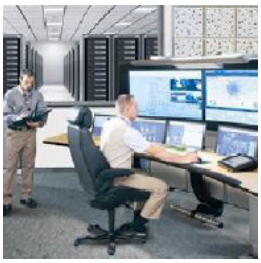
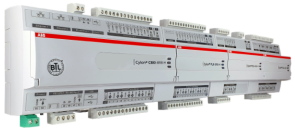
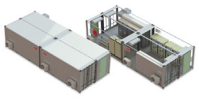
DATA CENTER LINE CARD

Smart, safe and sustainable electrification and automation

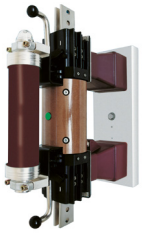
Global data center solutions

ABB supplies a wide range of solutions for the electrification and automation of data centers from the grid to the servers. Industrial-grade technology, integrated solutions and industry expertise enable data centers to operate with optimum reliability and benefit from savings in installation, energy, space and maintenance.

Product / Offering	Benefits and features
AUTOMATION AND CONTROL SOLUTIONS	
ABB Ability™ Data Center Automation 	ABB Ability™ Data Center Automation is ABB's industrial DCIM system for on-premise and hybrid cloud environments for control, monitoring and optimization for your mission critical infrastructure, with mechanical (BMS), electrical (EPMS) and DCIM capabilities in a single, industrial solution. It is built on the automation platform ABB Ability™ System 800xA, and it inherits all of the reliability and features that have made it one of the world's most deployed distributed control systems. ABB Ability™ Data Center Automation integrates data from IT, power, cooling and building systems. You can visualize and manage physical assets within a 'single pane' view of the entire data center, including multiple sites. Real-time visibility includes both high level (aggregate) and low level (granular) views of the data center infrastructure, including enterprise, floor plan, zone, system and component views. Moreover, when combined with third-party optimization tools of your choice, capacity planning and management capabilities are extended. You can automate cooling and electrical systems for continuous optimization and improved uptime.
CYLON® SMART BUILDING SOLUTIONS 	ABB Cylon delivers scalable, front-end building automation solutions, open protocol building controls, and cloud-based energy analytic tools to meet the need of today's high-performance, green-conscious commercial facilities. Scalable design and flexible building solutions that allow smart devices, systems, and people to connect more easily. ABB offers a wide range of IP controllers, built on an open platform provides the interconnectivity and flexibility required to create smarter buildings. Optimize energy consumption with ABB Cylon's cloud-based real-time energy management service Active Energy, which has been proven to significantly reduce overall energy consumption and carbon footprint, and reduce energy costs by up to 25%.

Product / Offering	Benefits and features
PREFABRICATED AND INTEGRATED DATA CENTER SOLUTIONS	
Solutions to minimize risks 	Reduce risk by leveraging prefabricated and integrated solutions: – Simplify the process with one vendor, one project manager, and one purchase order for your power distribution solutions – Fast track projects with pre-fabricated and pre-tested modules for power distribution solutions that reduce risk exposure during site works – Site services for installation, commissioning and customer support
eHouse 	Pre-fabricated electrical swicth room solutions, delivered to site fully tested with all equipment mechanically & electrically installed. This project delivery model reduces on site installation time & accelerates energization period/equipment startup period.
Skid Mounted Modules 	A prefabricated and scalable option with all equipment mounted on a common skid base. Equipment can include, but not limited to medium-voltage switchgear, low-voltage switchgear UPS systems, distribution transformers, busduct and electrical cabling. Delivered to site as a fully tested skid module, greatly assists in reducing onsite installation time, including wiring, testing activities and energization.
Compact Secondary Substation 	Compact Secondary Substations (CSS) are prefabricated substations, which include a low-voltage switchboard, a transformer and medium-voltage switchgear. A CSS is internally arc tested for higher safety according IEC 62271-202, the dedicated standard to CSS. The ABB CSS portfolio is covered with different enclosure materials, including steel and glass fiber reinforced polyester (GRP), an innovative material that provides the advantages of both steel and concrete enclosures. The CSS can be suited for harsh and demanding environmental conditions by choosing the suitable enclosure material.
EcoFlex 	EcoFlex, an ISO dimensioned IEC module, is factory assembled, integrated and tested with all major equipment and services prior to shipping, allowing for simple positioning and connection of customer cables at site. Designed to be scalable, modules can be combined at site to create a single large eHouse. Additionally, its C5M marine coating and seismic rating make it ideal for the harshest of conditions. EcoFlex, a robust pre-engineered, flexible, modular solution, provides overall project cost and lead time savings, reduced transportation and lifting complexity and a substantial mitigation of project risk.
	EcoFlex is an Internal Arc Classified (IAC-AB), single enclosure power solution, inclusive of transformer, medium-voltage switchgear and low-voltage switchgear, type tested to IEC 62271-202, for improved safety. Its rigid construction, ISO dimensions, CSC certification, C5M marine coating and seismic rating make EcoFlex an ideal solution for permanent, temporary or backup power installations. Other key features include ease of transport, lifting, relocation and storage (even stacking).
MEDIUM-VOLTAGE PRIMARY DISTRIBUTION	
UniGear Digital 	UniGear Digital is an innovative solution based on market-leading industry-standard air-insulated medium-voltage switchgear called UniGear and makes full use of ABB's Relion® protection and control relays, IEC 61850 communication protocol and is combined with the advantages of sensor technology. All this leads to an advanced switchgear solution addressing important requirements of the future: – Flexibility – Increased process efficiency – Lower cost of operation – Maximized integration – Reliability and safety

