PRODUCT PORTFOLIO

MICROGRID SOLUTIONS

For power conversion, communication, and control

ENGINEERED TO OUTRUN

Microgrid industry growth is driven by increased investment in new technology for Distributed Energy Resources (DERs).

From equipment for inverters to converters, discover how ABB products can provide reliable, efficient, and robust electrical solutions.

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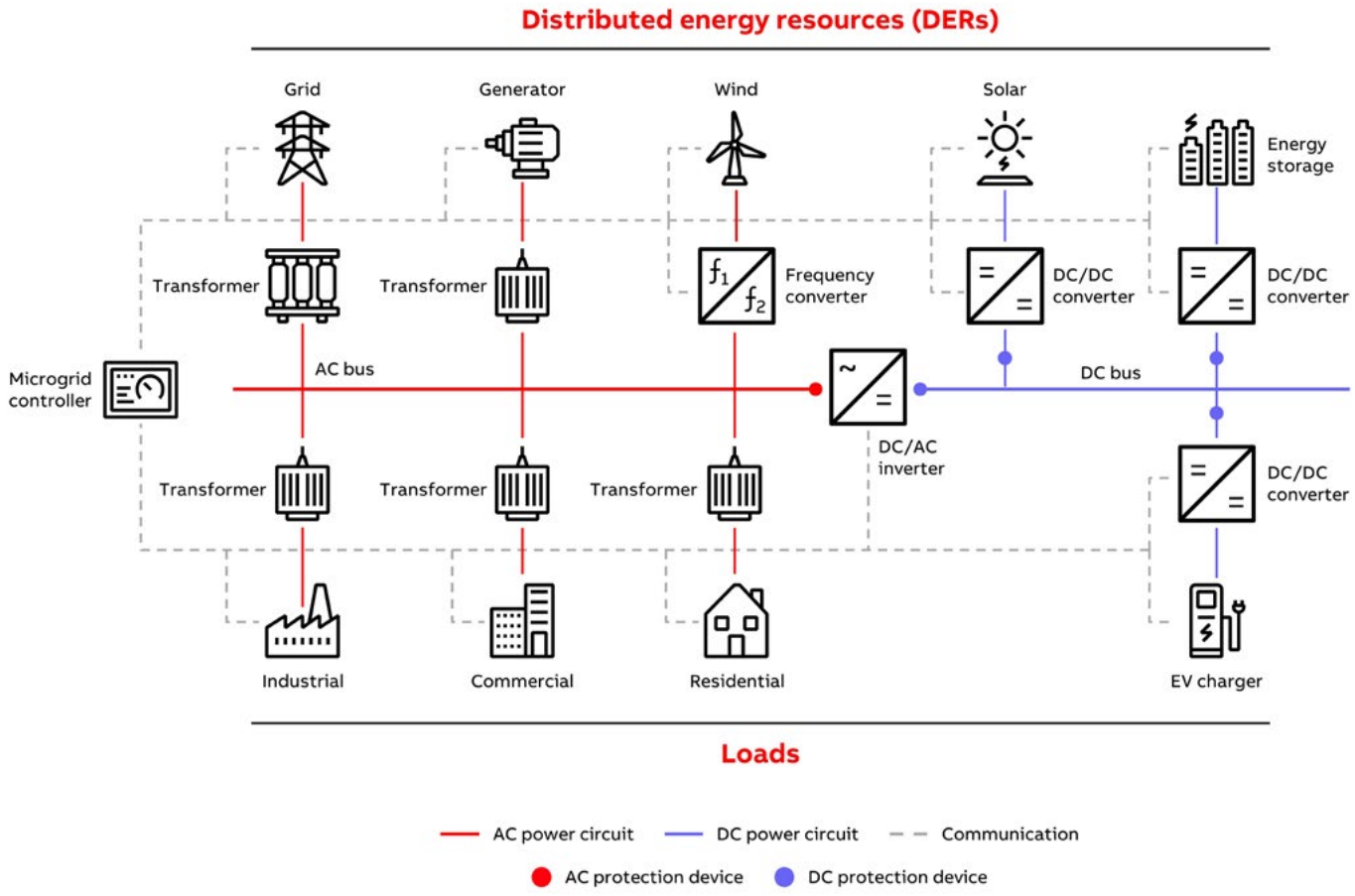
APPLICATION OVERVIEW

Technology topology

The figure includes the typical components in a microgrid system.



