



ABB drives

Product guide

Profile

ABB has designed an extensive portfolio of variable speed drives that is available through ABB's sales offices and technical partners around the world.

To meet the varying requirements of its customers, ABB offers a wide range of drives that meet the specific demands of pump, fan, conveyor and compressor applications through to machinery and marine applications.

This product guide gives an overview of ABB's portfolio of AC and DC drives.

Benefits of using ABB drives

Being able to vary the speed and torque of an electric motor, and in turn the driven load by using an ABB drive, brings benefits including:

Substantial energy savings – Rather than have an electric motor running continuously at full speed, an electric drive allows the user to slow down or speed up the motor depending on the demand.

Optimal process control – An electric drive enables a process to achieve the right speed and torque while maintaining its accuracy. All of which can contribute to a more consistent quality and throughput of the end product.

Reduced need for maintenance – Being able to vary the speed and torque of an electric motor means there is less wear and tear on the motor and the driven machine. For example, the ability to bring a process up to speed slowly prevents the sudden shock loading that can damage a motor and the driven machine over time.

Efficient system upgrade – An electric drive allows the removal of valves, gears and belts. It also ensures network dimensioning based on a lower starting current.

Functional safety - Most ABB drives offer functional safety features that comply with the requirements of the European Union Machinery Directive 2006/42/EC. This directive is associated with standards like EN 62061 (IEC, defining SIL - Safety Integrity Level) and EN ISO 13849-1 (defining PL - Performance Level).

ABB - global market and technology leader in AC and DC drives

ABB (www.abb.com) is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. ABB is the world's largest drives manufacturer. The ABB Group of companies operates in around 100 countries and employs more than 117,000 people.

All ABB drives have the following common features:

Easy to select – A drive can be easily selected using the ABB drives selection table on pages 6 and 7. Selection can be as simple as choosing the power rating, voltage and current through to detailed dimensioning and the addition of various options.

Easy to purchase – ABB drives are available from ABB and selected ABB partners. Contact ABB for more details.

Easy to install and commission – The drives are simple to install and commission. ABB has developed some of the most advanced control panels in the world. The panels feature plain-language instructions which can be accessed via very simple soft buttons. This combination, together with a series of Help menus, provides quick and effective access to all parameters needed to make the drive operational.

Easy to use – The drives are very easy to use. The advanced control panel allows instant adjustments to speed or other application parameters. PC tools extend the offering.

Electric motors consume about 65% of all electricity used throughout industry. Yet, less than 10% of those motors are fitted with a variable speed drive. Imagine the energy savings if more motors were controlled by a variable speed drive.



ABB drives

ABB low voltage AC drives

The ABB low voltage AC drives product range, from 0.18 to 5600 kW, is the widest available from any manufacturer. ABB drives are the global benchmark that signifies reliability, simplicity, flexibility and ingenuity throughout the entire life cycle of the drive.

Understanding how a process uses energy is essential in determining where additional energy savings can be made. To help, several ABB drives feature energy use calculators that provide energy consumption data. This information can be used to further analyze and tune a process for even greater energy savings.

The drives portfolio is supported by a selection of PC tools, fieldbus, and communication options.

ABB machinery drives

ABB offers machinery builders an AC drives portfolio featuring ABB component drives, ABB general machinery drives, and for high precision applications, ABB high performance machinery drives. Designed for use in very simple machines such as treadmills, to complex high speed flying shear machinery, the drives are designed for OEM integration into machines.

ABB standard drives

The ABB standard drives portfolio controls applications such as pumps and fans, in diverse industries from building services, such as HVAC, through to process industries, such as food & beverage. All the options needed for a particular application are built-in to the drive, reducing the need for external options or additional installation space.

ABB industrial drives

The ABB industrial drive portfolio is designed for heavy industrial applications such as those found in pulp and paper, metals, mining, cement, power, chemical, oil and gas, water and wastewater, and food and beverage. ABB industrial drives are available as wall mounted drives, modules for cabinet assembly, or as complete cabinet-built drives.

Drives adapted and approved for use in the marine environment are also included within this portfolio.

ABB industrial drives have a wide selection of built-in options and are easily programmed to fit the needs of the application.

ABB DC drives

ABB's DC drive portfolio, from 9 to 18000 kW, provides the highest power-to-size ratio on the market. The drives are designed for most industries including metals, cement, mining, pulp and paper, printing, food and beverage, wire manufacturing, test rigs, ski lift and cranes. ABB DC drives are available as complete cabinets, modules for cabinet assembly, and as retrofit kits. With built-in field exciters and integrated PLC's, they are the best DC drives choice for all new and retrofit applications.

Additionally, the drives are used in non-motor applications such as DC chargers and electromagnetic applications.

The DC drives feature auto-tuning capabilities. Intuitive user software minimizes start-up time and improves daily operation. This helps increase process productivity and improve production quality.

ABB medium voltage AC drives

ABB offers an extensive portfolio of variable speed drives and soft starters for medium voltage applications in the power range from 315 kW to more than 100 MW.

ABB medium voltage AC drives are used for a wide range of applications in industries such as pulp and paper, metals, mining, cement, power, chemical, oil and gas, water and wastewater and food and beverage.

The drives are available with air or water cooling and with different line supply connection options. Some products can have the input transformer integrated or to operate direct-to-line, without an input transformer thereby saving weight and space.

ABB has the complete range of products to supply drive systems including transformer, frequency converter and motor.



ABB machinery drives

ACS55

Power range 0.18 to 0.37 kW (1-phase, 100 to 120 V)

Power range 0.18 to 2.2 kW (1-phase, 200 to 240 V)

ACS150

Power range 0.37 to 2.2 kW (1-phase/3-phase, 200 to 240 V)

Power range 0.37 to 4 kW (3-phase, 380 to 480 V)

ACS355

Power range 0.37 to 2.2 kW (1-phase, 200 to 240 V)

Power range 0.37 to 11 kW (3-phase, 200 to 240 V)

Power range 0.37 to 22 kW (3-phase, 380 to 480 V)

ACSM1

Power range 0.75 to 160 kW (3-phase, 380 to 480 V)

ABB industrial drives

ACS800, drive modules

Power range 0.55 to 2900 kW (230 to 690 V)

ACS850, drive modules

Power range 1.1 to 500 kW (380 to 500 V)

ACQ810, drive modules

Power range 1.1 to 400 kW (380 to 480 V)

ACS800, single drives

Power range 0.55 to 5600 kW (230 to 690 V)

ACS800, multidrives

Power range 1.1 to 5600 kW (380 to 690 V)

ABB standard drives

ACS310

Power range 0.37 to 11 kW (3-phase, 200 to 240 V)

Power range 0.37 to 22 kW (3-phase, 380 to 480 V)

ACS550-01

Power range 0.75 to 75 kW (3-phase, 200 to 240 V)

Power range 0.75 to 160 kW (3-phase, 380 to 480 V)

ACS550-02

Power range 200 to 355 kW (3-phase, 380 to 480 V)

ACH550-01

Power range 0.75 to 160 kW (3-phase 208 to 240 V)

