



BROCHURE

Electric vehicle charger manufacturers

Powering emission-
free mobility

ABB's innovative solutions empower you to build high-performance EV chargers that keep pace with the rapidly evolving electric mobility landscape by helping deliver reliability, efficiency and safety.

Electric vehicle (EV) charger applications

Residential and commercial

As part of electric vehicle supply equipment (EVSE), EV chargers supply power to charge plug-in electric vehicles.



AC charger

The EV charger provides AC to the vehicle's onboard charger, which converts it to DC to charge the batteries.



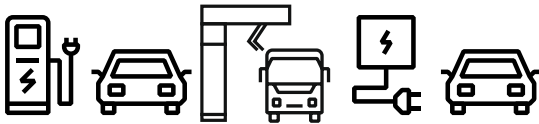
DC charger

The EV charger converts AC to DC and charges the vehicle's batteries directly with DC.

EV chargers are used in both residential and commercial locations. Based on the application and end-use, different charging power levels can be incorporated to meet the location requirements.

Commercial

- Retail shopping centers
- Government facilities
- Airports
- Rest and parking areas
- Gas stations
- Offices and business parks
- Hotels
- Car rental areas
- Truck stops



Residential

- Homes
- Apartment buildings

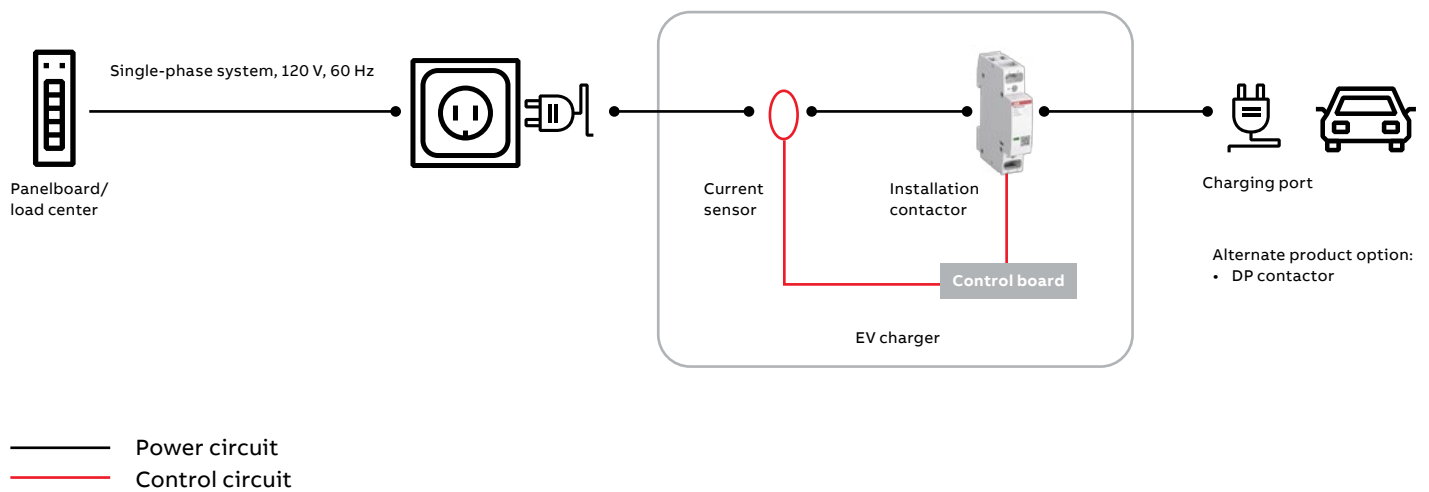


EV charger types

Level 1 charger example

Level 1 chargers are suited to residential applications. Level 1 chargers operate slower, typically needing to be plugged overnight to reach full charge.

