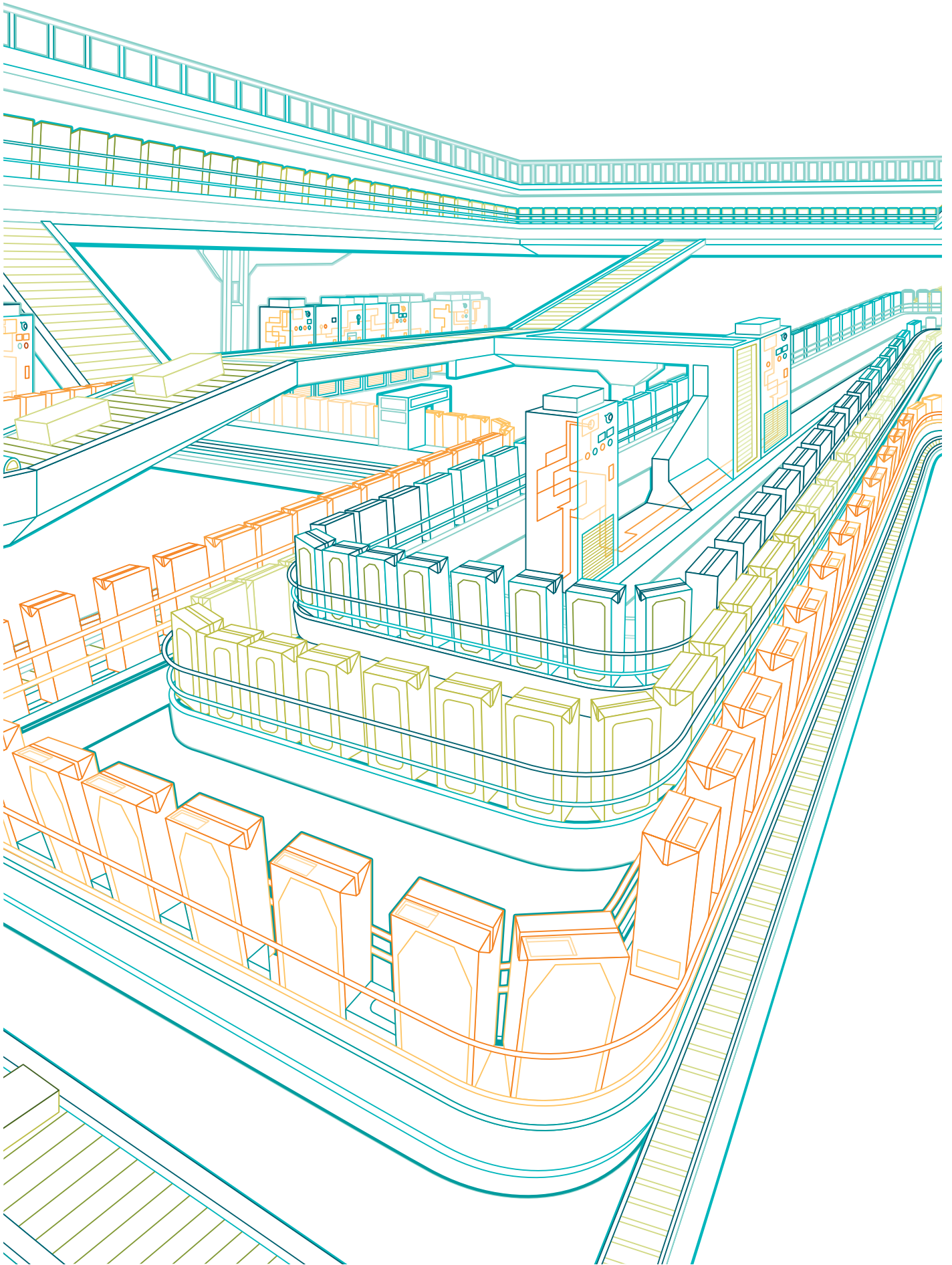




Drives and controls, motors and mechanical power transmission catalogue



Drives and controls, motors and mechanical power transmission catalogue

[What's new in 2015](#)

1

[Authorised Value Providers](#)

2

[Drives and motors packages](#)

3

[Low voltage AC drives](#)

4

[Other drives, accessories and services](#)

5

[AC motors](#)

6

[Mechanical power transmission](#)

7

What's new in 2015

1



ABB general purpose drives, ACS580

Initially available from 0.75 kW to 250 kW at 380 - 480 V, ABB has introduced a replacement for the successful ACS550. The ACS580 is a member of the new "all compatible" drive platform, ABB's philosophy of common drives architecture that features the same control panel, harmonised parameters and functions, universal accessories and engineering tools.

The architecture brings faster commissioning, minimal operator training and a familiarity across all ABB drives. The new Assistant control panel takes the drive user interface to new levels. The drive features safe torque-off (STO) as standard and many more options.



ACS880 range now includes multidrives and multidrive modules

The ACS880 range includes factory-built multidrive cabinets and a wide range of multidrive modules. The cabinet offering includes active rectifier sections up to 6000 kVA, diode rectifier sections up to 5500 kVA and a new style, low cost regenerative rectifier unit up to 6000 kVA.

The multidrive line UPS can be configured with a large selection of inverter and braking sections and integrated options. ABB offers a comprehensive range of multidrive modules that allows system integrators to build complex drive systems of their own.



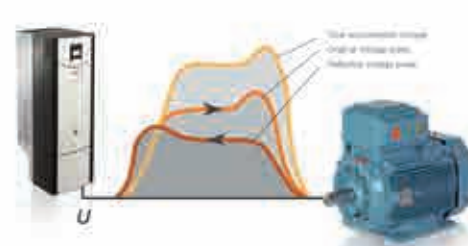
ABB industrial drive modules for cabinet builders, ACS880-04

The modules are further supported by the addition of:

- Fan kits to cool the unit
- Roof extract fan kits
- Door filter kits up to IP54
- An engineering tool to help design the module assemblies

Electrical heating made easy, DCT880

ABB has adapted the firmware inside its DC drive range to generate a unit for industrial heating applications. The unit is suitable for inductive and resistive loads and for infrared or ultraviolet heaters. Different load configurations such as delta, star, star with neutral and open delta are just a few of the options.



ATEX compliant motor-drive packages for hazardous areas

The challenge of matching low voltage AC motors and AC drives for use in hazardous environments has been overcome by ABB's ATEX-approved motor-drive package. Among the many motor types that can be matched with ABB's variable-speed drives are flameproof from 80 to 450 with power ratings from 0.18 kW to 710 kW, non-sparking in 71 to 450

frames from 0.09 kW to 1,000 kW and dust ignition proof (known more specifically as Ex tD/DIP) motors in frames 71 to 450 from 0.09 kW to 1,000 kW.

What's new in 2015



AVP Energy Toolkit App

Energy, CO₂ 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.



Register your ABB drives and protect your investment

You can register your drive using the Drivebase smartphone app. Drivebase lets you read product manuals and find ABB contact details, sends you service recommendations and allows quick troubleshooting through fault code analysis. Registration gives you peace of mind that your drive's support is in safe hands.



PROFIsafe enabled drives

With the new Automation Builder V1.1 engineering tool, ABB's AC500-S safety PLC and the ACS880 drive, it is possible to create an Ethernet based network topology including standard control and safety control. This network will use PROFIsafe over PROFInet to implement control and safety. Together with the ACS880's FSO-12 safety module, this means a larger number of safety and control requirements can be met with less wiring required.



Motiflex e180

The new MotiFlex e180 delivers versatile motion control performance, capability and dependability to power machine innovations. Flexible connectivity with Ethernet and motor feedback technologies is optimised for demanding motion applications. With the MINT WorkBench PC tool you can quickly and easily customise the drive to the exact control requirements of your machine.



WIMES-compliant motor

A new motor specifically designed for water and wastewater applications meets the UK's Water Industry Mechanical and Electrical Specification (WIMES). The motors are packed with features that afford greater protection against the environmental conditions found in the water and wastewater industry.



Automation Builder

A new 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.



AC500

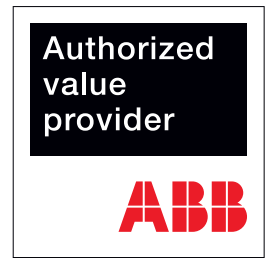
The built-in high performing processor surrounded with a large memory, offers simplicity, security and reliability to adapt the automation solution to new upcoming challenges. A variety of connectivity capabilities, integrated safety and usability even under harsh operating environments provide valuable benefits to machine builders for their automation tasks.



Certification extended for smoke extraction motors

ABB's smoke extraction motors, M3BPW in frames 160 to 450, are now certified to 400°C in horizontal and vertical mounting positions for smoke extraction duty. These special-purpose tunnel ventilation motors are regulated by EN12101-3 that specifies motor testing requirements.

Authorised Value Providers



2

Authorised Value Providers deliver sales, support, service and engineering expertise in seamless cooperation with ABB. Being strategically located throughout the UK and Ireland, they bring ABB's products and services directly to your site along with the same technical knowledge and back-up,

combined with the best equipped repair and maintenance facilities in Europe. All providers undertake extensive and on-going training in all aspects of motors, drives and services. This provides the consistency of support, wherever in the UK and Ireland you are located.

Authorised Value Providers - Drives

Offer one of the largest stocks of AC drives, from 0.18 kW to 500 kW, available off-the-shelf.

1. ACS Drives & Control Systems
Ireland
Tel: +353 (0)44 934 0242
2. Advantage Control
Northern Ireland
Tel: 028 4461 3782
3. APDS
South West
Tel: 0117 982 2049
4. Central Group
Merseyside
Tel: 0151 546 6000
5. EDC (Scotland)
Scotland
Tel: 0141 812 3222
6. Gibbons Engineering Group
East Anglia
Tel: 01621 868 138
7. Halcyon Drives
Yorkshire and Greater Manchester
Tel: 0113 236 1509
8. iDrives
South
Tel: 01483 766 555
9. Inverter Drive Systems
East Midlands
Tel: 0115 944 1036
10. MKE Engineering Group
South East
Tel: 01795 438 436
11. Quantum Controls
North East
Tel: 01661 835 566
12. Sentrledge Control
Midlands
Tel: 024 7655 3303



Authorised Value Providers - Motors

Offer electric motors up to 1,000 kW.

1. AAR Powerdrives
West Midlands
Tel: 0138 440 0800
2. APDS
South West
Tel: 0117 982 2049
3. Beta Power Engineering
Cheshire
Tel: 0161 432 9995
4. Campbell Electric Motors
Ireland
Tel: +353(0) 1 4628 333
5. Central Group
Merseyside
Tel: 0151 546 6000
6. CovElec (Leics)
Leicestershire
Tel: 0116 269 8111
7. EDC (Scotland)
Scotland
Tel: 0141 812 3222
8. EMR Silverthorn
Middlesex
Tel: 020 8903 1390
9. H.G. Rewinds
Staffordshire
Tel: 01782 262525
10. Halcyon
West Yorkshire
Tel: 0113 236 1509
11. Heasell Electromechanical Services
Hertfordshire
Tel: 01763 243369
12. JJ Loughran
Northern Ireland
Tel: 028 8676 2295
13. MKE Engineering Group
Kent
Tel: 01795 438 436
14. Quantum Controls
North East
Tel: 01661 835 566

Call Authorised Value Providers on:
07000 ABB AVP (07000 222 287)

Authorised Value Providers

Life cycle services

Proactive drives and motors maintenance programmes keep you competitive by minimising disruption to your production.

The many drives and motors used in industry have a high degree of reliance placed upon them and often perform critical duties and have a high in-service value. A failure of either asset can result in loss of production and revenues, as well as having safety and environmental consequences. To reduce the risk and consequences of failure, the drive and motor must be properly maintained at the right times in their life cycle.

Life cycle services

The services offered by the Authorised Value Providers span the entire value chain, from the moment a customer makes the first enquiry to disposal and recycling of either the motor or the drive. Throughout the value chain, the providers offer training, technical support and customised contracts.

Pre-purchase

The Authorised Value Providers offer a range of services that help guide the customers to the right products for their applications.

Order and delivery

Orders can be placed directly with the Authorised Value Providers, for timely deliveries including express delivery.



Installation and commissioning

While many customers have the resource to undertake installation and commissioning on their own, the Authorised Value Providers offer professional installation and start-up services.

Operation and maintenance

From site surveys to preventive maintenance and reconditioning of drives and motors, ABB has all the options covered to keep its customers' processes operational.

Upgrade and retrofit

An existing ABB drive or motor can often be upgraded to the latest model to improve the performance of the application.

Replacement and recycling

Authorised Value Providers can advise on the best replacement drive or motor while ensuring that the existing assets are disposed of in a way that meets all local environmental regulations.