Power range 0.75 to 355 kW (3-phase 380 to 480 V)

ACH550-02

Power range 200 to 355 kW (3-phase, 380 to 480 V)

ABB DC drives

Power range 9 to 18000 kW, 6-pulse or 12-pulse systems

DCS400 series, drive modules

3-phase 230 to 500 V AC, 20 to 1000 A DC

DCS800-S series, drive modules

230 to 1000 V AC, 20 to 5200 A

DCS800-A series, single drives, multidrives

230 to 1200 V AC, 20 to 20000 A

ABB medium voltage AC drives

ACS 1000

315 to 5 MW, 2.3 to 4.16 kV

ACS 2000

315 to 800 kW, 6.0 to 6.9 kV

ACS 5000

2 to 22 MW, 6.0 to 6.9 kV

ACS 6000

3 to 27 MW, 2.3 to 3.3 kV

MEGADRIVE-LCI

2 to 72 MW (higher on request)

Quick finder

The quick finder table lists some important features of ABB's drives. The table's purpose is to highlight the main differences between the various product portfolios. The pages following this table provide detailed information for each product offered.

● = available for all drives in the family

○ = available in one or more of the drives in the family

Voltage and power	
Supply unit options	12-pulse diode/6-pulse diode Low harmonic Regenerative
Enclosure class	IP00 IP20 IP21 IP22 IP42 IP54/ IP54R/ IP55 IP66/ IP67/ IP69K
Mechanical construction	Module Wall-mounted Free-standing Cabinet-built
Motor control method	Vector control (open/closed) Direct torque control (DTC) (open/closed)
Inputs and outputs	Analog input/output Digital input/output Speed feedback Built-in motor thermal protection relay
Fieldbuses	CANopen ControlNet DeviceNet EtherCAT Ethernet/IP EthernetPOWERLINK InterBus-S LonWorks® Modbus Modbus TCP PROFIBUS PROFINET IO SERCOS II
Remote monitoring and diagnostic tools	NETA-01 SREA-01 DriveMonitor™
Cooling method	Liquid cooling Cold plate
EMC compliance (EN 61800-3)	No EMC filter 2 nd unrestricted, C3 1 st restricted, radiated only, C2 1 st restricted, C2 1 st unrestricted, conductive only, C1
Harmonic filter/choke	Choke Swinging choke Low harmonic filter
Dynamic (resistor) braking	
Hardware options	du/dt filters Sine filters Coated boards Common mode filter Cabinet options
Safety functions	Prevention of unexpected start-up Safe torque-off (STO) Safe stop 1 (SS1) Safe brake control (SBC) Safely limited speed (SLS)
Approvals	UL cUL CSA C-Tick GOST R Go-Mark Marine
Energy efficiency features	Energy optimizer Energy saving calculator Load profile CO ₂ reduction calculator
For more details pages see	

ABB low voltage AC drives

ABB machinery drives

ABB component drives

ABB component drives are designed to be incorporated into a wide variety of simple machines such as automatic gates, exercise machines, whirlpools and pizza ovens. These drives are widely available and easy to purchase through the ABB distribution network.

There are two series in the ABB component drive family: ACS55 and ACS150.

The ACS55 is the simplest drive, programmed by switches. Extended programming is provided by the DriveConfig kit PC tool. DriveConfig kit enables drive programming without a power connection to the drive. The drive works with single phase power and is suitable for domestic environments as standard.



Series ACS55

- Power range 0.18 to 0.37 kW (1-phase 100 to 120 V)
- Power range 0.18 to 2.2 kW (1-phase 200 to 240 V)
- IP20 enclosure (UL open)
- For basic machinery applications
- Scalar control
- Entry-level product for new users
- Suitable for domestic networks as standard
- Parameter setting by switches or by PC software
- Built-in EMC filter for 1st environment
- Options
 - DriveConfig kit PC tool, potentiometer
 - Input and output chokes

For further information, see catalog “ABB component drives, ACS55, 0.18 to 2.2 kW”, code: 3AFE68899842 EN

The ACS150 extends the capability of the ACS55 by adding an extended power range and programmability. The ACS150 includes more advanced functions such as PID control and built-in brake chopper. To retain the simplicity of an ABB component drive, the ACS150 has a fixed keypad and speed control potentiometer. The drive is available with both single and three phase supply.



Series ACS150

- Power range 0.37 to 2.2 kW (1-phase/ 3-phase 200 to 240 V)
- Power range 0.37 to 4 kW (3-phase 380 to 480 V)
- IP20 enclosure, optional NEMA 1 kit
- For basic machinery applications
- Scalar control
- Integrated user interface and potentiometer
- Built-in brake chopper
- Built-in EMC filter for 2nd environment
- Options
 - External EMC filter for 1st/ 2nd environment
 - Input and output chokes
 - FlashDrop tool for unpowered drive configuration in 2 seconds

For further information, see catalog “ABB component drives, ACS150, 0.37 kW to 4 kW”, code: 3AFE68596114 EN

ABB low voltage AC drives

ABB machinery drives

ABB general machinery drives

The ABB general machinery drives are designed to be the fastest drives to install, parameter-set and commission. They are highly compact and cost effective. Equipped with cutting-edge intelligence and safety capability, the drives are designed specifically to meet the production and performance needs of machine builders, system integrators, and panel builders, as well as the requirements of end users in a broad range of applications.



Series ACS355

- Power range 0.37 to 2.2 kW (1-phase 200 to 240 V), 0.37 to 11 kW (3-phase 200 to 240 V)
- Power range 0.37 to 22 kW (3-phase 380 to 480 V)
- IP20 enclosure, optional NEMA 1 kit
- IP66, IP67 or IP69K as optional variant up to 7.5 kW
- For a wide range of machinery applications
- Sensorless vector control
- Advanced functionality with sequence programming
- Built-in brake chopper and EMC filter for 2nd environment
- Integrated safe torque-off (STO) as standard
- Options
 - Basic and assistant control panels
 - Potentiometer, plug-in fieldbus adapters, encoder interface, relay output extension module, input and output chokes
 - External EMC filter for 1st environment
 - FlashDrop tool for unpowered drive configuration in 2 seconds

For further information, see catalog “ABB general machinery drives, ACS355, 0.37 to 22 kW”, code: 3AUA0000068569 EN

ABB high performance machinery drives

ABB high performance machinery drives provide excellent speed, torque and motion control for demanding machines. They control induction, synchronous and asynchronous servo and high torque motors with various feedback devices. The drive's small size gives options to install it within existing designs, without modifications to the machine. A variety of programming tools means that the drive can be configured for virtually any application. With a detachable memory unit the drive can be configured as near to its point of commissioning as is practical. The drive offers different options for master communication as it supports PROFIBUS, CANopen, DeviceNet, Ethernet communication and real-time synchronous communication (EtherCAT, SERCOS).



