

# Low- and medium-voltage products and systems

## Wind global product offering

ABB is key-enabler for the wind-industry helping customers along the complete value-chain to generate, connect, monitor and control power from wind farms as well as to maintain and optimize their systems.

### GRID CONNECTION

ABB has a deep expertise to design grid connection systems and offers a comprehensive range of consultancy services

Product / Offering	Benefits and features	Suggested applications
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#### MEDIUM-VOLTAGE SYSTEMS

E-houses



Metal enclosed buildings providing greater safety, easier installation, maintenance and engineering and on site testing, all contributing to cost reductions.

Electrical House (E-House) is a prefabricated walk-in modular outdoor enclosure to house a medium voltage (MV) and low voltage (LV) switchgear as well as auxiliary equipment. It can be skid or wheel mounted and is ready to operate in the field with minimum installation, commissioning and start up time – as an alternative to traditional on-site building construction (concrete block, brick construction or similar).

Compact secondary substations



Compact secondary substations are prefabricated substations, which include a lowvoltage switchboard, transformer and medium-voltage switchgear. CSS is internal arc tested for higher safety. ABB CSS portfolio is covered with different enclosure material, including steel, concrete, and glass fiber reinforced polyester.

CSS is a type tested and arc tested assembly, typically installed in locations accessible to the public and ensure protection for all people according to specified service conditions.

#### MEDIUM-VOLTAGE PRIMARY DISTRIBUTION

Gas-insulated primary switchgear



ZX family up to 42 kV, 40 kA  
All “live” parts are completely protected from external influences like humidity, dust and vermin. Provides safest operating conditions over extended lifetime while minimizing maintenance. Saving space in particular at higher voltage levels. Easy “plug & play” installation.

Gas-insulated switchboards provide ultimate protection to medium-voltage electrical distribution.

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## GRID CONNECTION

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### Product / Offering

### Benefits and features

### Suggested applications

Air-insulated primary switchgear



The UniGear family of IEC switchgear and motor control centers for primary distribution offer a unique opportunity by freely combining different types of panels (UniGear ZS1, UniGear 550, UniGear 500R and UniGear MCC) in to the same switchgear, giving the highest flexibility while optimizing footprint. The new intelligent UniGear Digital solution maximizes benefits by using sensors and IEC 61850 based technologies.

Power distribution solutions for utility and industry, covering also highly demanding applications, such as data centers, oil and gas, mining, marine and nuclear power.

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## MEDIUM-VOLTAGE SECONDARY DISTRIBUTION

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Gas-insulated secondary switchgear



SafeRing/Safeplus is a SF6 insulated ring main unit/Compact switchgear platform for the secondary distribution network up to 40,5kV. Together, SafeRing/SafePlus provides a complete, flexible and compact switchgear system solution. It is a completely sealed system with a stainless steel tank containing all the live parts and switching functions. This ensures a high level of reliability as well as personnel safety and a virtually maintenance-free system.

SafeRing / Safeplus are prepared for the use in future distribution grids and designed for use in various application such as compact secondary substations, small industries, renewables or infrastructure.

Air-insulated secondary switchgear



UniSec metal-enclosed air-insulated switchgear is based on a highly flexible, modular concept with fewer parts and standardized solutions that can be readily configured to meet the specific needs of each application. This approach reduces training and maintenance requirements, ensures fast installation and facilitates future expansion to meet changing needs. UniSec offers highest level of safety with different solutions in terms of internal arc classification and safety interlocks.

UniSec indoor air-insulated switchgear are made for medium-voltage secondary distribution up to 24 kV.

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## APPARATUS

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Reclosers



ABB reclosers have over 15 years of proven field performance incorporating innovative technology and unique ABB expertise, including embedded sensors with the highest accuracy and least environmental sensitivity in the market.

- Increased reliability
- Unparalleled performance
- Simple, fast and safe maintenance
- Easy integration with multiple controller options

A recloser is a protection device for electrical distribution networks.

Outdoor dead tank circuit breakers



R-MAG® is designed with a magnetic actuator mechanism and reduces costly maintenance intervals, increases reliability, and improves safety. This field-proven design is offered in ratings of 15-38 kV 200 kv BIL and 40 kA.