Entire value chain services

The main services available throughout the entire value chain include:

- Training
- Technical support
- Contracts





Drives and motors packages

Introduction	10
Synchronous reluctance motor drive package	12
IE2 & VSD motor drive package	14
ATEX compliant motor drive package	16
Cooling tower direct drive motor package	20
Deck winch motor drive package	21

Drives and motors packages

Introduction

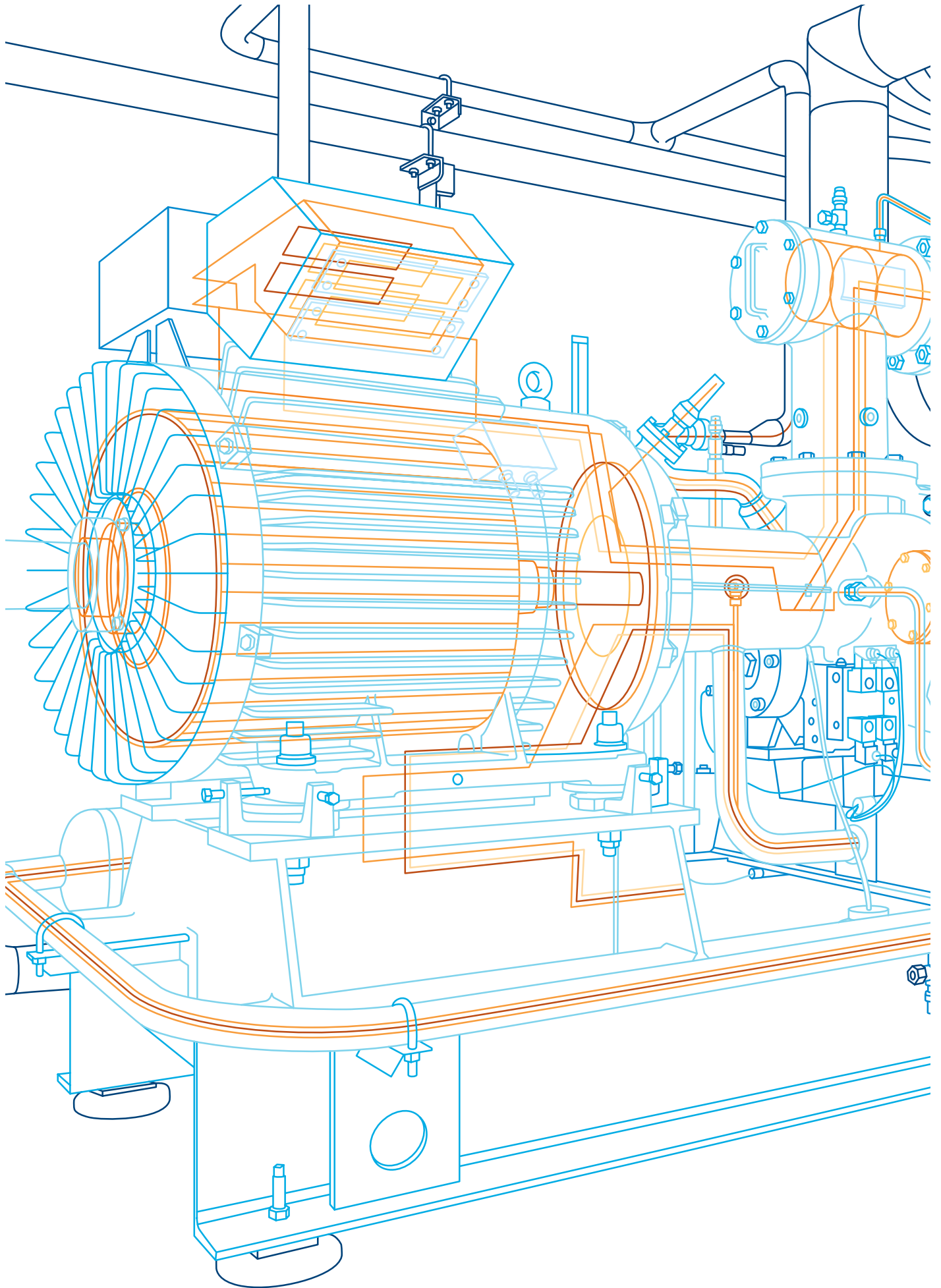
3

ABB is one of the only companies that makes both variable-speed drives and low voltage AC motors. As such it is well equipped to offer customers a perfectly designed, tested and approved matched pair, for whatever the motor-driven application.

In addition, ABB has devised a selection of bespoke drives and motors packages aimed at specific industry applications. In this catalogue we introduce five such packages.

Packages can extend beyond matching a motor and a drive. Other components, many of which are featured in this catalogue, also form part of the drive train – from bearings, couplings and gearboxes to programmable logic controls, switches and fusegear.





Drives and motors packages

Synchronous reluctance motor-drive package

Get the best of both worlds. The efficiency advantages of permanent magnet technology together with the simplicity and service-friendliness of an induction motor platform. Each motor-drive package combines proven stator technology, an innovative magnet-free rotor design motor, a best-in-class drive and advanced software to offer a complete, optimised solution.

3

ABB drive for water and wastewater applications - ACQ810

- 0.37 kW to 500 kW
- IP20 enclosure for installations in compact spaces
- Built-in pump features and protections through Intelligent Pump Control and supported by DTC motor control
- Advanced programming tool for fine tuning the drive to meet your process requirements
- STO as standard



See details on page 47

ABB industrial drive - ACS880

- Intuitive control panel and PC tool
- Direct torque control (DTC) for precise open and closed loop control
- Built-in safety features for simplified configuration
- Communication with all major automation networks
- Removable memory unit for easy drive commissioning and replacement
- Energy optimiser and energy efficiency information for monitoring and saving energy
- STO as standard



See details on page 52

ABB machinery drive - ACS850

- 0.37 kW to 560 kW
- Bookshelf design saves space
- Direct torque control (DTC) for premium motor control as standard
- Designed specifically to integrate into a machine environment
- Solution programming included
- STO as standard



See details on page 74

IE4 SynRM

- Cast iron frame 160 to 315
- 7.5 kW to 315 kW
- 40 percent lower losses compared to induction designs
- No magnets
- Cool running rotor
- Improved bearing system reliability
- Easy to service
- Simple to retrofit on induction motor applications due to identical physical size



High Output SynRM

- Aluminium frame 90 to 132
- 1.1 kW to 37 kW
- Cast iron frame 160 to 315
- 18 kW to 350 kW
- Achieve the same output with a motor that's up to two frame sizes smaller
- Enables smaller, lighter and more cost-efficient machine designs
- Ideal for applications where space and weight factors are critical



Drives and motors packages

IE2 & VSD motor drive package

On 1st January 2015, IE2 motors from 7.5 kW to 375 kW, that are new into the market, can only be used if fitted with a variable-speed drive, in order to comply with the new European Minimum Energy Performance Standard (EU MEPS).

3

ABB offers a wide range of variable-speed drives, all of which can be fitted to IE2 motors to deliver efficient, reliable and compliant motor control.

ABB machinery drive ACS355

- 0.37 kW to 22 kW
- FlashDrop - parameter programming with drive still in its box
- Sequence programming designed for food and beverage and materials handling applications



See details on page 31

ABB general purpose drives ACS310

- 0.37 kW to 22 kW
- Pump and soft pump and fan control (PFC and SPFC)
- Pipe cleaning (anti-jam) and pipe fill functions



See details on page 35

ACS580

- 0.55 kW to 250 kW
- Wide power range in wall-mounted IP21 and IP55 variants
- Sensorless vector and scalar control

ABB drive for HVAC ACH550

- 0.75 kW to 355 kW
- Quick installation
- Rapid start-up, trouble-free use, easy interfacing
- Built-in BACnet



See details on page 43

ABB industrial drive ACS880

- Intuitive control panel and PC tool
- Direct torque control (DTC) for precise open- and closed-loop control
- Built-in safety features for simplified configuration
- Communication with all major automation networks

- Removable memory unit for easy drive commissioning and replacement
- Energy optimiser and energy efficiency information for monitoring and saving energy



See details on page 39



See details on page 52

General performance motors combine convenience and easy handling seamlessly with ABB's engineering expertise, while providing standard variants and modifications. The motors can be tailored according to the specific needs of end-users and OEMs.

Highlights

- 0.06 kW to 355 kW
- One year warranty
- IE2 & IE3
- 2, 4 & 6 pole designs



Process performance motors are the flagship of ABB's standard low voltage motors. This range provides the most comprehensive, versatile set of motors for the process industries and heavy-duty applications which are dependent on continuous reliability, lowest possible environmental impact and life cycle costs.

Highlights

- 0.09 kW to 1,000 kW
- Three years warranty and an option to extend to five years
- IE2, IE3 & IE4
- All variant codes available for process industry applications



Drives and motors packages

ATEX compliant motor-drive package

ATEX approved AC motor and drive combination gives safe, economical power combined with effective control. By choosing an ATEX compliant motor-drive package, end-users can be confident that it is optimised for their application, complies to ATEX 95 and is commercially beneficial, giving more available power for your money.

3

ABB industrial drive ACS880

- Adaptive programming and CODESYS - like having a PLC (programmable logic controller) inside the drive
- DTC (direct torque control) proven motor control platform
- All major types of drive topology covered - 6-pulse, 12-pulse, 4-quadrant, low harmonic, air-cooled and water-cooled
- Built-in safety module
- ATEX approved STO



See details on page 52

ABB general purpose drive ACS550

- 0.37 kW to 355 kW
- Assistant control panel providing intuitive use of the drive
- Patented swinging choke for superior harmonic reduction
- Sensorless vector and scalar control



ABB machinery drive ACS355

- IP20 as standard (UL type 1 as option)
- IP66/69 variants
- Advanced functionality with sequence programming
- Configuration of unpowered drive in 2 seconds
- Compact installation
- STO as standard



See details on page 31

ABB hazardous area low voltage motors

- Flameproof motors, frame size 80 to 450
- 0.18 kW to 710 kW
- Non-sparking motors, frame size 71 to 450
- 0.09 kW to 1,000 kW
- Loadability curves optimised for ABB drives



ABB Ex tD/DIP motors

- Ex tD/DIP motors, frame size 71 to 450
- 0.09 kW to 1,000 kW
- IP55 or IP65 for non-conductive dust
- IP65 for conductive dust
- Loadability curves optimised for ABB drives



Drives and motors packages

ATEX compliant motor drive package

The route to EC Declaration of Conformity for ABB low voltage AC drives and motors (ATEX 95)

Important note: This flowchart only applies to standard ABB motors
 Type testing means thermistor relays are not mandatory but to allow protection against stall conditions they are recommended for a safe installation. Use ATEX approved thermistor measurement. ACS880 does not require a contactor as the ATEX approved STO can be used to disconnect.

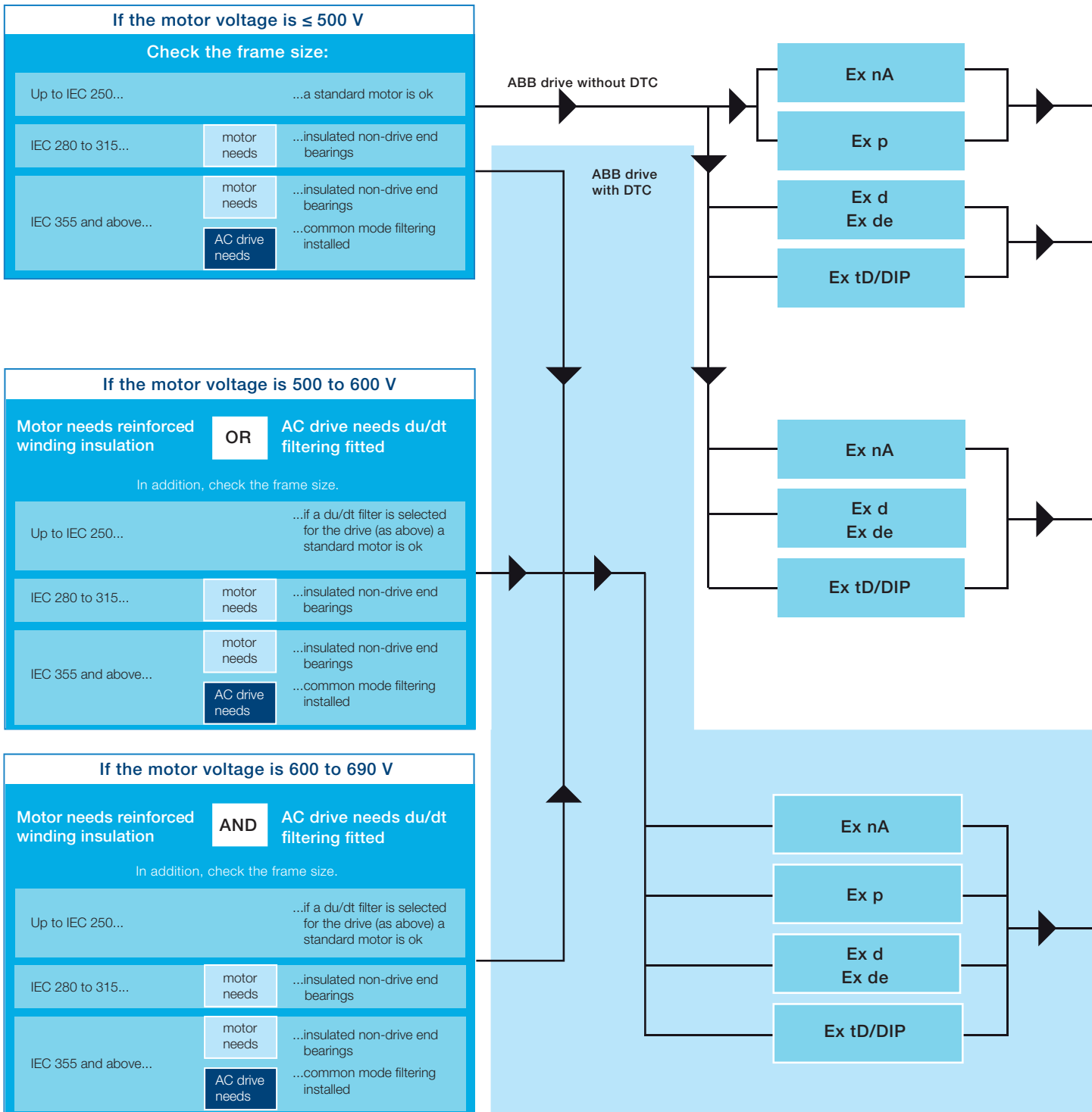


ABB drive, without DTC



Additional testing required to obtain EC Declaration of Conformity



ABB machinery drive, ACS355

Please check motor load capacity curves to ensure correct dimensioning of the motor

Motor to be equipped with thermal control to ensure Ex-temperature class

EC Declaration of Conformity



ABB general purpose drive, ACS550

Please check motor load capacity curves to ensure correct dimensioning of the motor

EC Declaration of Conformity

ABB industrial drive, ACS880 with DTC



ATEX approved STO

DriveSize
Using this tool, users can select a suitable combination of motor and drive. The tool also shows combinations that have not been tested.

