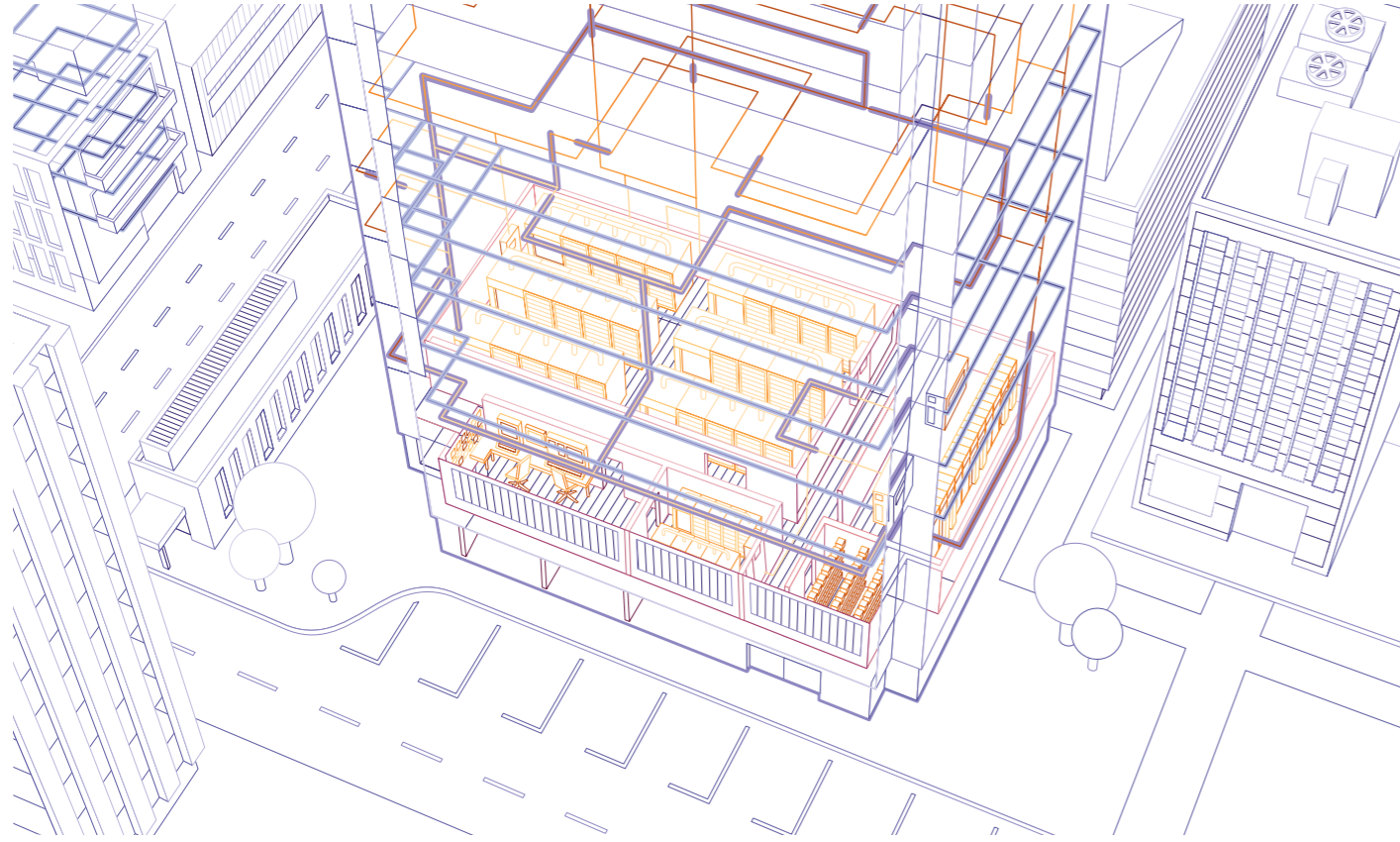




# MNS<sup>®</sup> RPP

## Power distribution to critical loads

## Intelligent, responsive power distribution and monitoring



Today's data centers consume 100 or more times the power per square foot than an average office building. In such an environment, a single hour of downtime can cost millions of dollars. At the same time, electricity costs are on the rise and customers want to be billed only for the energy they use. Data center operators are under constant pressure to increase energy efficiency and pinpoint usage while maintaining 100 percent uptime.