Level 1	
Charging type	AC charging
Voltage	Single-phase 120 V AC
Power	~ 1 kW
Amperage	8–16 A
Application	Residential
Time to charge	8–48 hours
Range per hour	3–5 miles



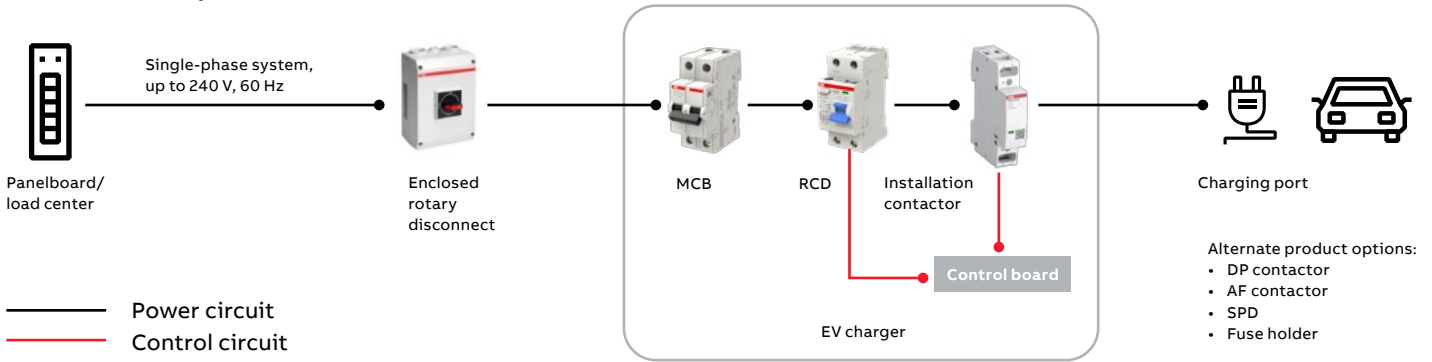
EV charger types

Level 2 charger examples

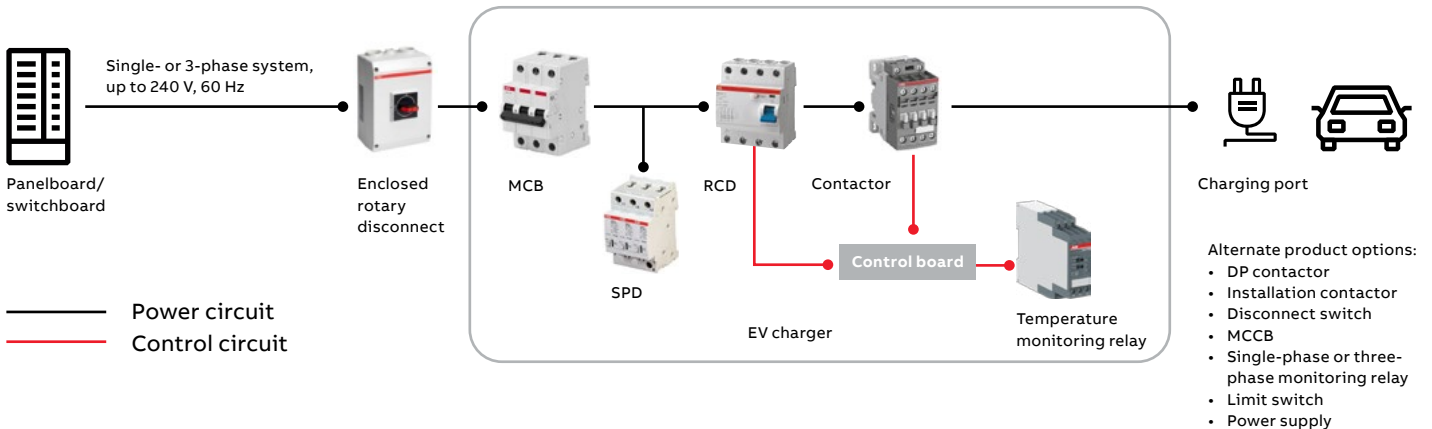
Level 2 chargers are suited to both residential and commercial applications. Level 2 chargers can present a higher installation cost to homeowners; however, they operate relatively faster than Level 1 chargers in both applications.