Magnetically actuated outdoor breaker.

Switch disconnectors



The NALF switches have a compact, modular design and broad functionality. Rated voltages are up to 36 kV, rated current up to 1250 A.

The NALF switch-disconnectors represent an attractive solution for applications in enclosed switchgear and compact transformer stations. They provide reliable control over the full range of overload currents.

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## LOW VOLTAGE

From breakers to contactors for the electrical drive train, to switches and surge protection devices for the turbine control system, ABB has one of the largest portfolios to ensure reliable and safe operations. By choosing ABB products, you can save cost with easy to install products. For example, an ABB motor starter can save up to 45% time compared to traditional systems. ABB's control and protection products are certified for worldwide applications, so wind turbine or sub-system manufacturers are able to standardize designs resulting in lower costs.

Product / Offering	Benefits and features	Suggested applications
<b>SWITCH AND DISCONNECT</b>		
<p>Moulded case circuit breakers Tmax</p> 	<ul style="list-style-type: none"><li>– Easy and safe installation</li><li>– Several electrical configurations</li><li>– Wiring diagrams for poles connection in series already tested in ABB laboratories</li><li>– Complete offer for a large range of current and voltage</li><li>– Compliant with the most important standard, IEC 60947-3 and UL489B</li><li>– Availability of the three and four poles in fixed versions</li><li>– Suitable for use in extreme condition thanks to operating temperature from <math>-25^{\circ}\text{C}</math> up to <math>70^{\circ}\text{C}</math></li></ul>	<p>For low-voltage applications in accordance to IEC 60947-2, UL 489 and CSAc22.2 Standards.</p>
<p>Air Circuit breakers Emax 2</p> 	<p>SACE Emax 2 air circuit breakers up to 6300A have been designed to increase efficiency. It is the only breaker that protects electrical circuits and also reduces energy consumption based on the user's needs, therefore leading to massive reductions in energy waste. The breaker contains a protection trip relay with an integrated power controller that measures and evaluates energy consumption, managing the loads to maintain or reduce the peak power usage.</p>	<p>For low-voltage applications in accordance to IEC 60947 and UL 1066 Standards.</p>
<p>Switch disconnectors OT</p> 	<p>The switches can be installed in any direction. Different mounting options, modular design and a wide variety of accessories give superior flexibility to the installation. Purpose-built earthing switches with floor installation possibility and 90-degree rotated mechanism available. Wide phase models designed for standard switchgear busbar layout.</p> <p>OT switches can be used in the most demanding applications.</p>	<p>The OT range of switch-disconnectors are suitable for diverse applications such as machinery, power distribution, motor control centers or renewables installations.</p>
<p>Contactors AF</p> 	<ul style="list-style-type: none"><li>– Optimize logistics and cut administration costs with fewer product variants to handle</li><li>– 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</li><li>– A reduction of the coil's energy consumption by 80% lets you save energy</li><li>– Secure your uptime by letting the AF technology overbridge voltage drops and sags.</li><li>– Screw, spring and ring tongue connection types</li><li>– Built-in surge suppression</li><li>– Connection sets and interlock unit for reversing and star-delta starter for an easy, fast and secure assembly of starters</li><li>– Mirror and mechanically linked contacts</li></ul>	<p>The AF range is made of standard, general purpose block contactors for reliable remote switching of both AC and DC circuits.</p>

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**LOW-VOLTAGE**

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**Product / Offering****Benefits and features****Suggested applications**

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## PROTECTION AND SAFETY

Moulded case circuit breakers Tmax VF and air circuit breakers Emax VF



Major benefits of this range of circuit breakers for applications at variable frequency are:

- Optimal protection of generators and users against overload and short-circuit over the whole range of frequencies from 1 to 200Hz
- Compatibility with all types of generators, even in overspeed running, thanks to the high rated voltage of the circuit-breakers (up to 1000V)
- Standardized switchboard design and optimized stock management thanks to dual IEC/UL circuit-breaker marking

For the protection of plants with variable frequencies.

