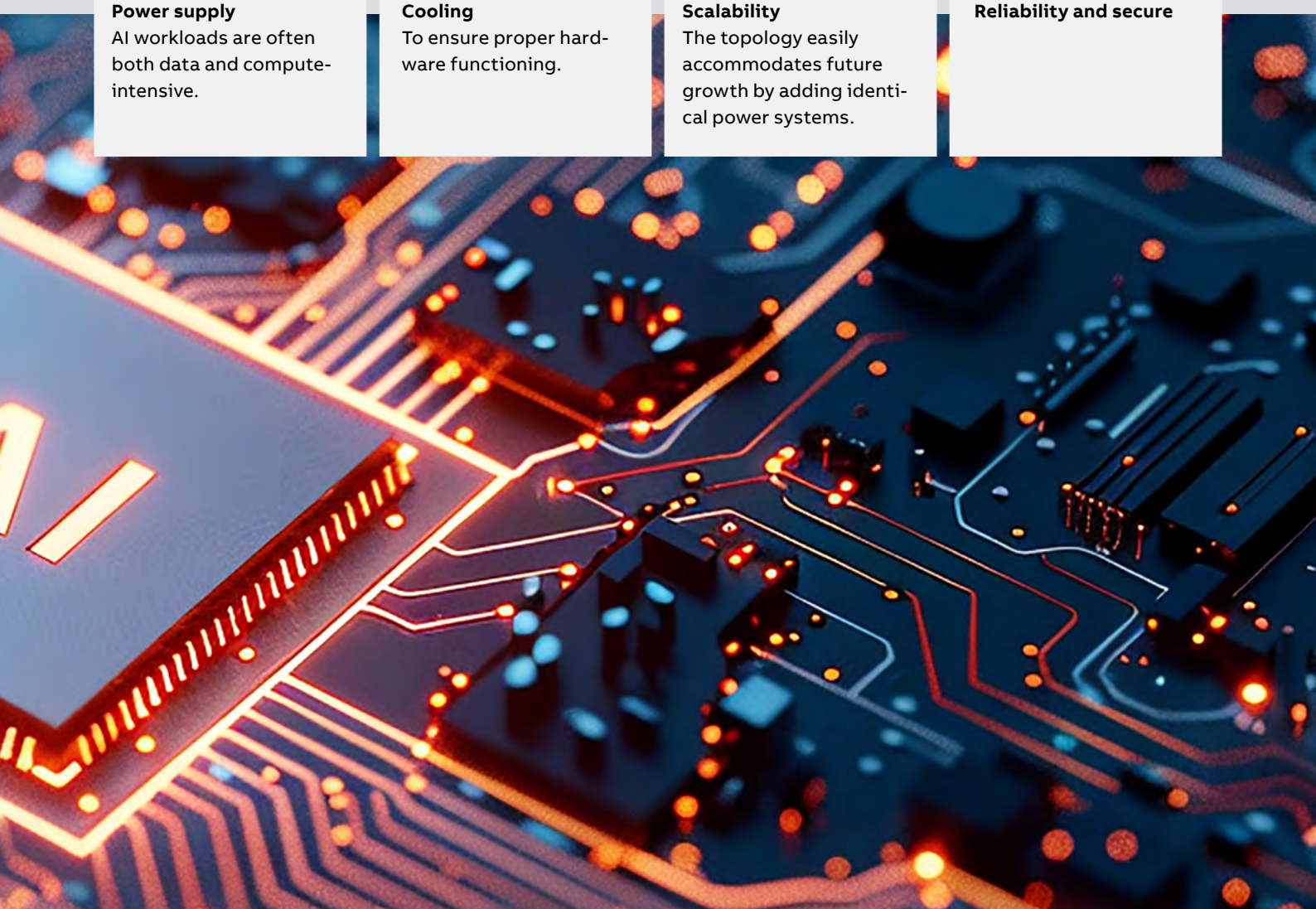
Main challenges

Power supply
AI workloads are often both data and compute-intensive.

Cooling
To ensure proper hard-ware functioning.

Scalability
The topology easily accommodates future growth by adding identi-cal power systems.

Reliability and secure



Main IT components
High Performing Computing (HPC) Clusters

High Performance Computing (HPC) clusters are groups of interconnected computers that work together to solve complex computational problems.

These clusters are designed to provide high-speed processing and storage capabilities, enabling them to handle large-scale scientific, engineering, and data analysis tasks. HPC clusters typically consist of multiple nodes, each with its own processors, memory, and storage, and are connected by a high-speed network to enable efficient communication and data transfer between the nodes, so that it is possible to run paralleling processing and get faster training time. HPC are designed to fit into standard 19 inches rack, as it is a modular and scalable system.

The power density of a single rack of HPC stays in the range from 20 kW to over 60 kW. For example, a single HPC server can consume 1430 W, If we consider a 42U rack filled with 1U high density servers, the total power will be 60 kW.
In the table below, you can see a comparison with standard server and with a low-power server such as the one used for web hosting.

