ABB Solutions for Shipbuilding

Components and systems

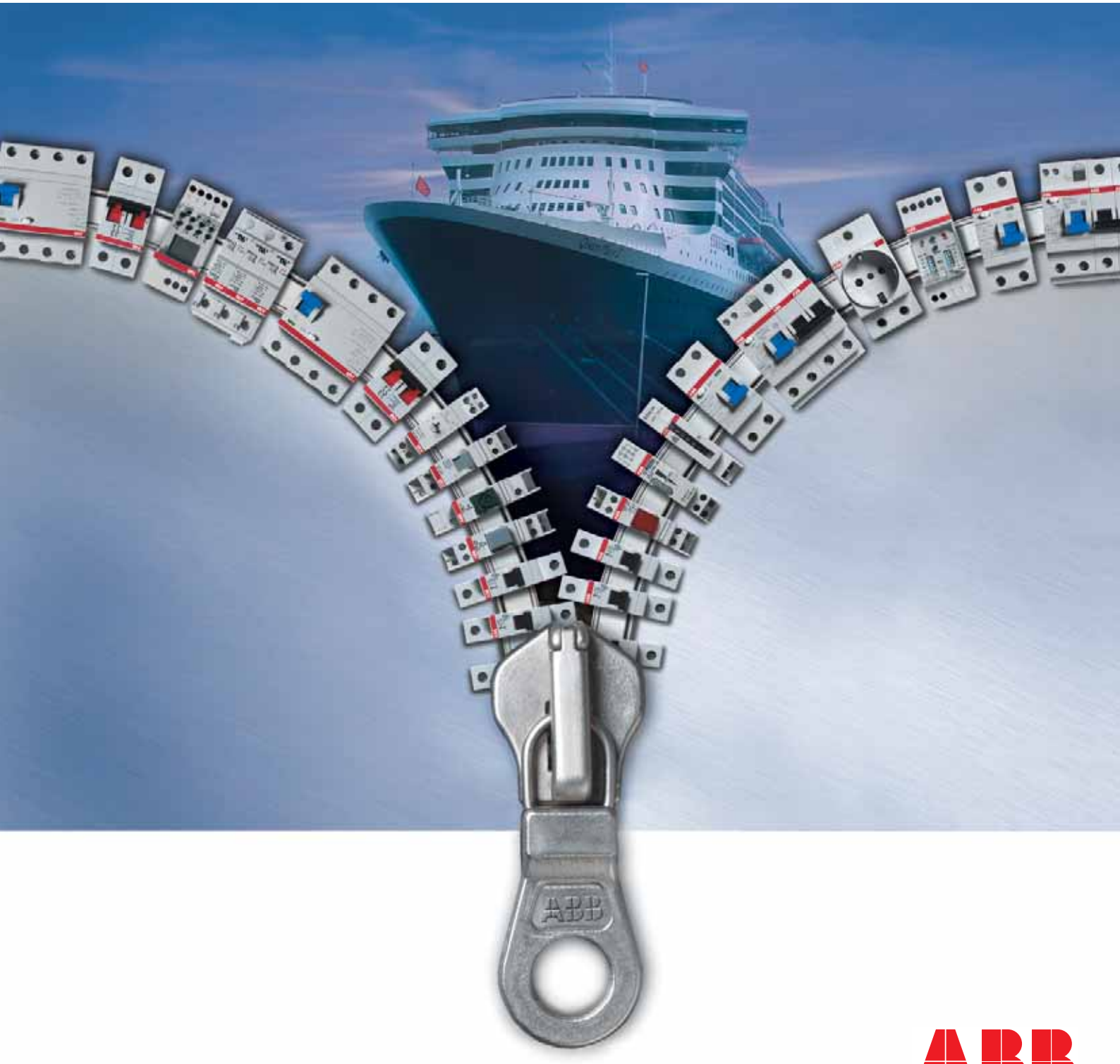

ABB is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 103,000 people. We provides an extensive range of electrical products for demanding marine applications. Proven and reliable product solutions combined with true global support ensure a world-class service for ship owners, operators, shipyards, OEMs, panel builders and integrators.