Switch fuses OS



The knife contact design in combination with the fuse link enables rapid fault clearance and maintains protection level even after fault occurs. The knife contact is self-cleaning and maintenance free.

Thanks to a modular structure, the mechanism and poles can be located according to your specific installation requirements. The length of the shaft is adjustable, saving up to 50% installation time. Double cabling is possible. Interlocking fuse covers prevent opening while the switch is in the ON position. The fuse links are fully isolated from both ends when the switch is in OFF position.

Tested type 2 co-ordination tables for motor protection are available online, for a fast and easy selection of ABB motor protection devices.

The OS range includes manual operated switch fuses from 20 to 1250 Amperes, available for all types of fuses: DIN, BS, NFC, CC, JJ and L types.

High performance miniature circuit breakers S800



Compact and reliable solution for line protection with a breaking capacity up to 50kA and a range of current ratings from 6–125A.

Thanks to its innovative and high-performance profile, S800 provides a great chance to save money in many installations, like PV string boxes or OEM automation panels, where cost depends mostly on size and installation time. S800 has a wide range of accessories to enlarge the circuit breaker's functionality not only for protection, but for remotely controlling and monitoring an installation.

S800-SCL SR (self-resetting short circuit current limiter) in combination with a high-performance circuit breaker or motor starter increases short-circuit breaking capacity of 50kA at 690V AC.

The reason for cut-off clearly identified thanks to TRIP position of the toggle.

S800 are for industrial heavy duty application and renewable energies. Thanks to their short circuit extinguishing technology, they are the right solution when both size and performance matter. Alternative to mains fuses at most, their applications are extremely varied: from building installations, to transport and renewable energies.

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## LOW-VOLTAGE

### Product / Offering

### Benefits and features

### Suggested applications

Miniature circuit breakers S 200



- Complete extra-wide range of MCBs to cover most applications and markets
  - Certificates, documentation, training and background information to support customers daily work
  - Space and time saving thanks to the unique bottom-fixing auxiliary contact
  - MCB range offers selection of different characteristics (B, C, D, K, Z), configurations (1P, 1P+N, 2P, 3P, 3P+N, 4P), breaking capacities (up to 25 k A) and rated currents (up to 63A)
- Compliance with worldwide product standard:
- IEC/EN 60898-1
  - IEC/EN 60947-2
  - UL 1077
  - UL 489
  - CSA 22.2 No. 235
  - CSA 22.2 No. 5

Miniature circuit breakers protect installations against overload and short-circuit, warranting reliability and safety for operations. System pro M compact S 200 series are current limiting overcurrent protective devices. They have two different tripping mechanisms, the delayed thermal tripping mechanism for overload protection and the magnetic tripping mechanism for short circuit protection.

SMISLINE TP



- The SMISLINE TP plug-in socket system allows for load-free plugging and unplugging of live devices and components without additional personal safety equipment for protection against electrical hazards.
- Time saving thanks to the plug-in devices and space saving inside control cabinet thanks to the vertical installation of the bus-bars socket.
- Easy and quick maintenance of the switchboard: input wiring is already integrated in the plug-in socket system, thus the installation is better arranged and easy to be checked, even by no-high qualified personnel.

For applications that need easy and fast installation and low maintenance requirements

Residual current devices



- Proven quality according to several international approvals
- Comprehensive range of devices either for industrial and residential applications
- Common accessories suitable for all System pro M Compact range
- Complete protection against all kinds of leakage currents (AC, A, B, A-APR types available)
- Strong resistance against unwanted trippings
- Rated currents up to 125 A
- All sensitivities are available from 0,01 A up to 2 A

Residual current devices protect people from life-threatening indirect contacts according to IEC/EN 61008 or IEC/EN 61009. ABB offers a comprehensive range of devices like RCCBs, RCBOs, RCD-blocks, Earth Leakage Relays DIN-Rail and front panels in order to cope with all the applications in residential, commercial and industrial segments.

Fuse switch disconnectors EasyLine XLP



A wide range of cable terminals and snap-on accessories make the installation easy and fast. EasyLine can be fitted into different distribution systems by means of busbar adapters. The degree of protection from the front is IP30 in closed position and IP20 in open position. EasyLine fuse switch disconnectors can be padlocked in closed and open positions. Thanks to a functional and modern design, operation is easy and smooth.