ABB's MNS® RPP helps meet the demands of power-intensive applications, delivering unsurpassed power monitoring and distribution with up to 168 poles in a safe, reliable, space-saving footprint.

MNS® RPP is the ideal solution for data center engineers, managers and executives who must ensure continuous power to critical applications. It provides accurate power management that helps improve the bottom line.

## Maximum uptime without outages



Power outages damage reputations, loss of productivity and profits. ABB's MNS® RPP protects from all three, providing years of safe, reliable operation and a complete vision for power distribution and monitoring. Our MNS® platform is designed to withstand the harshest of environments including data center use helping ensure maximum reliability and uptime.

### Product offerings include:

- Hot swappable branch circuits
- State-of-the-art, reliable components help minimize unplanned outages, ensuring high mean time between failures (MTBF)
- Pre-outage alarms, triggered by selectable parameters for main incomer and individual branch circuit breakers
- Plug-and-play branch circuit devices that make output replacement safe, fast and easy, reducing component downtime (MTTR)
- Industrial-grade, ABB-coordinated current limiting main and branch circuit breakers virtually eliminate nuisance tripping

- of the main/sub-main incomer. In case of a fault only the faulty branch circuit is disconnected, leaving remaining branch circuits/IT equipment unaffected
- Detection of overload through current measurement in each branch circuit
- User-friendly phase balancing capability
- The incoming supply to each branch circuit is integrated in the plug-in socket system, eliminating incoming cabling for each branch circuit

## Business without barriers



No matter where you are in the world, ABB expertise is nearby.

ABB maintains an extensive global network of production facilities and service centers. Customers can be sure they are buying the same high-quality design, regardless of the factory's location.

Whether conducting a factory acceptance test, ordering replacement parts, attending a training session, or scheduling an on-site service call, our network reduces lead times, eliminates the need for middlemen, and limits the language, time zone, and travel issues that make doing business difficult.

Consider ABB as your single point of contact from purchase order to delivery, and ensure your project's success.

## Optimize power usage



A thorough understanding of activity helps reduce operating costs and increase efficiency. MNS® RPP continuously monitors power and energy from branch circuits and the main incoming supply, providing a constant, accurate picture of capacity, energy use and facility reliability.

MNS® RPP assists with analysis of actual rack usage against the rack rated kW rating, helping data center operators manage capacity more efficiently.

- Determines whether a particular rack is being used efficiently and if it can support additional equipment
- Identifies areas for optimization (e.g., shut down passive racks) or areas that need increased capacity

### Intelligent monitoring and cost allocation

MNS® RPP allows data center operators to easily track who is using IT equipment and how much power they consume. The information captured can also be used for trend analysis, billing and maintenance planning purposes. Similarly, intelligent RPPs allow companies to assign costs to internal consumers.

## Safety in a compact footprint



The safety of your personnel is ABB's number one priority. MNS® RPP's design is IEC 61439-1 and -2 compliant.

Branch circuit breakers are plugged on to the SMISLINE TP plug-in socket system, allowing load-free plugging and unplugging of live devices and components without risk of electrical shock. The SMISLINE TP plug-in socket system is fully protected against direct contact (IPXXB). The system remains fully touchproof during plugging and unplugging of devices, eliminating the risk of injury due to switch or fault arcs.

## Scalable for the future



Today's successful data centers must be scalable, flexible and readily adaptable to business changes, especially the ever-growing appetite for increased data. In many cases, data centers add more servers, which increases power and HVAC consumption. ABB LV Systems solutions including MNS® RPP readily provide flexibility by allowing data center operators to safely install new feeders and HVAC equipment – racking up without powering down.