Level 2	
Charging type	AC charging
Voltage	Single-phase or three-phase up to 240 V AC
Power	3–19 kW
Amperage	16–80 A
Application	Residential, commercial, fleet
Time to charge	4–20 hours
Range per hour	15–80 miles

Residential example



Commercial example



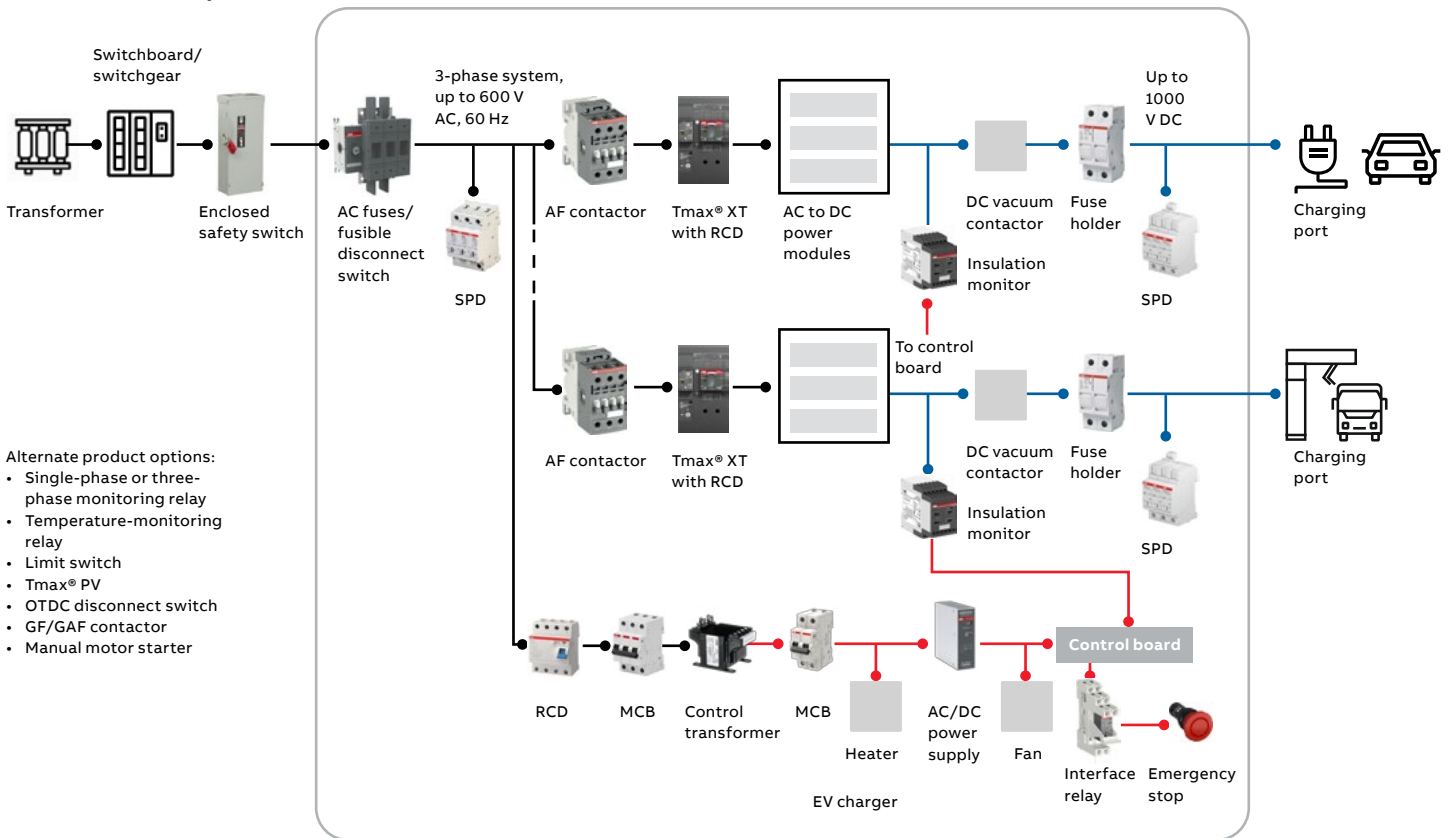
EV charger types

Level 3 charger example

Level 3 chargers are suited to commercial applications. Level 3 chargers use direct current (DC) to charge electric vehicles, resulting in rapid charging with less risk of degrading battery life.

Level 3	
Charging type	DC charging
Voltage	Three-phase up to 600 V AC input; up to 1000 V DC output
Power	24–450 kW
Amperage	40–600 A
Application	Commercial, fleet
Time to charge	15–60 minutes
Range per hour	90–600 miles

Commercial example



Featured products

DC and AC side connections



SACE® Tmax® XT molded case circuit breakers (MCCBs)

Flexible solutions to meet exact requirements with trip units allowing “future-ready” installations and cost-effective breakers for common applications, making them the ideal solution for designers, installers, OEMs and end users. For applications in accordance with UL 489 standards. Other available certifications include IEC and CCC.

The embedded features of all-in-one innovation extraordinarily streamline the installation, programming and testing of advanced functions with ready-to-go programming and simplified connections all in a compact, reliable system.



FASTER installation, EASIER commissioning and SAFER operation with the EPiC app across Tmax XT MCCBs and Emax 2 air circuit breakers.

- Thermal-magnetic and electronic versions
- Up to 1200 A with up to 200 kA of short circuit protection
- Up to 600 V AC/DC
- Fixed, plug-in or draw-out
- Accessories include: motor operators, auxiliary and signal contacts, shunt trip, under-voltage release, bell alarms and industrial communication protocol modules



Residual current devices (RCDs)