EasyLine range of fuse switch-disconnectors ensures high protection and reliable operation in critical power applications, distribution boards, switchboards and capacitor banks.

## LOW-VOLTAGE

### Product / Offering

### Benefits and features

### Suggested applications

Arc guard system TVOC2



- Increased safety to personnel and equipment
- Minimizes downtime after arc accident has happened
- Easy-to-read interface makes reading status information quick and easy
- Simple start-up menu quickens installation and setup
- Can easily be expanded with up to 30 sensors to increase cabinet coverage from a single TVOC-2
- No calibration needed ensures reliable function and quick installation
- DIN-rail or screw mounting
- Detachable key-pad with full-text display (can even handle two HMIs)
- SIL-2 certified according to IEC 61508 and IEC 62061 ensures extremely reliable function
- Rated supply voltage: 100-240 V AC and 100-250 V DC. Also 24-48 VDC is available
- Modbus RTU communication protocol

The Arc Guard TVOC-2 builds on the well-appreciated TVOC design and offers unmatched arc monitoring. With over 35 years of experience, Arc Guard System™ has become an industry standard in several key markets, helping to protect personnel and businesses around the world. The TVOC-2 is an optical detection system that together with an external breaker can limit the damage done to personnel and equipment in case of an arc accident happening.

Surge protective devices OVR



- Discharges the surge coming from lightning events (direct & indirects impacts) or from switching operations
- Limits the peak of voltage to an acceptable level for the end equipment
- Increases the quality of service and equipment lifespan
- Complete range of Surge Protective Devices for all applications: low-voltage power, data, telecom, CCTV PV, WT, LED and self-protected
- Fully equipped: End of life indicator, safety reserve system, pluggable, auxiliary contacts
- Range available for all electrical networks (TT, TNC, TNS, IT)

OVR range is designed to prevent electrical systems and equipment against transitory surges and impulses caused by lightning and operations on the electrical grid.

Surge protective devices OVR WT



Better return on investment for end user. High-protection features enable wind turbines to harness more energy even in stormy conditions so that the end customer can earn more.

Preventive maintenance! The auxiliary contact option can determine if the SPD is still operating. No need to replace the complete product when SPD reaches the end of its life. The pluggable feature, enables cartridges to be replaced without isolating the wires. Cartridge locks included to ensure correct positioning of the plug in part. Thus, we ensure unwanted unplugging of the cartridges due to the vibrations induced by the application, especially when the SPD is installed on the wind turbine generator itself.

- Type 1 and Type 2
- Full protection: association of MOVs and spark gap able to withstand repetitive peak voltages (Urp) up to 3,400 V
- Taught maximal continuous operating voltage Uc up to 1260V (P-G) and 2520 V (P-P)
- Complies with IEC 61643-1/IEC 61643-11

Variable-speed wind turbines are equipped with PWM (Pulse Width Modulation) controlled inverters using IGBT or IGCT to regulate their output voltage and frequency. These technologies, if not filtered properly, generate peak transient over voltages superimposed on the PWM control voltage. It is therefore necessary to use SPDs with a specific withstand to these PWM. That's why ABB provides OVR WT Surge Protection Device to keep the system running and reduce downtime events.

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## LOW-VOLTAGE

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### Product / Offering

### Benefits and features

### Suggested applications

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Safety relays PLUTO



Pluto is available in simple models for smaller systems and models with bus communication for larger systems. Some of our Pluto models are adapted for AS-i models with analogue inputs available too.

- Easy programming and still powerful
- Eliminates the need for extra module for speed monitoring for ex.
- Up to 32 Pluto can exchange data without extra programming
- Safe bus simplifies connection between cabinets in accordance with PL e/SIL3
- AS-i models simplify connection
- Extensive communication possibilities with HMI and PLCs Most Machine Safety functions inclusive speed monitoring and analog input monitoring
- Advanced programming possibilities
- Ladder and TÜV approved function blocks
- PL e/SIL 3
- Supports StatusBus

Pluto is a cost effective, powerful and compact safety PLC for all machine safety applications. Most safety devices on the market can be connected directly to Pluto and multiple safety sensors can be connected to a single input and still achieve the highest safety level. Programming is done easily in the accompanying software Pluto Manager.