- Option with 250/400A power supply and flexible outputs
- User-friendly phase balancing capability
- Branch current measurement range of 0-60A
- Branch current sensor is mounted directly on the protection device, allowing rapid addition / upgrading of branch circuits
- Branch circuit breakers can be easily moved between L1, L2 and L3 phases to achieve/maintain phase balance
- Inspection glass with phase indicator on the front of the device
- Option for various protection devices (MCB/RCB/RCBO, etc.) Simple network configuration and diagnostic options for rapid planning, implementation and commissioning
- Standard top or bottom cable entry for more flexible installation options to suite non-raised or raised floor applications

## Simple, cost-effective operation and maintenance



It is estimated that 80 per cent of power outages are preventable through regular monitoring and maintenance of mission-critical equipment. Even the smallest repair to a single component can cause significant downtime. However, in the rush of day-to-day operations, switchgear maintenance is sometimes overlooked. ABB's data center products and systems are engineered to deliver extended, continuous, reliable operation that helps avoid outages and costly maintenance.

ABB LV systems' global MNS® platform delivers a maintenance-free mechanical structure designed to save hours of maintenance each year. This platform provides plug-in solutions for critical components to be replaced quickly and easily.

- Pre-outage alarms mean corrective measures can be taken to prevent most unplanned outages (real time continuous monitoring to enable predictive maintenance)
- Plug-in output devices allow safe, quick and easy change or replacement, thus reducing the component non-availability time (MTTR)
- Branch circuit breakers are easily moved between L1, L2, and L3 phases, maintain phase balance without shutdown
- Monitoring & phase indicator on the front of the device
- Simple network configuration and diagnostic options

# Functional overview

ABB MNS® RPP comprises SMISLINE TP as distribution chassis to provide IPXXB protection for the branch MCB and facilitate ‘hot swap’ of circuits. CYBEREX BCM (branch circuit management) module is used to measure the parameters like kW, kWh, % load etc., for each branch. Additionally CYBEREX MFCM (main feed circuit management) module can be used to monitor the main incoming supply.

		MNS® RPP	
<b>No of branch circuits per system (BCM module)</b>		168	
<b>No of incoming sources (MFCM module)</b>		Upto 4	
<b>Accuracy</b>	Voltage	±2%	
	Current	±2%	
	Power	±2%	
<b>Measured voltage</b>		150 – 600VAC L-L 90 – 347VAC L-N	
<b>Operating temperature</b>		0 to 40°C	
<b>Storage temperatures</b>		-40°C to 70°C	
<b>Power supply</b>		230VAC	
<b>Communication</b>		MODBUS RS 485 or TCP/IP* Serial RS-232 (Service port)	
<b>MODBUS RTU</b>	Baud rate	9600,19200,57600,115200	
<b>Serial update rate</b>	Up to 168 Branches	≤ 2.5 Seconds	
<b>Power and energy measurements</b>	Mains	▪	
	Branch circuits	▪	
	Current	▪	
	Max. current	▪	
	Min. current	▪	
	Real power (kW)	▪	
	Real power (kW) demand max.	▪	
	Energy (kWh) per circuit	▪	
	Power factor	▪	
	Apparent Power (kVA)	▪	
	Branch CB rating	▪	
	<b>Branch circuit metering through BCM module</b>		

<b>Main incomer metering through MFCM module</b>	Current per phase	▪		
	Max. current per phase	▪		
	Energy (kWh) per phase	▪		
	Real Power (kW) per phase	▪		
	Apparent Power (kVA)	▪		
	Power factor total	▪		
	Power factor per phase	▪		
	Voltage, L-L and average	▪		
	Voltage, L-N and average	▪		
	Voltage, L-N and per phase	▪		
<b>Power quality measurements</b>	Frequency (phase R)	▪		
	V – THD%	▪		
	I – THD%	▪		
	Voltage	▪		
	Current	▪		
	<b>THD**</b>	Voltage	▪	
		Current	▪	
	<b>Alarms</b>			BCM
		Current	▪	▪
		Voltage	▪	▪
Power		▪	▪	
Pf		NA	▪	
THD		NA	▪	

\* TCP/IP is available only with the display unit.