Microgrid components definitions:

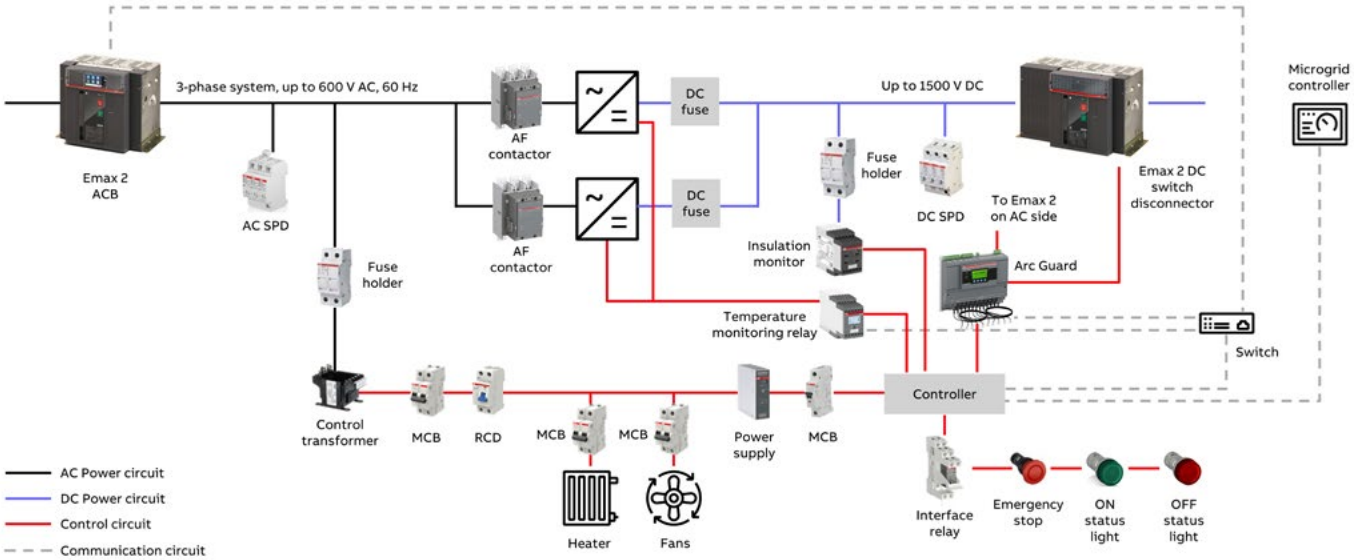
- **Distributed energy resource (DER):** A source of electric power often connected to the grid and/or local power system.
- **Grid:** A network that interconnects the generation, transmission, and distribution units in power systems.
- **AC/DC bus:** A common electrical pathway in which all components are connected.
- **Power conversion equipment:** A device that converts electrical energy between different voltage levels or between AC and DC.
- **Load:** Devices and processes that use electrical energy.
- **Microgrid controller:** A device that monitors and manages DERs and loads connected to a microgrid.