Residual current devices (RCDs) are safety devices used to detect and trip against electrical leakage currents, thus ensuring protection against electric shock caused by indirect contacts. These devices must be used in series with a miniature circuit breaker (MCB) or fuse, which protects them from the potentially damaging thermal and dynamic stresses of any overcurrent.



- AC, A, AP-R types available to ensure protection against all kinds of ground fault currents
- Rated currents from 16 A up to 100 A
- Rated I Δ n sensitivity 10 mA, 30 mA, 100 mA, 300 mA, 500 mA and 1 A
- Safety performances ensured worldwide by international marks approval
- High-quality execution and attention to details
- Complete range of products and related accessories



DIN rail surge protective devices (SPDs)

ABB offers the most comprehensive portfolio of surge protective devices (SPDs) that can be externally or internally mounted. They help reduce costly downtime while protecting sensitive electronic equipment against the damaging effects of transients caused by lightning, utility load switching, internal load switching and more.

- UL 1449
- Options for voltages up to 600 V AC and 1500 V DC
- OVR DIN rail SPD for equipment protection; 15 kA and 40 kA
- Replaceable MOV cartridges and modules



Featured products

DC and AC side connections



Fuse holders

ABB offers a wide range of DIN-rail mountable, UL approved IP20 fuse holders. They offer venting grooves and cooling chambers to improve heat dissipation, increasing durability and reliability. Ergonomic flip hinge makes fuse replacement easier in small spaces even when wearing gloves. All models offer blown-fuse indication.

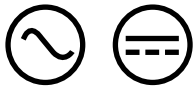
- Class J — up to 60 A at 600 V AC/DC
- Class CC — up to 30 A at 600 V AC/DC
- Midget 10 x 38 mm — up to 30 A at 600 V AC/DC
- Photovoltaic PV — up to 30 A at 1500 V DC



Insulation monitoring relays (IMDs)

ABB's CM-IWx insulation monitoring devices make systems more reliable and efficient by preventing interruptions caused by severe secondary insulation faults. The devices recognize insulation degradation and faults in real time, providing a warning output signal followed by tripping of the relay if the set threshold is exceeded.