Safety relays



- Removable terminal blocks
- LED indication on front
- Models with delayed safety outputs
- Easy exchange
- Faster troubleshooting
- Universal models (RT series) for less stock

A complete and flexible range of relays to grant the highest level of safety for operators and machines, in any industrial and production environment.

Fuse holders E 90



- The greatest heat dissipation performance on market
- Safety of handling
- Low cost solution for line protection
- Versions with LED on handle to easily see when fuse is blown
- Venting grooves and cooling chambers to improve heat dissipation even in multiple-pole configurations
- Compactness

Fuse holders can be used in any applications where you need to ensure electrical protection, isolation and switching under load of inductive or resistive loads. The technology solutions applied to reduce power dissipation help to minimize module heating. Fuse holders are suitable for protection against overloads and short circuits.

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**LOW-VOLTAGE**

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**Product / Offering****Benefits and features****Suggested applications**

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**MOTOR MANAGEMENT****Manual motor starters**

- Compact design
- Efficient planning and installation perfectly matching the ABB contactor family
- Simple connecting links ensure electrical and mechanical connection to build direct-on-line starters
- Less machine downtime by protecting motors and reduced trouble shooting
- Reduction of maintenance expenditures by protecting motors
- Manual control / short-circuit current and overload protection
- Adjustable current setting for overload protection and magnetic trip indication
- Disconnection function
- Temperature compensation
- Remote control via undervoltage release or shunt trip
- Short-circuit service breaking capacity Ics up to 100 kA

Manual motor starters are electromechanical protection devices for the main circuit. They are used mainly to switch motors manually ON/OFF and to provide fuse less protection against short-circuit, overload and phase failures. Fuse less protection saves costs, space and ensures a quick reaction under short-circuit condition by switching off the motor within milliseconds. Starter combinations are setup together with contactors.

**Universal Motor Controllers**

- Reduction of wiring: time and cost
- Fast replacement: save time, reduce downtime
- Saves commissioning time

The intelligent ABB Motor Controllers combine the functions of motor protection, motor control, fieldbus and Ethernet communication and fault diagnosis in just one device. Beside the proven UMC100 the new UMC100.3 offers even more capabilities.

**Soft starters**

- Secure motor reliability
- Improve installation efficiency
- Increase application productivity.
- Offering: PSTX, PST(B), PSE, PSR and PSS
- ABB's soft starters cover any motor application from 3 A to 2160 A
- Reduced starting current and less electrical stress on the motor and the network
- Fast and easy to install and set-up with a small footprint
- Reduced mechanical wear and tear on mechanical equipment

ABB's soft starters increase motor life by optimizing starting currents, among other built-in motor protection features, to reduce torsional stresses. ABB's soft starters are installation-friendly, cutting assembly and startup time by being easy to use. With everything that you need in one unit, from bypass contactor to overload protection, a single soft starter makes for a compact and complete starting solution. Furthermore, with many application specific features, ABB's soft starters can ultimately help you increase productivity. Torque control, pump cleaning and many more features let you do more than simply soft start.

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## LOW-VOLTAGE

### Product / Offering

### Benefits and features

### Suggested applications

Short circuit limiters



- Maximum system availability by automatic re-closing of the limiter contacts after fault clearing
- Selectivity and back-up protection in one device
- Upgrades systems up to 100kA
- High voltage range up to 690V AC
- Group protection without interruption
- S800-SCL-SR is available as IEC version (1-2-3 pole) and IEC/UL version (3-pole)
- Combined with S800S-B/C/D/K/KM, MS/MO325, MS/MO132, MS132-T

The S800-SCL-SR protects all downstream devices up to 100kA. In case of a fault current in one of the motor circuits the resulting short-circuit current is limited and only the faulty branch is cut off. After the downstream device has tripped, the S800-SCL-SR contacts re-close automatically. All other downstream devices continue to operate without interruption.