\*\*Only for the main incoming supply through the MFCM module

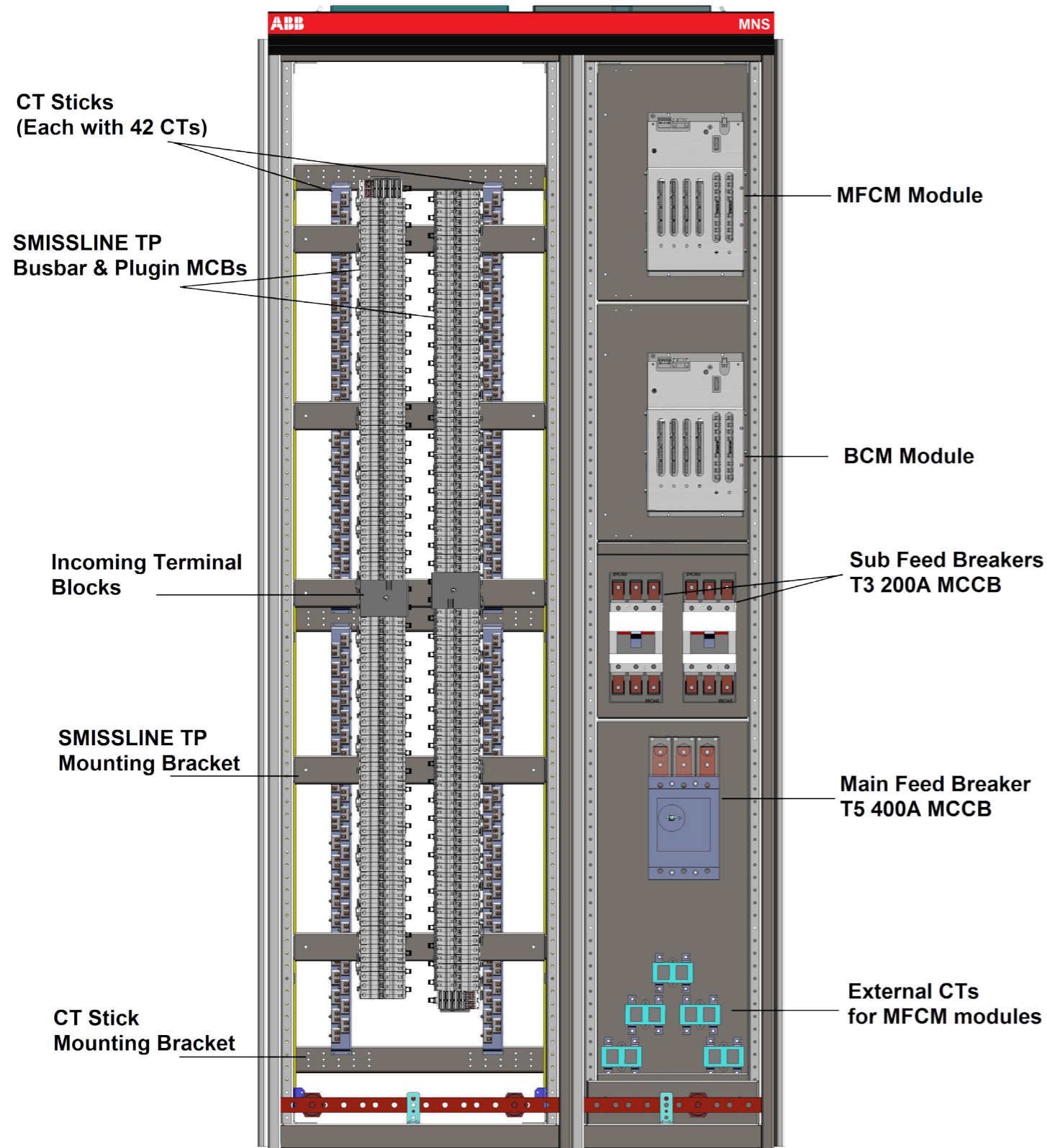
## Foot Print:

