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CATALOG

RPP Remote Power Panels, Power Distribution Unit

Smart, Flexible power to your data center





- Intelligent data needs intelligent power
- Unique power density, giving you more in less space
- 50% less footprint, 100% redundancy



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Key areas of focus Overview

Fulfilling the stringent needs for Data Center Power when it comes to continuous operation, energy efficiency, space saving, modularity and flexibility, is achieved with ABB's RPP which is engineered specially to respond to the complexity and criticality of Data Center application.

> ABB's configurable Remote Power Panel (RPP) helps to meet the demands of power-intensive applications, delivering unsurpassed power monitoring and distribution in a safe, reliable, space-saving footprint.

The configurable RPP is the ideal solution for Data Center engineers, saving the time for planning and drawing of the RPP.

Continuous operation

Inside ABB's Remote Power Panel (RPP) the SMISSLINE busbar technology is used.

It ensures continuous operation and load-free devices and components can be plugged on and off under voltage with no need for additional personal protective equipment to guard against electrical hazards. (Note: national regulation and safety rules need to be fulfilled at any time). The pluggable socket system is completely finger safe (IP2XB).

The SMISSLINE TP product portfolio provides a variety of circuit breakers and residual current devices up to 63A in different variations. With the touch proof SMISSLINE busbar system devices can easily be changed under voltage without any power interruption.

Energy efficiency

The ABB range of connected devices have been specifically developed to meet requirements of energy and asset management. Monitoring and controlling the energy flow in electrical distribution is made easy with these devices.

The network analyzers and branch monitoring product help users to detect risks at an early stage thanks to total transparency, constant diagnostics and real time notifications.





Space saving

Vertical structure saves space in the RPP and the input wiring is already integrated into the pluggable socket system.

This reduces the number of cables in the RPP and results in a clear and organized panel.

Modularity and flexibility.

SMISSLINE, multi-pole devices can be positioned anywhere. The system provides flexible architecture and many different power supply options. The ability to incorporate last-minute changes promptly is likewise a great advantage. New devices can be integrated easily and safely.

The system can be expanded quickly and is more efficient and fully compatible with existing installations. "Pay as you grow" is made easy by installing empty power distribution units and populate them with devices when your customers rent the rack space.

The advantages

Easy to install

The RPP focusses on user-friendliness: The SMISSLINE system consists of main busbars and a wide range of MCB's that can be easily changed without power interruptions. The wiring method simplifies the overall

installation and allows you to add any kind of protection device, metering or connection device.

The SMISSLINE Direct Feed connects the MCCB and the SMISSLINE system in a compact and reliable way and there is no need for additional cabling.

Adding devices can be done by the panel builder during the manufacturing phase or later by the system integrator on site.

Our new Branch Monitoring Systemis perfectly suitable to retrofit mains and branch monitoring into the panel.

With the new open-core sensor design, you just fit the tiny current sensors directly on the breaker without using any additional DIN rail space.





Speed up your projects

ABB' Remote Power Panel consist of a modular pluggable busbar system that is certified according to IEC 61439-2. This advantageous solution lowers time and financial effort of panel building activities.

Quickly adding or changing breakers and measurement sensors is guaranteed by our SMISSLINE touch proof system in combination with the System pro M compact[®] InSite.

Depending on the total load connected to each rack PDU in the server racks, the appropriate breakers can be added subsequently to the SMISSLINE busbar on site and maximize a system integrator's flexibility.

Instead of the time-consuming connections via wires, the new SMISSLINE Direct Feed reduces the assembly time and enables a fast installation.





Space Saving Unique power density

The plug-in connection without any wires requires less installation space inside the enclosure. The freed-up space allows more outgoing connections per RPP which reduces the footprint of the power distribution inside the server room.

In the RPP you will be able to place the A and B distribution into the same cabinet including the molded case circuit breakers, MCCB,-reducing the footprint by 50% and still maintaining the full level of redundancy.

Pay as you grow by installing empty power distribution units and populate them with devices when your customers rent the rack space.







Optimum Interface Simplifies connectivity

A high standard of cyber security is inevitable in today's data centers. The System pro M compact® InSite protects you against cyber attacks by using the end-to-end encrypted SNMP version 3 communication protocol.