## METERING, MONITORING AND SIGNALLING

CMS – Current Measurement System



- Minimize downtime in the system – Maximize running hours and productivity, avoid downtimes and connected penalties by monitoring power availability through early detection of any deviations in power consumption at branch level.
- Assets preservation – Early detection of any deviations in power consumption at branch level, avoid before serious damage occurs in the system.
- Energy efficiency – Consumption optimization and cost saving can be performed in the system thanks to maximum transparency on where and how the electricity is used up to lower branches.
- Maximum security – Thanks to the most secure communication protocols built-in in the CMS central units
- Easy Installation and configuration – Save up to 30% installation time thanks to smart configuration and quick installation guaranteed.
- Easy selections – Optimization of the portfolio and product selection thanks to sensor able to measure AC, DC or mixed currents.

For power monitoring and energy efficiency in critical power applications.

Current sensors



- Galvanic insulation between the primary and secondary circuits
- Measurement of all waveforms: DC, AC, impulse, etc.
- Excellent accuracy
- High dynamic performance
- High overload capacities
- High reliability

ABB current sensors enable to measure DC, AC or pulsating currents with a galvanic insulation between primary and secondary circuits.

Voltage sensors



- Galvanic insulation between the primary and secondary circuits
- Measurement of all waveforms is possible: DC, AC, impulse, etc.
- High accuracy
- High reliability
- Excellent immunity to magnetic fields
- Compact product

ABB voltage sensors enable to measure DC, AC or pulsating currents with a galvanic insulation between primary and secondary circuits.

## LOW-VOLTAGE

### Product / Offering

### Benefits and features

### Suggested applications

#### Energy meters EQ



EQ meters is the new range of meters for sub-metering and energy efficiency from ABB. EQ meters come in three product series and up to five functionality levels of each series, and in single phase or three phase versions. The A series is a advanced meter product range for installations up to 80 A direct connected or transformer connected both for current and voltage (CT/VT) The B series is a basic meter product range for installations up to 65 A direct connected or transformer connected (CT). The C series are products, without communication, intended for stand alone energy measurement up to 40 A direct connected.

Sub-metering provides a detailed picture of the energy consumption. It helps you identify specific areas where the energy consumption is too high and essentially where investments need to be made. With a submeter you can look into the details of your energy consumption and take actions where it's needed the most.

#### Grid feeding monitoring relays CM-UFD



- Safe and reliable monitoring of all important grid parameters
- High on grid times increase your revenues
- Latest approvals supports your installation complies to your local grid feeding standard
- Monitoring of voltage and frequency in single- and three-phase mains (2-wire, 3-wire or 4-wire AC systems)
- 10-minutes average value monitoring
- ROCOF (rate of change of frequency) monitoring configurable
- Vector shift detection configurable
- Error memory for up to 99 entries (incl. cause of error, measured value, relative timestamp)
- Password protection

The multifunctional grid feeding monitoring relays of the CM-UFD range are designed to monitor several grid parameters when feeding energy into the public grid. The intention is to trip a section switch which is connected between the distributed generation and the public grid in order to disconnect the distributed generation in case of problems (e.g. unstable grid), faults or maintenance on the grid.

#### Temperature relays



- Down-time and commissioning time reduced
- Engineering time savings
- Selection time reduction
- Different types of sensors e.g. PT100
- Different monitoring functions (over-/undertemperature, window monitoring)
- All configurations and adjustments by front-face operating elements
- One or two threshold values
- Open- or closed-circuit principle configurable
- Short-circuit monitoring and interrupted wire detection

The temperature monitoring relays of CM-TCS and C51x range are able to measure temperatures of solids, liquids and gaseous media using different types of sensors. Overtemperature and undertemperature monitoring as well as open- or closed-circuit principle is configurable for all devices. Temperature relays change their positions according to the configured functionality and the front-face LED display the current status.