APPLICATION OVERVIEW

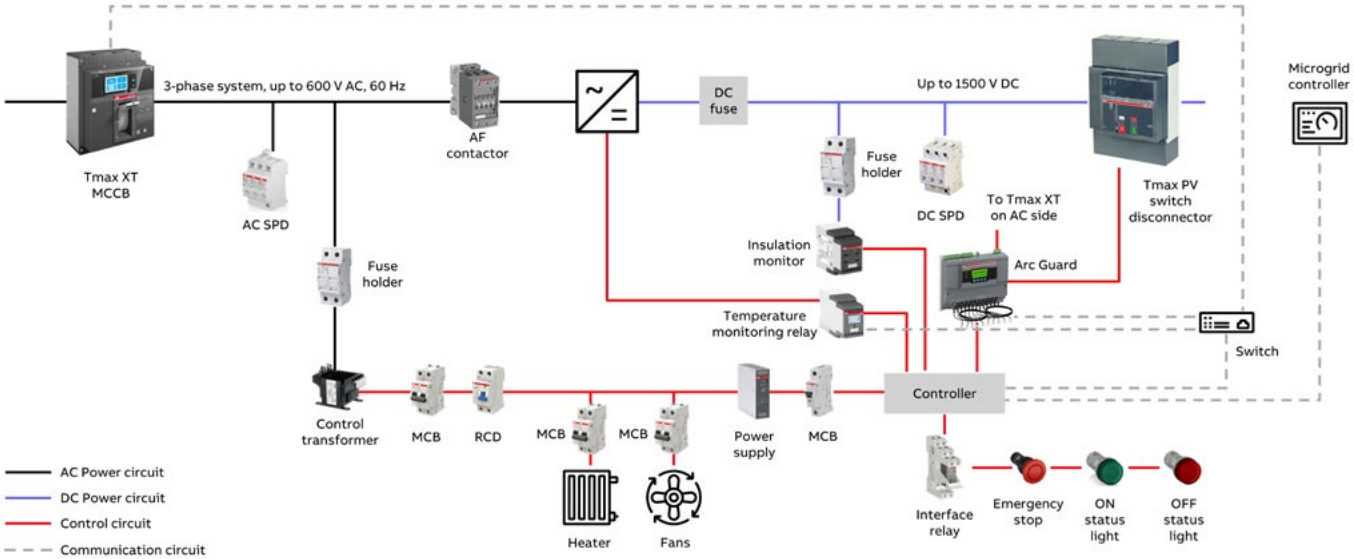
Inverters

Inverters are electronic devices that convert DC power to AC power. They specifically inject the converted power from renewable sources into the grid, e.g., from battery energy storage systems, solar, and fuel cells into the AC grid. Some inverters are bidirectional, allowing for smooth flow of electricity from and to the grid.

The figure shows an illustration of power and control solutions for LV utility inverters:



The figure shows an illustration of power and control solutions for LV commercial & industrial inverters:



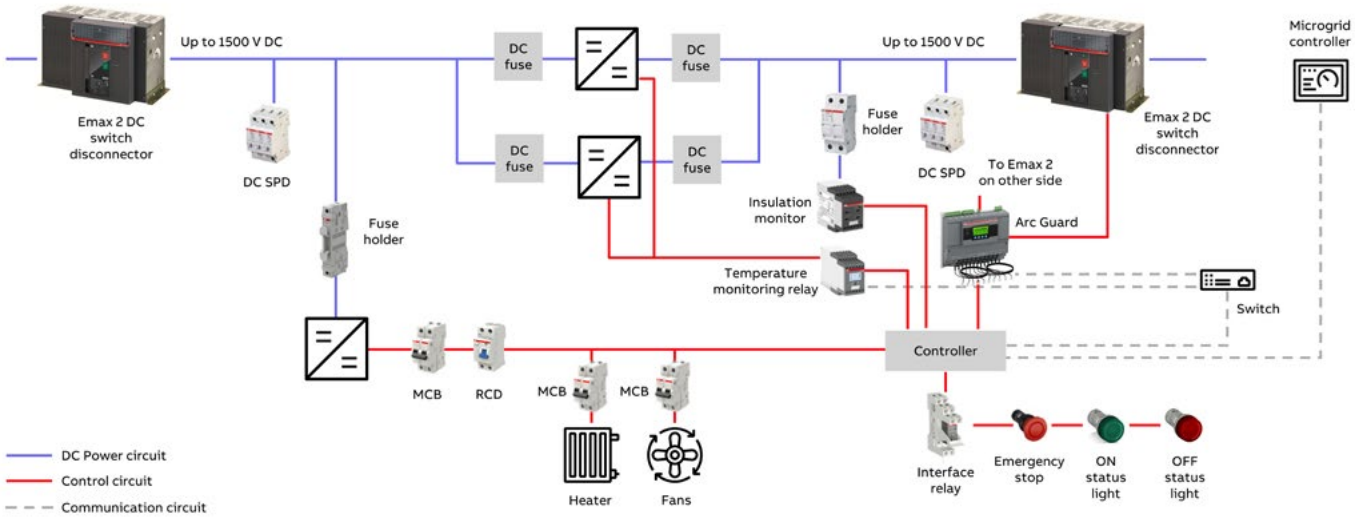
Note: This configuration is for a generic system and is not representative of existing manufacturers.