Series ACSM1

- Power range 0.75 to 160 kW (3-phase 380 to 480 V)
- IP20 enclosure for cabinet installation (UL open)
- Suitable for single drive and multidrive configurations
- For a wide range of demanding applications
- Speed, torque and motion control
- Controls synchronous and induction motors
- Integrated safe torque-off (STO) as standard
- Innovative memory unit for easy drive management
- Options
 - Various control options for encoder feedback, communication with master and I/O extension
 - Cooling variants: air, cold plate, liquid, push-through
 - Winder control program
 - Regenerative supply
 - Drive variant for lift applications

For further information, see catalog “ABB high performance machinery drives, ACSM1, 0.75 to 160 kW”, code: 3AFE68675073 EN

“ABB high performance machinery drives for lifts, ACSM1, 0.75 to 110 kW”, code: 3AUA0000075727 EN

ABB low voltage AC drives

ABB standard drives

ABB standard drives

ABB standard drives are designed to control a wide range of applications such as pumps, fans, conveyors and mixers, as well as for process control in industries including material handling, food and beverage, chemical, rubber and plastics, textile and printing. The drives are designed for easy selection, installation, commissioning and operation. The drives include a wide variety of built-in features which help reduce installation space and cabling. These drives are widely available and easy to purchase through the ABB distribution network.

There are two series in the ABB standard drive family: ACS310 and ACS550

The ACS310 is designed for pump and fan applications, such as booster pumps and process ventilation, having a wide range

of built-in functionality. Features such as pump and fan control (PFC), PID control with booster functionality and pump protection functions help optimize pump or fan flow, cut maintenance costs and save energy. Drive's compact dimensions and unified height and depth facilitate cabinet installations.

The ACS550 extends the capability of ACS310 with a wide power range and is targeted for a broad range of industries and variable and constant torque applications; from pumps and fans to conveyors and mixers. Built-in features including EMC filter for 1st environment, vector control and swinging choke enhance drive performance and help reduce needed installation space.



Series ACS310

- Power range 0.37 to 22 kW (3-phase 200 to 240 V, 380 to 480 V)
- IP20 enclosure, optional NEMA 1 kit
- Built-in pump and fan features such as multi-pump control, pipe clean and fill functions
- Embedded Modbus EIA-485
- Options
 - Basic and assistant control panels
 - Input and output chokes
 - Relay output extension module
 - External EMC filter for 1st environment
 - FlashDrop tool for unpowered drive configuration in 2 seconds

For further information, see catalog "ABB standard drives, ACS310, 0.37 to 22 kW", code: 3AUA0000051082 EN

Series ACS550-01

- Power range 0.75 to 160 kW (3-phase 208 to 240 V, 380 to 480 V)
- Wall-mounted drives, IP21 as standard (UL type 1), IP54 as option (UL type 12 in frame sizes R1-R6)
- Vector control
- Built-in EMC filter and Modbus fieldbus interface
- Swinging choke for superior harmonic reduction
- Options
 - Basic control and assistant control panel
 - Plug-in fieldbus adapters, panel mounting kits, relay output extension module
 - Output chokes
 - Brake units and choppers
 - FlashDrop tool for unpowered drive configuration in 2 seconds

For further information, see catalog "ABB standard drives, ACS550, 0.75 to 355 kW", code: 3AFE64792857 EN

ABB low voltage AC drives

ABB standard drives



ABB standard drives for HVAC applications

The ABB standard drive for HVAC, ACH550, is the first drive with native BACnet and it is the only certified and BTL listed drive in the market.

The drive is specially designed for heating, ventilation and air-conditioning (HVAC), and provides several pre-programmed application macros, including air handling units' (AHU's) supply and return fans, cooling tower fans, booster pumps and condensers.



Series ACS550-02

- Power range 200 to 355 kW (3-phase 380 to 480 V)
- Free-standing drives, IP21 as standard (UL type 1)
- Sensorless vector control, scalar control
- Standard software, easy to configure
- Built-in EMC filter and Modbus fieldbus interface
- Two mounting possibilities: drive's back against the wall or drive's side against the wall
- Pedestal unit on wheels, easy handling
- Built-in choke for superior harmonic reduction
- Options
 - Basic control and assistant control panel
 - Plug-in fieldbus adapters, panel mounting kits, relay output extension module
 - Output chokes
 - Brake choppers and resistors

For further information, see catalog "ABB standard drives, ACS550, 0.75 to 355 kW", code: 3AFE64792857 EN

Series ACH550

- Power range 0.75 to 75 kW (3-phase 208 to 240 V)
- Power range 0.75 to 355 kW (3-phase 380 to 480 V)
- IP21 for all powers, IP54 for unit powers up to 160 kW
- Built-in application know-how
- Control panel uses HVAC language
- HVAC specific application macros
- HVAC specific functions like override, PID, external PID, HVAC units, maintenance triggers, autoreset etc.
- Embedded communication protocols BACnet, N2, FLN and Modbus RTU as standard
- BACnet/IP router as option
- Swinging choke to reduce harmonics, compliant with IEC/EN 61000-3-12

For further information, see sales brochure "ABB standard drives for HVAC applications, ACH550, 0.75 to 355 kW", code: 3AFE68295378 EN

ABB low voltage AC drives

ABB industrial drives

ABB industrial drives

ABB industrial drives are highly flexible AC drives that can be customized to meet the precise needs of industrial applications. The drives cover a wide range of powers and voltages, including voltages up to 690 V. ABB industrial drives can be built in a number of differing formats: wall-mounted, free standing, cabinet, industrial kits, multidrives or liquid-cooled.

ABB single drives

ABB single drives are complete AC drives, which can be installed without any additional cabinet or enclosure. A single drive configuration contains a rectifier, optional EMC filter, reactor, DC link and an inverter in one single AC drive unit. Single drives are available as wall-mounted, free-standing and cabinet-built constructions. The degree of protection is at least IP21, and higher protection classes are available as an option. The key features of these drives are programmability and configurability during both ordering and commissioning, which makes adaptation to different applications easy.



Series ACS800-01

- Power range 0.55 to 200 kW (230 to 690 V)
- 6-pulse wall-mounted drives, IP21 as standard (UL type 1), IP55 as option (UL type 12)
- Built-in harmonic filtering choke
- High performance and overload capacity for all applications
 - Reliable and full-featured drive
 - Start-up assistant
- Built-in options
 - I/O extension modules
 - Fieldbus adapter modules
 - Pulse encoder and fiber optic link module
 - EMC filter, braking chopper
- Marine type approved design

For further information, see catalog “ABB industrial drives, ACS800, single drives, 0.55 to 5600 kW”, code: 3AFE68375126 EN

For further information about the ACS800 marine type approved design, see catalog “ABB drives for marine applications, ACS800-01/-04/-07LC, -17LC, -37LC, 0.55 to 5600 kW”, code: 3AFE68326753 EN

Series ACS800-11, regenerative drives

- Power range 5.5 to 110 kW (230 to 690 V)
- Regenerative wall-mounted drives, IP21 as standard (UL type 1)
- Built-in active rectifier and LCL filter for distortionless regenerative operation
- Advanced regenerative drive in one package
 - Complete full-performance drive
 - Built-in application know-how in software solutions
 - Start-up assistant
- Built-in options
 - I/O extension modules
 - Fieldbus adapter modules
 - Pulse encoder and fiber optic link module
 - EMC filter