Product / Offering	Benefits and features
Motor control centers 	UniGear MCC up to 12 kV, 50 kA Designed for the highest degree of safety and reliability, the UniGear MCC provides for maximum ease of use. All operations and maintenance actions are made from the front of the panel, which is equipped with mechanical safety interlocks between the vacuum contactor and earthing switch. – Slim and compact panel only 400 mm wide – Wide range of applications – Fused vacuum contactor with magnetic actuator – Fitted with safety interlocks and visible earthing connection
Gas insulated switchgear 	ZX family up to 42 kV, 40 kA GIS provides ultimate protection to medium-voltage electrical distribution – 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
HD4 – gas insulated circuit breakers 	HD4 circuit breakers are available in fixed or withdrawable versions. The withdrawable version is available for PowerCube fixed parts and enclosures, UniSafe and UniGear type ZS1 switchgear. HD4 circuit breakers are used in power distribution to control and protect lines, transformer and distribution substations, motors, transformers, capacitor banks, etc. They are also highly suitable for retrofitting, where the insulating materials of circuits may be sensitive to dielectric stresses.
VD4 – vacuum circuit breakers 	The VD4 vacuum circuit breaker with spring operated mechanism is excellently suitable for switching of short-circuit currents, overhead lines and cables under load and no load, transformers and generators, motors, ripple control systems and capacitors – even in parallel.
MEDIUM-VOLTAGE SECONDARY DISTRIBUTION	
Air insulated secondary switchgear 	UniSec indoor air-Insulated switchgear for medium-voltage secondary distribution up to 24kV. 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.
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.

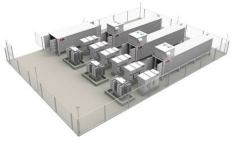
Product / Offering	Benefits and features
HD4/R – gas insulated circuit breakers 	HD4/R are used in secondary medium-voltage distribution and in MV/LV transformer substations. They are available in fixed version with right-hand side operating mechanism. Circuit breakers with rated voltage up to 24 kV can be fitted with current sensors and PR521 overcurrent release and can be used in unmanned substations without auxiliary power supply.
VD4G – vacuum generator circuit breakers 	The VD4G family is tested to meet the most stringent requirements for generator applications as per IEC/IEEE 62271-C37-013. VD4G is capable of interrupting currents with delayed zero crossings, or faults during synchronization with the high-voltage grid. With its compact dimensions, VD4G is suitable for installation in standard MV switchgear for the most cost-effective solution.
VD4/R – Vacuum circuit breakers 	VD4/R are used in secondary medium-voltage distribution and in small transformer substations. They are available in fixed version with right-hand side operating mechanism. Circuit breakers with rated voltage up to 24 kV can be fitted with current sensors and PR521 overcurrent release and can be used in unmanned substations without auxiliary power supply.
PROTECTION AND SAFETY	
Is-Limiter 	The ultra-fast solution for handling a short circuit current. In short-circuit-fault conditions this fast-acting switching device triggers a small charge to open the main conductor, which is designed to carry high-operating currents in normal conditions. The short-circuit current commutates to a parallel fuse with high breaking capacity, which limits the short-circuit current during the first rise within extremely short times. The Is-Limiter is a unique solution to limit short-circuit currents up to 210kA rms while handling operation currents up to 4000A. The wide range of applications, up to 40.5kV includes power supplies and industry applications through to special applications such as platforms, IPP´s or applications with ultra-fast switching requirements. Considering the Is-Limiter on the early engineering phase of a new project or on the extension of an existing system, the Is-Limiter is able to offer technical and economic benefits to our clients.
Ultra-Fast Earthing Switch UFES 	Active internal arc protection for switchgear. Innovative arc flash mitigation in less than 4 ms: the highest possible level of arc flash protection for personnel and equipment, maintenance of secure power supply and the reduction of production stoppages. The occurrence of an arc fault, the most serious fault within a switchgear system, is mostly associated with extremely high thermal and mechanical stresses in the area concerned. A new, active arc fault protection system is based on the know-how gained from decades of experience with the ABB vacuum interrupter and IS-limiter technology. This latest arc fault mitigation technology now effectively helps avoid these negative effects should a fault occur. The ultra-fast earthing switch of the UFESTM-type is a combination of devices consisting of an electronic unit and the corresponding primary switching elements, which initiate a 3-phase short-circuit to earth in the event of a fault. The extremely short switching time of the primary switching element in conjunction with the rapid and reliable detection of the fault, ensures that an arc fault is extinguished almost immediately after it arises (Extinguishing time < 4 ms after detection).