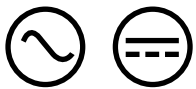
- Reduced downtime with early pre-warnings and more time for planned maintenance
- Early fault detection with monitoring of voltage-free networks
- Fast ground fault detection, self-diagnosis, and interrupted wire detection
- Clear visualization of device status via LEDs, easy adjustments with rotary wheels, and push-in terminals
- Monitoring range up to 1500 V DC and 1100 V AC
- Versatile system monitoring for 2-wire, 3-wire, 4-wire and battery systems
- Easy-to-configure interrupted wire detection and non-volatile fault storage



AF contactor

Featuring AF technology as standard, our contactors have helped to establish the industry benchmark. They come standard with electronic coils and built-in surge suppression. The integrated electronically controlled coil offers multiple benefits over conventional alternatives, and together with ABB's wide product offering, an optimal configuration, every time.

- Optimize logistics and cut administration costs with fewer product variants to handle
- Access global support and use the same products in all parts of the world: the 100... 250 V AC/DC coil covers all standard network voltages
- Push-in spring terminals require only one push for extremely fast wiring — faster-than-ever installation, easier-than-ever wiring and reliable-as-ever connections
- A reduction of the coil's energy consumption by 80% lets you save energy
- Secure your uptime by letting AF technology overbridge voltage drops and sags



Featured products

DC and AC side connections



ESB installation contactor

ABB's hum-free installation contactor designs offer a wide range of ratings from 16 A to 100 A. Widely used for switching and controlling lighting, heating, ventilation, EV chargers, motors and pumps, the installation contactors take noise reduction to a new level. With an innovative AC/DC design that eliminates hum, a selection of tool-free accessories as well as manual and automatic versions, installation contactors offer peace of mind in noise-sensitive applications.



- Comprehensive solution — one range from 16 A to 100 A
- Wide application range — all relevant standards, such as IEC60947-4-1, IEC61095 and various certifications are available
- Built-in protective circuit — protects against remote lightning strikes and overvoltages
- Automatic/manual operation — EN specialty types offer manual override functionality with a toggle switch

Complementary products

DC and AC side components



AC side components

- Disconnect switches, fusible (OS)
- Disconnect switches, non-fusible (OT)
- Miniature circuit breakers
- TEY MCCBs
- Formula MCCBs
- Manual motor starters
- Power supplies
- Pilot devices
- Single-phase monitoring relay
- Three-phase monitoring relay
- Temperature-monitoring relay
- Limit switches
- Interface relays
- Control transformer
- DP contactor
- B23 UL energy meter



DC side components

- OTDC disconnect switch
- Tmax® T PV circuit breaker
- DC switching contactors

Complementary products

DC and AC side components



DC disconnect switch OTDC

The ABB DC disconnect switch (OTDC) can be used as the main switch to protect the DC side of energy storage power conversion (PCS), battery section or prior to the battery rack.

The OTDC ESS applications range from 100 A to 1000 A. Specially designed for DC applications and offering reliable switching for a wide range of ESS applications up to 1500 V DC, they provide high kA ratings up to 40 kA in a 2-pole and 4-pole 1500 V DC.

- Tested according to IEC60947-3 and UL 98B
- IEC, UL, EAC and CCC approval
- Ratings according to utilization category DC-PV2 and mechanical endurance 10,000 operating cycles
- Rated conditional short-circuit current for the unique ESS types 40 kA
- Optimized arc chamber with long opening angle with patented dual magnetic breaking (DMB)
- Inspection window for a direct view of the contact position
- Symmetrical pole design enables independent polarity
- Grounded and ungrounded types available



OT non-fusible disconnect switch

ABB has a wide portfolio of low-voltage non-fusible switches with ratings between 16 and 2000 A for AC. ABB disconnect switches are designed, built and tested for the best possible performance. They are designed to be virtually maintenance-free across their entire extended lifespan and offer reliable performance.