For further information, see catalog “ABB industrial drives, ACS800, single drives, 0.55 to 5600 kW”, code: 3AFE68375126 EN

ABB low voltage AC drives

ABB industrial drives



Series ACS800-31, low harmonic drives

- Power range 5.5 to 110 kW (230 to 690 V)
- Wall-mounted low harmonic drives, IP21 as standard (UL type 1)
- Complete drive package
- Total current distortion less than 5%
- Power factor as unity
- Premium technology - double DTC
- Easy start-up
 - Plug and play
 - Start-up assistance
- Built-in options according to ACS800 series

For further information, see catalog "ABB industrial drives, ACS800, single drives, 0.55 to 5600 kW", code: 3AFE68375126 EN

Series ACS800-02

- Power range 45 to 560 kW (230 to 690 V)
- 6-pulse free standing drives, IP21 as standard (UL type 1)
- Ultra compact drive
 - Everything inside
 - Two mounting directions
 - Narrow design
- Enclosure extension (option)
 - For options such as contactor and motor thermal protection
- Fuse switch as standard

For further information, see catalog "ABB industrial drives, ACS800, single drives, 0.55 to 5600 kW", code: 3AFE68375126 EN

ABB low voltage AC drives

ABB industrial drives

ABB single drives

ABB cabinet-built single drives are drives that are mounted into a cabinet and the complete assembly is sold and delivered as one package. Often the cabinet will include additional accessories such as contactors, earth fault protection units, etc. These components are included when the term cabinet drive is used. Cabinet drives are typically made-to-order products.



Cabinet-built drives



Series ACS800-07

- Power range 45 to 2800 kW (380 to 690 V)
- IP21 as standard, IP22, IP42 (UL type 1), IP54 and IP54R as option (UL type 12)
- 6/12-pulse cabinet-built drives
- Rugged drive for demanding applications
 - Reliable and easy-to-use
 - Wide range of powers and voltages
 - Compact and modular design
- Customized solutions
 - Pre-configured or order-based solutions by application engineering
 - Industry-specific hardware and software solutions
 - Marine type approved design

For further information, see catalog "ABB industrial drives, ACS800, single drives, 0.55 to 5600 kW", code: 3AFE68375126 EN

Series ACS800-07LC, liquid-cooled single drives

- Power range 200 to 5600 kW (380 to 690 V)
- Totally enclosed cabinet, IP42 as standard, IP54 as option
- Liquid-cooled cabinet-built drives for harsh conditions
 - Compact size
 - Totally enclosed cabinet
 - 98% of heat dissipation through coolant, no additional air conditioning needed
- Customized solutions
 - Pre-configured or order-based solutions by application engineering
 - Industry and marine specific hardware and software solutions
 - Marine type approved design

For further information about the ACS800 marine type approved design, see catalog "ABB drives for marine applications, ACS800-01/-04/-07LC, -17LC, -37LC, 0.55 to 5600 kW", code: 3AFE68326753 EN

ABB low voltage AC drives

ABB industrial drives



Series ACS800-17, regenerative drives

- Power range 45 to 2500 kW (380 to 690 V)
- IP21 as standard, IP22, IP42 (UL type 1), IP54 and IP54R as option (UL type 12)
- Advanced regenerative drive in one package
 - Complete full-performance drive
 - Premium technology - double DTC
 - Easy start-up
- Customized solutions
 - Pre-configured or order-based solutions by application engineering
 - Industry and marine specific hardware and software solutions
 - Marine type approved design

Series ACS800-17LC, liquid-cooled regenerative single drives

- Power range 55 to 5200 kW (380 to 690 V)
- Totally enclosed cabinet, IP42 as standard, IP54 as option
- Liquid-cooled regenerative cabinet-built drives
 - 98% of heat dissipation through coolant, no additional air conditioning needed
 - Totally enclosed cabinet
 - Rugged design
 - Silent operation
- Customized solutions
 - Pre-configured or order-based solutions by application engineering
 - Industry and marine specific hardware and software solutions
 - Marine type approved design

For further information, see catalog "ABB industrial drives, ACS800, single drives, 0.55 to 5600 kW", code: 3AFE68375126 EN

Series ACS800-37, low harmonic drives

- Power range 45 to 2700 kW (380 to 690 V)
- IP21 as standard, IP22, IP42 (UL type 1), IP54 and IP54R as option (UL type 12)
- Cabinet-built low harmonic drives
- Ultra-compact
- Minimal network distortion
- Power factor as unity
- Premium technology - double DTC
- Easy start-up
 - Plug and play
 - Start-up assistant
- Customized solutions
 - Pre-configured and order-based solutions by application engineering
 - Marine type approved design

Series ACS800-37LC, liquid-cooled low harmonic single drives

- Power range 55 to 5200 kW (380 to 690 V)
- Totally enclosed cabinet, IP42 as standard, IP54 as option
- Liquid-cooled low harmonic cabinet-built drives
 - Totally enclosed cabinet
 - Rugged design
 - Low noise level
- Premium technology - double DTC
- Low harmonic content exceeding the requirements of IEEE519 standard
- Customized solutions
 - Pre-configured and order-based solutions by application engineering
 - Marine type approved design

For further information, see catalog "ABB industrial drives, ACS800, single drives, 0.55 to 5600 kW", code: 3AFE68375126 EN

For further information about the ACS800 marine type approved design, see catalog "ABB drives for marine applications, ACS800-01/-04/-07LC, -17LC, -37LC, 0.55 to 5600 kW", code: 3AFE68326753 EN

ABB low voltage AC drives

ABB industrial drives

ABB multidrives

ABB multidrives are built from ABB industrial drive modules connected to a common DC bus. This enables a single power entry and common braking resources for several drives.

This construction simplifies the total installation and results in many benefits: savings in cabling, reduced installation and maintenance costs, reduced line currents, and more.



Series ACS800, air-cooled multidrives

- Power range 1.1 to 5600 kW (380 to 690 V)
- IP21 as standard, IP22, IP42 (UL type 1), and IP54 as option (UL type 12)
- Common DC busbar
- Single power line connection
- Shared energy and motor-to-motor braking without braking chopper or regenerative supply unit
- Reduced line current
- Common braking resourced to several drives
- Does not require use of separate MCC
- Savings in cabling, installation and maintenance costs

An ABB multidrive is made up of several different units. These sections are called multidrive units and the most important ones are:

- Inverter units, ACS800-107
- Regenerative IGBT supply units, ACS800-207
- Diode supply units, 6- and 12-pulse ACS800-307 and -507
- Regenerative thyristor supply units, 6- and 12-pulse ACS800-407 and -807
- Braking unit, ACS800-607
- Control units as option

Series ACS800, liquid-cooled multidrives

- Power range 1.1 to 5600 kW (380 to 690 V)
- Totally enclosed cabinet, IP42 as standard, IP54 as option
- Common DC busbar
- Totally enclosed cabinet
- For harsh environments
- Silent operation
- Compact size
- Customized solutions
 - Industry and marine specific hardware and software solutions
 - Marine type approved design