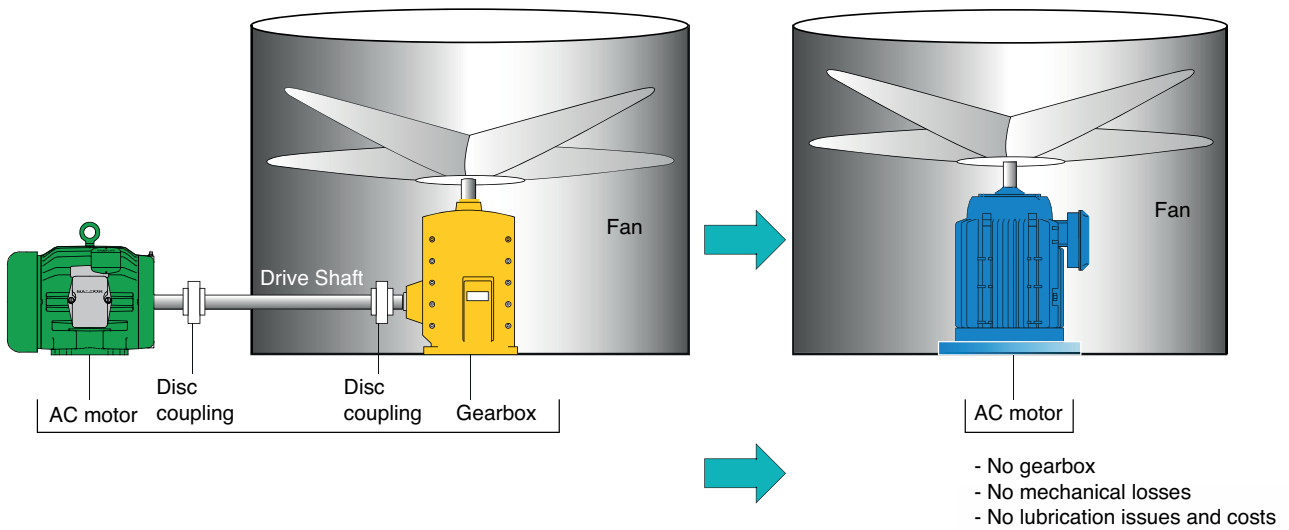
Website
Contains all relevant certificates for tested drive and motor combinations.
www.abb.com/drives
www.abb.com/motors&generators

EC Declaration of Conformity

Drives and motors packages

Cooling tower direct drive motor and variable-speed drive package

The ABB motor-drive package for cooling towers comprises an ABB permanent magnet motor with an ABB industrial drive, ACS880. Together, the package delivers precise fan control without the need for a gearbox, even under low load or speed conditions often experienced in cooling tower applications. ABB's RPM AC permanent magnet motor has a high power and torque density ratio which is needed to achieve the sustained low speed required for cooling tower operation. It is designed to retrofit into existing gearbox footprints within the cooling tower to allow swap-out in less than six hours.



- ABB industrial drive, ACS880 and RPM AC permanent magnet motor
- Designed to drop directly into existing gearbox mounting patterns
 - Retrofit can be accomplished in under six hours
 - Eliminates gearbox, lowers vibration and system noise
 - Permanent magnet control greatly increases operating efficiencies even under lightly loaded conditions, typical in fan applications at low speeds
 - Temperature rise in the motor is considerably lower
 - A power dense package increases motor life compared to a conventional induction motor system
 - Special weather sealing ensures maximum life expectancy



Drives and motors packages

Deck winch motor drive package

ABB offers motors and drives for anchoring and mooring winches, RoRo gate ramp winches and tugboat winches. A deck winch motor-drive package consists of an ABB low voltage marine motor with mechanical disc brakes and an ABB industrial drive, ACS880. Both are designed to stand up to the operations and installations found on many sea-going vessels.

Our marine certified motors and drives fulfil marine and offshore requirements and the design and operation comply with regulations from all major classification societies. Our electrical drive solutions improve reliability and give you many advantages over hydraulic systems. They enable more precise rope control and reduce operating noise. No hydraulics means no hydraulic fluid concerns, less parts, reduced installation space and reduced maintenance needs.

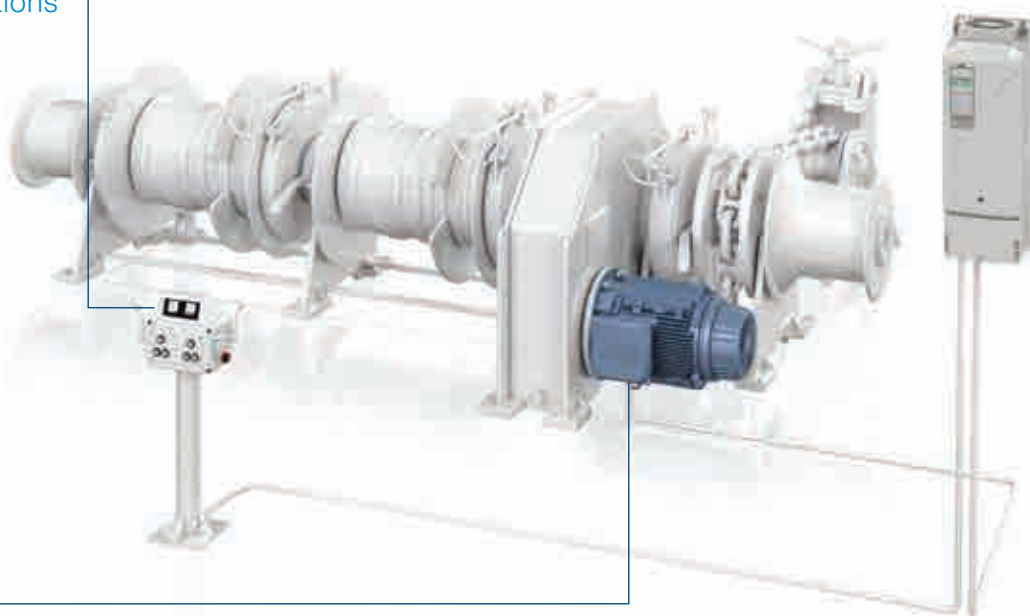
3

Control stand integration

- Connect up to three control stands and one wireless radio controller to a single drive
- Connect via drive I/O, PLC or fieldbus communications

ABB industrial drive, ACS880

- Built-in winch control program
- The combination of DTC and winch control program eliminate the need for motor shaft encoders and load cell sensors in the winch gearbox
- Ensures smooth winch start-up, eliminating the motor start-up voltage and current peaks on the ship's electrical network
- Dynamic braking with integrated brake chopper and external braking resistor
- Stepless speed and torque operation reduces winch noise
- Direct bulkhead installation or in cabinets (marine certified)



Low voltage marine motors with mechanical disc brakes

- Exact nominal data on rating plate helps you optimise motor operation especially when motor encoder is not used
- Specially designed low wear shaft seals

- Corrosion resistance improved with zinc primer painting
- IP56 open deck protection class
- Optional heating element and temperature supervision
- Ex motors also available



Low voltage AC drives

Drives feature finder	24
ABB micro drives	26
ABB machinery drive	31
ABB general purpose drive for fans and pumps	35
ABB general purpose drive	39
ABB drive for HVAC	43
ABB drive for water and wastewater	47
ABB industrial drive	52
Other ABB industrial drive variants	63

Drives feature finder

The table highlights the differences between the various ABB drives families. It also lists some of the key features of the different ABB drives. However, the table is not exhaustive and if you are seeking a feature which does not appear in the table, please contact ABB for information.



Drive range		ABB micro drives (ACS55 - p26) (ACS150 - p28)	ABB machinery drives (ACS355 - p31)	ABB general purpose drives for fans and pumps (ACS310 - p35)
Voltage & power	Details or additional notes	(ACS55) 1-ph 100 - 120 V: 0.18 - 0.37 kW 1-ph 200 - 240 V: 0.18 - 2.2 kW (ACS150) 3ph 380 - 480 V, 0.37 - 4.0 kW	1-ph 200 - 240 V: 0.37 - 2.2 kW 3-ph 200 - 240 V: 0.37 - 11 kW 3-ph 380 - 480 V: 0.37 - 22 kW	1-ph 200 - 240 V: 0.37 - 2.2 kW 3-ph 200 - 240 V: 0.37 - 11 kW 3-ph 380 - 480 V: 0.37 - 22 kW
Other rectifier options (assume 6-pulse as standard)	12-pulse diode Low harmonics regenerative (4Q) Low harmonics non-regenerative (2Q) Common DC link connectability	- - - -	- - - -	- - - -
EMC compliance (EN 61800-3, 2004)	No EMC filter 2nd unrestricted (C3) 1st restricted (C2) 1st unrestricted (C1)	● (or remove EMC screw) ● ■ (ACS150) ● - (ACS150)	● (remove EMC screw) ● ■ -	● (remove EMC screw) ● ■ -
Harmonic filter / choke / active (EN 61000-3-4)	Choke (AC or DC) Swinging choke (better harmonic performance) Low harmonic (best performance)	■ - -	■ - -	■ - -
Enclosure class	IP00 IP20 IP21 (or near equivalent) IP22 IP42 IP54/ IP54R/ IP55 IP66/69K	- ● ○ (Nema 1, ACS150) - - - -	- ● ○ (Nema 1) - - - ●	- ● ○ (Nema 1) - - - -
Mechanical construction	Module - panel mountable (IP20 minimum) Wall-mounted (IP21 or equiv. minimum) Free-standing, floor-standing Cabinet built by ABB	●* (DIN mount + screw) ○ (Nema 1, ACS150) - -	●* (DIN mount + screw) ○ (Nema 1 kit) - -	●* (DIN mount + screw) ○ (Nema 1 kit) - -
Cooling method	Direct air-cooling Water-cooling Through panel/flange mount	● - -	● - -	● - -
Dynamic braking chopper	Range of resistors available from ABB	-(ACS55), ● (ACS150)	●	-
Switching frequency		4 to 16 kHz	4 to 12 kHz	4 to 16 kHz
Motor control	DTC (open/closed loop) Sensorless vector Scalar, VVVF	- - ●	- ● ●	- - ●
Programmability	Parameter programming Adaptable programming IEC61131 programmability	uses dip (ACS55), ● (ACS150) - -	● (sequencer) - -	● - -
Start-up assistance and help	Aids to commissioning and diagnostics	-	● (assistant panel)	● (assistant panel)
Cold configure	Program the drive whilst still in its box	●	●	●
Removable memory module	No recommissioning time needed	-	-	-
Real-time clock	With assistant control panel	-	●	●
I/O built-in	Analogue input/output Digital input/output Speed feedback (encoder) Motor thermal protection STO (safe torque-off)	1 / 0 3 / 1r (ACS55), 5 / 1r (ACS150) - - -	2 / 1 5 / 1r+1t+(3r) ○ ○ configurable ●	2 / 1 5 / 1r+1t+(3r) - ○ configurable -
() = via add on expansion module				
+24V live control panel + comms	External 24V supply can be connected	-	○ (MPOW)	-
Fieldbuses	Modbus Fieldbus interface (popular networks) Drive-to-drive link BACnet	- - - -	○ ○ - -	● - - -
Remote monitoring	Report info and status remotely	-	■ (SREA)	■ (SREA)
Safety options (TÜV certified hardware)	Emergency stop (CAT.0, CAT.1) Safe torque-off (SIL2/PL d) Safe torque-off (SIL3/PL e) Dedicated safety module	- - - -	- ● - -	- - - -
ATEX	ATEX certified for use with ABB motors	-	● Ex tD and DIP only	-
PC tools	DriveConfig tool (programme in box) DriveWindow Light DriveWindow DriveAP IEC 61131 tool Drive Composer (Entry or Pro)	■ (ACS55), - (ACS150) - - - - -	- ■ - - - -	- ■ - - - -
Industry specific products	HVAC specific Food and beverage Machinery / OEM Water and wastewater Industry specific applications FW	- ○ ● - -	- ● ● ○ ● (IP66/69) F&B	- ○ ● ○ ●

● = standard ○ = option, internal or fitted ■ = option, external - = not available * = can be bookcase or flat mounted r = relay output, t = transistor output, c = configurable to be input or output