APPLICATION OVERVIEW

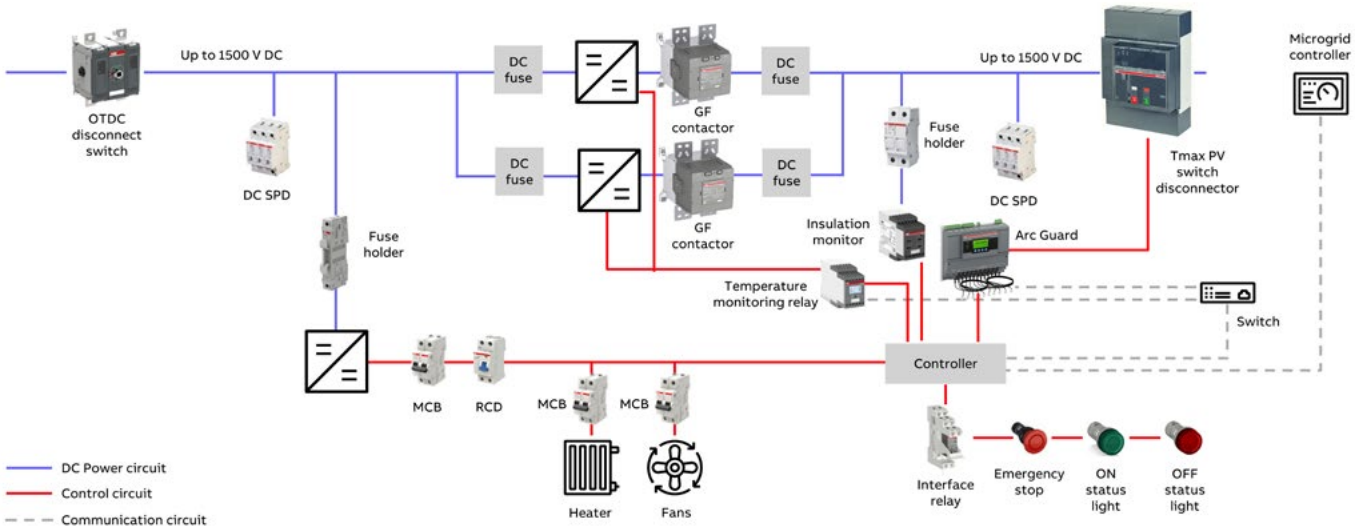
DC/DC converters

The DC/DC converters are electronic devices that convert DC power from one voltage level to another to meet the output requirements of renewable energy sources or energy storage devices.

The figure shows an illustration of power and control solutions for LV utility DC/DC converters:



The figure shows an illustration of power and control solutions for LV commercial & industrial DC/DC converters:



Note: This configuration is for a generic system and is not representative of existing manufacturers.

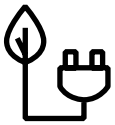
KEY VALUES

01

Continuous operation

Our advanced solutions provide superior short circuit protection and advanced trip units help to enhance system reliability and power quality by identifying voltage instabilities.

02



Energy-efficiency

Our innovative solutions optimize energy consumption, reducing operational costs and promoting sustainability in microgrid applications.

03

Smart metering and monitoring

Integrated metering and monitoring capabilities and inter-connectivity with several communication protocols provide real-time insights into system performance, enabling proactive management and improved reliability.

04

Compact and easy to install

Compact designs and user-friendly installation features help reduce setup time and save valuable space in control panels, making integration into microgrid systems simple.

FEATURED PRODUCTS

SACE® EMAX 2 AIR CIRCUIT BREAKERS (ACBS)

Product range
It comes in different ranges, up to 6000 A and up to 100 kA, for short circuit protection, which enables the construction of switchgear with compact dimensions and high ratings.
Efficiency and control
Embedded features of all-in-one innovation can be used for advanced functions such as Load Shedding, Power Controller, Embedded ATS, Synchrocheck logics, Interface Protection, and Adaptive Protection/Dual Settings, and a cradle is available for the draw-out version.
Connectivity
It provides simplified integration into automation and energy management systems due to the eight supported communication protocols.