Liquid-cooled multidrive units:

- Inverter units, ACS800-107LC
- Regenerative IGBT supply units, ACS800-207LC
- Diode supply units, 6-pulse ACS800-307LC, 12-pulse ACS800-507LC, 18-pulse ACS800-1107LC and 24-pulse ACS800-1207LC
- Liquid-cooling unit, ACS800-1007LC
- Braking unit, ACS800-607LC

For further information, see the catalog “ABB industrial drives, ACS800, multidrives, 1.1 to 5600 kW”, code: 3AFE68248531 EN

For further information about the ACS800 marine type approved design, see catalog “ABB drives for marine applications, ACS800-01/-04/-07LC, -17LC, -37LC, 0.55 to 5600 kW”, code: 3AFE68326753 EN

ABB low voltage AC drives

ABB industrial drives

ABB single drive modules

ABB single drive modules are designed for fast, cost effective installation and integration into a customer's own cabinet. Modules enable OEMs, system integrators and panel builders to build their own drive while benefitting from ABB drives technology such as DTC motor control, adaptive programming and a wide range of built-in and external options. ABB provides detailed cabinet installation instructions and other support material to help customers build their own solutions.



Series ACS800-04 and ACS800-04LC

- Air-cooled power range 0.55 to 1900 kW (230 to 690 V)
- Liquid-cooled power range 200 to 2240 kW (380 to 690 V)
- IP00, IP20
- Optimized design for cabinet assembly
- Compact and modular design allowing wide range of variants
- Easy cabling
- EMC compliant modules available
- Wide range of built-in options
- Marine type approved design

For further information, see catalog “ABB industrial drives, ACS800, drive modules, 0.55 to 2900 kW”, code: 3AFE68404592 EN

For further information about the ACS800 marine type approved design, see catalog “ABB drives for marine applications, ACS800-01/-04/-07LC, -17LC, -37LC, 0.55 to 5600 kW”, code: 3AFE68326753 EN

Series ACS800-14

- Power range 75 to 1700 kW (380 to 690 V)
- IP00
- Optimized design for cabinet assembly
- Compact and modular design allowing wide variety of variants
- Long lifetime cooling fan and capacitors
- Separate controllers for galvanic isolation
- Active supply unit can be configured for low harmonic mode (2 to 4% harmonic distortion) or regenerative mode, for better dynamic performance
- Assembly kits for Rittal cabinets and generic cabinets

For further information, see catalog “ABB industrial drives, ACS800, drive modules, 0.55 to 2900 kW”, code: 3AFE68404592 EN

ABB low voltage AC drives

ABB industrial drives

ABB single drive modules

ABB single drive modules are designed for fast, cost effective installation and integration into a customer's own cabinet.

The ACS850 units are complete single drive modules that are optimized for this purpose, using minimal cabinet space while ensuring cabinet assembly is as easy as possible. They offer a wide range of built-in options such as different I/O and communications and a wide selection of external accessories. The flexibility and programmability of the modules makes them an ideal choice for many applications in different areas of industry.



Series ACS850-04

- Power range 1.1 to 500 kW (380 to 500 V)
- IP20 as standard
- Designed for fast, cost effective cabinet installation and integration
- Compact size and side-by-side mounting
- Built-in input chokes for harmonic filtering
- Built-in braking chopper up to 45 kW as standard
- Customization with wide range of options and extensive standard inputs and outputs
- Features for enhanced reliability and durability
- Integrated safe torque-off (STO) as standard
- Removable memory unit for easy drive management

For further information, see catalog “ABB industrial drives, ACS850, drive modules, 1.1 to 500 kW”, code: 3AUA0000041481 EN

The ACQ810 drive modules are specifically designed modules for water and wastewater applications. These highly advanced drives meet the demanding needs of squared torque pump control while maximizing uptime and minimizing energy costs in pumping systems.



Series ACQ810 for water and wastewater applications

- Power range 1.1 to 400 kW (380 to 480 V)
- IP20 as standard (G frame IP00)
- Tailor-made pump control functions for single and multipump applications
- Compact and narrow design, side-by-side mounting
- Coated boards
- Built-in or plug-in options
 - I/O extension
 - Fieldbus adapter modules
- Harmonics filters
- EMC C2 filters

For further information, see technical catalog “ABB industrial drives for water and wastewater applications, ACQ810, drive modules, 1.1 to 400 kW”, code: 3AUA0000055685 EN

ABB low voltage AC drives

ABB industrial drives

ABB multidrive modules

ABB multidrive modules are designed to be installed into cabinets that feature a common DC bus, by OEMs and system integrators. They are available as inverter modules, supply modules and braking choppers and resistors and cover a wide range of applications.

These modules contain all the drive technology and different types of supply units that convert the AC supply from the mains into a DC supply for the inverter modules. ABB provides full engineering support for designing cabinets.



Inverter units ACS800-104 and ACS800-104LC

- Air-cooled power range 1.1 to 2900 kW (380 to 690 V)
- Liquid-cooled power range 1.1 to 2240 kW (380 to 690 V)

Diode supply units ACS800-304 (6-pulse), ACS800-704 (6-/12-pulse), ACS800-304LC and ACS800-704LC

- Air-cooled power range 145 to 4200 kW (380 to 690 V)
- Liquid-cooled power range 300 to 3650 kW (380 to 690 V)

Thyristor supply units ACS800-404

- Power range 470 to 3150 kW (380 to 690 V)
- Provide regenerative capacity

IGBT supply units ACS800-204 + LCL filters and ACS800-204LC

- Air-cooled range is from 2.2 to 2900 kW
- Liquid-cooled power range 181 to 2370 kW (380 to 690 V)
- Provides regenerative capacity plus additional filtering of harmonics in the supply

For further information, see catalog “ABB industrial drives, ACS800, drive modules, 0.55 to 2900 kW”, code: 3AFE68404592 EN

ABB DC drives

ABB DC drives are available as regenerative or non-regenerative drives. ABB offers digital DC drives for typical OEM applications up to complete drive solutions in cabinets. The drives can be also used in revamp or upgrade solutions. Power range is from 9 kW up to 12-pulse systems with 18000 kW.