As the most compact AC and DC multichannel branch monitoring system, the System pro M compact® InSite provides a reliable solution for measuring individual branch load circuits and presenting energy and power dashboards. Up to 96 bus-wired open-core sensors can be mounted directly on the SMISSLINE circuit breakers without using any additional space.

Branch monitoring system

As the most compact AC and DC multichannel branch monitoring system, the branch monitoring system provides a reliable solution for measuring individual branch load circuits and presenting energy and power dashboards. Up to 96 bus-wired sensors can be mounted directly on the SMISSLINE circuit breakers without using any additional space.

CMS is suitable both for new installations and retrofit into existing installations. I/O modules can be easily added to the same bus.





Safety and Protection

The SMISSLINE system enables load-free plugged on and off devices and components without power interruption . (Note: national regulation and safety rules need to be fulfilled at any time)

The pluggable socket system is completely finger-safe (IP2XB).

More than 30 years of experience has proven the reliability of SMISSLINE.

Data Security

Did you ever consider if measurement data of your local data center is properly encrypted? A high standard of cyber security is inevitable in today's data centers.

Our branch monitoring system protects you against cyber attacks by using the end-to-end encrypted SNMP version 3 communication protocol.



Continuous operation

The SMISSLINE type tested busbar guarantee safe and reliable operation.

The secure bolted connections between MCCB and the SMISSLINE Power Bar system reduces the risk of faulty wiring and increases the reliability of the power distribution.

Due to the optimized power-flow, the internal resistance of the RPP is reduced which results in a lower heat dissipation. This makes ABB's RPP an even more efficient solution for the server room power distribution.

The advantage of this solution is to simply add devices and balance the phases along the touch proof busbar distribution system without the need to turn off the supply at any time.

Value proposition and benefits for stakeholders



OWNER DESIGN CONSULTANT ENGINEERING COMPANY



AC or mixed- up to 160A



inefficiencies.

to quick mounting of breakers using plug in technology and ultra-compact sensors in only a few steps.

RPP Remote Power Panel System overview



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The Molded case circuit-breaker range ensures extreme performance and protection features. Designed to maximize ease of use, integration and connectivity. Built to deliver safety, reliability and quality.



DIRECT FEED

The new direct feed starter pack solution allows a direct connection from the Power Bar System to the ABB XT4 Moulded Case Circuit Breaker. The solution is built for a vertical design with one or two busbar system in one enclosure. The new solution saves space and wiring time.





Type 2 surge protective devices are designed to protect electric installations and sensitive equipment against indirect surges with ensuring a low protection level (Up). They are characterized by their capacity to safely discharge current with $8/20 \ \mu$ s wave form.

Energy efficiency, energy

Energy efficiency, energy cost savings and improvement of power quality are certainly three main goals to achieve in order to run sustainable buildings, and tracking electricity consumption is fast becoming a no-brainer for any business. ABB Network Analyzers and Multimeters range of System pro M compact[®] includes a comprehensive offer of front panel and DIN-Rail devices designed to monitor when, where and how power and energy are consumed by measuring and analyzing in real-time the main electrical parameters of the network and the power quality KPIs.



SMISSLINE

Small cause, large effect - The plug-in SMISSLINE system main strengths are wherever rapid replacement, simple expansion capabilities, a flexible phase balancing or a high level of standardization is required. It is also the perfect fit for any application where costly downtime must be avoided. It is available in 125A and 250A version. The MCB portfolio fits to both versions.



SMISSLINE DEVICES

The SMISSLINE miniature circuit-breaker is an energylimiting circuit-breaker that has high performance short circuit ratings and that is equally suitable for the industrial sector, for commercial use and for installation at home. If a short-circuit occurs, it guarantees excellent coordination with upstream overcurrent circuit breakers.

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CT and CTA current transformers Used to transform primary currents into .../5 A low secondary currents indirectly supplying power to analogue and digital measurement devices.

They are available both with wound and through primary. In the first case they are provided along with the bar or the primary terminal; in the second case they have a hole to insert in the bar or the cable which forms the primary.