Example of power density server racks

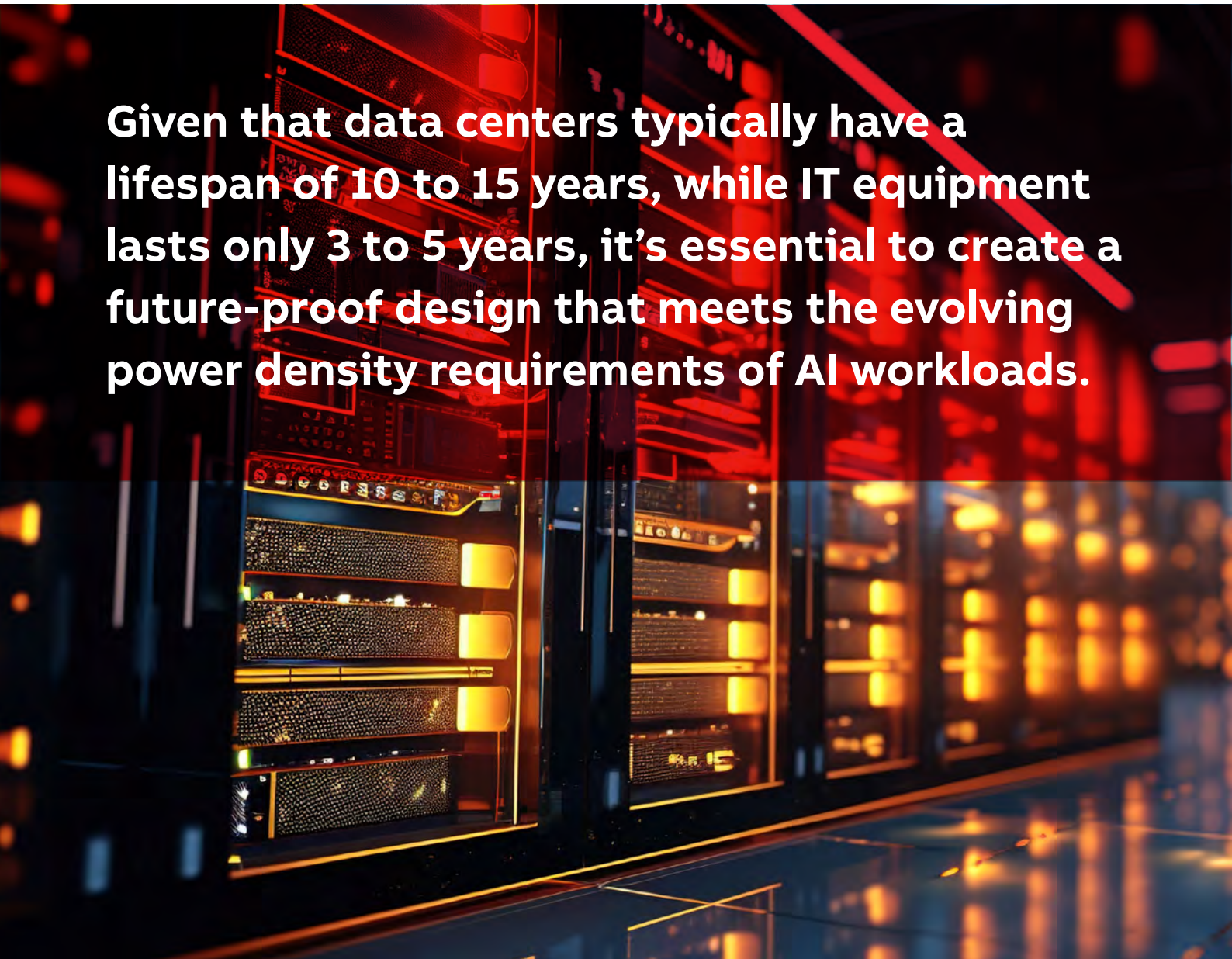
Server type	HPC standard density	HPC high density	Low-power
Rack type	42U	42U	42U
Server Power	500 W	1430 W	100 W
Rack Power	21 kW	60 kW	4.2 kW

01 42U rack with servers

Main IT components
Specialized hardware used in HPC

Each HPC is made up of several computers or servers called compute nodes, each node typically contains high power processors (CPUs), high speed memory (RAM) and specialized hardware GPUs.

Advanced hardware components, including GPUs, ASICs, and FPGAs, play a crucial role in accelerating machine learning algorithms. These specialized processors are integral to modern High-Performance Computing (HPC) systems. Specifically designed for matrix computations, they excel in handling machine learning workloads that require parallel processing of substantial data volumes. In addition to computational capability, it is required dedicate hardware for storage, so high speed memory and large storage memories enable AI models to efficiently read, write, and process data in real-time or near real-time. Finally, a network with high-capacity, scalable, and error-free is needed.



Overview of power supply requirements for AI workloads

The power supply requirements for AI workloads can vary depending on the specific hardware and workload being used. However, there are some general guidelines and standards that can be followed to ensure that the power supply meets the requirements for AI workloads.

Peak Power
AI workloads can have high peak power requirements, especially during periods of intense computation or when using specialized hardware such as GPUs. It's important to ensure that the power supply can handle these peak power demands without causing any issues.

Power Quality
AI workloads are often sensitive to power quality, as fluctuations or disturbances in the power supply can affect the accuracy and reliability of the computations. It's important to have a power supply that provides stable and clean power to the AI hardware.

Reliability
For AI workloads that require continuous operation, it's important to have a power supply that can handle interruptions, such as short outages or fluctuations in the power grid. This may involve using Uninterruptible Power Supply (UPS) or other backup power solutions to ensure continuous operation, not only to supply IT racks, but also to supply cooling.

Energy efficiency and cost reduction
Due to higher power supply needs, modern designs of HPC servers are adopting a 48 V architecture, instead of 24 V. Companies are exploring higher input voltages (beyond 48 V) to minimize electricity loss and enhance efficiency.

Same philosophy can be adopted for the entire power distribution system. The increase of level of voltage of power distribution will enable reduction of copper for power lines, which in connection with higher power density will impact a lot on reduction of construction cost, as well as power losses are reduced. We have calculated that for a power distribution system of a modular data center 3MVA we can decrease power losses of electrical system to IT of 13% by increasing the voltage from 415 V to 600 V.

Overview of power supply requirements for AI workloads

Safety
With the increasing of power density, increase also the short-circuit prospective current at IT level. Reducing short-circuit current in IT rack servers is crucial for safety and operational efficiency, balancing the growing power demand for AI with the risk to data center personnel.

Redundancy
To ensure continuous operation, concurrent maintainable and fault tolerant architecture are commonly used. To reduce costs keeping high level of flexibility, architecture with IT rooms sharing redundant power distribution are becoming more common. Redundancy is also widely adopted for monitoring and control.