Specifically designed and certified

With its wealth of broad maritime engineering expertise and long experience, ABB delivers products, solutions and services that meet the highest requirements of marine installations. Certified to the major international classification standards, our products provide high system functionality and integrity. The demanding conditions of the marine industry influence product design and engineering, products that are based on the proven ABB electric power, drives and automation product platform. Our worldwide sales and after sales network also adds to our ability to provide competent support wherever it is needed.

Your partner – whatever the application

ABB provides machinery suppliers (OEM), panel builders and integrators with compatible products that allow shipyards, ship owners and operators to harmonise electrical products onboard and thereby optimise operation, maintenance and support throughout the lifetime of the vessel. Top performance products, short delivery times and product availability via global distribution networks are all aspects of our service that are highly valued by our customers.

In addition to stand-alone products, ABB offers shipyards and shipowners the system deliveries in areas such as power generation and distribution, electrical propulsion and total solutions. In such deliveries ABB makes a system solution for vessels by using ABB marine products combined with a long marine system knowledge and experience.
We also take a responsibility of conceptual design, detail engineering, project management and commissioning of the system.
More information about marine systems can be obtained at www.abb.com/marine

The comprehensive ABB electrical product portfolio addresses all typical equipment and component requirements for machineries onboard the vessel. Our products include a complete series of synchronous motors and generators, low and medium voltage drives and soft starters, low and high voltage motors, transformers and switchboards. Breakers, switches and control products for integration into switchboards and panels are also included as are instrumentation sensors and solutions for a range of different measurement requirements. ABB is also the leading supplier of electric power and propulsion systems for the marine industry.

Wide range of products

The comprehensive ABB product portfolio encompasses all equipment and components typically required for machineries onboard the vessel. Products include: complete series of synchronous motors and generators; low and medium voltage drives and soft starters, low and high voltage motors, transformers and switchboards. Breakers, switches and control products for integration into switchboards and panels as well as instrumentation sensors and solutions for various measurements are also key products. The power and voltage range meets all industry requirements with high efficiency ratings to minimise onboard energy consumption. Our ABB product platform ensures high quality design, optimum compatibility and extensive product lifetime services. More comprehensive data can be obtained from our extensive web pages at www.abb.com, alongside information about our global presence.

For all applications

Pumps, compressors, air conditioning, ventilation, cranes, thrusters, winches, steering gears, generators, main and distribution switchboards, panels, protection and control systems are typical application areas for ABB products. We also provide a wide range of components for hazardous onboard environments which meet the respective regulatory requirements.

Life cycle services and support

ABB's global presence guarantees service and support wherever it is needed. Contact lists, spare parts information and other service and support data can be found at www.abb.com.

Product support and service

ABB has global presence through its worldwide organization and network of selected partners. This provides customers with fast delivery and competent product support whatever the location. ABB guarantees to supply a full range of genuine spare parts for ABB products and the regional logistic centers are committed to efficient delivery. We can provide systematic life cycle management with proactive service products that aim to maximise production process availability, reliability and performance.

Marine Services Centers

With dedicated marine services centers, strategically positioned around the world, we are committed to providing lifecycle service and support wherever your business takes you. ABB considers lifecycle services an important component of each total delivery. Our work begins during the conceptual phase of each project and continues throughout the life of the vessel. Through services such as proactive preventive maintenance programs and spare parts management, the unique requirements of each vessel are met. Competence is a key factor in smooth sailing. Our commitment continues through to the ABB Marine Academy where we can offer you a complementary range of learning solutions. Our solutions are designed to give the necessary technical understanding and working skills to guarantee full functionality of your ABB installation. More information can be obtained at www.abb.com/marine.

Wide range of products

Low voltage products

Motors

ABB offers a complete range of low voltage motors, ensuring that the right motor can be found for every need including special and hazardous environments. Low voltage motors are available in aluminum, steel and cast iron frames with an output range of 0.09 – 1200 kW.

More information at ***http://www.abb.com/motors&drives***

Applications:

In the marine industry, low voltage motors are used, both on- and under deck, in applications such as engine room pumps, steering pumps, cargo pumps, ventilation fans, deck cranes, thrusters, winches, hydraulic power packs, and compressors.

