

## Other drives, accessories and services

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# Other drives, accessories and services

## Servo drives

### Analogue, PTO, PowerLink and EtherCAT® options

#### MicroFlex Analogue

- Compact motion control drive for single- and three-phase operation
- $\pm 10$  V analogue speed / torque demand or pulse + direction inputs
- Choice of resolver feedback or incremental encoder / SSI
- Pulse train control inputs compatible to pulse train output (PTO) module FM562 for AC500 and AC500-eCo
- 1 or 3-phase operation 105...250 V AC

- 3, 6 and 9 A rms
- IP20 enclosure for cabinet installation (UL open)
- Auto-tuning and anti-resonance digital filters
- Suitable for single drive and multi axis systems
- Controls rotary and linear AC servo motors

#### Options

- Space saving footprint EMC filter
- Brake units

For further information, see flyer "ABB motion control drives, MicroFlex brushless AC servo drives", code: 3AUA0000123110 EN.



#### MicroFlex e100

- Compact motion control drive for single and three-phase operation
- Ethernet PowerLink technology for real-time motion control
- MINT programming for multitasking control of communications, logic, motion and HMI interaction in simple motion applications
- 1 or 3-phase operation 105...250 V AC
- 3, 6 and 9 A rms

- IP20 enclosure for cabinet installation (UL open)
- Suitable for single drive and multi axis systems
- Controls rotary and linear AC servo motors

#### Options

- Space saving footprint EMC filter
- Brake units

For further information, see flyer "ABB motion control products, MicroFlex e100 servo drives", code: 3AUA0000116018 EN.



#### MicroFlex e150

- Compact motion control drive with embedded safety for single and three-phase operation
- Embedded Ethernet including EtherCAT real-time, EtherNet/IP, and ModbusTCP
- Advanced MINT programming for multitasking control of communications, logic, motion and HMI interaction in high performance motion applications
- 1 or 3-phase operation 105...250 V AC
- 3, 6 and 9 A rms
- IP20 enclosure for cabinet installation (UL open)

- Suitable for single drive and multi axis systems
- Controls rotary and linear AC servo motors
- Safe Torque-Off (STO) feature as standard

#### Options

- MINT Motion programming
- Space-saving footprint EMC filter
- Resolver adapter
- Dual encoder splitter
- Brake units

For further information, see flyer "ABB motion control products, MicroFlex e150 servo drives", code: 3AUA0000097609 EN.



#### MotiFlex e180

- EtherCAT®, Modbus/TCP, EtherNet/IP and PowerLink
- DSL combined motor power and feedback in one cable
- Advanced MINT programming for multitasking control of communications, logic, motion and HMI interaction in high performance motion applications
- Three-phase operation 200...480 V AC
- 3.0..55 A rms in four frame sizes
- IP20 enclosure for cabinet installation (UL open)
- Suitable for single drive and multi axis systems

- Controls rotary and linear AC servo motors
- Safe Torque-Off as standard
- Memory unit for firmware, settings and functionality level

#### Options

- Drive functionality levels (single axis MINT motion)
- Feedback options, resolver, encoder, serial encoders or DSL One cable technology
- Filters, brake resistors and chokes

For further information, see flyer "ABB motion control products, MotiFlex e180 servo drives", code: 3AUA0000168682.



# Other drives, accessories and services

## Motion controllers

### MINT programmable, analogue, PTO, CANOpen and PowerLink

#### NextMove ESB-2

- Compact panel mount motion controller
- Up to 8 axis of coordinated motion
- Stepper and analogue axis control
- CANOpen manager for system expansion
- MINT programming for multitasking control of communications, logic, motion and HMI interaction in simple motion applications
- 4 x PTO (stepper) axis
- 3 or 4 x analogue controlled axis with encoder feedback
- Digital and analogue I/O including 4 x high speed registration latches
- Economical and simple to install

- USB, serial and CANOpen® provide flexible communications to PLC, distributed I/O and other devices
- Firmware variant allows the controller to operate as a CANOpen® DS402 master and control up to 64 axis

#### Options

- RS232 or RS485 serial option
- Differential/single-ended stepper interfaces
- 7 axis or 8 axis variants