Modularity
A business getting continuously faster requires a shorter development time, modular solutions not only reduce construction time, but also make easier maintenance and future updates.

Scalability
AI demand is growing so fast that it is not sufficient to build up new data center, but there is the need to convert existing data center into structure hosting AI server, getting the most power possible. For what concern new data center infrastructure, it is necessary to foresee an architecture able to host in the future rack with even higher power density.

Remote Power Panels (RPPs) requirements

The safety of IT operators in a data center is crucial due to the complexity of the equipment they handle. Operator safety is essential for maintaining high uptime for data center customers, which is critical for avoiding financial and operational disruptions.

One of the key safety considerations for IT operators in a data center is electrical safety. While it is always best practice to perform operations on de-energized systems, this is not always feasible, particularly in rack environments where equipment must remain active to support ongoing operations. In such scenarios, operators must exercise caution and follow strict safety protocols to mitigate the risks associated with working on live electrical systems.

Rack switchboards, for instance, are designed with an Icw (short-time withstand current) of 10 kA. This means that the short-circuit current should be limited to 10 kA RMS (Root Mean Square) or use a limiter breaker upstream to reduce the peak short-circuit current at a value not exceeding 17 kA[1]. Adhering to these specifications is crucial for limiting the effects of electrical hazards and ensuring the safety of IT operators in the data center environment.

1 IEC 61439-1: “Low-voltage switchgear and controlgear assemblies General rules”

Remote Power Panels
ABB solution

ABB can assist you in identifying the appropriate solution to ensure the safety of personnel while maintaining data center energy efficiency and avoiding design complexity.

There are some well known techniques to reduce short circuit current level in an installation:

- Current limiting circuit breakers
- Current limiting reactors
- Increase cable length
- Static circuit breakers
- Fuses

Let's analyze them one by one. Current limiting breakers are high-speed breakers that open rapidly to limit fault current. In this way, the fault current is prevented from reaching its peak value, reducing the let-through energy during the fault and minimizing damage to the installation. Designing a solution based on current limiting breakers is quite easy as it is sufficient to check the peak current limiting curve provided by the manufacturer.

Reactors introduce impedance, reducing fault current, it could be considered a cost-effective solution, but has effect on voltage and increase power dissipation. Increasing cable length is another way to introduce an additional impedance, but this method require extra cost for copper, as well as impact on voltage drop and power loss. Lastly, static circuit breaker have a fast response time and can limit fault current but require larger investment and a more complex cooling system due to high power losses.

In our proposal, we'll focus on using ABB's Tmax XT and S800 circuit breakers as outgoing feeders in the RPPs. Both breaker series are designed to limit short-circuit currents effectively.

Example of power density server racks

Rack Power kW	400 - 415 Vac	440 - 480 Vac	600 Vac	690 Vac
<35	S200 C63 A / S400 C63 A	S200 C63 A	S800 C40 A	S800 C40 A
35	S200 C63 A / S400 C63 A	S800 C63 A	S800 C40 A	S800 C40 A
60	S800 C100 A	S800 C100 A	S800 C80 A	S800 C63 A
70	XT1 160 A / XT2 160 A	S800 C100 A	S800 C80 A	S800 C80 A
100	XT1 160 A / XT2 160 A	XT1 160 A / XT2 160 A	XT1 160 A / XT2 160 A	S800 C100
150	XT3 250 A / XT4 250 A	XT3 250 A / XT4 250 A	XT1 160 A / XT2 160 A	XT1 160 A / XT2 160 A
200	XT5 400 A	XT5 400 A	XT3 250 A / XT4 250 A	Xt3 250 A / XT4 250 A

Table 1 Example of RPPs feeder circuit breakers
Notes: Breaking capacity to be selected according to prospective short circuit current

S800 and Tmax XT
Product overview

S800 – The High Performance MCB

S800 devices are designed to meet the highest electrical features providing:

- Breaking capacity up to 50 kA and rated current up to 125 A
- Voltage levels up to 580/1000 Vac and 1500 Vdc
- Line protection up to 100 kA thanks to short-circuit limiter device S800-SCL-SR
- Excellent back-up for downstream ABB MCB ranges thanks to its double contact that reduces let through energy and peak current
- Non polarized DC protection thanks to its double contact
- Excellent selectivity with ABB's MCCB ranges upstream, to provide the most continuous performances across the whole system
- S800 devices are certified with main IEC and UL relevant standards and approvals, plus specific standards for PV and railway available on selected ranges

Tmax XT – MCCB

Tmax XT is a series of moulded case circuit breaker which can reach high breaking capacity and limitation effect in compact dimension:

- Breaking capacity up to 150 kA @440Vac and rated current up to 1600 A
- Voltage levels up to 690 Vac and 500 Vdc
- Service breaking capacity Ics=100% up to 440 Vac
- Total selectivity with downstream MCBs
- Excellent selectivity with ABB's MCCB ranges upstream, to provide the most continuous performances across the whole system
- Possiblity to equip with high performance electronic trip units Ekip Touch and Hi-Touch for 1% measurement accuracy and power quality information.
- Tmax XT devices are certified with main IEC and UL relevant standards and approvals.

Guide to configure Remote Power Panels

Standard Power density Remote Power Panel
ABB solution

RPP-250A

RPP-400A

RPP-630A

RPP-800A

ABB offers scalable solutions for standard power density RPP, from 250 A to 800 A.

Configuration variants providing full flexibility in scaling-up your sub-distribution, as well as selection of accessories ensure customization.