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EMAX 2/E CIRCUIT BREAKERS

Product range
Provides short circuit protection up to 65 kA at 1000Y/577 V AC to protect growing equipment requirements.
Energy efficiency
Achieves a higher service voltage of 1000Y/577 V AC helps to cut power losses and improve energy efficiency.
Connectivity
It provides simplified integration into automation and energy management systems due to the eight supported communication protocols.

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EMAX MS/DC-E SWITCH DISCONNECTORS

Product range
Switch-disconnectors rated up to 1500 V DC for a wide range of DC applications.
Energy efficiency
Achieving 1500 V DC helps to cut power losses and improve energy efficiency.
Installation
Capable of insulating one or both polarities and manage current flow in both directions for flexibility when installing the 1500 V DC switch disconnectors.

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SACE® TMAX® XT MOLDED CASE CIRCUIT BREAKERS (MCCBS)

Product range
This circuit breaker portfolio helps ensure extreme performance and protection features up to 1200 A.
Performance & protection
It sets the standards when extreme breaking capacity is needed, sharing the same logic, interfaces, and features regardless of operating voltage or environmental conditions.
Data & connectivity
Provide advanced metering features and access, monitor, and control information remotely, improving efficiency and saving energy.

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SACE® TMAX T – PV

Product range
A series of products to UL Standards for protecting and isolating systems up to 1500 V DC and 800 V AC, thereby anticipating the most advanced construction trends.
High breaking capacity
High values of short circuit breaking capacity are guaranteed at different voltage levels, without compromising overall dimensions.
Advanced protection
A complete range of electronic trip units suitable for a different level of protection and enhancing selectivity values.

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MINIATURE CIRCUIT BREAKERS (MCBS)

Product range
Largest selection of current-limiting, compact, DIN-rail mounted MCBs for AC and DC applications with ratings of 0.2 to 100 A, up to 600 V AC/DC and 50 kA short circuit protection.
Safety
Thermal and magnetic trips are provided to cover both overcurrent and short-circuit faults.
Compliance
UL 489 and UL 1077 approved.

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FEATURED PRODUCTS

OTDC DISCONNECT SWITCHES

Product range
Open transition manual change-over switches series designed according to UL certification from 16 to 1000 A (UL) and up to 1500 V DC (Catalog shows 2000 V DC only for UL 98B).
Reliability
Reliable in extreme conditions with energy efficiency in mind.
Installation
The modular design makes it possible to operate more than one circuit simultaneously giving you more alternatives to design installation.

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AF CONTACTORS

Product range
UL 508 and UL 60947-4-1 contactors certified for up to 900 hp – 480 V and 2850 A – general use.
Installation
Comes in screw, push-in spring and ring tongue connection types. The Push-in Spring terminals offer only one push for extremely fast wiring.
Energy efficient
A reduction of the coil's energy consumption lets customers save energy.

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DIN-RAIL SURGE PROTECTIVE DEVICES (SPDS)

Product range
UL 1449 and has options for voltages up to 600 V AC and 1500 V DC.
Durability
Safety Reserve system with two varistors per line extends protection lifetime.
Installation
Pluggable and replaceable cartridges for easy replacement during maintenance.

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COMPLEMENTARY PRODUCTS

RESIDUAL CURRENT DEVICES (RCDS)

Product range
This product trips when the system leaks a significant current to ground and it is rated up to 125 A, 120–277 V AC (2-pole) and 120–480Y V AC (4-pole).
Innovation
The contact position indicator (CPI) always indicates the status of the contacts (red = closed contacts; green = open contacts) independent of the toggle position.
Compliance
The ground-fault sensing and relaying equipment components are UL 1053 approved.

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FUSE HOLDERS

Durability and reliability
Fuse holders have venting grooves and cooling chambers to improve heat dissipation.
Product range
UL approved IP20 fuse holders with ratings up to 60 A at 600 V AC/DC as well as PV fuse holders up to 30 A at 1500 V DC.
Installation
Ergonomic flip hinge makes fuse replacement easier in small spaces, even while wearing gloves.