Compact motion controller for analogue and stepper control

Number of axis	Serial port	Order code	
		Differential stepper	Single ended stepper
7	RS232 / USB	NSB202-501W	NSB203-501W
7	RS485 / USB	NSB202-502W	
8	RS232 / USB	NSB204-501W	NSB205-501W
8	RS485 / USB	NSB204-502W	

#### NextMove e100 (Ethernet PowerLink, Modbus® TCP and Modbus RTU)

- Compact, high performance motion controller
- Real-time Ethernet PowerLink and Modbus® TCP/IP
- 8 or 16 axis of interpolated motion
- (16 MN + 14 CN) profiled axis = max. 30 Powerlink axis
- 4 stepper axis/3 analogue axis
- CANOpen® network manager
- RS232/422 and USB communications
- Advanced multitasking MINT programming
- ActiveX® controls
- Integrated digital/analogue I/O including high speed registration inputs



Compact motion controller with real-time Ethernet PowerLink technology

Number of axis	Order code	
	Differential stepper	Single ended stepper
8	NXE100-1608DBW	NXE100-1608SBW (1)
16	NXE100-1616DBW	

(1) For use with DSMS stepper/driver.

# Other drives, accessories and services

## ABB machinery drives

### ABB machinery drives

ABB machinery drives are designed to suit the needs of OEMs with reasonably complex machinery requirements. The range integrates with the ABB servo drive range, allowing capable and suitably priced drive packages for machinery applications. The range has scalable safety, by way of STO to SIL 3 (PL e) as standard with FSO available on the ACS880. ABB machinery drives feature sequence programming, adaptive programming or IEC 61131 (CODESYS) programming. The drives can be customised for OEMs down to parameter visibility levels to protect the set-up.

#### ACS380

- 0.25 kW to 3.0 kW (240 V), 0.37 kW to 11 kW (400 V), wider range by end 2017
- Part of the "all compatible" family
- Same PC tool, keypad and fieldbuses as the other ranges
- Basic and demanding constant torque applications, including brake control
- IP20 optimised for cabinet mounting, built-in keypad
- Highly compact drives with enhanced cooling design
- Built-in Modbus, EMC C2, STO to SIL 3, robust motor control
- Control induction, permanent magnet and SynRM motors
- Two variants, one containing traditional I/O, the other pre-configured for a fieldbus
- Contains sequence programming and adaptive programming. Each sequence is freely programmable

#### ACS880-M04

- 0.37 kW to 18.5 kW (240 V), 0.75 kW to 45 kW (400 V)
- Part of the "all compatible" family, and based on the ACS880 control program
- Same PC tool, keypad and fieldbuses as the other ranges
- More demanding constant torque applications, industrial positioning
- IP20 optimised for cabinet mounting
- Built-in Modbus, EMC C2, DTC motor control
- Control induction, PM and SynRM motors
- STO to SIL 3 as standard. Extended machinery safety with FSO module
- Memory module contains all of the settings, zero re-commissioning
- Extensive range of feedback interfaces
- Contains adaptive programming and fulfils IEC 61131 (CODESYS) programming





# Other drives, accessories and services

## Medium voltage AC drives



ABB offers a complete range of medium voltage AC drives for speed and torque control and for the starting of large AC motors. The drives feature an arc-resistant design that protects workforce and goods from electric arcs. Certified functional safety features and an integrated DC grounding switch ensure safety and reliability.

### ACS580MV

- General purpose drive from 200 kW to 6.3 MW
- Air-cooled with integrated input transformer
- Output voltage 6 kV to 11 kV
- New generation of cascaded h-bridge topology allows the use of standard motors
- Optimal network friendliness due to 30-54 pulse configuration

### ACS1000i

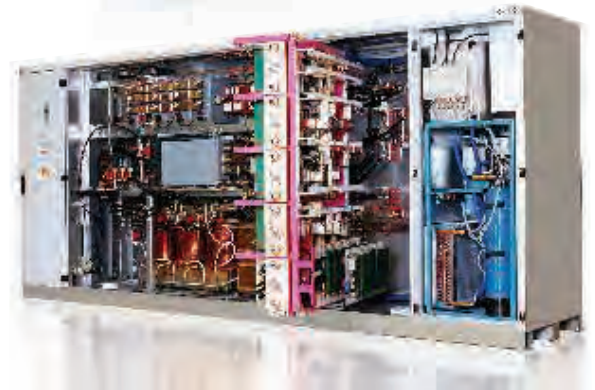
- Single drives 315 kW to 2 MW
- Output voltage 2.3 kV to 4.16 kV
- Air-cooled, 24-pulse drive with integrated input transformer
- Retrofit-ready for existing motors, suitable for most MV applications
- Integrated output sine filter for pure sinusoidal voltage and current output
- Offshore cabinet versions available