Product / Offering	Benefits and features
MEDIUM-VOLTAGE RELAYS/DISTRIBUTION AUTOMATION	
Relion® 615/620 series 	The Relion® family of programmable numerical protection relays offers a full range of genuine IEC 61850 products for the protection, control, measurement and supervision of power systems. IEC 61850 supports interoperable and future-proof solutions including peer- to-peer GOOSE communication. Relion® enables the creation of comprehensive protection schemes for feeders, motors, transformers, generators, busbars, capacitor banks etc. Features supporting high situational awareness and communication availability: – Graphical display and web browser-based human-machine interface – Disturbance recorder for in-depth analysis of network disturbances – Support for additional communication protocols including use of two communication protocols simultaneously – Communication redundancy including HSR and PRP protocols – One configuration tool for all Relion® relays
Relion REX640 	REX640 offers all-in-one protection for any power distribution and sub-tranmission application. The relay introduces an entirely new application package concept, by offering a variety of ready-made application packages to choose from. The application packages include various protection and control functions, which can be flexibly combined to create protection solutions that meet your unique protection requirements. The available packages support the following applications: feeder protection, power transformer protection, machine protection, shunt capacitor protection, busbar protection, automatic synchronization, Petersen coil control and arc protection with supervised sensors. The modularity and scalability of both software and hardware allow you to create your own, unique relay for your specific protection requirements. A novel, application-driven approach to the local human-machine interface (LHMI) allows support for entirely new applications.
ABB Ability™ Condition Monitoring for switchgear - SWICOM 	Reliable asset condition monitoring to reduce operations and maintenance costs. SWICOM is a monitoring and diagnostic unit which provides mechanical and electrical health status of a fleet lineup. It acquires data communicating with IEC 61850 based protection relays and via sensor bus of additional e.g temperature sensors, and converts the data to diagnostic information. – SWICOM monitors breaker drive, temperatures in critical points on primary circuit and partial discharge using an indicator – Any existing panel can be completely modernized regardless of the age, design and brand, becoming ABB digital compliant. – Quick and easy implementation into a truly digital switchgear also when the panel designs are not set for the application.
Smart Substation Control SSC600 	ABB Ability™ smart substation control and protection for electrical systems, SSC600 centralizes all protection and control functionality in a single, IEC 61850 - compliant device on substation level to reduce network complexity and support optimal, lifelong asset management for the digital substation. SSC600 has been designed to support the ABB Ability offerings of digitally enabled solutions, helping industries know more, do more and do it better than before. The modular software allows customization at the initial ordering stage and flexible modification for the lifetime of the digital substation. The advantage of only having to modify one device instead of all bay-level protection and control devices makes upgrading the entire substation system easier than ever.
Zenon Electrification Edition ZEE600 	The Zenon Energy Edition is a very well accepted SCADA for scalable low - medium and high voltage substations management, which is feature-rich and offers versatility in visualization, data communication and control. It integrates ABB's electrification products and applications including power management applications like loop control, load shedding and many more.

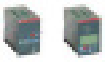
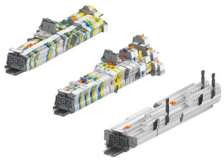
Product / Offering	Benefits and features
Arc protection devices REA series 	With safety a top priority, the REA family of relays is designed for the protection of medium- and low-voltage air-insulated switchgear against arc incidents.
Test switches Flexitest™ switch 	Flexitest™ switches provide a safe, simple, fast and reliable method to isolate, test, and service installed equipment without disturbing the system.
AC500 	The AC500 family AC500 is ABB's range of scalable, flexible and reliable high performance PLC's. The product has the following features: – Fully IEC61131-3 compliant – Safety rated SIL3 – Hot standby redundancy – Central and decentralized IO options – Native power systems protocol support: IEC61850(GOOSE and MMS), IEC 60870-5-104 & 101 – Native open industry systems protocol support: CanOpen, Modbus TCP and RTU – Native process systems protocol support: Profinet, Profibus DP, Ethernet I/P and EtherCat – Native network protocol support: OPC UA&DA, FTP, SNTP, UDP – Embedded HTML5 web browser HMI
Compact power management system cPMS 	Easier installation and maintenance due to reduced cabling (no need of hard-wired custom PLC solution), thanks to IEC61850 and seamless integration of protection and control, station automation and power management functionality in the medium-voltage switchgear. Safer operation due to continuous self-supervision of communication and relays. Simplified engineering, operation, training of personnel (compact and modular solution) and easier system expansion and integration, to protect customer investment for existing infrastructure.
LOW-VOLTAGE POWER DISTRIBUTION	
MNS - low-voltage power distribution switchgear 	MNS is ABB's global low voltage switchgear solution for power distribution up to 690V / 6300A / 100kA (IEC) and 600V / 5000A / 100kA (ANSI) respectively. MNS offers unrivalled flexibility for all low-voltage applications. The MNS product portfolio offers: MNS - universal design enables front or rear access assemblies supporting Fixed, Plug-in or Withdrawable modules. MNS Compact offers the highest density plug-in modules enabling the smallest footprint possible for Form 4 energy distribution. MNS Fixed with reduced section widths and combined cable compartments provides cost effective solutions for infrastructure applications. The MNS portfolo provides superior reliability, avaiability and safety, due to ABB's comrehensive verification and testing programm. MNS is proven to exceed the requirements defined in the applicable standards. MNS also provides maintence free frame construction and busbar systems helping to minimize maintenance and unscheduled downtime. MNS Digital portfolio (cloud ready) provides enhanced user functionality with the ABB Ability™ Condition Monitoring for electrical systems (CMES), data is collected and analysed securely without inteterference to either operation or control. CMES generates asset health and engergy consuption reports for all connected assets providing preditive maintenance functionality, to further reduce your OPEX.