ABB general purpose drives (ACS580 - p39)	ABB drives for HVAC (ACH550 - p43)	ABB drives for water and wastewater (ACQ810-04 - p47)	ABB industrial drives and drive modules (ACS800-01,-02,-04,-11,-14,-31 - p52)	ABB industrial drives cabinet-drive (ACS880-07, 17 - 37 - p58)	ABB industrial drives and drive modules (ACS880-01, 04 - p52)
3-ph 380 - 480 V: 0.55 - 250 kW	3-ph 208 - 240 V: 0.75 - 75 kW 3-ph 380 - 480 V: 1.1 - 355 kW	3-ph 380 - 480 V: 1.1 - 400 kW	3-ph 230 V: 0.55 - 200 kW 3-ph 400 V: 1.1 - 1450 kW 3-ph 500 V: 1.5 - 1850 kW 3-ph 690 V: 5.5 - 1900 kW	3-ph 400 V: 45 - 1450 kW 3-ph 500 V: 55 - 1850 kW 3-ph 690 V: 45 - 2800 kW	3-ph 230 V: 0.55 - 75 kW 3-ph 400 V: 0.55 - 1400 kW 3-ph 500 V: 0.55 - 1400 kW 3-ph 690 V: 4 - 2200 kW
-	-	-	○ (>400 kW) ● (800-11, 800-14) ● (800-31)	○ (>400 kW) ● (880-17) ● (880-37)	-
● (remove EMC screw)	● (remove EMC screw)	○	● (remove EMC screw)	● (remove EMC screw)	● (remove EMC screw)
●	●	○	○, ■ (800-04 R7/8)	○	○
-	-	●, ■ (A,B Frame)	-	-	-
●	●	-	● (800-31)	● (800-37)	-
-	-	● (G frame) ● (A-E frame) ● (G1/G2 frame)	● (800-04, R7/R8, 800-14) ● (800-04, R2 - R6) ● (800-01, -02, -11, -31)	-	● (-04) ● (-01)
○ (IP55)	○ (IP54)	-	○ (800 -01, -11, -31) IP55	○	○ (-01, IP55)
●	●	●	● (800-04*)	●	● (-04*)
●	●	-	● (800-02)	●	● (-01)
-	● (550-02)	-	-	●	● (-07)
● (variable-speed fan)	●	●	●	●	● (Fan variable speed)
○○ (IP54 drive)	○ (IP54 drive)	-	○ (800-04)	● (LC range)	-
● (to 22 kW), ■ thereafter 4 to 12 kHz	● (to 11.0 kW), ■ thereafter 4 to 12 kHz	DTC	○	○	○
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	● (Drive AP)	● (Drive AP)	● (Drive AP)
(later)	-	● (SPC)	-	● (CODESYS)	● (CODESYS)
● (assistant panel)	● (assistant panel)	●	●	●	●
●	●	●	-	●	●
●	●	●	-	●	●
2 / 2 6 / 3r+(2r+1t)	2 / 2 6 / 3r+(3r)	2+(3) / 2+(1) 6+2c+(4) / 2r+(2r)	3+(2) / 2+(2) 7+(6) / 3+(6r)	2+(3) / 2+(1) extra possible 7+(4) / 3r+(2r) extra possible	2+(3) / 2+(1) extra possible 7+(4) / 3r+(2r) extra possible
○ isolated and configurable	○ configurable	○ configurable	○ configurable	○ configurable	○ configurable
○ (via CMDD)	-	●	●	●	●
● (or ethernet)	●	●	○	●	●
○	○	○	○	○	○
-	●	●	○	●	●
■ (SREA)	■ (SREA)	■ (SREA)	■ (NETA)	■ (NETA)	■ (NETA or SREA))
● (via STO)	-	-	-	● (via STO)	● (via STO)
●	-	●	■	●	●
●	-	-	-	○	○
-	-	-	●	●	●
-	■	-	■ (NPCU req.) ■ (RDCO req.) ■ (RDCO req.)	-	-
-	-	■	-	■	■
○	○	-	-	-	○
○	○	-	○	○	○
-	●	●	○	-	-
-	●	●	xx ○	xx ○	xx ○

All ABB drives are CE marked
 Other global approvals such as UL, cUL, CSA, C-Tick, GOST-R also applicable
 xx = ACS800 and ACS880 can be loaded with industry specific code, like crane, winder, winch, spinning etc ++ = A wide range of encoder interfaces to suit high performance applications
 Drives and controls, motors and mechanical power transmission catalogue 25

Low voltage AC drives

ABB micro drives

0.18 kW to 2.2 kW, ACS55

Motor control method - scalar

200/240 V, 1-phase supply, 3-phase output, 0.18 kW - 2.2 kW

100/120 V, 1-phase supply, 3-phase output, 0.18 kW - 0.37 kW

What is an ABB micro drive, ACS55?

The ABB micro drive meets the requirements of OEMs, machinery builders and panel builders. It is a component that is purchased, together with other components, from a distributor. ABB micro drive is so small and simple that users of contactors and softstarters can switch to the benefits of variable-speed control. The ACS55 is a simple drive, programmed by switches. Extended programming is possible via a PC if required, as is programming without power.

Highlights

- Quick and easy installation - less than five minutes
- User interface via three rotary switches and a further eight on/off function DIP switches located on panel front
- Can be programmed via DriveConfig if needed to access extended functions (useful to OEMs)
- Compact size and narrow shape
- Ideal drive for DIN-rail mounting
- Two mounting orientations
- 110 V single phase - input gives 240V, 3-phase output
- IP20 as standard
- Potentiometer option
- Integral EMC filter for 1st environment (EN61800-3), unrestricted distribution (C1)
- Optimised switching frequency for low noise (up to 16 kHz silent motor)



Where can it be used?

- Washing machines
- Dishwashers
- Mixers
- Treadmills
- Pizza ovens
- Car washing machines
- Vacuum cleaners
- Rotating billboards
- Sliding doors
- Electric gates
- Dryers

Feature	Advantage	Benefit
No programming is required	Inverter parameter settings with DIP switches and potentiometers. Extended programming is possible via DriveConfig if needed	Faster set up Easier configuration Easy drive for new users
Compact size and narrow shape	Up to 0.37 kW, 45 mm width; 2.2 kW, 67.5 mm width	Less space required for installation
Removable mounting clip	Removable clip allows DIN-rail and wall-mounting from back and side of the unit	Flexible and easy mounting, book case or flat
DriveConfig kit	Fast and safe configuration of an unpowered drive	Simple programming for high volume OEMs - programming in the box, no mains power needed
EMC	Fast environment. C1 EMC filters as standard ('E' model)	Low EMC emissions
Automatic switching frequency	Increases switching frequency automatically when drive temperature is decreased	Provides lowest possible noise without derating the drive
110-240 V AC, single phase supplies	Output always capable of full 240 V, 3-phase, regardless of supply voltage	Can easily replace single phase cap start motors
RoHS compliance	Compliance achieved during 2007	Environmentally friendly drives

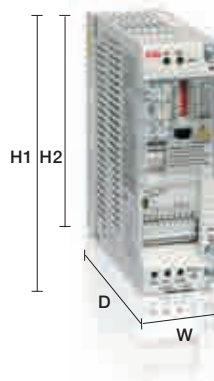
Low voltage AC drives

ABB micro drives

ACS55 – Ratings, types, voltages, prices and dimensions

Dimensions and weights

Frame size	H1 mm	H2 mm	W mm	D mm	Weight Kg
A	170	146.5	45	128	0.65
B	170	146.5	67.5	128	0.70
C	194	171	70	159	1.1
D	226	203	70	159	1.1



200/240 V, 1-phase supply, 3-phase output

Nominal kW	Input current A	Output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m³/h	Type	Price £
With EMC filter									
0.18	4.4	1.4	2.1	A	10	21	*Nat Vent	ACS55-01E-01A4-2	£93
0.37	6.9	2.2	3.3	A	16	32	*Nat Vent	ACS55-01E-02A2-2	£102
0.75	10.8	4.3	6.5	B	16	51	*Nat Vent	ACS55-01E-04A3-2	£122
1.5	18.2	7.6	11.4	D	25	74	26	ACS55-01E-07A6-2	£170
2.2	22	9.8	14.7	D	32	103	26	ACS55-01E-09A8-2	£199
Without EMC filter									
0.18	4.4	1.4	2.1	A	10	21	*Nat Vent	ACS55-01N-01A4-2	£88
0.37	6.9	2.2	3.3	A	16	32	*Nat Vent	ACS55-01N-02A2-2	£97
0.75	10.8	4.3	6.5	B	16	51	*Nat Vent	ACS55-01N-04A3-2	£114
1.5	18.2	7.6	11.4	C	25	74	26	ACS55-01N-07A6-2	£159
2.2	22	9.8	14.7	C	32	103	26	ACS55-01N-09A8-2	£186

* Ensure minimum installation space is provided, see User's Manual for details

100/120 V, 1-phase supply, 3-phase output

Nominal kW	Input current A	Output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m³/h	Type	Price £
With EMC filter									
0.18	6.4	1.4	2.1	A	10	24	*Nat Vent	ACS55-01E-01A4-1	£101
0.37	9.5	2.2	3.3	A	16	35	*Nat Vent	ACS55-01E-02A2-1	£113
Without EMC filter									
0.18	6.4	1.4	2.1	A	10	24	*Nat Vent	ACS55-01N-01A4-1	£98
0.37	9.5	2.2	3.3	A	16	35	*Nat Vent	ACS55-01N-02A2-1	£106

* Ensure minimum installation space is provided, see User's Manual for details



Options and interfaces

Potentiometer

Potentiometer with two switches: start/stop and forward/reverse direction. No external power source is needed for the potentiometer, connects directly to drive I/O.



DriveConfig programming with no power

To increase the number of applications possible with the ACS55, the DriveConfig kit can be used to access an extended parameter set. It is still possible to programme in the usual way, if these extended features are not required. DriveConfig also allows programming in the box without power.

Low voltage AC drives

ABB micro drives

0.37 kW to 4 kW, ACS150

Motor control method - scalar

200/240 V, 1-phase supply, 0.37 kW - 2.2 kW

200/240 V, 3-phase supply, 0.37 kW - 2.2 kW

380/480 V, 3-phase supply, 0.37 kW - 4 kW

What is an ABB micro drive, ACS150?

The ABB micro drive meets the requirements of OEMs, machinery builders and panel builders. It is a component that is purchased, together with other components, from a logistical distributor. ABB micro drives are designed to encourage users of contactors and softstarters to move to the benefits of variable-speed control. The ACS150 extends the capability of the ACS55 (page 26), by adding an extended range of power frames and programmability. The ACS150 can solve more difficult tasks like PID functionality. To retain the simplicity of an ABB micro drive, the ACS150 does not have a serial communications interface or extended options but does have a fixed keypad and speed control potentiometer.

Highlights

- PID controller built-in
- DC hold stop ensures stationary motor shaft
- IR compensation improves starting torque for heavy loads
- Parameter lock prevents tampering by unauthorised staff
- DIN rail or screw mounting as standard
- IP20 enclosure
- Fixed basic control panel
- Two-year warranty
- Flashdrop - parameter programming whilst drive still in its box - excellent for OEMs
- Protected against wiring errors: shows fault if power cable is inadvertently connected to motor terminals
- Automatic noise reduction
- Optional short or long parameter mode for standard or advanced users
- Unified height across the power range simplifies cabinet design



Where can it be used?

ACS150 can be used to control less demanding components in any machine, fans or pumps or anywhere where a fixed speed motor needs to go to variable-speed control. The functionality of the drive is designed to compliment the ABB machinery drives and ABB motion control drives.

Feature	Advantage	Benefit
FlashDrop*	Faster and easier drive set-up and commissioning for volume manufacturing. Programming in the box	No need for high voltage safe programming areas Parameters can be hidden for clarity Programme the drive during machine production build-up
Fixed interface	Simple drive with comfortable and robust interface Easy to navigate parameter structure	Integrated control panel with clear LCD display, backlight and buttons for editing and control
Fixed potentiometer	Intuitive speed setting	Integrated potentiometer. Settings shown on the control panel
Programmable functions	Useful control functions like PID, accelerating rates and start/stop modes included	Take control of the motor and reduce cost in the installation
Built-in EMC filter	No need for external filtering	2nd environment built-in filter. Complying with IEC 61800-3 as standard
Built-in brake chopper	Reduced cost, saved space and simple wiring	100 percent braking capability
Flexible installation	Optimum layout and efficient cabinet space usage	Screw, DIN-rail, sideways and side-by-side mounting Unified height and depth
Drive protection	Latest solutions to protect the drive and offer trouble-free use and the highest quality	The drive protects itself when power is connected to the motor terminals. I/O protected against short-circuit. Coated boards included as standard
Brand labelling	Drive logo, control panel logo, manuals and box can be printed with machine builders logo and name	Drives and packaging badged to your design
RoHS compliance	Compliance achieved during 2007	Environmentally friendly drives

* For details of FlashDrop, see user interfaces in ABB machinery drive section (page 34)

Low voltage AC drives

ABB micro drives

ACS150 – Ratings, types, voltages and prices

200/240 V, 1-phase supply voltage

Nominal kW	Nominal output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m³/h	Type	List Price £
0.37	2.4	4.2	R0	10	25	+Nat Vent	ACS150-01E-02A4-2	£100
0.75	4.7	8.2	R1	16	46	24	ACS150-01E-04A7-2	£117
1.1	6.7	11.7	R1	20	71	24	ACS150-01E-06A7-2	£147
1.5	7.5	13.1	R2	25	73	21	ACS150-01E-07A5-2	£165
2.2	9.8	17.2	R2	35	96	21	ACS150-01E-09A8-2	£198

+ Ensure enough space around the unit - refer to the User's Manual for details

200/240 V, 3-phase supply voltage

3-phase, 240 V is available for customers supplying the North American market. Please enquire for details.