### ACS1000

- Single drives from 315 kW to 5 MW
- Output voltage 2.3 kV to 4.16 kV
- Air-cooled (315 kW to 2 MW) and water-cooled (2 MW to 5 MW) versions
- Retrofit-ready for existing motors, suitable for most MV applications
- Integrated output sine filter for pure sinusoidal voltage and current output
- Offshore cabinet versions available

### ACS2000

- Single drives, air-cooled from 250 kW to 3.2 MW
- Output voltage 4.16 kV to 6.9 kV
- Active rectifier unit or 24-pulse diode front end for minimal line side harmonics
- Regeneration and power factor correction with active rectifier
- Direct-to-line versions for operation without an input transformer
- Optional integrated input transformer
- Multilevel topology allows the use of standard motors
- Simple drive system integration
- Modular power modules for reduced MTTR
- Sine filter output optional, for retrofit and long cable run applications



# Other drives, accessories and services

## Medium voltage AC drives and low voltage DC drives



### Medium voltage drives cont...

#### ACS5000

- Single drives from 2 MW to 36 MW
- Air-cooled (2 MW to 7 MW) and water-cooled (5 MW to 36 MW) versions
- Air-cooled version with integrated input transformer (2 MW to 6 MW)
- Output voltage 6 kV to 13.8 kV
- Multilevel topology allows the use of standard motors
- Multilevel fuseless topology results in a drive with unbeatable efficiency, reliability and footprint
- Optimal network friendliness due to 36-pulse configuration



#### ACS6000

- Single or multidrives, water-cooled 5 MW to 36 MW
- Output voltage 2.3 kV to 3.3 kV
- Active rectifier unit available for 4-quadrant operation, reduced harmonics and adjustable power factor
- Line supply unit available for 2-quadrant operation and a constant power factor of 0.96 across entire speed range
- Modular design for optimum configurations, including multidrive and redundant configurations
- Offshore cabinet versions available



#### MEGADRIVE LCI

- 2 MW to 72 MW (higher power on request)
- High power with series connection of thyristors
- N+1 thyristor redundancy possible
- Fuseless design
- Water- and air-cooled converters available
- Line side harmonics: 6-pulse, 12-pulse or 24-pulse
- Motor side harmonics: 6-pulse or 12-pulse
- High converter efficiency
- Proven technology and design
- Complete package solutions including transformers, drives and motors



### ABB general purpose DC drives

#### DCS550

- A digital DC drive targeted at OEMs, such as machine builders
- Range from 20 to 1000 A DC
- 230 V AC - 525 V AC
- Start-up assistants and commissioning wizards
- Extensive range of fieldbus interfaces
- Adaptive program for additional flexibility
- Onboard field controller



# Other drives, accessories and services

## Low voltage DC drives and power quality filters (PQF)

### ABB industrial DC drives and DC heaters

#### DCS800, DCT880

- From 25 to 5200 A
- Commissioning wizard gives easy start-up
- Easy to use - standard macros or user programmability
- Intuitive control panel with 'Help' key, consistent with many of the AC drives
- Adaptive programming for additional flexibility
- Modules can be connected in parallel up to 20,000 A
- Uses ACS800 I/O option modules and fieldbus modules
- I/O is backward compatible with DCS500 and DCS600
- Field converters built-in (up to 25 A)
- The drive can be ordered as an electrical heater control, the DCT880, ideal for all industrial heating



### Power quality filters - overview

- Actively eliminates harmonics in a controlled way
- Filters up to 50th harmonic in accordance with G5/4 requirements. Each harmonic individually programmable
- Redundancy feature allows units to continue when others have shut down
- Active filters - only work when harmonics are present thereby reducing unwanted losses, resulting in greater overall efficiency
- Close loop for better measurement of harmonics - thereby more accurately eliminating the potentially damaging harmonic
- Auto-detection of CT polarity - ensures accurate current distortion readings on network, resulting in easy commissioning
- Stores record trail. Fault and event log - any trip will have a record trail