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Q-LINE BREAKERS

Product range
The UL 489 thermal-magnetic breaker offers a wide product range from 15 A to 125 A, with interrupting ratings of 10 kA, 22 kA and 65 kA at up to 240 V AC making it suitable for all residential, commercial and OEM applications.
Reliability and performance
All Q Line circuit breakers feature Quick-make / Quick-break mechanisms, common trip bars, and easy-to-spot trip indication to ensure safety and reliability.
Installation flexibility
The breakers are available with lug-lug, bolt-on, or ring lug connections to accommodate a variety of project requirements.

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COMPLEMENTARY PRODUCTS

ELECTRONIC PROTECTION DEVICES

Product range
UL 508 and UL 2367 approved and variable rated currents can be set on advanced from 0.5 A to 12 A or on entry from 1 A to 10 A. Expansion up to 32 channels (8 devices) via jumpers.
Reliability and performance
This product offers selective overcurrent protection for the loads connected and reacts to short circuits or overloads more rapidly than the supplying switch mode power supply
Energy efficiency
The 4-channel devices feature very high efficiency and significantly reduced power loss.

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E150 THERMAL-MAGNETIC MCCBS

Product range
Range of breakers from 10 to 150 A with multiple short circuit tiers, in 1, 2, or 3 poles, and rated up to 600 V AC or 500 V DC.
High performance
Reliable operation and protection enabling seamless management of power distribution networks with efficiency and minimized downtime.
Installation
Non-interchangeable trip breakers can be accessorized with various signaling and controlling functions as well as add on UL listed current limiters.

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TEY CIRCUIT BREAKERS

Product range
Range of breakers from 15 to 125 A with multiple short circuit tiers (TEY 14 kA, TEYF 18 kA, TEYD 25 kA, TEYH 35 kA and TEYL 65 kA at 480/277 V) allow the most cost-effective ratings for the application.
High performance
Dependable and effective thermal-magnetic trip units with time-current curves designed for easy coordination with upstream main devices.
Installation
Flexible installation with a mounting base for unit mount/lug-lug type installations and 1 inch per pole spacing.

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INTERFACE RELAYS AND OPTOCOUPLERS

Continuous operation
Optocouplers allow for continuous operation without any mechanical wear-and-tear.
Installation
The interface relay includes both pluggable and non-pluggable relays. The pluggable relays allow for the easy and seamless exchange of relay modules.
Product rating
The wide variety of pluggable interface relays have coil voltages from 5 V DC to 230 V AC and are accompanied by standard or logic sockets that may be used for switching AC or DC loads.

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MEASURING AND MONITORING RELAYS

Design
Wide range of products from single-and three-phase monitors to temperature monitoring relays.
Technology
Easy Connect Technology with push-in terminals allows the product to be wired much more quickly and easily – without the need for tools.
Product range
Comes in value devices (CM-E range) and advanced solutions (CM-S and CM-N range) to meet customer's needs.

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DC SWITCHING CONTACTORS (GF)

Product range
Rated up to 210 A, 1500 V DC for PV solar power application, up to 2050 A, 1000 V DC, and wide control voltage range.
Technology
Designed based on the well-proven AF technology that ensures controlled, distinct, and energy efficient operation of the contactor.
Durability
These contactors are designed for durability and feature built-in surge suppression for reliable performance.

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COMPLEMENTARY PRODUCTS

OS FUSIBLE DISCONNECT SWITCHES

Safety and protection
Designed for personal safety as well as for reliable process protection.
Reliability and performance
The knife contact design, in combination with the fuse link, enables rapid fault clearance and maintains a protection level even after a fault occurs.
Installation
Its accessories create considerable savings in terms of installation time and costs. For example, the shaft can be adjusted to various installation depths, which eliminates the need for special cutting tools.

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OT NON-FUSIBLE DISCONNECT SWITCHES

Product range
UL 508 and UL 98 approved portfolio of switches with ratings between 16 and 2000 A for AC.
Installation
Their modular design and smaller dimensions enable installation into even the smallest enclosures, saving space and significantly reducing material, handling and installation costs.
Reliability
Designed to be virtually maintenance free across their entire extended lifespan.