Drives

ABB low voltage variable speed drives offer powerful and a curate performance for any application in powers of 0.55 up to 5600 kW. ABB's AC drives, with asynchronous or permanent magnet synchronous motors, combine environmental benefits with reduced operating cost. The drives fulfill marine and offshore requirements, with design and operation tested in line with approval requirements. Approved ABB drives ensure reliable and economic operation in all conditions in a complete and compact package.

More information at ***http://www.abb.com/motors&drives***

Applications:

LV drives are used in main propulsion, steering, thrusters, compressors, pumps, fans, winches, and a number of other onboard systems.

Breakers

ABB's moulded-case and air circuit-breakers provide the optimal solution for applications up to 6300 A with voltages up to 1150 V in AC and DC. In addition to the ability to include communication features, they are particularly suitable in all conditions where the status of the circuit-breaker, information exchange of any kind and measurements need to be transmitted remotely.

More information at ***http://www.abb.com/lowvoltage***

Applications:

Moulded-case and air circuit-breakers are widely used for protection of the main power circuits and in the auxiliary circuits in all the main configurations for all marine applications.

Switches

In fusible electrification systems the switch fuse provides superior short circuit protection up to 800 A for voltages up to 690 V. Switch-disconnectors are available up to 3150 A, in 1- to 4-pole versions. These switches ensure safe operation, protecting both people and equipment, eliminating the risk of electrical accidents. Switch fuses are available for all kinds of fuse links.

More information at ***http://www.abb.com/lowvoltage***

Applications:

Switch fuses are tested and classified for marine use for isolation, breaking, making and short circuit protection and switch-disconnectors for isolation, breaking and making.

Other products

Syncronous motors and generators

High efficiency and robust construction make our synchronous motors (up to 50 000 kW) and generators (up to 50 000 kVA) ideal for the marine industry. A high degree of standardization enables shorter delivery times and greater versatility in all applications. Reliability and high efficiency results in considerable savings over the life time of the motor. Precise torque control with ABB frequency converters, noise and vibration reduction, protection by enclosure, cooling method and terminal box arrangements are considered in design.

More information at ***http://www.abb.com/motors&drives***

Applications:

Synchronous motors and generators are mainly used as propulsion motors, main, auxiliary and shaft generators in various vessel types.

Induction motors

ABB offers a comprehensive range (up to 18 000 kW) of reliable and high efficiency induction motors. Of low and medium voltage and built around a modular and cast iron platform, they are designed for demanding operating conditions. The simplicity of these platforms allows them to be perfectly engineered according to each individual customer's requirements for application areas that include special and hazardous environments.

More information at ***http://www.abb.com/motors&drives***

Applications:

In the marine industry, induction motors are used in applications such as compressors, pumps, winches, fans, blowers, propulsion and ship thrusters.

Medium voltage drives

ABB medium voltage drives with their modularity, energy efficiency and superior performance are the perfect solution for modern marine requirements in the power range up to 28 000 kW. The use of the latest IGCT (Integrated Gate Commutated Thyristor) power semiconductors results in an intrinsically less complex, more efficient and highly reliable medium voltage converter. The compact construction produces a small footprint and lightweight design, giving greater flexibility to ship designers and making more space available for other needs.

More information at ***http://www.abb.com/motors&drives***

Applications:

The modular platform is extremely versatile, providing a basis for marine certified standard single drives, transformerless solutions, multi-motor-drives and systems with built-in redundancy. ABB medium voltage drives are used in advanced propulsion schemes and auxiliary applications in all types of vessel and floating structure.

Control products

Claimed to be the most extensive range in the marine market, ABB provides softstarters (3 A to 1810 A), contactors and motor protection products (6 A to 2000 A), electronic products and relays, arc guard (TVOC) and pilot devices, terminal blocks and automation devices. Flexible components for customised automation solutions for operating, control, networking and switching are also available with a multitude of standard field busses and networks.

More information at ***http://www.abb.com/lowvoltage***

Applications:

With reliability and performance built into every piece of equipment, these products are used in demanding marine industry applications by switchboard, panel and console builders.