### PQFM, PQFI

- Available in IP00 back plate or IP21, IP42 cabinets
- New intuitive user interface
- Current ratings, 70 A, 100 A, 130 A, 150 A, 250 A, 450 A, per module. The modules can be connected in parallel to a maximum of eight modules of equal rating

### PQFs

- Small compact unit suitable for wall mounting
- Low ratings available from 30 A, 45 A, 60 A, 70 A, 80 A, 90 A, 100 A, 120 A. The modules can be connected in parallel to a maximum of four modules of equal rating
- Same user interface as the larger units
- Available in IP30





# Other drives, accessories and services

## Remote monitoring and support options

### Remote monitoring overview

Remote monitoring is the reporting of information back to the user, from a remote station or location. Typical remote monitoring information can include:

- Energy consumption and savings
- Motor condition
- Warnings (predictive maintenance), faults and alarms
- Diagnostics
- Monitoring actual values and parameters
- Parameter access is possible, but is not the primary function of remote monitoring



### Monitoring Drives over “1-Wire” networks

#### Drive Composer Pro

Drive Composer Pro is able to communicate to the all compatible drives range over existing ethernet fieldbus networks. This ability to use existing control networks for drive communication is known as “1 wire” tools networks, and clearly reduces installation costs as only 1 communications network is required.

#### Ethernet adapters

The ABB range of drives can be fitted with Ethernet adapters which allow them to communicate on Ethernet networks. The FENA-21 is two-port so removes the need for a switch. Once on a company network the drive can be monitored from anywhere within that company, or if firewall allow, from anywhere on earth. The FENA-21 also contains a web environment.



### Ethernet adapter for ABB industrial drives

#### NETA-21

NETA-21 module provides remote access for ABB drives and connected devices. The module connects to the drive via several different connection possibilities:

- 2 x panel ports (32 drives per port)
- Optical connection (10 drives)
- Ethernet connection (32 drives)
- RS485 Modbus (32 devices)

It can send process data, data logs and event messages independently, without a PLC or a dedicated on-site computer. The module can send either e-mails or SMS text messages to inform the user of the status of the drive(s) connected to it. It has an internal web server for easy configuration and drive access.



### ABB DriveTune wireless App

Drivetune is the smart mobile app enabling wireless communication to ABB low voltage drives. The drive needs to have the Bluetooth enabled keypad fitted. You will be able to start-up your drive and commission with your phone using simple settings and widgets. The appealing dashboard shows intuitively drive status, performance and configuration.



### High speed drive monitoring – remote diagnostics

#### DriveMonitor

DriveMonitor is a service tool which can be fitted to any ABB industrial drive in case of site problems and issues. It uses high speed optical connections to the drives power stages and monitors all of the switching signals sent. In this way complicated system problems can be diagnosed. DriveMonitor can also be used as a system optimisation and recording tool, as its memory buffers can save up to one years worth of performance data.



#### Cut the cord.

Access the drive without the cord with Bluetooth enabled keypad.



#### Lose the Ladder

Users won't need to access difficult-to-reach work areas to access information necessary to help them commission and tune a drive.



#### Skip the steps

The drive will register within 75m (246ft) of the smartphone or tablet.



#### Protect your personnel.

Users won't need to enter hazardous areas to access information necessary to help them commission and tune a drive.



#### Bring Your Own Device

No need to learn another device. ABB's DriveTune app will work on your smartphone or tablet.



# Other drives, accessories and services

## Software tools

ABB offers several software tools to facilitate and enhance the use of ABB drives. These tools provide a user-friendly and easy-to-use approach for the selection, commissioning and use of AC drives.

### Integration and programming tools

#### Drive Composer



The Drive Composer PC tool offers fast and harmonised set-up, commissioning and monitoring for the new ABB all compatible drive portfolio. The tool has two variants, a free version called Drive Composer Entry and a professional

level tool which is licensed called Drive Composer Pro. The free version of the tool provides start-up and maintenance programming with monitoring and parameter editing, while the professional version provides additional features such as custom parameter windows, control diagrams for easy parameter editing of the drive's configuration and the ability to programme the built-in safety module. Drive Composer has add-ons for adaptive programming and enables CODESYS programming for more complicated system designs. CODESYS requires Automation Builder.