DC drive converter modules

DCS400 series

- Start-up assistant
- Integrated IGBT based field supply
- 230 to 500 V AC 3-phase
- 20 to 1000 A DC
- IP00

For further information, see leaflet "DCS400"
code: 3ADW000140



DCS800-S series

- Compact design, highest power-to-size ratio in its class
- Simple operation
- Integrated field exciter
- Fast installation and commissioning via start-up assistants and macros
- Numerous optional features to adapt the drive to various applications
- Freely programmable by means of integrated IEC 61131-PLC
- 20 to 5200 A DC
- 0 to 1160 V DC
- 230 to 1000 V AC
- IP00

For further information, see catalog "ABB DC Drive DCS800"
code: 3ADW000192

ABB DC drives



Cabinet-built DC drives

DCS800-A - complete drive solutions

- Individually adaptable to customer requirements
- High power solutions in 6- and 12-pulse up to 20000 A, 1500 V
- Individually factory load tested
- Detailed documentation
- 20 to 20000 A DC
- 0 to 1500 V DC
- 230 to 1200 V AC
- IP21, IP54

For further information, see catalog "ABB DC Drive DCS800"
code: 3ADW000192



DC drives revamping solutions

DCS800-E series - pre-assembled drive kits

- For mounting in existing cabinets
- DCS800 converter module with all necessary accessories mounted and fully cabled on a panel
- Very fast installation and commissioning
- Keeps retrofit projects down-time to a minimum
- 20 to 2000 A DC
- 0 to 700 V DC
- 230 to 600 V AC

For further information, see brochure
"DC drives Modification - Expansion - Modernization"
code: 3ADW000007

DCS800-R series - rebuilt kit

- Proven long-life components are re-used, such as power stacks, (main) contactors, cabinets and cabling/ busbars, cooling systems
- Features a wide range of high speed serial modules to interface to factory automation systems
- Increased production and quality
- Very cost-effective solution
- Open rebuild kits for nearly all existing DC drives
- Tailor-made solutions for classic or obsolete products

For further information, see brochure
"DC drives Modification - Expansion - Modernization"
code: 3ADW000007

ABB medium voltage AC drives

ABB medium voltage AC drives

ABB offers an extensive portfolio of variable speed drives and soft starters for medium voltage applications in the power range from 315 kW to more than 100 MW.

ABB medium voltage AC drives are used for a wide range of applications in industries such pulp and paper, metals, mining, cement, power, chemical, oil and gas, water and wastewater and food and beverage.

They are available with air or water cooling and with different line supply connection options. Some products offer the possibility to have the input transformer integrated or to operate direct-to-line without an input transformer thereby saving weight and space.

ABB has the complete range of products to supply drive systems including transformer, frequency converter and motor.



ACS 1000, ACS 1000i

- Air-cooled power range 315 to 2 MW (2.3, 3.3, 4.0, 4.16 kV)
- Water-cooled power range 1.8 to 5 MW (3.3, 4.0, 4.16 kV)
- Available with integrated input transformer or for connection to external input isolation transformer
- Output sine filter for pure sinusoidal voltage and current outputs
- For induction motors

For further information, please see ACS 1000, ACS 1000i brochure (3BHT490400R0001)



ACS 2000

- Power range 315 to 800 kW (6.0 to 6.9 kV)
- Air cooling
- Available for transformerless operation allowing a direct connection to the line supply (direct-to-line) or for connection to a conventional two-winding input isolation transformer
- Active Front End (AFE) for minimal line side harmonics with power factor correction and energy regeneration
- Redundant cooling fans available as option
- For induction motors

For further information, please see ACS 2000 brochure (3BHT490640R0001)

ABB medium voltage AC drives



ACS 5000

- Air-cooled power range 2 to 7 MW (6.0 to 6.9 kV)
- Water-cooled power range 5 to 22 MW (6.0 to 6.9 kV)
- Low harmonic solution (36-pulse configuration)
- Air-cooled ACS 5000 available with integrated input transformer or for connection to external input isolation transformer
- Redundant cooling available as option
- For induction, synchronous and permanent magnet motors

For further information, please see ACS 5000 brochure (3BHT490501R0001)



ACS 6000

- Power range 3 to 27 MW (3.0 to 3.3 kV; optional: 2.3 kV)
- Water cooling
- Modular drive designed for the most demanding single or multi-motor applications
- Common DC bus enabling multi-machine operation and energy regeneration as option
- For induction, synchronous and permanent magnet motors
- Marine type approved design available as option (e.g. ABS, DNV, Lloyd's)

For further information, please see ACS 6000 brochure (3BHT490399R0001)

ABB medium voltage AC drives



MEGADrive-LCI

- Air-cooled power range 2 to 31 MW
 - Water-cooled power range 7 to 72 MW and higher
 - Available as variable speed drives and soft starters
 - For synchronous motors
-

For further information, please see MEGADrive-LCI brochure (3BHT490112R0001)

Connectivity and software products

ABB's connectivity products enable communication between drives and automation systems as well as enable remote monitoring capabilities. Software tools are used throughout the drive's life cycle from start-up, daily operation, to drive programming and tuning.



Fieldbuses

ABB drives are connected to automation systems using embedded protocols and fieldbus adapters. All of the major fieldbus protocols are supported allowing flexibility and compatibility with the automation system:

- BACnet MS/TP and IP
- CANopen
- ControlNet
- DeviceNet
- EtherCAT
- EtherNet/IP
- EthernetPOWERLINK
- FLN
- InterBus-S
- LonWorks
- Modbus RTU
- Modbus TCP
- N2
- PROFIBUS DP
- PROFINET IO
- SERCOS II

Remote monitoring

Remote monitoring allows access to a drive via the local internet through a standard web browser. This enables application and drive diagnostics, monitoring, configuration and even drive control when needed. Remote monitoring tools can be configured to automatically send alarm notifications via SMS messages or email. This capability is very useful when drives are installed in remote or difficult to access locations.

PC tools

ABB drives are supported by a selection of PC tools used for drive selection, commissioning, programming, daily operation and maintenance, monitoring, and process tuning. The PC tools support the drive throughout the drive's life cycle.

Engineering tool

- DriveSize

Startup and maintenance tools

- DriveWindow
- DriveWindowLight
- DriveStudio

Programming tools

- DriveSPC
- DriveAP
- DriveCam

Operation tools

- DriveBrowser
- DriveAnalyzer
- DriveOPC



ABB has amassed a wealth of expertise on all aspects of drive systems applied to many different applications across most industries. Its dedicated experts talk your language and can offer the quickest route to a profitable solution, without forgetting personnel safety and environmental responsibility.

Leading technology in design and production

For over 100 years, ABB has invested a proportion of its turnover in research and development, working closely with the world's leading universities and institutions. The result is several technology patents that have benefited the most advanced range of variable speed drives in the market. ABB's reputation is enhanced through association with world leading standards authorities and legislative bodies which has contributed to the safety of ABB's products.

Cooperating with its sub-suppliers, ABB can exploit the latest component technology when designing drive products. The result is improved quality at component and complete drive level.

ABB's drive manufacturing facilities use the latest techniques and advanced software. Precision robots combined with fully automated material flow and testing routines guarantee high quality products and short throughput times. Identical manufacturing facilities are located in Finland, Switzerland, the USA, China and India.

Complete technical advice from selection to installation and use

ABB constantly monitors all legislation, regulations, directives and standards, not only ensuring that its products comply but by offering sound advice to customers.

For example, ATEX, the European regulation for equipment used in potentially explosive atmospheres, became mandatory in July 2003. ABB was one of the first companies to gain blanket ATEX certification for its ABB industrial drives and flameproof and non-sparking motors. ABB, therefore, can provide combined ATEX-approved drives and motors packages that do not need further testing on site.

ABB's expertise extends across a plant's entire electrical installations from correct selection, dimensioning and installation through to operation and maintenance of drives, motors, transformers, relays, switches, contactors through to transducers and meters.