Standard cubicle depth – 600mm,

Standard cubicle height – 2200mm (Excluding raised roof for ventilation)

Branch circuit Poles	Access	Cubicle Width
42 or 84	Front & Rear	600mm
42 or 84	Front only	800mm
126 or 168	Front only	1000mm

# MNS<sup>®</sup> RPP product overview



## MFCM module

The MFCM monitors the RMS phase currents and voltages. Based on the above parameters, it calculates the power quality parameters like power, energy, load, power factor, MD etc. It is also capable of monitoring voltage and current total harmonic distortion (THD). The MFCM generates warning / alarms for different power quality parameters based on the thresholds and delays configured by the user. The MFCM is designed to monitor upto 4 incoming sources (each 3 phase) with neutrals & earths.



## BCM module

The BCM monitors the RMS branch currents and voltages. Based on the above parameters, it calculates the power quality parameters like power, energy, load, power factor, MD etc. The BCM generates warning / alarms for different power quality parameters based on the thresholds and delays configured by the user. Single BCM module can monitor upto 4 x 42 (168) SP branch circuits.



## CT stick

The BCM CT stick assemblies are designed to sense branch currents from the respective protection device. The power wire from each branch circuit breaker will pass through a CT (1 turn) on the BCM CT strip assembly and a secondary sensing signal is sent to the BCM module through the wire harness. A standard CT strip assembly has upto 42 CTs.



## Display unit

High resolution graphic display with 320 x 240 resolution capable of monitoring and storing data from upto 16 local or remote circuit management (BCM or MFCM) modules. Single display can monitor upto 2688 circuits.



## SMISLINE-TP

The world's first pluggable socket system. SMISLINE touch proof busbars ensures that load-free devices and components can be safely snapped on and off under voltage without additional personal protective equipment and without the need for shutting down the complete RPP.