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TRUONE AUTOMATIC TRANSFER SWITCHES

Product range
UL applications amperage range is 30 to 1200 A, with three phase voltage ratings from 200 to 480 V AC and single phase from 200 to 240 V AC.
Reliability and performance
Allows emergency manual operation under load for immediate power restoration in the event of an equipment malfunction.
Installation
Reduced number of wires and connections, which speeds installation and minimizes the potential of connection failures.

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NEMA 30 MM HEAVY-DUTY OIL-TIGHT PILOT DEVICES

Product range
NEMA types 1, 3, 3R, 4, 4X, 12 and 13 to meet a wide range of applications.
Durability
Due to the octagonal locking nut design, greater torque can be applied during assembly and installation to provide a water- and oil-tight fit.
Installation
Ease of assembly with one-screw contact block mounting and easy wiring with 45° angled wire Terminals.

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POWER SUPPLIES

Product range
Wide range of AC or DC supply voltages with output voltage of up to 48 V DC, output current of up to 20 A and output power of up to 480 W.
Durability
Coated (PCBA) and ATEX certification available for hazardous locations. It has overload protection, active power factor correction and a broad certified AC and DC input range.
Efficiency
These power supplies have a 150% integrated power reserve and operate at an efficiency of up to 94%.

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CONTROL POWER AND MACHINE TOOL TRANSFORMER

Installation
Type IP transformers are lightweight, small, and designed for minimum mounting dimensions.
Safety
Finger-safe terminals offer added protection and safety.
Reliability
Pressure-plate terminals ensure secure connections.

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COMPLEMENTARY PRODUCTS

22 MM PILOT DEVICES

Product range
Modular plastic and metal ranges include flexible and adjustable products to meet your exact needs.
Reliability
Designed with a protection degree of up to 4X, helping provide reliability in extreme environments.
Installation
The compact range reduces installation space and saves time, and the modular range enables tool-free installation that is quick and simple.

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ARC GUARD SYSTEM

Ease of installation
It can easily be expanded with up to 30 sensors to increase cabinet coverage from a single TVOC-2. Rogowski technology current sensors for fast and reliable installation.
Safety and protection
The TVOC-2 detects the light from an occurring arc flash and sends the signal to the breaker within 1 ms. With ABB's Emax 2 circuit breaker, the total arc fault clearing time is less than 50 ms.
Ease of use
No calibration is needed to ensure reliable function and quick installation.

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RELION RELAYS

Product range
The Relion® product family offers the widest range of products for the protection, control, measurement and supervision of power systems.
Protection and control
Its IEC 61850-compliant protection and control IED Manager PCM600 tool provides versatile functionalities for the entire life-cycle of all Relion protection and control IED applications at all voltage levels.
Industry-leading support
A 10-year warranty is included for support when you need it most.

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LITE PANEL PRO

Features
Allows you to monitor connected low voltage devices on-premise and in the cloud when connected to ABB Ability™ Energy Manager, ensuring energy efficiency.
Integration ease
All HMI functionalities can be accessed remotely from any computer on the same network for a more convenient operation.
Communication
It supports communication protocols via Modbus TCP, Modbus RTU and third-party devices via templates.

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ZENON ENGINEERED SOLUTION

Scalability and adaptability
The ZEE600 was designed to be flexible and adjustable, allowing for easy integration into existing systems or seamless expansion as needs evolve.
Installation flexibility
The product is versatile for primary distribution substations, serving new and existing installations as an HMI, communication gateway, and data handling unit to boost efficiency.
Safety & Cyber Security
Comprehensive testing, compliance with industry standards, and detailed risk assessments reduce hazards, safeguarding workers, end users, and operational integrity.

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ELECTRIFICATION SOLUTIONS MICROGRID CONTROLLER

Product reliability
Ensures continuous power supply by leveraging multiple DERs, captive generation and utility grid.
Remote monitoring and control
Maximizes uptime, enhances safety, reduces O&M costs and extends equipment lifespan.
Network security
Segmented architectures facilitate integrated and independent operations with fail-safe back-up mechanisms, ensuring cybersecure microgrids.

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LEARN MORE

To learn more about ABB engineered products for microgrids, visit our website

CONTACT US

Do you have a similar project and are you searching for the right application configuration?
Contact us and talk to our experts!

Additional information
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