BRANCH MONITORING SYSTEM

System pro M compact[®] InSite and CMS have been specifically developed to meet requirements of energy and asset management by monitoring and controlling the energy flow in sub distribution boards. In a framework where energy efficiency and operational continuity are becoming crucial, the InSite range helps users to detect risks at an early stage thanks to total transparency, constant diagnostics and real time notifications.

Customized actions can be programmed to react promptly to certain events or crossed thresholds which does not only increase availability but also saves up to 20% on your energy bill achieving highest energy efficiency standards.

CT SENSORS

Alternating (AC), direct (DC) or mixed (TRMS) currents – the CMS sensors monitor and measure all types of current over a measurement range of up to 160 A (TRMS). They even measure harmonic components in the signal curve. The measurements are connected through a bus interface, enabling reliability of data and removing disturbance effects.

AUXILIARY AND SIGNALING

The auxiliary switches and signal contacts are mounted on the protective devices and can be connected e.g. to the I/O modules of the System pro M compact[®] InSite.

ENCLOSURE

Designed for commercial and industrial buildings, System pro E[®] energy sub distribution boards have been developed for simple and flexible configuration and offer 20 % more wiring space, require 30 % less stock and save up to 40 % of assembly time.







Technical Features at a glance

Remote Power Panel technical features at a glance:

Standards			IEC/UL	
Voltages	240V/415V IEC- UI 277V/480V 50/ 60 Hz			
Conditional Short-Circuit Current Pating (Icc)				
		up till 100k	(A @415Vac (A14)	
RPP Version				
Full Load rating IEC (@240V/415V)	180kW	288kW	453kW	576kW
Full Load rating UL (277V/480V)	207kW	332kW	500kW	664kW
Main incomer rating	250A	400A	630A	800A
Rated current of the assembly (Ina)	250A	2x250A	3x250A	4x250A
Main incomer rating	250A	400A	630A	800A
Incomer				
мссв	XT3-XT4 250A	XT5 400A	XT5 630A	XT6 800A
Rated current of the assembly (Ina)	250A	400A	630A	800A
Outgoings				
Max nr of loads/ outgoings (1P)	80	160	240	320
MCB characteristics		1p/3p C curve / K-	characteristic 6kA—40kA	
Options	Overvoltage protection			
	Main Power Monitoring			
	Incomer Switch Disconne	ctor or MCCB		
	Branch monitoring			
	HMI "Door Display"			
	Network Analyser			
	A and B only			
	A and B			
Dimensions (mm) H x W x D	1950/550/350	1950/550/350	1950/800/350	1950/1050/350













Short Summary on Main Technical Aspects

Enclosure Specifications

Standards / requirements	IEC 61439 -1/-2/-3
Protection Class	Class I, earthed
Degree of protection	IP43
Mechanical impact Strength	IK 08 for the cabinet enclosure
Conditions of installation	Indoor installation
Ambient air temperature	max. +40 °C
Ambient air temperature	min5 °C
Operating temperature	max. +55 °C
Storage temperature	max. +55 °C
Rated current	(In) 800 A
Rated operational voltage	(Ue) 690 V
Rated insulation voltage	(Ui) 1 000 V
Rated short-circuit current	(Icw) 32 kA/1s
Rated current of busbar systems	800 A in IP43

Busbar Specifications

Technical data according to IEC/EN 61439-6 Power Bar System 250 A Use only for wall mounted application (horizontal or vertical). When installed correctly the requirements of EN/IEC 61439-2 are met.

Standards / requirements	IEC 61439 -6 / UL508
Number of Modules (18mm):	6 to 80 3p+N / 2 additional bars PE+N
Rated operational voltage (Ue):	690 VAC, 1000 VDC (400 VAC, 250 VDC when used for load-free plug on and off under power)
Rated insulation voltage (Ui)	Main circuit: 690 VAC, 1000 VDC
Rated insulation voltage (Ui)	Auxilary circuit: 415 VAC
IP Code:	IP20B
Pollution degree:	3 (690 V a.c.) 2 (1000 V d.c.)
Rated impulse voltage (Uimp):	8 kV mainbusbars; 6 KV auxillary busbars
Rated current of the assembly (InA) :	max. 250 A side feeding
Rated conditional short- circuit current (Icc)	100kA @415 Vac (Tmax T4/XT4 250 A)
Rated operational voltage	(Ue) 690 V
Rated insulation voltage	(Ui) 1 000 V
Rated short-circuit current	(Icw) 32 kA/1s
Rated current of busbar systems	800 A in IP43