System

- ABB MCCB Tmax XT: high breaking capacity in compact dimensions for increased safety for your whole Data Center.
- ABB's SMISSLINE TP system: the world's first touch-safe busbar system is another critical element of the severius modernization. This allows load-free modules and components to be made live and removed without the use of Personal Protective Equipment (PPE) to protect against electrical hazards.
- Network analyzer M2M for measuring the efficiency and power consumption of your RPP. All information about voltage and current on a quick sight through protocols like RS485 for an integration in your supervision system.
- Circuit Monitoring System (CMS) system for energy consumption monitoring. This compact CMS is ideally suited for power monitoring and analysis, and energy efficiency optimization.

Smallest configuration include 1xRPP-250A with 1 SMISSLINE module up to 128/84* connections; largest frame is RPP - 800A with 4 SMISSLINE modules up to 256/168* connections.

https://new.abb.com/low-voltage/products/system-pro-m/smissline-tp

Miniature circuit breakers for SMISSLINE TP
S400

The S400 series breakers are advanced circuit protection devices designed to ensure the safety and reliability of your electrical systems. These breakers are engineered to handle a wide range of applications, including data center, providing robust protection against overloads and short circuits.

Seamless Integration with Smissline
One of the standout features of the S400 breakers is their compatibility with the Smissline system. This innovative connection system allows for quick and tool-free installation, making it easier than ever to integrate the S400 breakers into your existing electrical infrastructure. The S400 breakers come equipped with plug contacts that enable seamless switching of the power supply between phases, ensuring optimal distribution and flexibility in your electrical setup.

Benefits for Customers
- Enhanced Safety: S400 can be snapped on and off under voltage with no need for additional personal protective equipment to guard against electrical hazards.
- Easy Installation: thanks to the plug-contacts, installation is straightforward and efficient, saving time and reducing labor costs.
- Reliability: built with high-quality materials and advanced technology, the S400 breakers ensure long-lasting performance and peace of mind.

Standard Power density RPP
Save time during the Planning Phase

Benefits

Energy transparency
Clear visibility of energy consumption is made possible at branch level.

Maximum reliability and security
Utmost data security in CMS-700 / SCU100 thanks to encrypted SNMP v3 and SSL certificate.

One sensor for all currents
Measurement of any kind of current – DC, AC or mixed- up to 160 A.

Get help from the new Server Room Sub-Distribution Configurator

Busway or Remote Power Panel, IEC or UL, with a constant focus on energy density, safety and flexibility, ABB's solution guides you through your Data Center planning phase.

- **Configuration in less than 10 minutes**
- **3D visualization**

We will show you the advantages of the configurator and how to get access on the following pages.

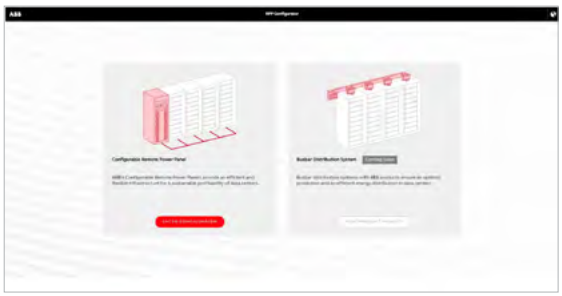
Standard Power density RPP
ABB Server Room Sub-Distribution Configurator

Access

- Via Google Chrome: http://abbrpp.hiddenltd.com/
- Via iOS (iPad only): «ABB Data Centers 3D» in the App Store
- Available in 8 languages: German, English, French, Spanish, Russian, Chinese and Japanese

Planning the energy distribution in data centers is complex and time-consuming. To save time, use the ABB Data Centers 3D Configurator – efficient, user-friendly and customer-oriented. It allows you to easily create a customized solution for the low voltage power distribution of your data center project – without the need of in-depth knowledge of electrical planning.

- Start from IT related specifications (e.g. number of server racks)
- Automatically generate a functional low voltage power distribution for your project
- Receive technical specifications and a bill of material via e-mail
- Share your configuration with our support team to request a quotation
- Enjoy a 3D experience of your data center project



High Power density RPP
ABB solution

Thanks to ABB application it is easy to choose the right components for your Remote Power Panel. When dimensioning a RPP from an IT power rack, few key steps need to be followed to ensure that the RPP is properly sized and configured to meet the power requirements of the IT equipment.

The following steps outline the process for dimensioning an RPP.