- UL 508 and UL 98 listed
- Compact size
- High performance
- Safe to use and easy to install



OS fusible disconnect switch

ABB's OS range includes manually operated fused switches from 20 to 1250 amps, available for all types of fuses: DIN, BS, NFC, CC, JJ and L types.

- Reliable in extreme conditions
- Easy to install
- Safety and protection
- Speed up your project

Complementary products

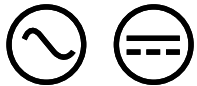
DC and AC side components



Limit switches

ABB limit switches are an easy and reliable way to convert mechanical movements into electrical signals. The contacts are mechanically linked to an actuator for visible operations. By combining different types of actuators and casings, our wide limit switches are designed to match your applications.

- Plastic or metal casing, IP66 and IP67
- Able to switch strong current up to 10 A
- Mechanical durability up to 30 million operations
- Reliable in extreme conditions
- Continuous operation — keep your installation running 24 hours a day
- Easy to install — easy to use



Miniature circuit breakers (MCBs)

ABB, the inventor of miniature circuit breaker technology, offers the largest selection of current-limiting, compact, DIN-rail mounted MCBs for AC and DC applications. Thermal and magnetic trips are provided to cover both over-current and short-circuit faults.

- UL 489, UL 1077 and IEC
- 0.2 to 100 A, up to 600 V DC
- Accessories: bus bars, auxiliary and signal contacts, shunt trip, under-voltage release and lock out/tag out



TEY circuit breakers

TEY circuit breakers have dependable and effective thermal-magnetic trip units with time-current curves designed for easy coordination with upstream main devices. Multiple short circuit tiers (TEY 14 kA, TEYF 18 kA, TEYD 25 kA, TEYH 35 kA and TEYL 65 kA) allow the most cost-effective ratings for the particular application.

- Thermal-magnetic trip system
- Ambient compensating
- Short circuit ratings to 65 kA at 480/277 V AC and 100 kA at 240 V AC
- 15 to 125 A in 1-inch per pole spacing
- 1-, 2- and 3-pole versions
- Multiple short circuit tiers
- Cost-effective protection
- Mounting base for unit-mount installations

Complementary products

DC and AC side components



Molded case circuit breakers (Tmax® T PV)

The SACE® Tmax PV range of molded case circuit breakers and disconnect switches for photovoltaic applications offers an increasingly comprehensive, leading-edge solution that anticipates market trends. Multiple versions form a uniform product range and a complete portfolio of shared accessories, including the connection jumpers that are mandatory for SACE Tmax PV UL. The jumpers ensure ease of installation and safety and are fully compliant with UL regulations.

- Molded case disconnect switches up to 1500 V DC in compliance with UL 489B
- Molded case circuit breakers up to 1000 V DC in compliance with UL 489B
- Molded case circuit breakers up to 800 V AC in compliance with UL 489B
- An entire range of electrical and mechanical accessories



SACE Formula breaker

The SACE Formula range consists of two frames, A1 and A2, which reach up to 100 A and 250 A, respectively. Both frames are available in a fixed configuration with front terminals.

- Fixed configuration
- Polarity: 1-pole, 2-pole and 3-pole
- Maximum breaking capacity of 25 kA at 240 V AC
- DIN-rail mounting
- Fixed thermal-magnetic trip unit (TMF) for protection of networks in alternating current
- Single depth of 2.36 inches
- Standard front terminals



Manual motor starters

Manual motor starters, also known as motor protection circuit breakers (MPCBs) or manual motor protectors (MMPs), are electromechanical protection devices for the main circuit that are designed to provide a complete motor protection concept. They are mainly used to switch motors ON/OFF manually and to provide fuseless protection against short-circuit, overload and phase failures. Fuseless protection saves cost and space and ensures a quick reaction under short-circuit condition by switching the motor off within milliseconds. Starter combinations are set up together with contactors and are available with screw or push-in spring terminals.