Severe plant disruptions caused by harmonic disturbances in electrical equipment can be overcome using ABB harmonic filters. ABB can assess the user's vulnerability to harmonic problems and the need for filters. In water and wastewater treatment plants, reducing inductive reactive power consumption can be achieved using ABB's compensation equipment.

In many applications there is a need to interface the drives with external systems. ABB has the expertise in all high performance communication protocols.

Expertise

Thorough process know-how for improved competitiveness

ABB has a thorough knowledge of all applications from pumps, fans and compressors through to conveyors and mixers. ABB has a formidable team of dedicated industry specialists whose focus is on their chosen industry but who share the knowledge from other sectors to their benefit.

In the 1970s, ABB developed the very first high-power AC drive. In subsequent decades ABB has led a technology revolution, driven by the needs of its customers. ABB is recognized as the world's leading application engineering organization, offering advice throughout process control and focussing on increasing production capacity, improving end product quality, reducing waste and reducing maintenance costs.

Sustainable development for people and the environment

The ISO 14001, international environmental management standard, has been implemented by ABB.

Life cycle assessment (LCA) is applied continually to all product development. All certificates and declarations relating to environmental issues can be found at www.abb.com/drives.

Health and personnel safety is a fundamental part of ABB's commitment to sustainability. ABB cares deeply about how its operations and products affect its employees, customers, contractors and neighbors.

ABB's ultimate aim is to prevent all accidents, injuries and occupational illness through the active participation of its customers, contractors and employees.

Smaller carbon footprint through improved energy efficiency

One of the biggest benefits of controlling the speed of an electric motor according to demand is the energy saving opportunity over other control methods that are used in combination with motors running at fixed speed. For example, in pump and fan applications, using AC drives can cut energy bills typically from 20 to 50 percent, although higher savings are possible.

ABB offers energy appraisals, coupled with a series of energy saving tools. An energy appraisal identifies key applications that can benefit from AC drives and proves the saving through "before" and "after" measurements. ABB AC drives achieve a payback usually within months, based on energy savings alone.

Energy efficient ABB motors and drives can help to minimize life cycle cost (LCC) of pumps, fans and other driven machines and the entire mechanical installation. Optimal speed control by an AC drive not only saves energy, but also reduces the application's maintenance needs.

ABB technical partner network



The ABB global technical partner network brings ABB's products and services straight to your front door. The partners have in-depth knowledge of local markets and are conversant with the ABB low voltage drives products and processes. Many of them also have extensive industry and application knowledge and experience.

The technical partner network includes technical distributors, system integrators as well as electrical wholesalers. Each brings its own set of skills and services and collectively they can tackle all your diverse drives needs and a lot more.

Customer driven network structure

ABB technical partners are authorized according to a global program. They provide a quality of services that are world-class and globally consistent.

All ABB technical partners are authorized for the relevant category of the partner program. The category describes the product line and services the partner is authorized for and promoted by ABB towards the end-customer.

Partner companies are regularly trained and audited to provide consistency in the services and support. Together ABB and the partners strive for continuous quality improvement for products and customer services.

Maximized process up-time and energy efficiency

The partners are fully conversant with ABB drives and many have thorough application knowledge. The partners can help with all kinds of drives and motors related issues to improve process efficiency, and offer support wherever and whenever it is needed.

The ABB drives technical partner network provides consistent and authorized quality in sales, support, service and engineering, both globally and locally.

Via dedicated sales engineers and authorized technical personnel the ABB technical partner network provides the following services:

- Optimized product dimensioning and selection
- Technical product support
- Engineering
- Installation
- Commissioning
- Preventive and corrective maintenance
- Spare part services
- Training
- Access to an extensive stock of ABB products and spare parts

Categories and main focuses

All ABB technical partners are authorized for the relevant category of the partner program.



Find the members of the network at www.abb.com/drivespartners.

Services



All industries face a common goal: to maximize their production output at the lowest possible cost, while maintaining the highest quality end products. One of ABB's key objectives is to maximize the uptime of its customers' processes by ensuring optimum lifetime of all ABB products in a predictable, safe and low cost manner.

The services offered for ABB drives span the entire value chain, from the moment a customer makes the first inquiry through to disposal and recycling of the drive. Throughout the value chain, ABB provides training and learning, technical support and contracts. All of this is supported by one of the most extensive global drive sales and service networks.

Maximizing return on investment

At the heart of ABB's services is its drive life cycle management model (see below). All services available for ABB drives are planned according to this model. For customers it is easy to see which services are available at which phase.

Drive specific maintenance schedules are also based on this four-phase model. Thus, a customer knows precisely the timing of the part replacements plus all other maintenance related actions. The model also helps the customer when deciding about upgrades, retrofits and replacements.

Professional management of the drive's life cycle maximizes the return on any investment in ABB drives.