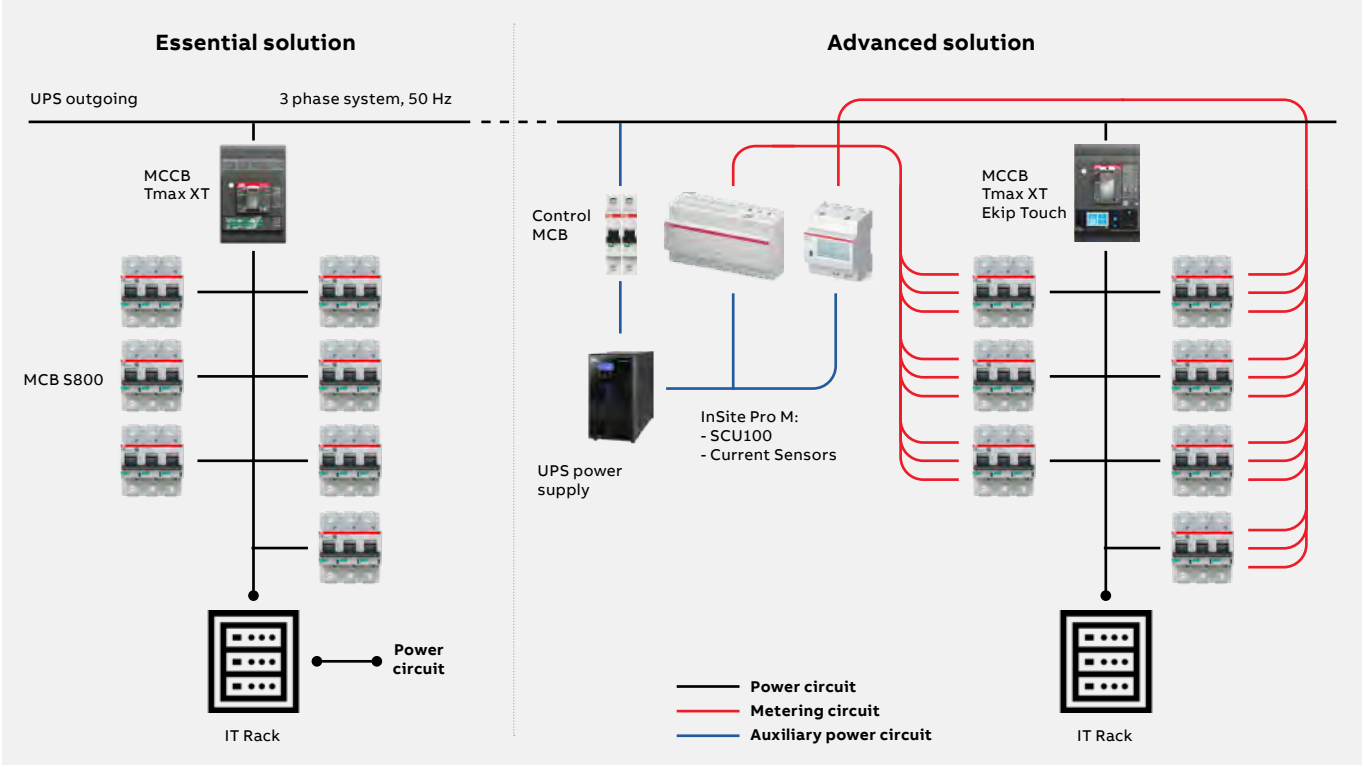
1. Determine the total power consumption of the IT equipment in the rack. This includes all servers, switches, storage devices, and other components that will be powered from the RPP.
2. Consider future growth and expansion of the IT equipment to ensure that the RPP has sufficient capacity to accommodate additional loads.
3. Consider any additional feature such as power monitoring, or remote management capabilities, that may be needed for the RPP.
4. Choose the right table selection according to IT Rack power needed.
5. Determine the number and type of output feeders required on the RPP to support the IT equipment in the rack according to voltage system level.
6. Select the appropriate input power supply according to number of outgoing feeders desired.

By following these steps, IT professionals can effectively dimension an RPP from an IT power rack, ensuring that the RPP is properly sized and configured to meet the power needs of the equipment it will support.

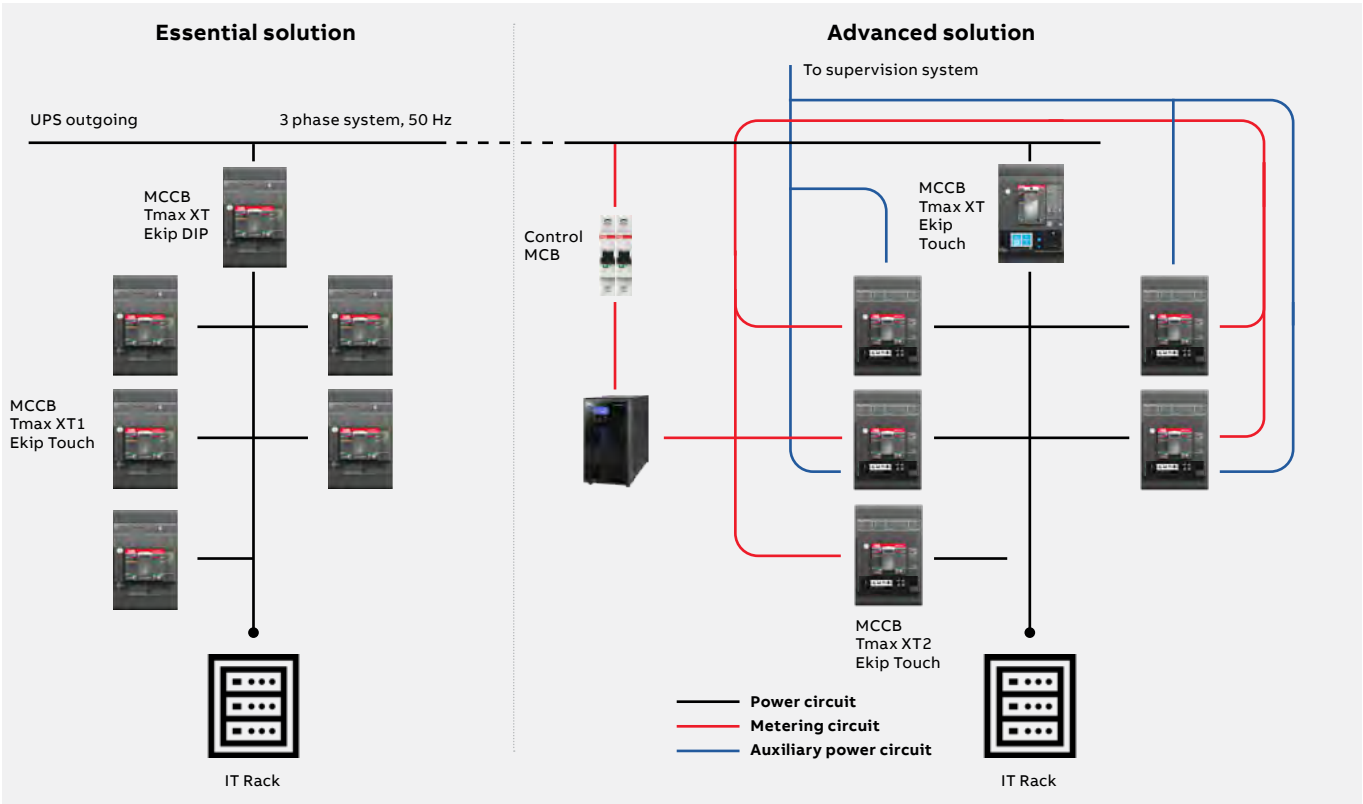
To illustrate the ABB solutions with examples, we have put together 4 cases for configuration options on the following pages.