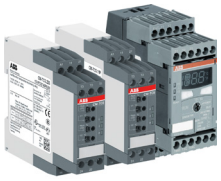
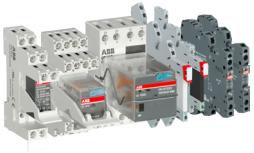
Product / Offering	Benefits and features
MNS Rear - low-voltage power distribution switchgear with rear access cable termination 	MNS Rear is a variation of MNS enabling rear access to cable termination and thus offering a space saving design in power distribution. It provides performance up to 690V / 6300A / 100kA and utilizes the same Plug-in and Withdrawable module design as in MNS. With the bus bars located at the top MNS Rear can provide significant footprint reduction, flexibility is still maintained with top and bottom power cable and bus duct connections, and options for cable separation up to Form 4 Type 7. MNS Rear also provides increased safety and lower OPEX costs through arc fault certification and maintenance free construction of the section frame and busbar system. Enhanced functionality is also provided with MNS Digital and ABB Ability™ Condition Monitoring for electrical systems (CMES).
MNS-Up – integrated UPS and power distribution solution for critical power applications 	MNS-Up is a fully integrated combination of two of ABB's key products for data centers and other critical power applications, combining MNS power distribution switchgear and the ConceptPower DPA500 UPS. MNS-Up reduces CAPEX of the electrical infrastructure by combining input and output switchgear and UPS functionality into a single scalable assembly. MNS-Up is scalable in 100 kW increments up to 3 MW, allowing users to adapt the power distribution solution to their actual needs and pace their investment. Flexibility is further enhanced by options for installation in a straight line, back-to-back or in L- or U-shape to optimize room space. ABB's exclusive decentralized UPS Paralleling Architecture (DPA™) with N+1 redundancy at module level ensures service continuity as well as easy, quick and safe replacement.
Main distribution boards System pro E power 	System pro E power is the ABB solution for main distribution switchboard with rated current up to 6300A and short-circuit current up to 120kA. It meets all types of installation requirements, degrees of protection, and the electrical and mechanical specifications. ABB System pro E power provides complete solutions for main power distribution in infrastructure and industries in accordance with the standard IEC 61439. In addition, it guarantees full compatibility with all other ABB products.
Sub distribution board System pro E energy – TwinLine 	With TwinLine N 55 we have a perfect system in achieving space savings for RPP (Remote Power Panels). TwinLine N 55 is a welded system up to 850A, with protection class I and II, IP rate 55. All in accordance to IEC 61439 and DIN EN 61439 Parts -1, -2 and -3. Continuity is the guiding principle for these wall-mounted and floor standing cabinets for distribution assembly – from the degree of protection, over the ease of installation, to the wide range of portfolio we can meet all requirements in the field. System intelligence comes as standard with TwinLine in combination with System pro E combi – CombiLine modules. TwinLine offeres unlimited possibilities for all internal combinations.
Automation boards System pro E control- IS2 	System pro E control – IS2 is the ABB range of metal structures and boxes for industrial automation and controlgear switchboards compliant to several international standards such as the IEC 62208, to the new IEC 61439-1-2 and UL 50.
Tmax circuit breakers 	ABB's molded case circuit breakers guarantee an extremely high performance level while being progressively smaller in size, simple to install and able to provide increasingly better safety. Our Tmax XT range is complete with four frame sizes: XT1, XT2 up to 160A, and XT3, XT4 up to 250A. Our Tmax T range completes the offering from 320A up to 1600A.

Product / Offering	Benefits and features
Emax 2 circuit breakers 	ABB Emax 2 is the new benchmark of air-circuit breakers that not only monitors power, but has evolved into a true power manager. It is offered in frame sizes up to 6300A for applications in accordance to IEC 60947 and UL 1066 standards – with exclusive integrated functions such as the Ekip power controller, generator protection and network analyzer functions. Emax 2 is the only breaker that protects electrical circuits and also reduces energy consumption based on the user's needs, thereby leading to massive reductions in energy waste. Emax 2 contains the perfect blend of control, connectivity, safety and performance. Installing Emax 2 power circuit breakers in data center could result in footprint savings of 20% for the switchboard, providing additional square meters for IT equipment. Emax 2 is the first low-voltage circuit breaker with integrated automatic transfer switch logic managing the supply from the main line to a local generator line in case of faulty conditions in the utility network. Emax 2 new functions maximize service continuity and enable to reduce by up to 30 percent the switchgear.
Ekip Gateway 	Ekip UP is the low-voltage digital unit able to monitor, protect and control any data center site. Thanks to the embedded software-based functions and application versatility, Ekip UP upgrades any existing data center site into advanced power distribution grid. Leveraging on the upload of microgrid and IoT innovative technology, the ABB plug&play solution updates the efficiency of the basic installations, increases awareness of resources and process behaviors, and delivers an easier, more intuitive user experience. The digital unit ensures low impact on the original switchgear design and reduced commissioning downtime to maximize uptime in all projects.
SlimLine XR – switch disconnector fuse 	The SlimLine XR meets increasing demands in the industry for safe and reliable energy distribution. Thanks to the unique contact design and compact size, the installation is safe, fast and easy. For remote operation and monitoring, SlimLine XR is available with an integrated motor, electronic fuse monitor (EFM) or the new integrated energy monitoring device ITS2.
SMISSLINE TP 	Being the world's first pluggable socket system, SMISSLINE TP ensures that load-free devices and components can be snapped on and off under voltage without the need for additional personal protective equipment to guard against electrical hazards. Saving time thanks to the easy plug-in system and saving space devices during first installation and maintenance, thanks to the vertical installation of the bus-bars socket. The switchboard is easy and quick to maintain since the input wiring is already integrated in the plug-in socket system, thus the installation is better arranged and tidier, making it possible for non-qualified personnel to check. All the above mentioned benefits ensure maximum flexibility, expandability and availability.
SMISSLINE TP Power Bar System 250A 	The SMISSLINE TP finger-safe plug-in socket system ensures that load-free devices and components can be snapped on and off under voltage without the need for additional personal protection equipment to guard against electrical hazards. A powerful 250 A system is now available in the shape of the SMISSLINE TP power bar system. The power bars have a rated amperage of 250 A and therefore allow a side feed of 250 A. This extends the spectrum of potential applications, particularly for applications with high-current devices. More high-current outlets can be placed on the same busbar system. The power bar system is compatible with those devices which were previously directly pluggable.