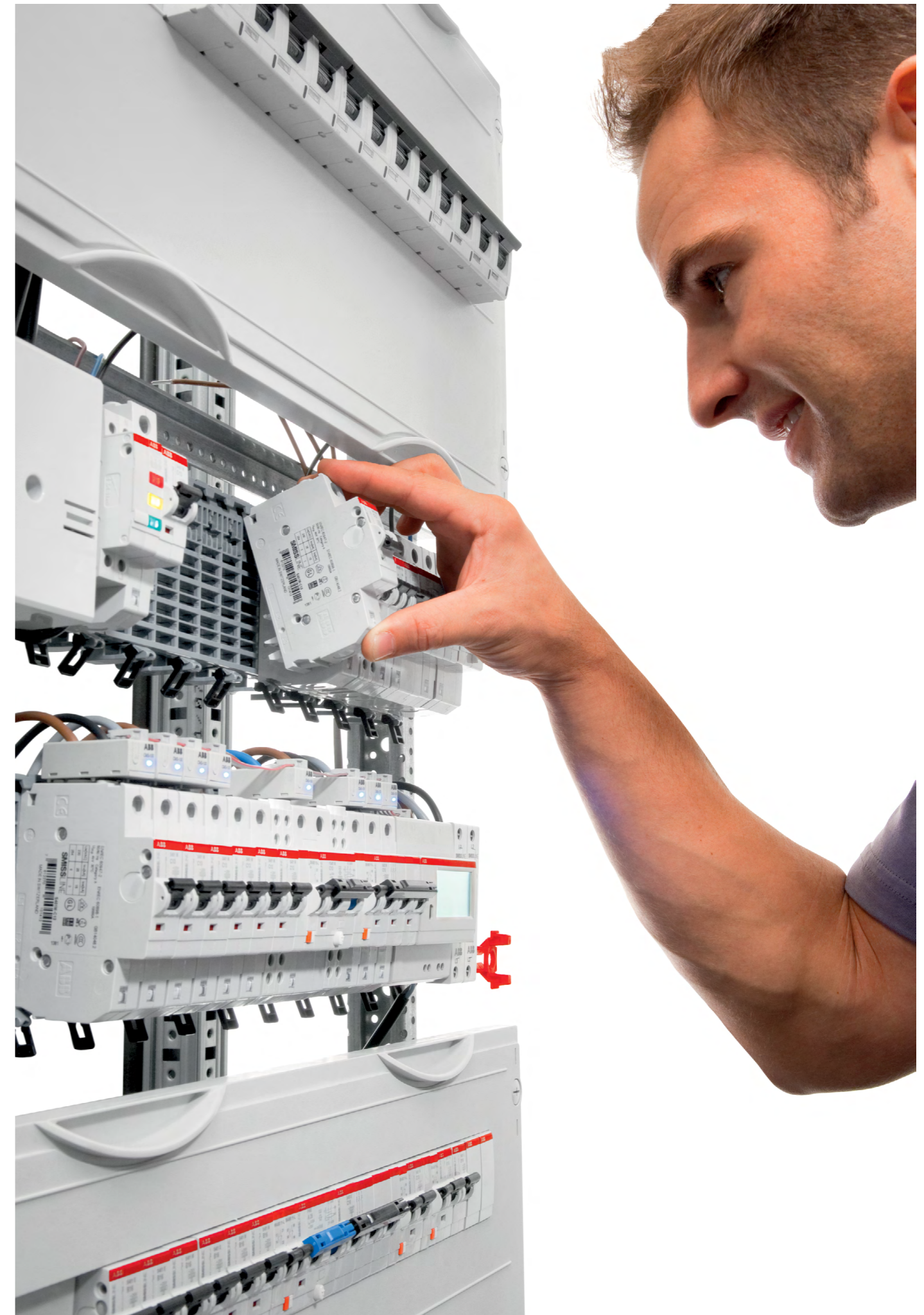


## Pluggable Device

Safe load free plugging in & unplugging possible under power. Fitting and operation/ expansion of the installation can be carried out more safer, faster & thus more efficiently.

# Technical data

<b>Reference standards</b>	Low Voltage Switchgear and Controlgear Assemblies	IEC 61439-1 and -2	
	Information technology equipment – Safety part 1 – General Req	IEC60950-1	
	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (references CISPR 22:2008)	EN 55022:2010	
	: Information technology equipment - Immunity characteristics - Limits and methods of measurement (references CISPR 24:2010)	EN 55024:2010	
<b>Electrical data</b>	Rated voltages	Rated insulation voltage $U_i$	690VAC
		Rated operational voltage $U_e$	415VAC
		Rated impulse withstand voltage $U_{imp}$	8kV
		Overtoltage category	II / III
		Degree of pollution	3
		Rated frequency	Up to 60 Hz
	Rated current	<b>Main Incomer</b>	
		Rated current $I_n$	250 / 400A
		Rated ultimate SC breaking capacity $I_{cu}$	50kA, 415VAC
		<b>SMISLINE-TP socket system</b>	
		Rated current	Top / bottom fed – 100A Center fed – 200A
		Rated conditional short circuit current $I_{cc}$	Main circuit and N+PE additional bars: 32.5kA, 400 V
	No of SP branch circuits		42, 84, 126, 168
Form of separation		2	
Dimensions	Cubicle & frames	DIN 41488	
	Recommended height	2200 mm	
	Recommended width	600, 800mm	
	Recommended depth	600mm	
	Basic grid size	E = 25 mm, DIN 43660	
Degrees of protection	According to IEC 60529	External - from IP 30 to IP 41. Internal - IPXXB	
Steel components	Frame incl. internal subdivisions	2.0 / 2.5 mm	
	Cladding, internal	1.5 / 2.0 mm	
	Cladding, external	1.5 mm	
Surface protection/ paint	Frame incl. internal subdivisions	Zinc or Alu-zinc coated	
	Cladding, internal	Zinc or Alu-zinc coated	
	Cladding, internal	Zinc or Alu-zinc coated and Powder coated RAL 7035	
Plastic components	Halogen-free		



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