380/480 V, 3-phase supply voltage

Nominal kW	Nominal output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m³/h	Type	List Price £
0.37	1.2	2.1	R0	10	11	+Nat Vent	ACS150-03E-01A2-4	£159
0.55	1.9	3.3	R0	10	16	+Nat Vent	ACS150-03E-01A9-4	£168
0.75	2.4	4.2	R1	10	21	13	ACS150-03E-02A4-4	£183
1.1	3.3	5.8	R1	10	31	13	ACS150-03E-03A3-4	£201
1.5	4.1	7.2	R1	16	40	13	ACS150-03E-04A1-4	£220
2.2	5.6	9.8	R1	16	61	19	ACS150-03E-05A6-4	£315
3	7.3	12.8	R1	16	74	24	ACS150-03E-07A3-4	£379
4	8.8	15.4	R1	20	94	24	ACS150-03E-08A8-4	£431

+ Ensure enough space around the unit - refer to the User's Manual for details

The drive can be fitted with the NEMA 1 kit for easy wall-mounting and convenient protection, see user interfaces in ABB machinery drive section, page 34.



Low voltage AC drives

ABB micro drives

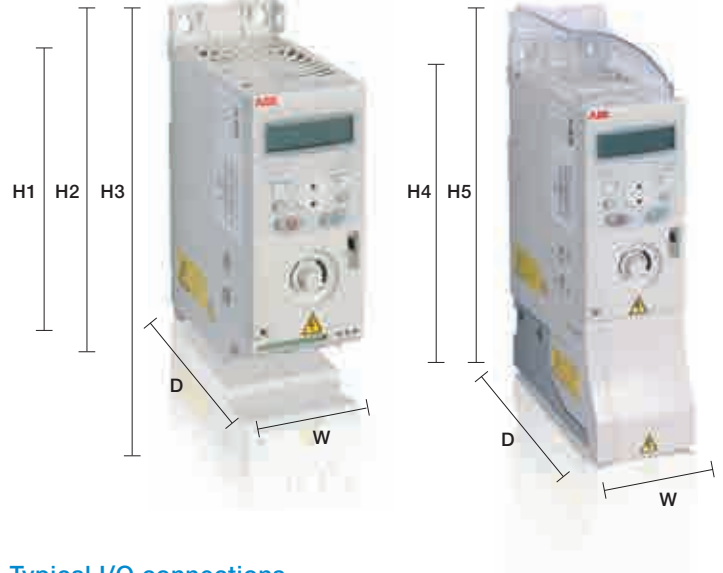
ACS150 – Dimensions, I/O and options

Dimensions and weights

Cabinet-mounted drives, wall mounted drives

Frame size	IP20 (UL open)						NEMA 1				
	H1	H2	H3	W	D	Weight	H4	H5	W	D	Weight
	mm	mm	mm	mm	mm	Kg	mm	mm	mm	mm	Kg
R0	169	202	239	70	142	1.1	257	280	70	142	1.5
R1	169	202	239	70	142	1.3	257	280	70	142	1.5
R2	169	202	239	105	142	1.5	257	282	105	142	1.5

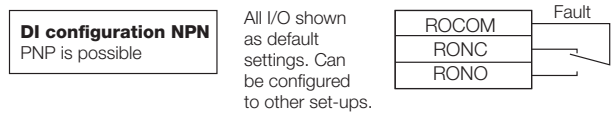
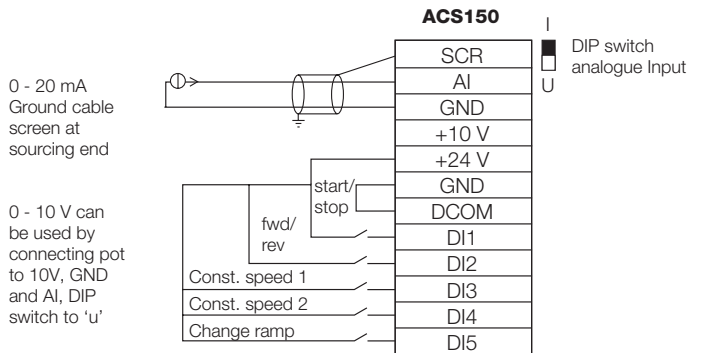
H1 = Height without fastenings and clamping plate
 H2 = Height with fastenings but without clamping plate
 H3 = Height with fastenings and clamping plate
 H4 = Height with fastenings and NEMA 1 connection box
 H5 = Height with fastenings, NEMA 1 connection box and hood
 W = Width
 D = Depth



Options available

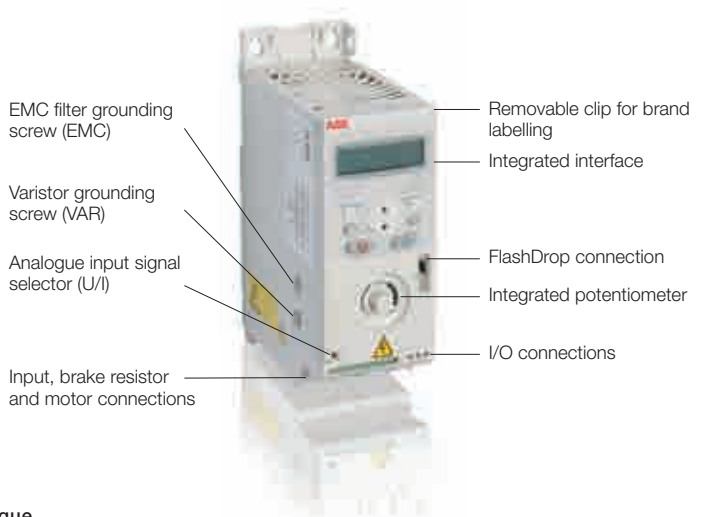
- Input and output chokes
- Brake chopper resistors (all drives in the ACS150 range have integral chopper)
- 1st. environment EMC filters - footprint style
- Low leakage EMC filters < 30mA leakage
- FlashDrop - programming without power
- NEMA kit allows installations to be neater and provides mechanical support for glanded cables

Typical I/O connections



User interfaces

The ACS150 has a simple user interface, consisting of I/O connections and a fixed programming keypad. An integrated speed control potentiometer is also provided.



Low voltage AC drives

ABB machinery drive

0.37 kW to 22 kW, ACS355

Motor control method - scalar, vector (open and closed loop)

200/240 V, 1-phase supply, 0.37 kW - 2.2 kW

200/240 V, 3-phase supply, 0.37 kW - 11 kW

380/480 V, 3-phase supply, 0.37 kW - 22 kW

What is an ABB machinery drive?

ABB machinery drives are designed for the machine building sector. In serial type manufacturing the consumed time per unit is critical. The drive is designed to be optimal in terms of installation, setting parameters, available machinery features and commissioning. The basic product is as user-friendly as possible, yet providing high intelligence. The drive offers diverse functionality to cater for the most demanding needs. The drive is also equipped with a dual-channel safe torque-off interface to SIL3/PL e.

Highlights

- FlashDrop - parameter programming with drive still in its box - excellent for OEMs
- Sequence programming designed for food and beverage and materials handling applications - Eight-steps included
- Unified height and depth across the power range simplifies cabinet design
- Protected against wiring errors: shows fault if power cable is inadvertently connected to motor terminals
- Automatic noise reduction
- Own branding possible for large users



Where can it be used?

ABB machinery drives are designed to meet the requirements of an extensive range of machinery applications. The drive is ideal for food and beverage, material handling, textile, printing, rubber and plastics and woodworking applications. The higher IP66 class variant meets all of the relevant hygiene requirements for the food and beverage industry.

Feature	Advantage	Benefit
FlashDrop*	Faster and easier drive set-up and commissioning for volume manufacturing. Programming with no power	Fast, safe and trouble-free method to set up and commission without powering up the drive - patented
Safe torque-off	Built-in compliance to new machinery directive	SIL3/PL e certified dual channel input - TUV approved
Sequence programming	Application specific 8-state programming with comprehensive triggering conditions, 16 conditions with option code	Logic programming included as standard. Reduces the need for external PLC
Common DC link	Connection to existing DC power sources (patented)	Easy integration into high performance machines
User interfaces	Wide range, including Assistant panel	Cost efficient approach - meets requirements of OEM
Fieldbus	Extensive range of industrial fieldbus option modules available	Connectability to all of the most popular fieldbuses
24 V 'live keypad' operation	Connect 24 V to the drive via the MPOW option	Keep fieldbus, control card and I/O healthy while able to remove the main supply - safer maintenance
Built-in EMC filter	2nd environment filter complying with IEC 61800-3 as standard	No extra space, parts, time or cost required
Built-in brake chopper	100 percent braking capability	Reduces cost, saves space and simplifies wiring
Drive protection	Latest solutions to protect the drive and offer trouble-free use and the highest quality	The drive protects itself when power is connected to the motor terminals. I/O protected against short-circuit. Coated boards included as standard
IP66/69k enclosure option	Makes drive suitable for hose down applications	Meets food hygiene standards in a wall-mounted enclosure
Brand labelling	Drive logo, control panel logo, manuals and box can be printed with machine builders logo and name	Drives and packaging badged to your design
RoHS compliance	Compliance achieved during 2007	Environmentally friendly drives

* For details of FlashDrop, see user interfaces in ABB machinery drive section, page 34

Low voltage AC drives

ABB machinery drive

ACS355 - Ratings, types, voltages and prices

200/240 V, 1-phase supply voltage

Nominal kW	Output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m³/h	Type (code shown is IP20)	IP20 list price without control panel*	IP66 list price with control panel**
0.37	2.4	4.2	R0	10	48	*Nat Vent	ACS355-01E-02A4-2	£111	n/a
0.75	4.7	8.2	R1	16	72	24	ACS355-01E-04A7-2	£139	n/a
1.1	6.7	11.7	R1	20	97	24	ACS355-01E-06A7-2	£163	n/a
1.5	7.5	13.1	R2	25	101	21	ACS355-01E-07A5-2	£179	n/a
2.2	9.8	17.2	R2	35	124	21	ACS355-01E-09A8-2	£219	n/a

* Ensure enough space around the unit - refer to the User's Manual for details

* Note: IP20 drives require a keypad for parameter alteration, it can then be removed if required

** Note: IP66 drives are always delivered with the Assistant keypad

200/240 V, 3-phase supply voltage

3-phase, 240 V is also available for customers supplying the North American market. Please enquire for details.

380/480 V, 3-phase supply voltage

Nominal kW	Output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m³/h	Type (code shown is IP20)	IP20 list price without control panel*	IP66 list price with control panel**
0.37	1.2	2.1	R0	10	35	*Nat Vent	ACS355-03E-01A2-4	£189	£400
0.55	1.9	3.3	R0	10	40	*Nat Vent	ACS355-03E-01A9-4	£199	£402
0.75	2.4	4.2	R1	10	50	13	ACS355-03E-02A4-4	£218	£417
1.1	3.3	5.8	R1	10	60	13	ACS355-03E-03A3-4	£247	£463
1.5	4.1	7.2	R1	16	69	13	ACS355-03E-04A1-4	£300	£526
2.2	5.6	9.8	R1	16	90	19	ACS355-03E-05A6-4	£348	£600
3	7.3	12.8	R1	16	107	24	ACS355-03E-07A3-4	£454	£777
4	8.8	15.4	R1	20	127	24	ACS355-03E-08A8-4	£517	£882
5.5	12.5	21.9	R3	25	161	52	ACS355-03E-12A5-4	£599	£1,043
7.5	15.6	27.3	R3	30	204	52	ACS355-03E-15A6-4	£777	£1,237
11	23.1	40.4	R3	50	301	71	ACS355-03E-23A1-4	£949	n/a
15	31.0	54.3	R4	80	408	96	ACS355-03E-31A0-4	£1,216	n/a
18.5	38.0	66.5	R4	100	498	96	ACS355-03E-38A0-4	£1,443	n/a
22	44.0	77.0	R4	100	588	96	ACS355-03E-44A0-4	£1,764	n/a

* Ensure enough space around the unit - refer to the User's Manual for details

* Note: IP20 drives require a keypad for parameter alteration, it can then be removed if required

** Note: IP66 drives are always delivered with the Assistant keypad

Control panel

Control panel	Type	Price £
Assistant control panel	ACS-CP-A	£86†
Basic keypad	ACS-CP-C	£24