Product / Offering	Benefits and features
POWER DISTRIBUTION UNITS	
Cyberex® PDU 	The Cyberex PDU combines flexible output distribution and a large array of transformer options to provide the most versatile PDU offering in the industry. Features include touch safe, selectively coordinating, current limiting breaker options, along with energy efficient transformers. Add Cyberex's Circuit Management System and take complete control of your data center's power.
MNS PDU / RPP– power distribution for mission-critical applications 	MNS PDU / RPP are solution for power distribution panel based on the MNS platform. It delivers continuous power and energy monitoring at rack-level. With its increased current carrying capacity vs. conventional PDU's, MNS-PDU allows for space-saving and more economic data center build-out. MNS PDU consists of incoming circuit braker sections and outgoing MCCB sections i.e. MNS Compact as well as further options for fuses, integrated static transfer switches, active harmonic filters and complete monitoring solutions. It can easily combined with all MNS solutions to create a space saving distribution assembly. In line with the underlying theme of maximized operator safety MNS-PDU / RPP uses ABB's touch-proof SMISSLINE-TP plug and socket system and digital distribution solution CMS700 to create an unmatched flexibility with its scalable and modular design using "plug as you grow" approach. The solution is fully integrated in the MNS Digital solution and ABB Ability Condition Monitoring.
REMOTE POWER PANELS (RPP)	
Configurable remote power panel 	ABB's configurable Remote Power Panel (RPP) helps to meet the demands of power-intensive applications, delivering unsurpassed power monitoring and distribution with up to 240 poles in a safe, reliable, space-saving footprint. The RPP is the ideal solution for data center engineers, saving the time for planning and drawing of the RPP. The preconfigurable RPP can dramatically reduce the certification costs and ensure continuous power to critical applications.
RPP from Cyberex 	Today's data centers require the highest level of reliability and performance. The Cyberex RPP series provides the flexibility to expand your data center distribution capabilities. Fed from your existing PDM, the RPP readily provides up to (4) 42 circuit output panelboards and (4) source breakers.
ENERGY STORAGE	
Battery energy storage systems 	Strategically placed energy storage systems throughout the electrical grid can increase the operational performance and reliability of the utility network, better integrate alternative energy sources, balance electricity supply and demand, and ensure that energy is readily available when primary power sources are interrupted. Energy storage benefits the entire power value chain, from generation, transmission and distribution, all the way to users.
PROTECTION AND SAFETY	
Arc guard TVOC-2 	ABB is a leader in electrical safety with the TVOC-2 arc guard system providing an unrivaled optical arc mitigation device with SIL-2 safety certification. With TVOC-2 an arc is detected in < 1ms and a trip signal is sent to the breaker to isolate the panel and limit the damage. With TVOC-2 both lives and cost can be saved if an electrical arc happens and it is an industrial standard in several markets. The TVOC-2 is very easy to install and with the plug-in communication module, it provides operators real time status updates and instant information regarding the location of any arcs.

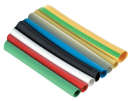
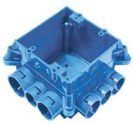
Product / Offering	Benefits and features
Surge protection devices 	The OVR range is designed to protect electrical systems and equipment against transitory surges and impulses caused by lightning and operations on the electrical grid. QuickSafe is a new generation of surge protection device (SPD) with improved performance.
Miniature circuit breakers 	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. Main benefits: – Extra-wide and complete range of MCBs to cover most applications and markets – Meeting worldwide standards – Certificates, documentation, training or background information to support customers
METERING, MONITORING AND SIGNALLING	
Electricity meters 	Managing electrical supply is a priority. Without measuring usage, it is hard to determine efficiency. Measuring an electrical installation can save effort and money. The addition of energy meters for sub-metering and a current measurement system for branch supervision enables the monitoring of energy usage, from the incoming energy all the way down to the last branch.
Circuit monitoring system (CMS) 	The circuit monitoring system (CMS) is a family of unique ultra-compact and high-performance multichannel measurement systems for branch monitoring. The system consists of a control unit and sensors with different measurement ranges and mounting possibilities. The sensors are measuring alternating (AC), direct (DC) and mixed currents up to 160A. Up to 92 sensors can be connected to each control unit. The measurement data can be stored and shown with an integrated web-server. Additionally it can be read remotely by a Modbus system via RS485 Modbus RTU or via Ethernet using Modbus TCP or the encrypted SNMP v3 interface.
Network analyzer 	Energy efficiency, minimized costs and high system availability represent three central aspects of electrical systems. For full installation monitoring, ABB offers a front-panel range of network analyzers: M2M and ANR are able to measure and record network parameters, energy consumption and alarms, routing data to supervision and monitoring systems. They also work as panel manager thanks to the digital inputs, used to gather the information about the status of other devices in the panel in a unique device. The status of the other devices, as well as energy pulse inputs from energy meters, can remotely monitored via bus to a supervision monitor thanks to the wide range of available communication protocols.
SWITCH AND DISCONNECT	
Switch-disconnectors 	The OT range of switch disconnectors from 16 to 4000A is suitable for diverse applications such as machinery, power distribution and motor control centers. Thanks to a modular design, OT switches are available in different pole configurations. Mounting is possible in any direction and a wide offering of accessories is available.
Switch fuses 	OS switch fuses range from 20 to 1250A and are suitable for different types of fuses: DIN, BS, NFC, J and L. OS switch fuses have a modular design and are available in different pole configurations. ABB offers ready and tested type 2 coordination tables for easy and fast selection of motor control devices.
TruONE automatic transfer switch 	TruONE is the world's first true all-in-one automatic transfer switch, engineered to incorporate switch and controller in one seamless unit. Performance tested beyond standard requirements, TruONEstands ready to ensure the steady delivery of critical power at all times. Its self-contained design reduces the number of wires and connections, which speeds installation and ensures best-in-class reliability. Its predictive maintenance and modular components reduce downtime and service costs. And its advanced connectivity is ready for the future.