System pro *M* compact®: The right choice for naval application

A wide product range suitable for all applications in marine installations. Thanks to the compatibility between the new System pro *M* compact® range and the System pro *M* range, ABB offers many additional functionalities like:

- **protection and switching**
- **checking and monitoring**
- **control and programming**

Shape and dimensions of the new series allow both precise adapting in already existing installations and continuity in terms of profile and appearance.

Time saving in cross-wiring within groups and combinations of devices is another advantage.

The technologically innovative bidirectional cylinder-lift terminal enables synchronous closing of the front and rear wiring input.

Highest safety standard for the installer thanks to protection against electric shock according to EN 41140.

Marking of devices is reliable and clear.

Both supply and connection with busbars from top or bottom is admitted.

Approved and certified by all major ship registers

- **Products approved by leading ship registers as well as complying to international standards IEC+UL+CSA**
- **Suitable for use in 440V~**
- **High rupturing capacity**
- **Special characteristics K and Z**

The System pro *M* compact® range

MCBs:
– new circuit-breakers

RCDs:
– new residual current circuit-breakers (RCCBs)
– new RCD-blocks
– new residual current circuit-breakers with overcurrent protection (RCBOs)

Auxiliary elements:
– new universal signal contact switch/ auxiliary switch
– new auxiliary switch for circuit-breaker extensions
– new shunt release
– new undervoltage release

MDRCs-Surge protection devices

MDRCs-Protection devices
In addition to MCBs and RCDs, ABB supplies other modular devices for protection such as residual current relays and fuse holders.

MDRCs-Command devices
This category includes devices that are operated manually to command the electric system: contactors, latching relays, switchisolators, switches, pushbuttons etc. Typically they are installed to control lights from severeal points of the same circuit or to pilot user devices with a high number of operations.

MDRCs-Load management devices
Overload relays, load management switches, anti black-out lamps, time switches and the other modular devices in this category react automatically to variations of parameters and other events in the system to allow for plant optimisation.

MDRCs-Measurement devices
The range of devices in this category is very wide, including a great number of auxiliary components and accessories that make installation in switchboards and consumer units practical and economic.

MDRCs-Other devices
The range of ABB MDRCs also includes bells, transformers etc.

Various accessories

System pro *M* compact®: The right choice for naval application

MCBs can also be extended with an integrated auxiliary contact (1 NO or 1 NC). Existing installations can be easily upgraded to include auxiliary switch functionality.

Availability of a quite wide range of factory fitted RCBOs.

RCD-blocks DDA 200 2P, 3P, 4P up to 40 A fit into two modules. Versions in 63 A sizes are supplied with two additional terminals for remote tripping.

Universal signal/auxiliary and auxiliary contacts fit on S 200, F 200 and DS 200.

Without busbars two terminal spaces can be used for cables with different cross sections: incoming supply with supplementary terminal up to 50 mm² from the front side.

Safe connection between DDA 200 and S 200 thanks to not losable coupling elements, opportunely shaped pins and plastic clamps.

Special quick fastening for an easy removal of the devices from the assembly pressing upwards, both for MCBs S 200 and RCCBs F 200: the only in the market that can be removed without a screwdriver.

More working space between component rows.

- **Products approved by leading ship registers as well as complying to international standards IEC+UL+CSA**
- **Suitable for use in 440V~**
- **High rupturing capacity**
- **Special characteristics K and Z**

New System pro *M* compact® range is compatible with the System pro *M* range, thanks to the configuration of new vs old terminals.

Supply from top or bottom either with cables or busbars.

Safe terminal technology: the terminals offer protection from misconnection.

Druck Nr. 2CDC 002 078 B0201
Stand: 2 / 2006

ABB STOTZ-KONTAKT GmbH
P.O. Box 10 16 80, 69006 Heidelberg, Germany
Eppelheimer Straße 82, 69123 Heidelberg, Germany
Telephone +49 (0) 6221/701-0
Telefax +49 (0) 6221/701-240
www.abb.de/stotz-kontakt
E-mail: info@de.abb.com