† Price of control panel only when purchased with drive

Panel mounting kit and user interface descriptions, see page 34

Low voltage AC drives

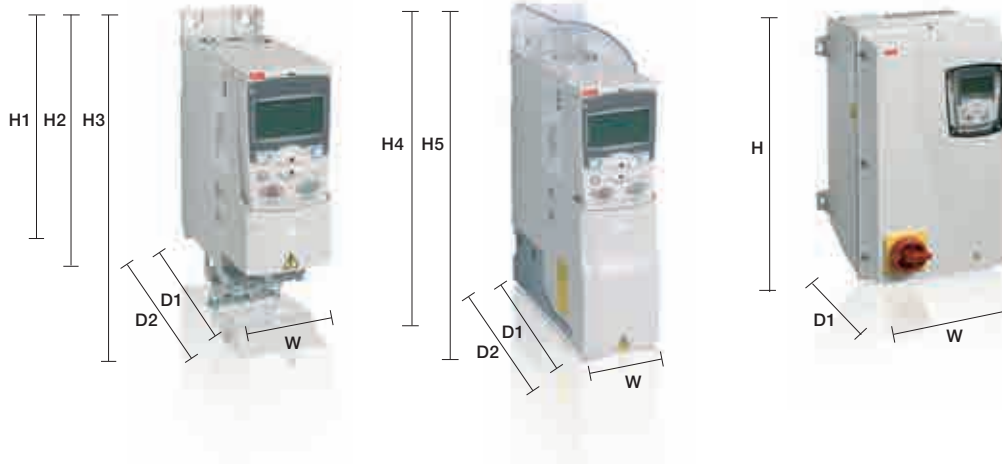
ABB machinery drive

ACS355 – Dimensions, I/O and options

Dimensions and weights

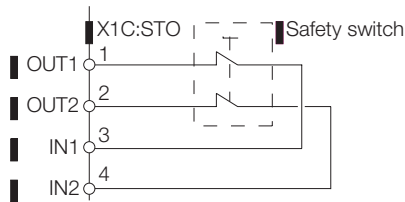
IP20 UL Open								NEMA 1/UL Type 1						IP66/67/UL Type 4x			
Frame	H1	H2	H3	W	D1	D2	Weight	H4	H5	W	D1	D2	Weight	H	W	D1	Weight
size	mm	mm	mm	mm	mm	mm	Kg	mm	mm	mm	mm	mm	Kg	mm	mm	mm	Kg
R0	169	202	239	70	161	187	1.2	257	280	70	169	187	1.6	-	-	-	-
R1	169	202	239	70	161	187	1.2	257	280	70	169	187	1.6	305	195	281	7.7
R2	169	202	239	105	165	191	1.5	257	282	105	169	191	1.9	-	-	-	-
R3	169	202	236	169	169	195	2.5	260	299	169	177	195	3.1	436	246	277	13
R4	181	202	244	260	169	195	4.4	270	320	260	177	195	5.0	-	-	-	-

H = Height
 H1 = Height without fastenings and clamping plate
 H2 = Height with fastenings but without clamping plate
 H3 = Height with fastenings and clamping plate
 H4 = Height with fastenings and NEMA 1 connection box
 H5 = Height with fastenings, NEMA 1 connection box and hood
 W = Width
 D1 = Standard depth
 D2 = Depth with MREL or MTAC option



STO connections

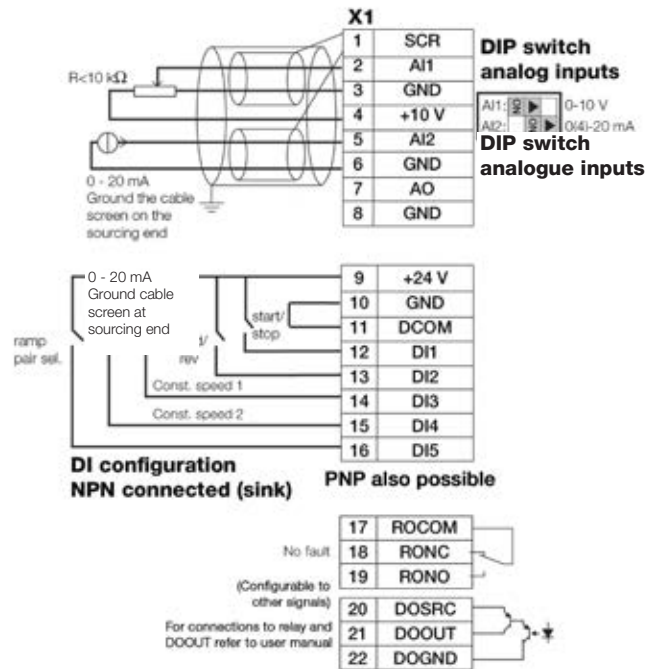
The ACS355 has a dual channel STO (safe torque-off) input as standard, certified to BS EN 62061 and BS EN 13849-1



Options available

- Input and output chokes
- Brake chopper resistors (all drives in the ACS355 range have integral chopper)
- 1st. environment EMC filters - footprint style
- Low leakage EMC filters < 30 mA leakage
- FlashDrop, programming in the box without power
- Fieldbus modules
- NEMA kit allows installations to be neater and provides mechanical support for glanded cables
- An extensive range of user interfaces is available - please see following pages
- IP66 pressure relief valves

Typical control connections



Low voltage AC drives

ABB machinery drive

ACS355 – User interfaces

Assistant control panel (+J400)

Features a multilingual alphanumeric display for easy drive programming. The control panel has various assistants and a built-in help function to guide the user. It includes a real-time clock, which is used during fault logging and in controlling the drive, such as start/stop. The control panel can be used for copying parameters for backup or for downloading to another drive. A large graphical display and soft keys make it extremely easy to navigate.



Basic control panel (+J404)

Features a single line numeric display. The panel can be used to control the drive, set the parameter values or copy them from one drive to another, or view changes.



Panel cover

The panel cover protects the drive when no control panel is used. The ABB machinery drive is delivered with a panel cover as standard. In addition, there are two alternative control panels available as options, see above.



NEMA 1 kit

The NEMA 1 kit is a convenient cover which is added to the drive and enables easy wall-mounting. It includes a connection box for cable gland or conduit tube installation and a hood for protection against dirt and dust.



Panel mounting kits, IP54 and IP66

The panel mounting kits enable mounting of control panels onto cabinet doors. These kits include a 3 m extension cable, a gasket, mounting screws and a mounting template - two versions are now available, IP54 and IP66. The IP66 has an additional keypad membrane cover.

Note: IP66 cover is not suitable for outdoor use.



Relay extension module (+L511)

Add an additional three relays to the ACS355 to allow greater use of the drives programme. Fits behind the keypad.



Potentiometer (+J402)

Potentiometer with two switches: start/stop and forward/reverse direction. No external power source is needed for the potentiometer. Fits to the drive I/O.



FlashDrop

Programme the drive whilst still in the box, with no power. Perfect for OEMs and machine builders. FlashDrop is a powerful palm-sized tool for fast and easy parameter selecting and setting. It gives the possibility to hide selected parameters to protect the machine. The tool stores 20 parameter sets, which can be moved between a PC and a drive. Safe programming during machine building production for unskilled staff.



Fieldbus interfaces

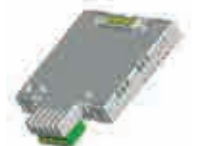
Extensive range of plug-in fieldbus interfaces, allowing connection to Profibus, DeviceNet, CanOpen, Modbus RTU and Ethernet and many others.



24V “live keypad” options

There are two ways of powering the fieldbus modules, so that they operate when the main power is removed.

FEPA - maintains power to the fieldbus module only.



MPOW (+G406) - powers the fieldbus module, the control card, the drive I/O and the drive keypad, generating the functionality commonly known as ‘live keypad’ operation.



DriveWindow Light PC tool

The tool is a parameterisation and commissioning tool used to set-up and commission the drive. Monitoring and diagnostic facilities are included, as well as a local control panel. Wizards are included to guide the user through the most commonly performed tasks.



Low voltage AC drives

ABB general purpose drive for fans and pumps

0.37 kW to 22 kW, ACS310

Motor control method – scalar

200/240 V, 1-phase supply, 0.37 kW - 2.2 kW

200/240 V, 3-phase supply, 0.37 kW - 11 kW

380/480 V, 3-phase supply, 0.37 kW - 22 kW

What is an ABB general purpose drive for fans and pumps?

A dedicated fan and pump controller, designed for squared-torque applications such as booster, submersible and irrigation pumps and centrifugal fans.

The drive design includes a powerful set of features which benefit pump and fan applications including built-in PID controllers and PFC (pump and fan control). The drives also have pre-programmed protection functions such as pipe cleaning (anti-jam) and duty standby functionality, including soft pipe filling to reduce leaks.

These features, combined with pre-programmed application macros, an intuitive user interface, and several assistant screens, speed up the installation, parameter setting and commissioning of the drive.

Highlights

- Pump, soft pump and fan control (PFC and SPFC), for multi-pump and soft fill control
- Pipe cleaning (anti-jam) and pipe fill functions
- Multiple PID set points, allowing for automatic duty/assist/standby schemes to be implemented
- Energy efficiency counters, real-time clock
- Energy optimiser – optimises the motor control for the application to run with minimum energy requirements
- Load analyser for optimised dimensioning of the drive, motor and process
- Embedded Modbus RS-485 fieldbus interface
- FlashDrop tool for fast parameter setting, without mains power



For more details, please refer to Technical Catalogue 3AUA0000051082

Where can it be used?

The ABB general purpose drive's software features are ideal for solving the challenges and issues surrounding pumping in general, and those of water and wastewater in particular.

The drive is designed to compliment the features offered by the industry specific products for water and wastewater (see page 47).

Feature	Advantage	Benefit
Pump and fan control (PFC) feature to control pumps and fans in parallel	One drive controls several pumps or fans and eliminates the need for an external programmable logic controller Interlock function enables one motor to be disengaged from the mains supply while others continue operating in parallel	Saves cost of additional drives and external PLC Longer life for pump or fan system while reducing maintenance time and costs. Maintenance can be carried out safely without stopping the process
Soft pump and fan control feature (SPFC)	Reduces unwanted pressure peaks in pumps and pipelines when an auxiliary motor is started or main pump started	Reduces maintenance costs and leaks typically seen in DOL starting. Longer life for pump or fan system. Ideal for irrigation systems
Pump protection functions	Pre-programmed features like: Pipe cleaning (anti-jamming), inlet/outlet pressure supervision and detection of under or overload for preventive maintenance	Reduces maintenance costs Smoother processes: improved and optimised system Longer life for pump and fan system, reduced maintenance costs
Energy monitoring and optimising features	Drive monitors the saved energy compared to equivalent DOL operation Drive controls the motor voltage dependant on the load	Energy savings presented in local currency and CO ₂ Consumed energy optimised across the speed and load range
Full output current at 50°C ambient	Drive can be operated in ambient temperatures up to 50°C without de-rating the output current	Optimised drive dimensioning for wide temperature range
Unified height and depth	Optimum installation layout, as all drive frames are the same height – only the width changes	Space savings. Easier to lay the cabinet back panel out
Best-in-class user interfaces	Assistant and Basic keypads with intuitive operation. Short and long menus, Assistants and wizards for ease of use	Users are supported as they program the drive, can tailor the open menu views to suite there customer needs
FlashDrop*	Faster and easier drive set up and commissioning for volume manufacturing	Fast, safe and trouble-free method to set up and commission without powering up the drive - patented
RoHS compliance	Compliance achieved during 2007	Environmentally friendly drives

* For details of FlashDrop, see user interfaces (page 38)

Low voltage AC drives

ABB general purpose drive for fans and pumps

ACS310 – Ratings, types, voltages and prices

200/240 V, 1-phase supply voltage

Nominal kW	Nominal output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m ³ /h	Type	IP20 list price without control panel*
0.37	2.4	4.0	R0	10	48	+Nat Vent	ACS310-01E-02A4-2	£110
0.75	4.7	7.9	R1	16	72	24	ACS310-01E-04A7-2	£125
1.1	6.7	11.4	R1	20	97	24	ACS310-01E-06A7-2	£146
1.5	7.5	12.6	R2	25	101	21	ACS310-01E-07A5-2	£162
2.2	9.8	16.5	R2	35	124	21	ACS310-01E-09A8-2	£197

+ Ensure enough space around the unit - refer to the User's Manual for details

* Drives require a control panel for parameter alteration, it can then be removed if required
For 50°C ratings contact ABB

200/240 V, 3-phase supply voltage

3-phase, 240 V is available for customers supplying the North American market. Please enquire for details.