Remote Power Panels
Examples of possible configurations

Case 1: MCB S800

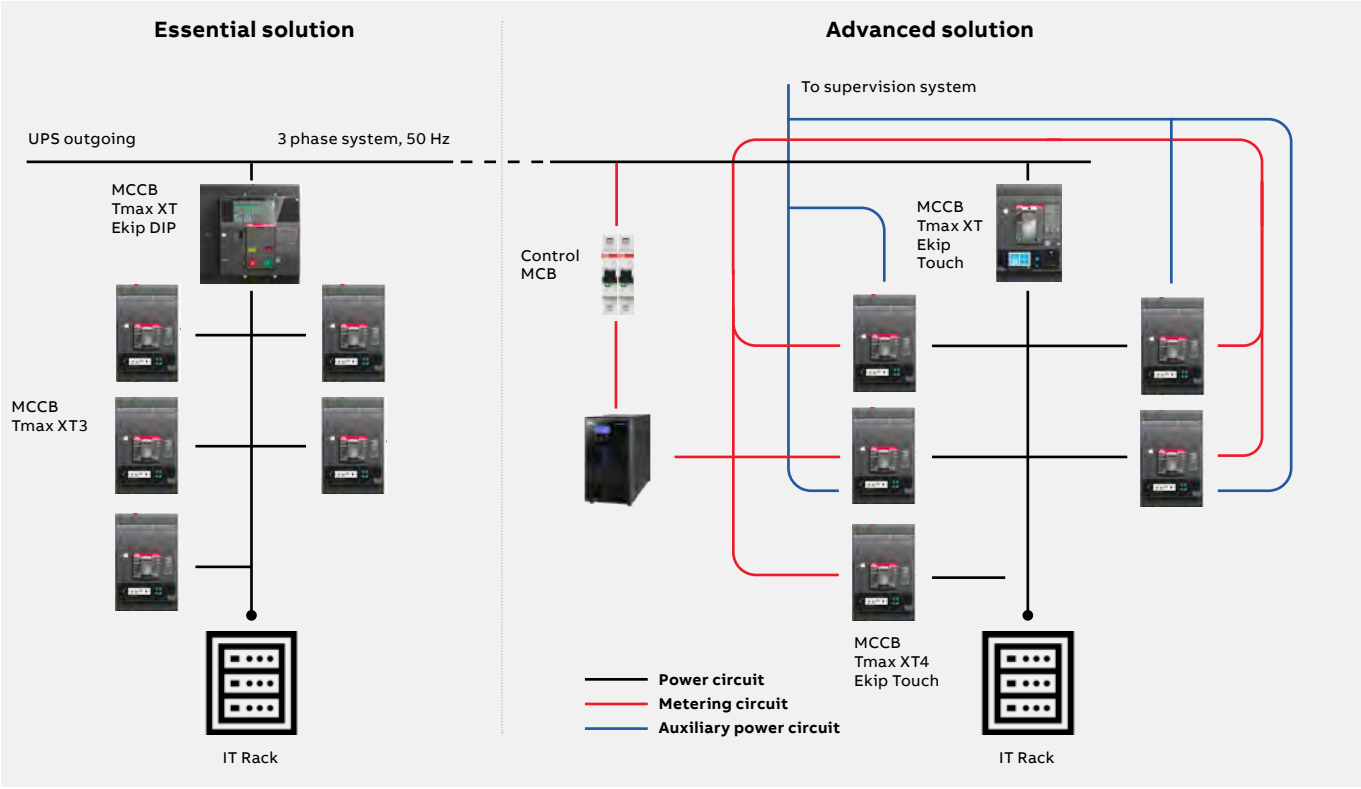


Case 2: MCCB Tmax XT1 and XT2

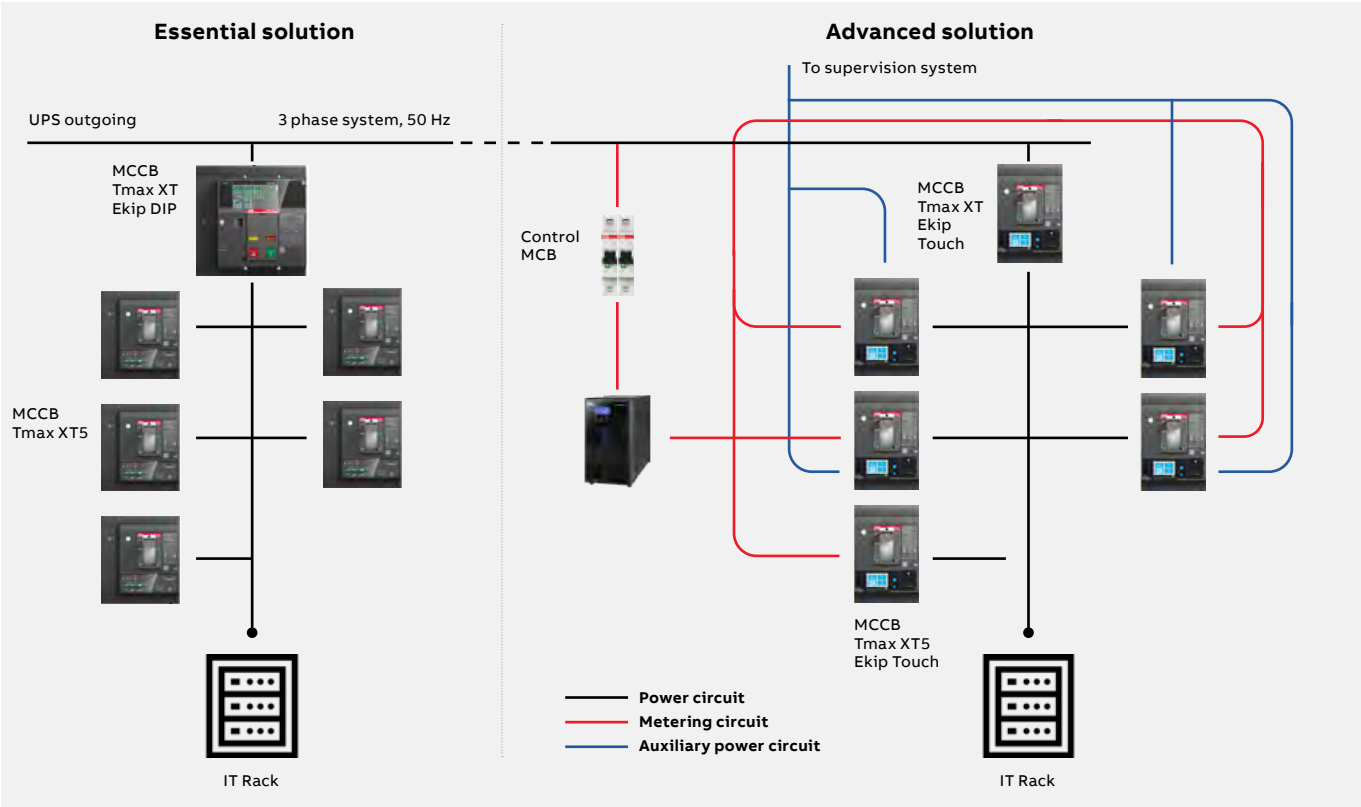


Remote Power Panels
Examples of possible configurations

Case 3: MCCB Tmax XT3 and XT4



Case 4: MCCB Tmax XT5



Technical Data
Remote Power Panels

RPPs 35 kW

Incoming CB selection		System Voltage (V)											
		400		415		440		480		600		690	
I_n (A)	Type	Outgoing breaker selection /N° outgoing circuits											
250	XT4 250	S800 C63 A see case 1	2	S800 C63 A see case 1	2	S800 C63 A see case 1	3	S800 C63 A see case 1	3	S800 C40 A see case 1	4	S800 C40 A see case 1	4
400	XT5 400		4		4		4		5		6		7
630	XT5 630		6		7		7		8		10		11
800	XT7 800		8		9		9		10		13		15
1000	XT7 1000		10		11		12		13		16		18
1600	XT7 1600		17		18		19		21		26		30

RPPs up to 60 kW

Incoming CB selection		System Voltage (V)											
		400		415		440		480		600		690	
I_n (A)	Type	Outgoing breaker selection /N° outgoing circuits											
250	XT4 250	S800 C100 A see case 1	2	S800 C100 A see case 1	2	S800 C100 A see case 1	3	S800 C100 A see case 1	3	S800 C80 A see case 1	4	S800 C63 A see case 1	4
400	XT5 400		4		4		4		5		6		7
630	XT5 630		6		7		7		8		10		11
800	XT7 800		8		9		9		10		13		15
1000	XT7 1000		10		11		12		13		16		18
1600	XT7 1600		17		18		19		21		26		30

RPPs up to 70 kW

Incoming CB selection		System Voltage (V)											
		400		415		440		480		600		690	
I_n (A)	Type	Outgoing breaker selection /N° outgoing circuits											
250	XT4 250	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	2	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	2	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	2	S800 C100 A see case 1	2	S800 C100 A see case 1	3	S800 C100 A see case 1	4
400	XT5 400		3		3		4		4		5		6
630	XT5 630		5		6		6		7		8		10
800	XT7 800		7		7		8		8		11		12
1000	XT7 1000		9		9		10		11		14		16
1600	XT7 1600		15		15		16		17		22		25

Technical Data
Remote Power Panels