Drive Composer Pro includes a programming environment called adaptive programming. This allows reasonably complex programs to be generated within the all compatible

drives. The drives contain adaptive programming for free, you only need the tool to access it. Adaptive programming allows logic or mathematics to be performed to enhance the parameter set, using a range of logic functions or arithmetic function blocks. Inside some of the drives the environment is further enhanced by the addition of sequence programming, where the program can be organised into steps that are triggered by certain events. Adaptive programming allows the drive to take the place of relays and PLCs around the drive, removing cost from the project. If adaptive programming is not sufficient, then upgrade to the CODESYS environment using Automation Builder in the drives that support it.

#### DriveManager for SIMATIC

Drive Manager for SIMATIC (DM4S-01) is a plug-in device tool that can be easily installed into the STEP 7 and TIA Portal. It utilises the TCI interface of the SIMATIC PLC to communicate



with the drives connected to PROFIBUS or PROFINET network. Drive Manager for SIMATIC offers features for the setup of ABB low voltage drives used with SIMATIC S7 PLCs

#### Automation Builder



Automation Builder is an integrated software suite for machine builders and system integrators wanting to automate their machines and systems in an integrated and efficient way.

Automation Builder is the successor of the PS501 Control Builder Plus product, incorporating all PLC engineering functionality plus additional engineering features.

#### DriveWindow Light

Available for ACx550, ACS310, ACS355 and ACS800 drives it has the similar functions as DriveWindow but is designed for point-to-point communication, via control panel port.



### Engineering tools

#### DriveSize

For dimensioning drives and motors this PC programme helps select an optimal motor, drive and transformer, which



is especially useful where a straightforward selection from a catalogue is not possible. DriveSize is used to compute network harmonics and to create documents about dimensioning. It contains current versions of ABB's motors and drives catalogues.

It can also be used in conjunction with ABB machinery drives to specify the dimensions of different kinds of linear or rotary movement mechanisms such as lead screws, rack and pinion combinations, belts and pulleys, conveyors, feed rolls and rotating tables.

DriveSize software can be used in Win98, WinNT, Win2000 and WinXP, Windows 7, Windows 8 operating systems.

#### DriveChopper



For dimensioning a braking chopper and resistor.

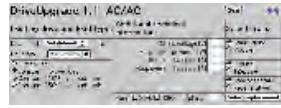
DriveChopper is a web tool for braking chopper and resistor dimensioning. The programme is created especially for system designers who need a braking unit for a particular drive application.

# Other drives, accessories and services

## Software tools

### DriveUpgrade

For finding an adequate drive to replace an old one. This on-line tool is ideal for finding a replacement to an existing ABB drive that may be coming to the end of its useful life. Simply input some basic information and the modern equivalent drive will be revealed.



To download, go to: [www.abb.com](http://www.abb.com) > drives > drive PC tools.

### AVP energy toolkit app

Energy, CO<sub>2</sub> and money saved, together with an estimated return on investment, are the outputs of an app designed to show the benefits of using variable-speed drives (VSDs) and electric motors to replace direct-on-line starting.



The app produces an instant mini-report that contains details of a matched ABB motor-drive package and can be forwarded to one of ABB's authorised value providers.

To download the app, visit the Apple App Store on your iPhone or iPad and search AVP energy toolkit.

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### Energy saving tools

For comparison of energy consumption between different flow control methods in pumps and fans, ABB has developed calculation tools for estimating the energy savings that become available when applying electric speed control to certain flow machines. ABB has smartphone Apps to help also.