380/480 V, 3-phase supply voltage

Nominal kW	Nominal output current A	Max output A	Frame	Fuse A Type gG	Heat dissipation W	Cooling requirements m ³ /h	Type	IP20 list price without control panel*
0.37	1.3	2.1	R0	10	35	+Nat Vent	ACS310-03E-01A3-4	£171
0.55	2.1	3.3	R0	10	40	+Nat Vent	ACS310-03E-02A1-4	£180
0.75	2.6	4.2	R1	10	50	13	ACS310-03E-02A6-4	£197
1.1	3.6	5.8	R1	10	60	13	ACS310-03E-03A6-4	£219
1.5	4.5	7.2	R1	15	69	13	ACS310-03E-04A5-4	£285
2.2	6.2	9.8	R1	15	90	19	ACS310-03E-06A2-4	£315
3	8	12.8	R1	20	107	24	ACS310-03E-08A0-4	£404
4	9.7	15.4	R1	25	127	24	ACS310-03E-09A7-4	£459
5.5	13.8	21.9	R3	30	161	52	ACS310-03E-13A8-4	£533
7.5	17.2	27.3	R3	35	204	52	ACS310-03E-17A2-4	£702
11	25.4	40.4	R3	50	301	71	ACS310-03E-25A4-4	£857
15	34.1	54.3	R4	80	408	96	ACS310-03E-34A1-4	£1,101
18.5	41.8	66.5	R4	100	498	96	ACS310-03E-41A8-4	£1,284
22	48.4	77.0	R4	100	588	96	ACS310-03E-48A4-4	£1,569

+ Ensure enough space around the unit - refer to the User's Manual for details

* Drives require a control panel for parameter alteration, it can then be removed if required
For 50°C ratings contact ABB

Control panel

Control panel	Type	Price £
Assistant control panel	ACS-CP-A	£86**
Basic keypad	ACS-CP-C	£24

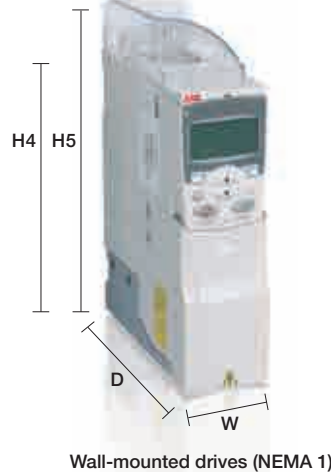
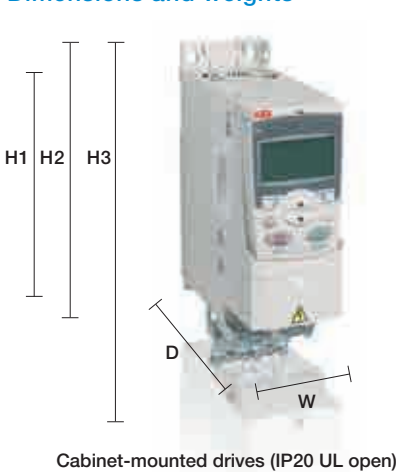
** Price of control panel only when purchased with drive
Panel mounting kit and user interface descriptions, see page 38

Low voltage AC drives

ABB ACS310 general purpose drive for fans and pumps

ACS310 – Dimensions, I/O and options

Dimensions and weights



Frame size	IP20 UL open						NEMA 1/UL Type 1				
	H1 mm	H2 mm	H3 mm	W mm	D mm	Weight Kg	H4 mm	H5 mm	W mm	D mm	Weight Kg
R0	169	202	239	70	161	1.1	257	280	70	169	1.5
R1	169	202	239	70	161	1.3	257	280	70	169	1.7
R2	169	202	239	105	165	1.5	257	282	105	169	1.9
R3	169	202	236	169	169	2.9	260	299	169	177	3.5
R4	181	202	244	260	169	4.4	270	320	260	177	5.0

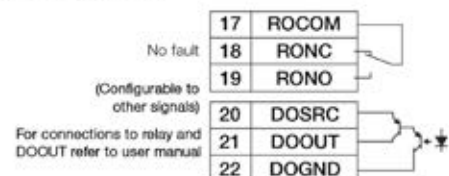
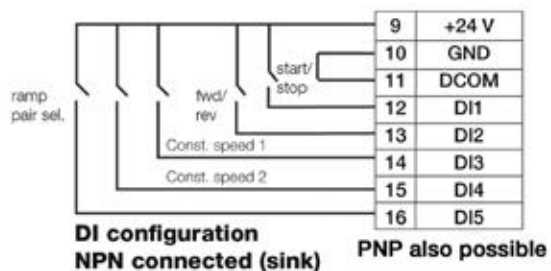
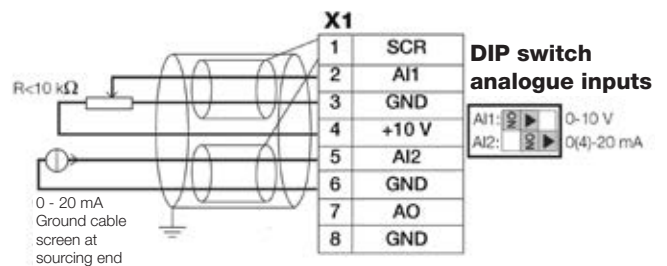
H1 = Height without fastenings and clamping plate
 H2 = Height with fastenings but without clamping plate
 H3 = Height with fastenings and clamping plate
 H4 = Height with fastenings and NEMA 1 connection box
 H5 = Height with fastenings, NEMA 1 connection box and hood
 W = Width
 D = Depth

Options available

- Input and output chokes
- ACS310 has no braking options
- 1st environment EMC filters - footprint style
- Low leakage EMC filters < 30mA leakage
- FlashDrop
- NEMA kit allows installations to be neater and provides mechanical support for glanded cables
- An extensive range of user interfaces is available - please see following pages

Typical control connections

- All I/O are programmable for other configurations



Low voltage AC drives

ABB general purpose drive for fans and pumps

ACS310 – User interfaces

Assistant control panel (+J400)

Features a multilingual alphanumeric display for easy drive programming. The control panel has various assistants and a built-in help function to guide the user. It includes a real-time clock, which is used during fault logging and in controlling the drive, such as start/stop. The control panel can be used for copying parameters for backup or for downloading to another drive. A large graphical display and softkeys make it extremely easy to navigate.



Basic control panel (+J404)

Features a single line numeric display. The panel can be used to control the drive, set the parameter values or copy them from one drive to another.



Panel cover

The panel cover protects the drive's connection when no control panel is used. The ABB general purpose drive is delivered with a panel cover as standard, thereby providing a cost effective package. In addition, there are two alternative control panels available as options, see above.



NEMA 1 kit

The NEMA 1 kit is a convenient cover which is added to the drive and enables easy wall-mounting. It includes a connection box for cable gland or conduit tube installation and a hood for protection against dirt and dust.



Panel mounting kit, IP54 and IP66

The panel mounting kit enables mounting of control panels on cabinet doors. These kits include a 3 m extension cable, a gasket, mounting screws and a mounting template - two versions are now available, IP54 and IP66. The IP66 has an additional keypad membrane cover.



Note: IP66 cover is not suitable for outdoor use.

Relay extension module (+L511)

Add an additional three relays to the ACS310 to allow greater use of the PFC program. Fits behind the keypad.



FlashDrop

Programme the drive whilst still in the box, with no power. Perfect for OEMs and machine builders. FlashDrop is a powerful palm sized tool for fast and easy parameter selecting and setting. It gives the possibility to hide selected parameters to protect the machine. The tool stores 20 parameter sets, which can be moved between a PC and a drive. Safe programming during machine building production for unskilled staff.

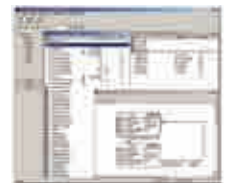


Fieldbus communications

ACS310 has no industrial fieldbus interfaces, but it does have an RS485 Modbus communications link built-in. This link can be used to communicate to industrial HMIs or remote monitoring devices or to a fieldbus via a suitable gateway.

DriveWindow Light PC tool

This tool is a parameterisation and commissioning tool used to set-up and commission the drive. Monitoring and diagnostic facilities are included, as well as a local control panel. Wizards are included to guide the user through the most commonly performed tasks.



Low voltage AC drives

ABB general purpose drive

0.55 kW to 250 kW, ACS580

Motor control method – scalar or vector control (open or closed loop)

380 - 480 V, 3-phase supply, 0.55kW to 250kW

What is an ABB general purpose drive?

The ACS580 is part of the ABB all-compatible family, which means it uses the same keypad and same PC tool as the other drives in the family. The drive contains the new harmonised parameter set, so familiarity with the ABB industrial drive is closer than it ever has been.

Highlights

- Improved internal options including 24V support
- Integral EMC filter for 1st and 2nd environment as standard
- Assistant control panel with improved primary settings menu and backups
- Wide power range in wall-mounted IP21 and IP55 variants
- Patented permanent magnet swinging choke for superior harmonic reduction, even at reduced motor load
- STO as standard SIL 3 PL e
- Flexible fieldbus system with built-in Modbus and numerous internally mountable fieldbus adapters
- SynRM, permanent magnet (PM) and induction motor control with improved motor platform
- New energy monitoring features



For more details, please refer to Technical Catalogue 3AUA0000145061

Where can it be used?

The ABB general purpose drive is ideal in those situations where there is a need for simplicity to install, commission and use and where reasonable amounts of flexibility and functionality are required. The addition of STO, 24V support and improved fieldbus support, extends the applications.

Feature	Advantage	Benefit
Intuitive modern keypad	High contrast, high definition display giving intuitive access to the drive parameters. Built-in "Help" button, giving programming hints. Real-time clock, allows timed tracing of faults and setting of parameters to activate functions at various times of day. Changed parameters menu also included, so you can see your edits	Easy commissioning, programming, maintenance and fault finding, making the drive easy to own and use across all activities
Primary setting menu	Assisted set-up for all of the drives common settings. Intuitive and context sensitive makes navigation easier for the user	Even easier to configure the drive to the application
Start-up assistant	Guided start up for getting the drive going	Step-by-step instructions make the set up easy
Text editing capabilities	Rename drive variables or warning messages	Tailor the drive to "speak" in the language of the application
Clone drives	Copy parameters from drives of differing rating or software versions	Easy to copy parameters to other drives, reducing commissioning times
Improved backups	Keypad can store backups with a time stamp, or automatic backups can be taken. Backups can be viewed before download, or partial downloads can be performed	Easy to manage installed base and speeds up commissioning. Auto backup means you never forget
Integrated safety. STO as standard SIL3 PL e	TÜV approved STO is on board the drive. Makes it easy to generate safety systems without the need for external contactors	Minimise installation time and space. Shorter design times using TÜV approved interface
Modern PC tools	Entry level (FOC) and Pro level PC tools are available for commissioning, tuning, parameter management and monitoring	Keep copies of the parameters for back-up. Use the PC tools to optimise the application
Fieldbus gateways	Built-in Modbus using RS 485, or built-in Ethernet Optional plug-in fieldbus modules also available	Reduced cost, full access to industrial networks
Energy monitoring and optimising features	Drive controls the motor voltage dependant on the load. Drive monitors the saved energy compared to equivalent DOL operation	Consumed energy optimised across the speed and load range. Energy savings presented in local currency and tonnes of CO ₂
24V operation	Power the drive control card, I/O and fieldbus from an external 24V	Safer diagnostics and maintenance activities can be undertaken without the need for mains voltages
Cold configuration - Programming without mains power whilst in the box	Quicker parameter programming for OEM users. Drive can be programmed with a PC interface that injects the parameters directly into the drive whilst it is still in the box	Quicker, cheaper manufacturing for OEM's. Easier spares handling in store without the need to power on the drive

Low voltage AC drives

ABB general purpose drive

ACS580 – Variants, ratings voltages and prices

The drive is programmed by the most intuitive and user friendly keypad ABB has produced and incorporates a “primary settings” menu that guides the user through the most common settings. The new PC tool is designed to incorporate all of the latest functionality that new operating systems bring, including a free of charge entry level version and a chargeable Pro version.

The drive retains the same harmonic suppression technology as previously, the swinging choke, which has been updated to permanent magnet technology, making the package lighter. The IP rating has improved to IP55. Improvements are made to terminal sizes and fieldbus offerings, as well as gaining the ability to be powered by an external 24V.

The drive includes built-in machinery safety functionality with safe torque-off (STO) to SIL 3 PL e as standard. There are more frame sizes, extending the power range to 250 kW in a wall-mounted format and the IP55 variant is significantly smaller, occupying almost the same space as the IP21 equivalent.



For more details, please refer to Technical Catalogue 3AUA0000145061

Wall-mounted single drive Series ACS580-01

- 0.55 kW to 250 kW, (380 - 480 V)
- Largest power for wall-mount drive on market
- Coated boards as standard
- TÜV approved safe torque-off (STO) to SIL 3 PL e standard
- IP21 as standard, IP55 as option
- IP55 variant similar footprint to IP21 variant
- Brake chopper standard to R3 frame, option thereafter
- Optional UK cable box option for SWA cables
- EMC filter for C3 category according to EN 61800-3 (2004) standard
- Internal fieldbus options
- Optional relay expansion, PTC and 115V/240V DI's

380 – 480 V, 3-phase supply voltage (ratings shown are for 415 V)

No-overload (nominal) use		Light-duty use		Heavy-duty use		Max output A	Frame	Fuse A	Heat dissipation	Cooling requirements	Type (+J400 + H358 to order keypad & SWA gland plate)	Price IP21	Price IP55 (+B056)
P _N kW	I _N A	P _{Ld} kW	I _{Ld} A	P _{hd} kW	I _{hd} A			Type gG	W	m ³ /h			
0.75	2.6	0.75	2.5	0.55	1.8	3.2	R0	4	45	34	ACS580-01-02A6-4	£450.00	£529.00
1.1	3.3	1.1	3.1	0.75	2.6	4.7	R0	6	55	34	ACS580-01-03A3-4	£473.00	£563.00
1.5	4	1.5	3.8	1.1	3.3	5.9	R0	6	66	34	ACS580-01-04A0-4	£567.00	£639.00
2.2	5.6	2.2	5.3	1.5	4	7.2	R0	10	84	34	ACS580-01-05A6-4	£623.00	£708.00
3	7.2	3	6.8	2.2	5.6	10.1	R1	10	106	50	ACS580-01-07A2-4	£680.00	£756.00
4	9.4	4	8.9	3	7.2	13	R1	16	133	50	ACS580-01-09A4-4	£765.00	£889.00
5.5	12.6	5.5	12	4	9.4	14.1	R1	16	174	50	ACS580-01-12A6-4	£908.00	£999.00
7.5	17	7.5	16.2	5.5	12.6	22.7	R2	25	228	128	ACS580-01-017A-4	£1,039.00	£1,209.00
11	25	11	23.8	7.5	17	30.6	R2	32	322	128	ACS580-01-025A-4	£1,246.00	£1,411.00
15	32	15	30.4	11	24.6	44.3	R3	40	430	116	ACS580-01-032A-4	£1,523.00	£1,700.00
18.5	38	18.5	36.1	15	31.6	56.9	R3	50	525	116	ACS580-01-038A-4	£1,916.00	£2,112.00
22	45	22	42.8	18.5	37.7	67.9	R3	63	619	116	ACS580-01-045A-4	£2,298.00	£2,476.00
30	61	30	58	22	44.6	76	R5	80	1153	280	ACS580-01-061A-4	£2,877.00	TBA
37	72	37	68.4	30	61	104	R5	100	1153	280	ACS580-01-072A-4	£3,189.00	TBA
45	87	45	82.7	37	72	122	R5	100	1156	280	ACS580-01-087A-4	£3,963.00	TBA
55	105	55	100	45	87	148	R6	125	1331	435	ACS580-01-105A-4	£4,110.00	£4,348.00
75	145	75	138	55	105	178	R6	160	1476	435	ACS580-01-145A-4	£4,621.00	£4,913.00
90	189	90	161	75	145	247	R7	250	1976	450	ACS580-01-169A-4	£5,961.00	£6,447.00
110	206	110	196	90	169	287	R7	315	2346	550	ACS580-01-206A-4	£7,674.00	£8,194.00
132	246	132	234	110	206	350	R8	355	3336	550	ACS580-01-246A-4	£9,358.00	£9,875.00
160	293	160	278	132	246	418	R8	425	3936	1150	ACS580-01-293A-4	£11,129.00	£11,649.00
200	363	200	345	160	293	498	R9	500	4836	1150	ACS580-01-363A-4	£13,510.00	£13,921.00
250	430	200	400	200	363	617	R9	630	6036	1150	ACS580-01-430A-4	£16,522.00	£17,115.00