- Compact design
- Efficient planning and installation, perfectly matching the ABB contactor family
- Simple connecting links ensure electrical and mechanical connection
- Less machine downtime by protecting motors and reduced troubleshooting
- ABB's push-in spring terminals offer unique, fast, easy and reliable connections
- Harmonized main accessory range (auxiliary contacts, signal contacts, shunt trips and undervoltage releases) across family

Complementary products

DC and AC side components



Temperature-monitoring relay

ABB's well-established temperature-monitoring relays monitor and measure the temperatures of solids, liquids and gaseous media using a variety of different sensors. Over-temperature and under-temperature monitoring as well as open- or closed-circuit principal monitoring can be configured for any device quickly and easily. When the temperature falls below or exceeds the set threshold value, output relays change position according to your configured functionality and front-facing LEDs show the current status. Discover how temperature-monitoring relays can help protect your application.

- Downtime and commissioning time reduced
- Engineering time savings
- Selection time reduction
- Different sensor types (e.g., PT100)
- Different monitoring functions, including over-/under-temperature, window monitoring
- All configurations and adjustments are via front-facing controls
- One or two threshold values
- Open- or closed-circuit principles easily configurable
- Short-circuit monitoring and interrupted wire detection
- Screw connection or easy-connect push-in technology available



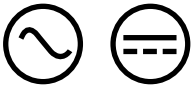
B23 UL energy meter

B23 series are precise UL energy meters for three-phase measuring. The UL range includes performance levels "Steel" B23 112-500 and "Silver" B23 312-500 meters. Both meters feature direct connections up to 65 A and are installed on a DIN rail, which makes them suitable for a wide range of applications. B23 UL energy meters are UL recognized, ANSI C12.1 and IEC approved. They can be integrated with ABB Ability™ energy and asset manager to help achieve higher levels of energy efficiency.

- Energy efficient
- Precise and reliable
- Wide range of measurements
- Easy communication and integration in cloud-based applications
- Easy direct electrical connection
- Space optimization
- Lower power consumption (1.6 VA)
- Active/reactive/apparent power, power factor, import/export power, frequency, voltage, current energy measurements
- Modbus RTU, infrared port, ABB Ability Edge industrial gateway
- ANSI C12.1 Class 1 ambient temperature -40 °C to +70 °C
- No derating up to 4,000 m

Complementary products

DC and AC side components



Single-phase monitoring relay

CM-Exx and CM-Sxx are single-phase current and voltage monitoring relays that provide reliable monitoring of voltages and currents using the TRMS measuring principle.

ABB's CM range offers a wide selection of powerful, compact devices for the monitoring of currents and voltages in single-phase AC/DC systems. All come in a housing that is just 22.5 mm wide. This product range includes current and voltage monitoring relays for over- and under-current protection, over- and under-voltage protection and phase-loss monitoring — from 3 mA to 15 A and from 3 V to 600 V. ABB's CM range gives your electric installation the highest safety and reliability.

- Over-/under-current monitoring
- Over-/under-voltage monitoring
- AC/DC signal measurements
- True RMS measuring principle
- Window monitoring (upper and lower threshold at the same time)
- Easy connect technology with push-in terminals
- Double-chamber cage connection terminals



Three-phase monitoring relay

CM-MPx and CM-Pxx are three-phase monitoring relays that help ensure reliable and continuous monitoring of a three-phase network as well as trouble-free and cost-effective operation of machines and installations.

ABB's CM-MPS/N three-phase monitoring relays for rated voltage levels up to 820 V AC and 400 Hz offer maximum flexibility and control.