Product / Offering	Benefits and features
Transfer and change-over switches 	ABB's transfer switch range from 16 to 3200A includes switches for transfer of loads from one source to another manually, remotely or automatically. Adequate durability has been ensured by testing against the IEC 60947-6-1 standard in the specification of endurance requirements. The switches have a comprehensive range of built-in safety features. The motorized and automatic change-over switches are also equipped with a handle for manual operation in case of emergency.
Enclosed manual and automatic transfer switches 	Enclosed automatic transfer switches with current ratings from 40A to 1600A. The enlosure complies with IP65 EN 60529 and finished in a RAL 7035 colour. The ATS enclosures are designed to allow adequate cabling space to allow installers to terminate oversized cables. Automatic transfer switches are available as 3 or 4 pole versions. All three positions I, 0 and II shall be stable and keep its positions in case of supply failure or mechanical shocks.
Terminal blocks 	SNK series terminal blocks offer high productivity and space saving, an excellent marking visibility which are important values in data centers where a large number of connections are handled. The range is available in PI-Spring (Push-in and spring), screw clamp and pluggable technologies with common accessories. Connecting capacity from 0.22 to 95 mm² (24 to 0000 AWG).
HVAC MOTOR CONTROL AND PROTECTION	
Installation contactors 	ESB installation contactors are mainly used in buildings for switching and controlling lighting, heating, ventilation, motor and pumps. They are designed to match the ABB modular DIN-Rail components and can be easily integrated into dedicated panels. EN contactors have a built-in toggle switch for automatic and manual application.
Manual motor starters 	Manual motor starters are electromechanical protection devices for the main circuit. They are used mainly to switch motors manually ON/OFF and to provide fuseless protection against short-circuit, overload and phase failures. Fuseless protection saves costs, space and ensures a quick reaction under short-circuit condition by switching off the motor within milliseconds. Starter combinations are set up together with contactors. Special versions for control transformer protections complete the portfolio.
Motor controllers 	The ABB Motor Controller UMC100.3 combines flexible motor control, motor protection and fieldbus/Ethernet communication in one modular solution. With its advanced diagnosis functions it can create pre-warnings before a fault actually happens and helps to avoids unwanted downtimes. The device can easily be expanded when needed for example with analog and temperature inputs, voltage measurement or digital inputs and outputs. Due to its flexible configuration options the engineering effort can be significantly reduced and the design is reduced to a minimum. All these functions let the UMC100.3 become the intelligent HUB within an Motor Control Center. Due to the benefits it provides, the UMC100.3 is used worldwide in many application segments and in projects where several thousand motors must be reliably controlled.
Soft starters 	ABB's soft starters increase a motor's lifetime by protecting it from electrical stresses. They do so by letting you optimize starting currents that with conventional starting methods put lots of stress on the motor. With many built-in motor protection features, your motor is safe in its hands. ABB's soft starters are also installation-friendly and can cut your assembly and startup time by being easy to use and easy to learn. 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 softstarting.

Product / Offering	Benefits and features
3-Pole contactors and overload relays for motor starting and power switching 	ABB 3-pole contactors offer an exhaustive selection of products for simple and extreme applications as well as products with specific purposes. The AF contactor technology revolutionizes how we use contactors and allows use in all parts of the world and in a variety of network conditions. Furthermore, the mini-contactor range offers compact dimensions and specific connection possibilities.
4-Pole Contactors for Power Switching 	ABB's AF 4-pole contactor range is a complement to the family of 3-pole AF contactors and motor protection equipment. Unmatched performance in a variety of applications and environments has made the AF contactors well appreciated by customers throughout the world. You can also benefit from the compactness of the 4-pole mini contactors available with 3 connection types.
Pilot devices 	ABB pilot devices have high reliability with self-cleaning contacts and up to IP69K rating for water- and dust-proof panels. They are very easy to install with the modular range that allows for simple reconfigurations of e.g. number of contacts during installation and the compact range with an all-in-one design. The same ranges are available world-wide and our pilot devices comply with all major certifications, making them the perfect option for exporting industries.
ELECTRONIC RELAYS AND CONTROL	
Measuring and monitoring relays 	ABB offers all the important measuring and monitoring relays required for a wide range of applications no matter what environment you operate in. All electrical key parameters of single- and three-phase networks can be monitored including special purpose products e.g. for insulation and grid feeding monitoring. Further products offer reliable temperature measurement and help to protect motors and other equipment. Liquid level monitors allows to realize filling and draining applications. Choose among a large range of high quality multifunction or single function products to ensure reliable protection of your valuable assets.
Primary switch mode power supplies 	The CP range offers the latest technology in a compact construction of power supplies. Modern power supply units are a vital component in most areas of energy management and automation technology. ABB pays the utmost attention to the resulting requirements. Innovation is the key to a substantial enlargement of our power supply product program.
Interface relays and optocouplers 	ABB's interface relays and optocouplers ensure a reliable voltage conversion between process peripherals and higher level control systems. For all sorts of machinery, our relays ensure reliable signal switching and provide electrical isolation for your sensitive electronics such as PLCs. 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 offers a range of different coil voltages and plug-in functional modules.
INTELLIGENT BUILDING CONTROL	
ABB i-bus KNX 	ABB i-bus KNX is the intelligent building system that meets the highest requirements for applications in building control data centers. By controlling applications such as lighting, heating, ventilation and air-conditioning building operators can benefit from comfort, security and energy efficiency. The system is based on the simple and proven KNX technology, which is accepted as the world's first open standard for the control of all types of intelligent buildings – industrial, commercial or residential.