RPPs up to 100 kW

Incoming CB selection		System Voltage (V)											
		400		415		440		480		600		690	
I_n (A)	Type	Outgoing breaker selection /N° outgoing circuits											
250	XT4 250	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	–	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	–	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	–	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	–	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 2	2	S800 C100 A see case 1	2
400	XT5 400		2		2		2		3		3		4
630	XT5 630		4		4		4		4		6		9
800	XT7 800		5		5		5		6		7		7
1000	XT7 1000		6		6		7		7		9		11
1600	XT7 1600		10		10		11		12		15		18

RPPs up to 150 kW

Incoming CB selection		System Voltage (V)											
		400		415		440		480		600		690	
I_n (A)	Type	Outgoing breaker selection /N° outgoing circuits											
250	XT4 250	XT3 250 A Ekip DIP or XT4 250 A Ekip Touch see case 3	–	XT3 250 A Ekip DIP or XT4 250 A Ekip Touch see case 3	–	XT3 250 A Ekip DIP or XT4 250 A Ekip Touch see case 3	–	XT3 250 A Ekip DIP or XT4 250 A Ekip Touch see case 3	–	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 3	–	XT1 160 A Ekip DIP or XT2 160 A Ekip Touch see case 3	–
400	XT5 400		–		–		–		2		2		3
630	XT5 630		2		2		3		3		4		4
800	XT7 800		3		3		3		4		5		6
1000	XT7 1000		4		4		4		5		6		7
1600	XT7 1600		7		7		7		8		10		12

RPPs up to 200 kW

Incoming CB selection		System Voltage (V)											
		400		415		440		480		600		690	
I_n (A)	Type	Outgoing breaker selection /N° outgoing circuits											
250	XT4 250	XT5 400 A Ekip DIP or Ekip Touch see case 4	–	XT5 400 A Ekip DIP or Ekip Touch see case 4	–	XT5 400 A Ekip DIP or Ekip Touch see case 4	–	XT5 400 A Ekip DIP or Ekip Touch see case 4	–	XT3 250 A Ekip DIP or XT4 250 A Ekip Touch see case 3	–	XT3 250 A Ekip DIP or XT4 250 A Ekip Touch see case 3	–
400	XT5 400		–		–		–		–		–		2
630	XT5 630		–		–		–		–		3		3
800	XT7 800		2		2		2		3		3		4
1000	XT7 1000		3		3		3		3		4		5
1600	XT7 1600		5		5		5		6		7		9