- Over-/under-voltage monitoring
- Phase-failure detection
- Phase unbalance monitoring
- Phase sequence monitoring
- True RMS measuring principle
- Easy connect technology with push-in terminals

Complementary products

DC and AC side components



Interface relay

ABB's interface relays and optocouplers provide reliable voltage conversion between process peripherals and higher-level control systems. Our relays ensure reliable signal switching and provide electrical isolation for sensitive electronics such as PLCs in all kinds of machinery. The wide variety of pluggable interface relays with standard or logic sockets can be used for switching AC or DC loads. Suitable for extreme environments, ABB's interface relays offer a range of different coil voltages and plug-in functional modules. Environmentally friendly, cadmium-free and lead-free, ABB interface relays and optocouplers meet RoHS requirements. Complete versions consisting of a relay, socket, holder, marker and function module are available in this range.

- Coil voltages from 5 V DC up to 230 V AC
- Up to 16 A contact ratings
- Up to 4 output contacts
- Pluggable function modules such as RC elements available
- Integrated test button for manual operation
- Gold-plated contacts available for lowest contact resistivity



DP contactor

Definite purpose (DP) contactors provide high performance with flexibility and reliability and are designed to match numerous applications.

- Wide current range (from 20 A up to 75 A, up to 600 V AC)
- Flexible sizes: compact 1- and 2-pole contactors as well as full-size 2-, 3- and 4-pole devices
- Various contact configuration from one pole up to four poles
- Industry standard mounting plate provides easily accessible mounting holes
- UL listed, CSA certified
- Coil is class B (130 °C) insulation system with a wide range of voltages and 50/60 Hz ratings
- Double E magnet assembly provides optimal performance with reduced power consumption
- Snap-in auxiliary switch with one SPDT or two SPDT contacts available as an option



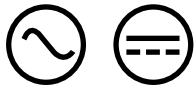
DC switching contactors

GF, GAF and GA contactors are specifically designed for switching DC circuits up to 1500 V. Thanks to the efficient breaking of DC circuits, the product range is one of the most compact on the market for applications such as PV solar, EV charging, UPS and energy storage systems. ABB's standard AF contactor range can also be used for switching DC from 850 V DC and below.

- Up to 2050 A, 1000 V DC UL general use rating
- Up to 1050 A, 1500 V DC PV3 or 210 A UL general use rating
- GF and GAF are based on AF technology with two coil voltages
- Wide control voltage range
- Built-in surge suppression

Complementary products

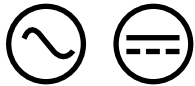
DC and AC side components



22 mm pilot and signaling devices

Trust is everything and in industrial environments, it is essential to have human-machine interfaces you can count on. Whenever you start or stop a process, the response must be assured. That's why ABB pilot devices are designed and engineered to deliver reliability.

- Increase your uptime with products designed and engineered to deliver total reliability
- Modular plastic and metal ranges include flexible and adjustable products to meet your exact needs
- Save up to 30% installation time with unique tool-free snap-on components with the modular range
- Reduce your installation size with the compact range



Power supplies

ABB's CP range of power supplies offers the latest technology in a more compact package. Modern power supply units are a vital component in most areas of energy management and battery storage systems. The CP range of primary switch-mode power supplies provides compact construction, easy DIN-rail mounting, high efficiency, reliability and safety. ABB's range of complementary accessories, such as buffering units and redundancy modules, provides an additional level of reliability in critical applications.

- Rated output voltages 5, 12, 24 or 48 V DC
- Rated output currents 5 A, 10 A, 20 A
- Rated output powers 120 W, 240 W, 480 W
- Wide range of AC or DC supply voltages
- High efficiency, up to 94%
- Open-circuit, overload and short-circuit proof input fuse
- Coated (PCBA) and ATEX certification available for hazardous locations



Control power and machine tool transformer

Machine tool transformers are used to provide voltage to control devices in applications where voltage regulation and minimum space are critical. Welded cores provide the highest quality electrical performance and quiet operation. Control power transformers are an economical alternative to high inrush/machine tool transformers.

- Finger-safe terminals offer added protection and safety
- Pressure-plate terminals ensure secure connections
- Wide variety of fusing options
- Type IP transformers are seismically qualified



CONTACT US



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



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