#### Signal converters



- Down-time and commissioning time reduced
- Engineering time savings
- Selection time reduction
- Different types of sensors e.g. PT100
- Different monitoring functions (over-/undertemperature, window monitoring)
- All configurations and adjustments by front-face operating elements
- One or two threshold values
- Open- or closed-circuit principle configurable
- Short-circuit monitoring and interrupted wire detection

Universal signal converters of the CC-range amplify, convert, isolate and measure any type of analog signal to ensure safe and reliable plant processes. Whenever a 3-way electrical isolation is needed, ABB signal converters protect process and automation applications from overvoltages.

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**LOW-VOLTAGE**

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**Product / Offering****Benefits and features****Suggested applications**

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Logic relays



- Universally programmable to adapt to your application
- Compact design reduces panel space
- Maintenance free
- Stand alone device with display
- Expansions units available
- Programmable via display and front face buttons or the PC software CL-Soft

The logic relays of the CL range are ideally suited for small industrial applications saving time and cost as well as eliminating error sources. Their compact design reduces panel space and comprehensive functionality will save you cost and make installation easier as they can eliminate traditionally wired circuits. The logic relays are maintenance free because no external back-up is needed and all values are saved in the relay itself. Expansion units with analog inputs, relay and transistor output complete the portfolio.

Electronic timers



- Down-time and commissioning time reduced
- Engineering time savings
- Selection time reduction
- Wide range of functions from single to multifunction devices
- A variety of control supply voltages available
- Time range from 0.05 s to 300 h
- MDRC housing e.g. for building automation

The electronic timers of the CT range have proven their excellent functionality in daily use, even under the toughest conditions. Three ranges of electronic timers provide timing functions for all applications and meet all low voltage timing control needs.

Interface relays and optocouplers



- Safe and reliable voltage conversion
- Highest contact ratings
- Pluggable function modules for highest application requirements
- 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

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**POWER SUPPLY**

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Power supplies CP



- Maintenance-free: Using the latest ultra-capacitor technology instead of batteries
- No deep discharge
- Temperature resistant
- Rated input voltage 24 V DC
- Rated currents 3 A DC, 10 A DC, 20 A DC
- Expandable with CP-B EXT.2 module
- LEDs for status indication
- High efficiency, higher than 90%

Power supply units are a vital component in most areas of energy management and automation technology.

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## LOW-VOLTAGE

### Product / Offering

### Benefits and features

### Suggested applications

#### ENCLOSURES, CONNECTION AND INSTALLATION EQUIPMENT

Main distribution switchboards System pro E power



The structure can be assembled according to different logic sequences. Just a few part numbers for 120 enclosure sizes. Protection classes up to IP65 can be obtained for every type of application. New busbar systems using the same components.

Simple, effective lean methodology for switchboards' assembling to save the time. Mistakes-free simple movements to fix internal equipment. New mounting plates with rapid click-in system. Internal segregation partitions created by simply adding accessories in sequence. Error-free assembly of the structure, which is perfectly symmetrical. Modular uprights and crosspieces joined together by means of a patented new system with axial screws.

System pro E power is the main distribution switchboard solution with rated current up to 6300A and short-circuit current up to 120kA. Designed to easily fulfill all electrical installation requirements in terms of protection degree, segregation form and electrical characteristics, according to the latest international standards and in perfect synergy with all ABB's low voltage equipment.

Automation boards System pro E control



The IS2 enclosures family offers the possibility to choose from pre-assembled structures and flat pack solution. Wide range of sizes, versions and accessories to fulfill most requirements of the industrial sector.

System pro E control range is conforming to several international standard such as the IEC 62208 and to the new IEC 61439-1-2. The IS2 structures are also seismic-proof according the IEEE Std 693 and tested against vibrations.

System pro E control is a range of metal cabinets and switchboards for industrial automation. Their high-mechanical performances, the sturdiness and loading capacity are the market benchmark and allow installation on machines, in production lines, at motor control centers and in every typical 19" rack applications. Furthermore, the new range of System pro E control made in stainless steel AISI304 is perfect for outdoor and for environments where high-level hygiene is required.

Switchgear MNS



- Safety
- Availability and reliability
- Flexibility
- Ease of maintenance
- Ease of doing business

Connecting power and automation through the MNS switchgear platform for process industry, power and infrastructure customers.