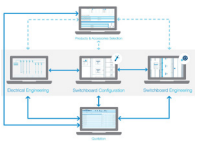
Product / Offering	Benefits and features
MODULAR AND STANDALONE UPS	
MegaFlex UL 	MegaFlex UL uninterruptible power supply (UPS) designed for critical high-density computing environments such as large enterprises, colocation, hosting cloud and telecommunications data centers. MegaFlex UL UPS offers: – 1,600 kW smart, scalable and flexible power on business demand – High energy efficiency operations in eBoost mode, up to 99% – 40% Footprint savings inside the high-density computing rooms – 60% reduced energy consumption kWh over the product lifespan
TLE Series UPS 160-1000kW 60Hz / UL listed 	The TLE Series UPS is a three-level inverter design with a multi-mode architecture that makes real time decisions between premium protection mode and premium efficiency mode. TLE UL UPS offers: – Highly reliable and efficient tri-level conversion – Automatic or manual multi-mode generation – Up to 99% premium efficiency mode (filtered eBoost) – Up to 97% premium protection mode (double conversion)
DPA UL Series 	The three phase modular Decentralized Parallel Architecture (DPA) UPS series provides high reliability and is available in several sizes: – DPA 60 UL uses 20kW power module for power ratings from 20 to 60 kW at 208V – DPA 120 UL fulfills power requirements from 20KW to 600kW at 208V – DPA 240 UL fulfills power requirements from 40kW to 1.2MW at 415V This advanced UPS design provides the highest degree of protection in critical applications where the load must be fed with quality power. These Conceptpower DPA systems utilize decentralized parallel architecture and ensures the highest level of reliability and availability with true redundancy across modules.
DPA UPScale ST 400 V IEC (10 – 400 kW system power) 	DPA UPScale ST modular double conversion UPS is available for high density data center applications requiring an all-in-one power protection solution that includes frame, UPS, battery and communications. Decentralized paralleling architecture (DPA™) means each module is self-contained and can be added, removed or online-swapped at any time. This fully scalable and easily maintained UPS gives you unparalleled uptime and energy efficiency. UPS is based on 10 or 20 kW modules and can be scaled up to 400 kW.
Conceptpower DPA 250 S4 IEC (50 – 1500 kW system power) 	The DPA 250 S4 has a high-efficiency, modular architecture that offers best reliability for environmentally conscious organizations that also need zero downtime and low cost of ownership. Thanks to three-level interleaved technology, the DPA 250 S4 achieves an efficiency of 97.6 percent UPS module efficiency and 97.4 percent system efficiency. The DPA 250 S4 300 kW cabinet can host up to six 50 kW modules for 300 kW redundant power. Up to five 300 kW frames and up to 30 modules can be paralleled for an amazing 1,500 kW of uninterrupted power.
Conceptpower DPA 500 400 V IEC and 480 V UL (100 – 3000 kW system power) 	Conceptpower DPA modular double conversion UPS delivers complete power protection solution for medium to large power applications in data centers and other critical applications. Modular decentralized paralleling architecture (DPA™) reduces need to over specify UPS power as power modules can simply be added, as needed, in the future. This also makes the UPS fast and easy to service. This, together with high, up to 96 percent efficiency reduces significantly total cost of ownership and secures increased system uptime. UPS is based on 100 kW modules and can be scaled up to 3000 kW system power.

Product / Offering	Benefits and features
PowerScale 400 V IEC (10 – 1000 kVA system power) 	PowerScale is an online, double-conversion UPS that provides enhanced power protection in a compact format. Its outstanding price / performance delivers the best value with uncompromised system reliability and power availability. The standalone three-phase UPS system is the ideal solution for server rooms, networks, small data centers and storage.
PowerWave 33 400 V IEC (60 – 5000 kW system power) 	PowerWave 33, standalone double-conversion UPS, covers range of 60 kW to 500 kW by rated power. Up to ten UPS can be further connected in parallel for more capacity and/or redundancy. High, up to 96 percent efficiency reduces cost of ownership and carbon footprint.
Cyberex®SuperSwitch®4 Digital static transfer switch 	Cyberex®SuperSwitch®4 is a 200-4000A digital transfer switch. Designed with a 'true' fault-tolerant architecture, SuperSwitch®4 ensures there is truly no single point of failure through the use of our patented transfer algorithms and robust electrical components. With an increased MTBDE to an estimated 1.5 million hours, SuperSwitch®4 reliability is unmatched. SuperSwitch®4 redefines power reliability with its exceptional design, serviceability and user-interface.
PCS120 medium voltage UPS 2.25 MVA/2.25 MW (single unit) paralleling and ring bus capabilities 	PCS120 MV UPS is the next generation of medium-voltage UPS intended for multi megawatt power protection. Based on the revolutionary ZISC architecture, the PCS120 MV UPS introduces a flexible solution for higher reliability and higher efficiency in critical power facilities. The approach offers two main benefits. It increases reliability and reduces costs of the critical power facility build and operation. Increased reliability is derived from the MV design approach with larger protected load blocks, lower switchgear count and the operating culture of medium voltage systems. Installing the power protection at the MV level provides the most energy efficient configuration as the lower currents at this voltage result in smaller cables and lower losses. – Cost effective – Flexibility – Connectivity and monitoring – Serviceability
INSTALLATION PRODUCTS	
Cable ties, tools and accessories 	ABB offers one of the industry's broadest ranges of innovative solutions for fastening, bundling and securing wire and cable, including the trusted Ty-Rap®, Ty-Fast® and Spec-Kon® cable tie brands in multiple sizes, colors and specialty materials for demanding applications. Our range also covers many mounting bases and easy-to-use tools. – Hook-and-loop fasteners for bundling low-voltage and fiber optic cabling – Plenum-rated for use in air-handling spaces above ceilings and under floors – Weather-resistant for rooftops and other outdoor applications – UL® Listed for metal-clad cable support in walls
Wiring duct 	Premium quality duct for point-to-point wiring is ideal for electrical enclosures, machine building and data/communications panels and cabinets. Offering includes imperial, metric and DIN duct in standard materials and specialty materials that are halogen-free.