ABB drive life cycle management model

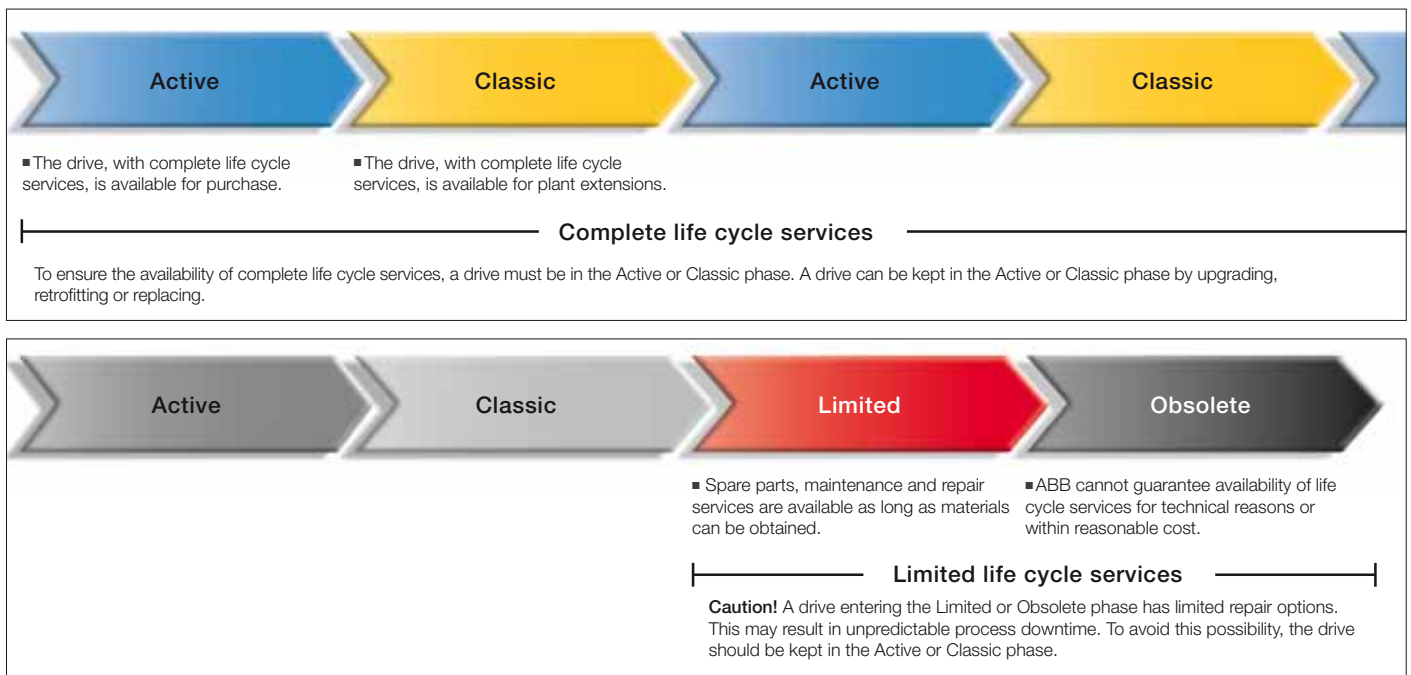


ABB follows a four-phase model for managing drive life cycles, which brings enhanced customer support and improved efficiency.

Examples of life cycle services are: selection and dimensioning, installation and commissioning, preventive and corrective maintenance, remote services, spare part services, training and learning, technical support, upgrade and retrofit, replacement and recycling.

ABB drives technical guides

ABB has produced a series of technical guides that explain in great detail different aspects of using ABB low voltage drives. The listing below shows the available technical guides and the topics they cover.

Technical guides:

1. **Direct torque control (DTC)** explains what DTC is; why and how it has evolved; the basic theory behind its success; and the features and benefits of this motor control platform.

Code: 3AFE58056685 EN

2. **EU Council Directives and adjustable speed electrical power drive systems** gives a straightforward explanation of how the various EU Council Directives relate to power drive systems.

Code: 3AFE61253980 EN

3. **EMC compliant installation and configuration for a power drive system** helps personnel using AC drives in their designs or installations to better understand the requirements of the EMC directive.

Code: 3AFE61348280 EN

4. **Guide to variable speed drives** describes basics of different variable speed drives (VSD) and how they are used in industrial processes.

Code: 3AFE61389211 EN

5. **Bearing currents in modern AC drive systems** explains how to avoid damages.

Code: 3AFE64230247 EN

6. **Guide to harmonics with AC drives** describes harmonic distortion, its sources and effect, and also distortion calculation and evaluation with special attention to the methods for reducing harmonics with AC drives.

Code: 3AFE64292714 EN

7. **Dimensioning of a drive system.** Correct dimensioning is the most effective way to control capital expenditure. Biggest savings can be achieved by avoiding very basic mistakes. Guide provides top tips for those involved with dimensioning drives. Code: 3AFE64362569 EN

8. **Electrical braking** describes the practical solutions available in reducing stored energy and transferring it back into electrical energy.

Code: 3AFE64362534 EN



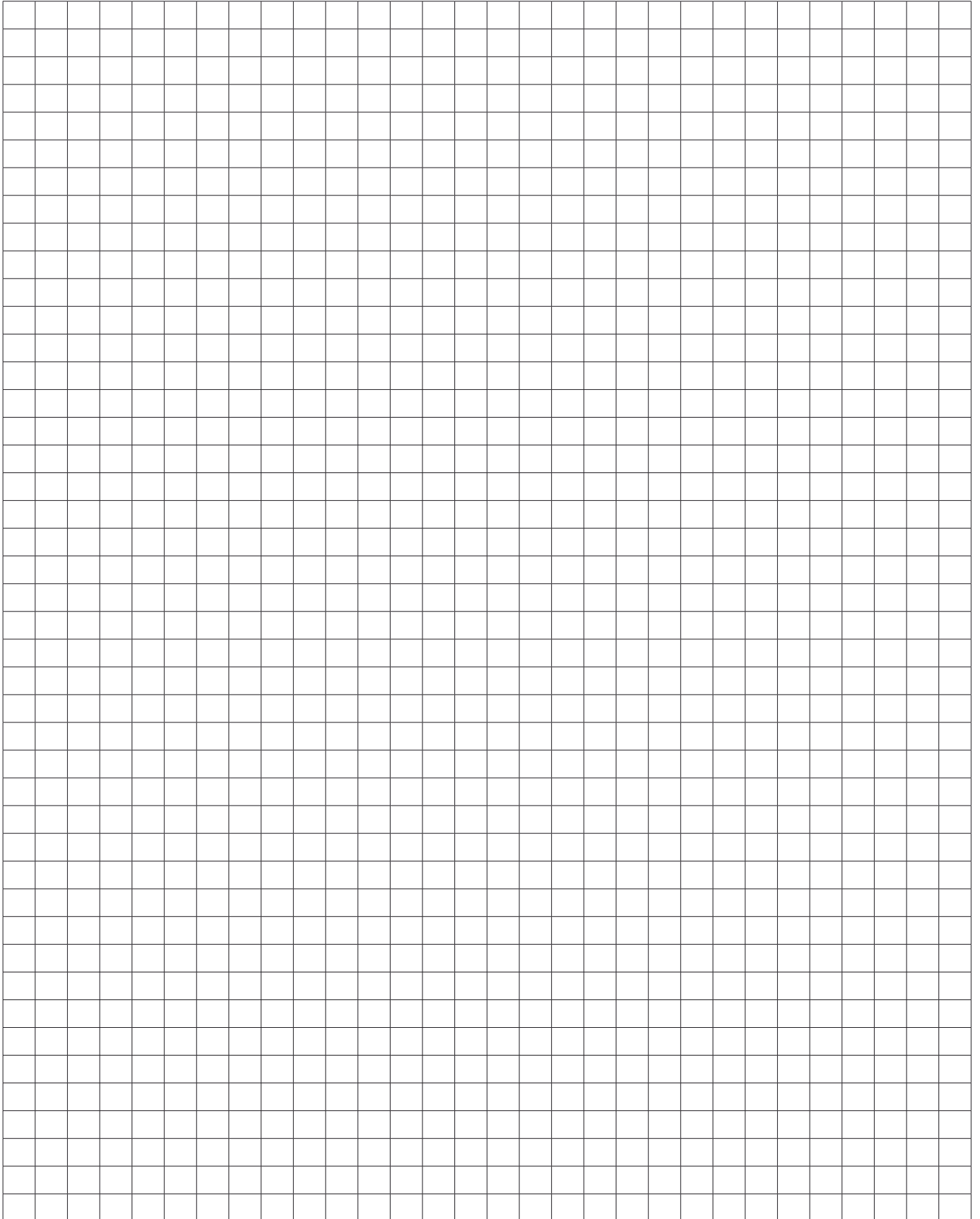
9. **Guide to motion control drives** gives an overview of high performance drives and motion control.

Code: 3AFE68695201 EN

10. **Functional safety** introduces the Machinery Directive and the standards that must be taken into account when designing a machine, in order to ensure operational safety.

Code: 3AUA0000048753 EN

Notes



Contact us



www.abb.com/drives
www.abb.com/drivespartners

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