RPPs Bill of Materials (BOM) – example
Remote Power Panels 35kW, 800A @440Vac

RPP 35kW, 800A @440Vac – without monitoring

Description	Model	Code	Qty
RPP outgoing MCB 30kA @440Vac	S803S-C63	2CCS863001R0634	9
RPP Incoming MCCB 50kA @440Vac withdrawable	XT7S 800 Ekip Dip LSI In=800A 3p F F	1SDA100830R1	1
	Kit W MP XT7 3p	1SDA104717R1	1
Surge arrester OVR Type 2-3	OVR T2-T3 3N 20-440 P QS	2CTB803973R1300	1
Circuit Breaker for surge arrester OVR	S804S-C32	2CCS864001R0324	1

RPP 35kW, 800A @440Vac – including monitoring

Description	Model	Code	Qty
RPP outgoing MCB 30kA @440Vac	S803S-C63	2CCS863001R0634	9
Control Unit InSite Pro M	SCU100	2CCA880705R0001	1
CMS sensor (63A)	CMS-100S8	2CCA880125R0001	18
Connector Set (35 pcs.)	INS135	2CCG000244R0001	1
Flat Cable 5 m 5000 mm	INS105	2CCG000243R0001	1
Protection for power supply	S804S-C6	2CCS864001R0064	1
UPS for auxiliary power supply	UPS Power Value 11RT G2 1 kVA B	4NWP100200R0001	1
RPP Incoming MCCB 50kA @440Vac withdrawable	XT7S 800 Ekip Dip LSI In=800A 3p F F	1SDA100830R1	1
	Kit W MP XT7 3p	1SDA104717R1	1
Surge arrester OVR Type 2-3	OVR T2-T3 3N 20-440 P QS	2CTB803973R1300	1
Circuit Breaker for surge arrester OVR	S804S-C32	2CCS864001R0324	1

RPPs Bill of Materials (BOM) – example
Remote Power Panels 150kW, 1600A @415Vac

RPP 150kW, 1600A @415Vac – without monitoring

Description	Model	Code	Qty
RPP outgoing MCCB plug-in 50kA @415Vac	XT3S 250 TMD 250-2500 3p F F	1SDA068221R1	7
	KIT P MP XT3 3p	1SDA066280R1	7
RPP Incoming MCCB 50kA @415Vac withdrawable	XT7S 1600 Ekip Dip LSI In=1600A 3p F F	1SDA100833R1	1
	Kit W MP XT7 3p	1SDA104717R1	1
Surge arrester OVR Type 2-3	OVR T2-T3 3N 20-440 P QS	2CTB803973R1300	1
Circuit Breaker for surge arrester OVR	S804S-C32	2CCS864001R0324	1

RPP 150kW, 1600A @415Vac – including monitoring

Description	Model	Code	Qty
RPP outgoing MCCB 50kA @410Vac	XT4S 250 BREAKING PART 3p F F	1SDA068174R1	7
	Ekip Hi-Touch LSI In=250A XT4 3p	1SDA100293R1	7
	KIT P MP XT4 3p	1SDA066282R1	7
	EKIP COM HUB XT2-XT4 INT	1SDA105160R1	7
Protection for power supply	S804S-C6	2CCS864001R0064	1
UPS for auxiliary power supply	UPS Power Value 11RT G2 1 kVA B	4NWP100200R0001	1
RPP Incoming MCCB 50kA @415Vac withdrawable Power supply for incoming MCCB	XT7S 1600 Ekip Hi-Touch LSI 1600A 3p FF	1SDA100857R1	1
	Kit W MP XT7 3p	1SDA104717R1	1
	EKIP SUPPLY 24-48VDC E1.2..E6.2-Tmax XT	1SDA074173R1	1
	EKIP COM MODBUS TCP Tmax XT	1SDA105167R1	1
Surge arrester OVR Type 2-3	OVR T2-T3 3N 20-440 P QS	2CTB803973R1300	1
Circuit Breaker for surge arrester OVR	S804S-C32	2CCS864001R0324	1

Product offering

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ABB Power Value 11RT

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ABB RPP (≤ 35 kW)

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ABB OVR

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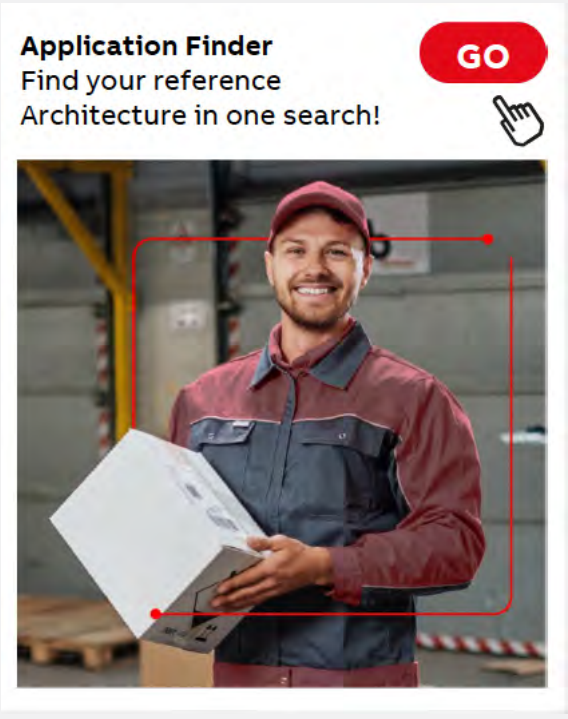

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