System pro E energy



- Innovative flange technology
- Wider area for cable entry
- Wide range of the new modular distribution panel system CombiLine S
- Simplified accessories concept for reduced inventory levels
- Flatpack/modular enclosures
- Rated current In up to - Protection class: I earthed
- IP protection class: IP43 with door and IP30 without door
- Compliance with Standard IEC 61439-1, -2 and -3

Provides a solution for every application. The modular system is simple in planning, quick in assembly and safe in application, guaranteeing a modern energy distribution.

## LOW-VOLTAGE

Product / Offering	Benefits and features	Suggested applications
Socket outlets 	<p>A complete range of modular sockets, including 17 models conforming to 7 national Standards – Italian, French, German, English, Swiss, Australian and Argentine – suitable to be used in around 180 countries.</p> <ul style="list-style-type: none"> <li>– Well sized terminals with positive safety for reliable wiring</li> <li>– Integrated fuse and indicator light</li> <li>– Safety shutters: socket holes protected for safe operations in plugging and unplugging</li> </ul>	<p>Provides a solution for every application.</p>
Industrial plugs and sockets 	<p>Reliable contacts prevent stops and power breaks, leading to increased productivity.</p> <p>Durable equipment prevents time and cost lost due to maintenance.</p> <p>Safe connections prevent accidents</p>	<p>Provides a solution for every application.</p>
Terminal blocks 	<ul style="list-style-type: none"> <li>– High quality products: benefit from the best connection.</li> <li>– Simplification and acceleration of flows: reliable expertise in delivery times.</li> <li>– Innovating for tomorrow's solutions.</li> <li>– Perfect connection reliability in response to all connection challenges.</li> <li>– Connecting capacity from 0.22 to 300 mm<sup>2</sup> (22AWG to 1000kcmil).</li> <li>– Large offering covering all applications and functions.</li> <li>– Worldwide availability.</li> <li>– Exclusive solutions and technologies like ADO System<sup>®</sup> terminal blocks, ESSAILEC<sup>®</sup> test blocks, Interfast the pre-wiring system for PLC's</li> </ul>	<p>ABB proposes one of the largest connection offering on the market with various technologies: screw, PI-Spring, (Push-in and spring), spring, IDC, pluggable, stud... technologies found in over 8000 products and solutions.</p>
Pilot devices 	<ul style="list-style-type: none"> <li>– Extremely robust and reliable</li> <li>– Identical look outside the panel makes mixing compact and modular range easy</li> <li>– A complete offering to meet any customer need.</li> <li>– High IP ratings</li> <li>– Fulfills major international standards</li> </ul>	<p>From the smallest inside component to the outer tough shell.</p>
Cable ties, tools and accessories 	<p>Nylon 12 is a lower, moisture absorbing material than Nylon 6.6, and the effect of water on properties is much less. For use in temperatures ranging from -40°F to 185°F (-40°C to 85°C). Stainless steel cable ties: steel alloys available for enhanced corrosion protection and all quick, easy installation and secure locking.</p>	<p>ABB offers a full range of premium cable ties and tools, including Ty-Rap<sup>®</sup> weather-resistant nylon 12 cable ties for long life in direct (UV) sunlight and chemical environments.</p>
Cable trays 	<ul style="list-style-type: none"> <li>– Extensive product range</li> <li>– Available in aluminium or steel</li> <li>– Medium duty to ultra heavy duty, to cover all types of installation</li> <li>– Extensive selection of fittings, covers and accessories</li> <li>– Reliable: Cable tray systems open design eliminates moisture buildup and reduces damage to cable insulation during installation</li> <li>– Adaptable: As new technologies develop or new needs arise, count on full adaptability from a cable tray system because cables can enter or exit at any point</li> <li>– Maintain with ease: Because cable tray systems are easy to inspect, maintenance requires less time, and there is less susceptibility to fire loss</li> </ul>	<p>The cable tray systems, including perforated tray, cable ladder, channel tray and strut (metal framing) offer an extensive product range for all types of installation around the world, whether specifying a major new project, or simply refurbishing existing facilities.</p>

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