Product / Offering	Benefits and features
Wire termination and tools 	A full line that includes insulated and non-insulated terminals, splices, wire joints, disconnects, ferrules, heat-shrinkable terminals, splices and disconnects in imperial and metric sizes. A complete set of tooling is included. Products are IEC, UL® listed and CSA certified.
Shield-Kon® coaxial grounding connectors 	– One- and two-piece coaxial connectors for grounding – Save time and reduce assembly costs – Safe monitoring and simple operation – Low profile and compact size
Heatshrink solutions 	A broad range of heat shrink products with different wall thicknesses (thin, medium, thick), packaging (reels, cut lengths, dispenser boxes, pre-cut bags), shrink ratios (2:1, 3:1, 4:1), different colors, pre-molded parts, with or without glue are offered (dual).
Safety labels, tags, signs and barricade tapes 	Safety labels, tags, signs and barricade tapes – Help to ensure personnel and workplace safety – Conform to NECR 2012 Section 110.3(A)(1) – Highly visible and long-lasting materials – Barricades and burial marking tapes in a variety of materials and colors – Custom labels, tags and signs
Compression cable lugs and tools 	AWG, IEC and DIN compression connectors, made of the highest-grade materials offering high conductivity/low resistance, meet or exceed all industry standards. Range includes straight and angled connectors and splices, plus a full range of mechanical, pneumatic, and battery operated compression tools. Specifically for space saving applications we offer: – Narrow-tongue lugs – Consistent narrow width from barrel to tongue to fit into tight spaces – Featuring the Color-Keyed® Installation Tooling System that ensures proper connections – Space-saving 90°, tee and cross connections – Use with standard compression lugs and splices
DuraGard® pin-and-sleeve connectors 	– Complete line of 20–60A (600VAC/250VDC max.) connectors, plugs and receptacles – UL94V-0 flammability-rated, corrosion-resistant non-metallic housings – Waterproof whether mated or unmated
Fittings 	CHASE® Fittings – Compact, low-profile fittings – ideal for limited space – Line encompasses nipples and hubs for rigid conduit, as well as liquid-tight conduit fittings and cord connectors Multi-Hole cord grips – Space- and labor-saving metallic or non-metallic cord fittings for panels – Up to 4-to-1 SKU reduction – purchase, stock and install one fitting versus four
Carlon ENT (Electrical Non-metallic Tubing) system 	– To be used within the air-handling spaces beneath raised floors for informational technology equipment as per NEC® Sections 300.22(D) and 645.5(E) – Material-handling savings with lightweight, flexible coils – Installs in half the time of comparable EMT conduit
Cable tray and metal framing systems 	T&B® cable tray is a cost effective, reliable and adaptable alternative to conduit systems. Additionally ABB offers a comprehensive lines of metal framing including the industry's only 100precent plated products, our 11/2" modular system, and hundreds of accessories to complete any job.
Grounding systems 	– Superior grounding and bonding of electrical systems and equipment – EZGround™ connectors provide a consistent, irreversible bond – Connectors require no special tools to install

Product / Offering	Benefits and features
Flexible braids 	– Variety of flexible straps and accessories for grounding – Extra-flexible links for heavy-duty applications to 3,600A – Standard links for medium-duty applications to 2,350A
Signal reference grid connectors and clamps 	– Secures grid grounding to raised floor posts – No kinks or bends with lay-in feature – Range-taking design – Quick and easy installation
Grounding bushings & bonding locknuts 	Blackjack® Grounding Bushings – Dual rated for grounding and bonding of threaded and unthreaded conduit, aluminum and copper wire – Speeds installation and improves aesthetics – UL® listed and CSA Certified Bonding Locknuts – Ensure positive bonding of conduit to enclosure – Available in steel or aluminum
Industrial plug and sockets – Easy & Safe 	Basic range of industrial plugs and sockets for 16-32A with high requirements on quality, safety and functionality. Plugs, connectors, sockets and inlets for surface and panel mounting. Compact design makes 'Easy & Safe' suitable for applications with limited space.
Industrial plugs and sockets – Modular Combi 	Modular Combi is an effective fully customized system with a combination of IP&S outlets and inlets, Schuko outlets and ABB DIN-rail components in a robust metal or plastic box. Managing power this way is rational and safe. Modular Combi is very easy to install, delivered fully assembled and wired, only one feeding cable is needed. It is easy to modify in the future for additional needs.

SERVICES AND SUPPORT

Service 	The services offered by ABB for the low- and medium-voltage products and systems span the entire value chain, from the moment a customer makes the first inquiry to disposal and recycling of the product. Throughout the value chain, ABB provides training, technical support and customized contracts. All of this is supported by one of the most extensive global sales and service networks.
Consultancy 	Finding the best technology solution for your electrical system designs is easy with ABB's comprehensive selection tools and extensive technical documentation. We offer highly functional and easy to deploy products to support a wide range of projects. And we want to support you at each stage of your project, with design software, training materials, configuration and product selection tools. Whether you're looking to deliver energy efficiency, space savings, easily maintained systems or overall project cost reduction for your customers, with the breadth of our offering you can deliver customized solutions to meet your project goals and streamline engineering processes.
Design software 	Choosing the right products for complex installations can be extremely time consuming. ABB provides a wide range of software and mobile applications to help you select precisely what you need, in a simple yet effective way. Choosing, dimensioning and drawing your application has never been easier.

Please note: This is ABB's global offering and some products might not be available in your country. Refer to abb.com for your location.

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ABB

For more information and local contacts, please visit:

new.abb.com/data-centers
new.abb.com/low-voltage
new.abb.com/medium-voltage
new.abb.com/ups

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