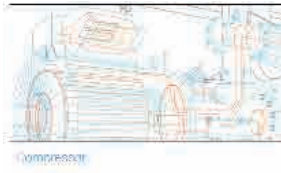
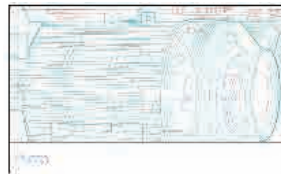
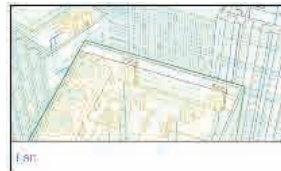
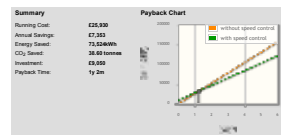


ABB have also upgraded their popular Fansave and Pumpsave tools to a more modern platform. Savings for Fans pumps and compressors can now be calculated in a graphical Environment, please visit: <http://new.abb.com/drives/energy-efficiency/energysave-calculator> where links to the Appstore and WEB based tools can be accessed.

### Energy appraisal report web tool

This is a dedicated web tool to allow ABB's authorised value provider to generate energy appraisal reports, helps to save energy on applications.



Equipment Required	
Type Designation:	ACS800-01-075A-4
Rated Power:	37.5kW
Drive Range:	ABB HVAC drive
Drive Type:	AC variable speed drive (VSD) - 2 pole
EMC Compliance:	EN61800-3, CS (2nd edn.) Option of C2
Quantity:	2
Price including Installation:	£3,500

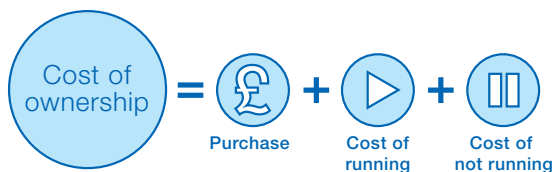
# Other drives, accessories and services

## Reliability Assessment, service and training

In the UK, it is estimated that over 80 percent of installed variable-speed drives are not maintained. The Reliability Assessment service helps to highlight this issue by preparing a report at a given site, which shows life cycle phase, maintenance history and recommended maintenance schedule.

### Total cost of ownership

Consider this:



The main challenge facing every motor-driven application is how to minimise the cost of not running. While rapid response to failures is one approach, it would be much easier if the risk of failure was minimised in the first place.

This is where Reliability Assessment service steps in. The cost of maintenance is always less than the cost of failure; therefore a structured maintenance/ replacement scheme drives down the total cost of ownership.

### Reliability Assessment

Maximising profit means that every part of your process is running uninterrupted, without surprises. Predictability saves time, cuts costs and ultimately, keeps your business effective.

With the Reliability Assessment service, you can combine the drives maintenance status with its criticality to the process or application. This provides the know-how to determine exactly where your process stands, now and in the future.

Reliability Assessments work by highlighting the most critical drives so clear priorities for maintenance are set. Service budgeting is optimised as the total plant's maintenance actions can be planned in advance. As a result, fewer unexpected interruptions occur. The ultimate aim: to always maximise reliability of the ABB drives installed base at a site and to manage the entire lifecycle, reducing downtime and production losses.

Taking ownership via some long term planning of maintenance and replacement through Reliability Assessments reduces total cost of ownership since cost of not running is minimised via maximising uptime.

Reliability Assessments are suitable for all drives, no matter what make or stage in their life cycle.

### How it works

#### Drive registration

Before any assessments can be done, every drive needs to be registered. During registration, the drive criticality can also be defined and customer identification and application data will be entered.

#### Getting started

ABB collects and prepares all applicable data on your drives, along with detailed service history and environment of the installation. Together with the insight of on-site professionals, we gather all the crucial data about your technical infrastructure.

#### Focusing on the detail

Details of each drive are analysed including age, location, business impact, effects of operating environment, service history, as well as all additional third party servicing and part replacements.

#### Analysing your maintenance plant

The Reliability Assessment service now combines the variables of each drive to paint a comprehensive picture of your entire technical infrastructure that allows you to define and review your maintenance plan.

#### Getting to know your facts

Finally, ABB provides you with an in-depth report that examines the current and future state of your factory or plant. Getting detailed information helps you plan future investments and maintenance better, with the related schedules, budgeting and execution. It also lets you tackle any imminent future defects in time.

#### ABB University - Professional drives training

Factory certified courses delivered in a bespoke drives training facility by experienced applications and service personnel. With ABB University you can enrol onto either e-learning or classroom based courses. Please call **01785 285939** or visit [www.abb.co.uk/abbuniversity](http://www.abb.co.uk/abbuniversity)