Incomer Specifications (XT serie)

Standards / requirements	EC 60947-2 / UL489 / CSA C22.2
Rated current	160 - 800A
poles	3/4
breaking Capacity (Icu)	36 – 150 kA (@415 Vac)
Rated service voltage, Ue	690Vac

Outgoings Specifications (S400 series)

Standards / requirements	EC 60947-2 / UL489
S400 / SUP400	160 - 800A
Rated current	1-63 A
poles	1/2/ 3/4
breaking Capacity (Icu)	6- 40 kA (@415 Vac)
Rated service voltage, Ue	690Vac

Branch Monitoring Specifications (CMS700/ SCU100)

Main features	Measurement of Power and Voltage Mains
measurement Branch currents (up to 96 sensors)	Class I, earthed
I/O modules	IP43
Communication Protocols	Modbus RTU, TCP or SNMP v1 and v2 and the encrypted v3
Accuracy	0.5%
Supply voltage [VAC]	80-277 (L1-N, +5%)
Frequency [Hz]	50/60
Power input (L1-N) [W]	545 depending on number of sensors and I/O modules
Voltage measurement range [VAC]	80-277 (L1, L2, L3-N)
Harmonic component [Hz]	up to 2000
Data rate of Modbus RTU [Baud]	RS485 2- wire, 2400115200
Standards	IEC61010-1
Accuracy SCU100 (mains)	Voltage ± 1%
	Current ± 1%
	Harmonic component (up to 2500Hz) ± 1%
	Active power ± 2%
	Apparent power + 2%
	Reactive power + 2%
	Power factor ± 2% to 2500Hz) ± 1%
Sensors measurement ranges [A]	20, 40, 80
Sensors Accuracy	<0.5 for closed core sensors
	<1% for open core sensors

Network analyzers specifications (M4M20 / M4M30)

	M4M20	M4M30
Measurement		
Current, Voltage, Frequency	•	•
Power, Power Factor		
Neutral Current	Calculated	Measured
4 quadrants Energy (Import /Export)	•	•
Total Harmonic Distortion (THD)	•	•
Harmonics (40th), Unbalances, Waveforms	-	•
Graphs visualization	Basic	Advanced
Data recording		
Notification logs	•	•
Alarms / Complex alarms with logics	25 / -	25-Apr
Demand values, Max/Min demand	Basic	Advanced
Energy Trending logs	-	•
Real Time Clock (RTC)	-	•
Connectivity		
Data rate of Modbus RTU [Baud]	RS485 2- wire, 2400115200	
Communication protocols	Modbus RTU, Modbus TCP/IP, Profibus DP-V0, BACnet/IP	
I/O options	- 2 DO	- 4 I/O
	- 2DO+2 I/O+2AO	- 6 I/O+2AO
Integration in System pro M compact InSite	•	•
ABB Ability™ Energy and Asset Manager		
RJ45 Daisy Chain (Ethernet)	-	•

Over Voltage Protection Specifications (OVR404 4L 40-275 P TS QS / OVR404 3N 40-275 P TS QS)

Standard	IEC 61643-11/EN 61643-11
Type/ Test Class	Туре 2
Number of pole	4
Nominal voltage UN (L-N, L-L)	240/415V
Max. cont. operating voltage Uc	275 V AC
Nominal discharge current In (8/20)	20kA

Coordination

Electrical energy is supposed to be available every time and everywhere in the RPP application. Knowing this, it is evident that the distribution system for electrical energy has to meet a high degree of continuity without neglecting protection aspects and ABB has the complete range of products for a safe and reliable installation!

Since the electrical installation inside a the data center is a more or less complex system for distributing energy from the supply to any connection point for current using equipment, considerations have to be made for the correct design of circuits and for the selection of electrical equipment.

Back-up is a key issue in critical power application, at the same time selectivity (discrimination) reduces the risk of unwanted black-out of total segments or data hall.

The ABB products used in the RPP have been extensively tested in different combinations. The results are presented in the SOC tables (Selected Optimized Coordination).



Back-up protection

Assignment of two overcurrent protective devices in series, where the protective device, generally but not necessarily on the supply side, effects the overcurrent protection with or without the assistance of the other protective device and prevents excessive stress on the latter [IEC 60947-1, definition 2.5.24].



Total selectivity

Overcurrent discrimination where, in the presence of two overcurrent protective devices in series, the protective device on the load side effects the protection without causing the other protective device to operate [IEC 60947-2, definition 2.17.2].





Temperature Considerations



Temperature has a high impact on the reliability of the application. Although, at maximum ratings, the temperatures are within the maximum allowable limits of the applicable standards, an enginereed verification needs to be considered while designing any RPP to prevent overheating and eliminate hotpsots to ensure smooth operation and continiuty of supply for the load attached to the RPP.

Tools to support the temperature consideration are available at the Support Tool web.

Support Tools

Choosing the right low voltage products for complex installations can be extremely time consuming.

ABB provides a wide range of software and mobile applications to help you selecting precisely what you need, in a simple yet effective way. Choosing, dimensioning and drawing your application has never been easier.





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Planning the energy distribution in a data center is complex and time-consuming. **Our first solution for you** →

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How to get your RPP preconfigured? Configure your RPP with the configurator

Configure your individual RPP everywhere

ABB Server Room Sub-Distribution Configurator. The Data Center 3D configurator tool - efficient, user-friendly, customer-oriented. With the support of the Configurator, you can plan and create your customized RPP solution on your iPad or by using the Browser version.

When you start the Configurator, a detailed overview of a data center with its different areas appears. By selecting the field Remote Power Panel, you will be directly led into a server room. Based on the number of servers and server cabinets planned in your data center, the application selects the appropriate variant of the cabinet. It will be calculated whether two, three or four SMISSLINE touch proof busbars in the cabinet fit your setup.

The customer can also choose if a network analyzer for monitoring purposes is desired, if the neutral conductor needs to be switched off or if current measurement per branch should be implemented. Another option to customize the Remote Power Panel is to choose between two possible front door alternatives: select a glass door or a metal door with an integrated touch display.

A detailed visualization of the configured devices supports the planning phase right from the start and gives you an idea about how your customized solution will look like.

What you will get?

Four dynamic views are available to suit your configuration steps

- Display of the entire Remote Power Panel
- View on the front door with touch display
- Detailed visualization of the equipped SMISSLINE TP busbar
- Zoom on the DIN rail with molded case circuit breakers and Circuit Monitoring System

Main advantages

- Be flexible when dealing with customized requirements
- Send out your configuration via e-mail using just one click
- Generate detailed bill of materials and specifications
- Save your configurations locally

In addition to the interactive planning, the configuration tool generates a bill of material, dynamic wiring diagrams and certificates based on your individually selected features. These documents are provided by e-mail right after finishing the configuration process.

Stay flexible

The Data Centers 3D Configurator is available in the app store to download on your iPad and as browser version for your PC. In addition, it is a global tool which allows the user to choose between German, English and Japanese in the language menu.

Impressive 3D experience

Enjoy a three-dimensional data center with all functions. In the upper-right corner of the application, please activate the Virtual Reality view and place the camera on image 01 to start this function

Planning the energy distribution in a data center is complex and timeconsuming. Another solution for you →

How to get your RPP preconfigured? Configure you RPP with a team of experts

Configure your individual RPP everywhere Another way to configure your RPP and when your application is more complex and cannot be addressed by the configurator.

we are capable of offering a customized solution that fits exactly the needs of your project taking into consideration the specification of the consultant and developer keeping in mind the installer and site consideration input and last but not least the operator and end user requirement.

What you will get?

Technical engineered offer consisting of:

- Detailed wiring diagram
- Detailed layout
- Compliance statement
- · Detailed bill of material

Main advantages

- Channel of communication with all stake holders to support you inhandling the job
- Full compliance to the project requiement
- End to end support from design stage till execution stage
- Fully customizable solution tailor made for the project specification

In case of any enquiry related to RPP kinldy adrress to