For 440 to 480V data see the user's manual, document code: 3AUA0000076333

Low voltage AC drives

ABB general purpose drive

ACS580-01 – Dimensions and options

Dimensions and weights, wall-mounted drives

IP21				
Frame size	Height mm	Width mm	Depth mm	Weight kg
R0	303	125	210	4.5
R1	303	125	223	4.6
R2	394	125	227	7.5
R3	454	203	228	14.9
R5	726	203	283	23
R6	726	252	369	45
R7	880	284	370	55
R8	965	300	393	70
R9	955	380	418	98



IP55				
Frame size	Height mm	Width mm	Depth mm	Weight kg
R0	303	125	222	5.1
R1	303	125	233	5.1
R2	394	125	239	8.0
R3	454	203	237	15.4
R6	726	252	380	45.5
R7	880	284	381	55.5
R8	965	300	452	72
R9	955	380	477	100



Options for ACS580-01

ACS580-01 is a wall mounted drive, so all of the options fit inside:

- IP55 variant
- Internal fieldbus options
- Optional additional industrial fieldbus
- Optional relay expansion
- Optional isolated PTC option
- Optional 115/230 V digital inputs
- UK gland box to accommodate SWA cable
- Brake chopper (up to frame R3 fitted as standard)

All ABB general purpose drives use the same common options and user interfaces. These are detailed on page 42. They are also part of the “all compatible family” so keypad interfaces, common PC tools, parameter structures and programing methods are all common.

Cold configuration adapter – CCA-01

ACS580 drives can be programmed without the need for mains power or without taking the drive out of the box using the CCA-01. This specifically allows rapid programming for OEM without the need for safe areas in production.



Typical I/O connections for ACS580

These connections are shown as examples only. Please refer to the User's Manual – macro section, for more detailed information and for different I/O configurations.

Terminal	Meaning	Default macro connections
S1	AI1 U/I	Voltage/Current selection for analogue input
S2	AI2 U/I	Voltage/Current selection for analogue input
1	SCR	Signal cable shield (screen)
2	AI1	External frequency reference 1: 0 to 10 V
3	AGND	Analogue input circuit common
4	+10V	Output reference voltage 10 V DC
5	AI2	Analogue input (not used)
6	AGND	Analogue input circuit common
7	AO1	Output frequency: 0 to 20 mA
8	AO2	Output current: 0 to 20 mA
9	AGND	Analogue output circuit common
S3	AO1 I/U	Voltage/Current selection for analogue output
X2 & X3 Aux. voltage output and programmable digital inputs		
10	+24V	Auxiliary voltage output +24 V DC
11	DGND	Auxiliary voltage output common
12	DCOM	Digital input common for all DI
13	DI1	Start/Stop: Activate to start
14	DI2	Fwd/Rev: Activate to reverse rotation direction
15	DI3	Constant speed selection
16	DI4	Constant speed selection
17	DI5	Ramp pair selection: Activate to select second pair
18	DI6	Not used
X6, X7, X8 Relay outputs		
19	RO1C	Ready
20	RO1A	250 V AC/30 V DC
21	RO1B	2 A
22	RO2C	Running
23	RO2A	250 V AC/30 V DC
24	RO2B	2 A
25	RO3C	Fault (-1)
26	RO3A	250 V AC/30 V DC
27	RO3B	2 A
X5 EIA-485 Modbus RTU		
29	B+	
30	A-	Built-in Modbus RTU fieldbus interface
31	DGND	
S4	TERM	Serial data link termination switch
S5	BIAS	Serial data link bias resistors switch
X4 Safe torque-off		
34	OUT1	
35	OUT2	
36	SGND	Safe torque-off. Both circuits must be closed for the drive to start. The circuits are closed with jumper wires in the standard delivery.
37	IN1	
38	IN2	
X10 24 V AC/DC*		
40	24 V	AC/DC-in. Ext. 24 V AC/DC input to power up the control unit when the main supply is disconnected
41	24 V	AC/DC-in.

*Standard on R5 frames and above and is optional on smaller frames

Low voltage AC drives

ABB general purpose drive

ACS580 – Common user interfaces

New control panel

State-of-the-art high resolution keypad brings a new level of usability to the drives marketplace. The ACS580 uses the keypad platform from the new “all compatible” range of drives from ABB. The main difference, is that the ACS580 includes a “primary settings” menu, a guided set-up procedure similar to that of a smart phone.



I/O extension and external 24 V (+L501)

The CMOD-01 offer additional two relay outputs (changeover) and one digital output, as well as giving a place to connect external 24 V (AC or DC).



Fieldbus (various and codes)

The ACS580 supports an extensive list of fieldbus modules for connectivity to industrial networks. These modules are common with other drives within the ABB drives range.



Embedded fieldbus

The ACS580 can be fitted with one of two embedded low cost fieldbus units, either Modbus RS485 or EtherNet. These modules fit into a dedicated slot on the drive.

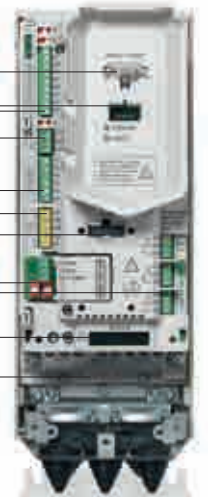
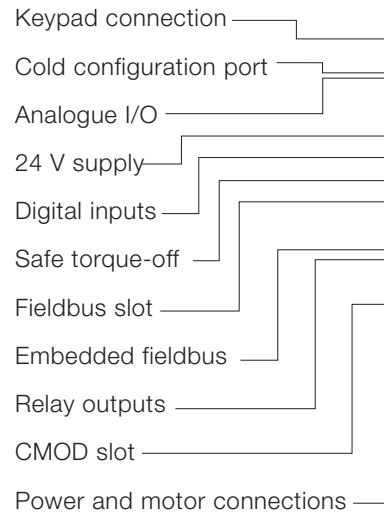


Panel/keypad bus adapter - CDPI-01(+K450)

The ACS580 can be connected onto a panel bus, where 32 drives can be daisy chained using a simple CAT cable. The chain would have one keypad mounted on the cabinet door, communicating to the other drives via the CDPI module, which fits where the keypad normally connects on the drive.



Interface



Isolated PTC input and external 24 V (+L523)

The CMOD-02 offers an isolated PTC interface, as well as giving a place to connect external 24 V (AC or DC)



High Voltage I/O extension (+L512)

The CHDI-01 offers an additional six high voltage (115/230 V) digital inputs and two relay outputs (changeover); allows high voltage connection without interposing relays.

Drive Composer PC tool

Drive Composer is the new PC tool for the ACS580 family. The PC tool comes in two variants – the “Entry” level is a free of charge point-to-point tool and allows simple parameter editing and storage, as well as monitoring and commissioning support, while the “Pro” level has all of this as well as animated control diagrams and extended commissioning, monitoring and diagnostic support, as well as the ability to program the safety functions. The Pro tool allows the user to connect to multiple drives either over “panel bus” where the keypad port is used, or over Ethernet.



Door mounting kit, ACS/H/Q-AP-EXT

The keypad can be mounted onto a panel door using a two part kit. The kit includes a CDPI which is mounted onto the drive, then the DPMP-02 (pictured) is mounted onto the door and a CAT5 cable is used to connect between the two.



Low voltage AC drives

ABB drive for HVAC

0.75 kW to 355 kW, ACH550

Motor control method - scalar, vector speed and torque (open and closed loop)

208/240 V, 3-phase supply, 0.75 kW - 75 kW

380/480 V, 3-phase supply, 0.75 kW - 355 kW

What is an ABB HVAC drive?

ACH550 is a dedicated low voltage AC drive for heating, ventilation & air-conditioning (HVAC) applications. The drives are designed to meet the HVAC market requirements including harmonics and EMC standards and for easy integration with building management systems straight out of the box. They feature built-in control programmes specifically designed for HVAC applications like cooling tower fans, supply and return fans and booster pumps and condensers. With built-in PID control, native BACnet communication, timers, real-time clock and a calendar, ABB HVAC drives provide flexible solutions for a wide range of HVAC needs.

Where can it be used?

ABB HVAC drives make maintaining a buildings comfort zone easy, quick and energy efficient. The drives control the speed of pump, fan and compressor motors used in air handling units, cooling towers, chillers and other HVAC applications. They help reduce the HVAC system's energy consumption by up to 70 percent, and quite often have payback times of less than a year. These highly reliable drives with built-in BACnet easily integrate into building management systems.



Highlights

- Built-in BACnet
- New energy monitoring features record energy, CO₂ and money saved (compared to equivalent DOL)
- Wide power range in wall-mounted IP21 and IP54 variants
- Intelligent HVAC control panel
- Programmed with several HVAC applications, including supply and return fans, cooling tower fans, booster pumps and condensers

Feature	Advantage	Benefit
Swinging choke	Patented by ABB Reduces the drives' harmonic signature	Reduces part load harmonics by up to 25 percent, in comparison with traditional chokes. Variable air volume (VAV) systems run on partial loads at least 95 percent of the time
EMC (manufacturer's statement available)	Integrated category C2 (1st environment) filters to BS EN 61800-3	EMC filters suitable for 400 V network connection built-into the drive as standard will save panel space, avoid additional wiring, earthing and assembly costs
Additional serial communications	HVAC protocols built-in as standard. BACnet, Modbus RTU, FLN Apogee, N2 Metasys, RS 485 Fieldbus adapter allows connection of: LonWorks, Profibus-DP, CANopen, DeviceNet, Modbus/TCP, ControlNet, Ethernet	Can connect to any building management system (BMS), native BACnet as standard
Real-time clock	Easily set up at time of installation and protected by its own battery back-up. The time allows the drive to timestamp and operate functions at set times	Can be used together with timer functions of the drive to trigger various events (via relays or outputs) within the application software such as time / speed profile, allowing the drive to be a stand alone unit without the need for BMS input
System diagnostics	Diagnostic assistant, on-board fault history with real-time of when fault occurred, covering voltage, current, DC link level etc	Instant fault tracking and date stamping, gives status of drive to enable rapid drive diagnostics
Energy efficiency counters	Works out energy savings of the application in kWh and MWh; the cost of the energy saved in a local currency; and the carbon dioxide (CO ₂) emissions equivalent of the energy saved	Can assist with electricity billing in accordance with Part L2 Building Regulations. Allows verification of energy savings before making investments in capital equipment

* For details of FlashDrop, see user interfaces (page 46)

Low voltage AC drives

ABB drive for HVAC

ACH550 – Variants, ratings, types, voltages and prices

Wall-mounted - 0.75 kW - 160 kW, 380/480 V,

- Wall-mounted, frame sizes R1-R6
- Two variants, IP21 and IP54
- 55 percent size reduction at 160 kW
- Built-in EMC filter (1st & 2nd environment)
- Standard software, easy to configure
- Built-in BACnet and Modbus interfaces
- Cable connection box
- Brake chopper in frame sizes R1-R2
- HVAC assistant control panel
- Built-in patented swinging choke
- Sensorless vector control, scalar control
- FlashDrop compatible
- RoHS compliant



Free-standing - 160 kW - 355 kW, 380/480 V

- Free-standing, frame size R8
- IP21 as standard, very compact design
- Built-in EMC filter
- Standard software, easy to configure
- Built-in BACnet and Modbus interface
- Pedestal unit on wheels, easy handling
- HVAC assistant control panel
- Sensorless vector control, scalar control
- Free-standing units are not FlashDrop compatible
- Not RoHS compliant
- For dimensions and prices, please contact ABB



Types, ratings and dimensions

380-480 V, 3-phase supply voltage

Nominal		Frame	Fuse A	Heat dissipation	Cooling requirements	Type (code shown is IP21, for IP54 add + B055)	IP20 list price without control panel*	IP20 list price with control panel**
P _N	I _{2N}	A	Type gG	W	m ³ /h			
kW	A							
0.75	2.4	R1	10	30	44	ACH550-01-02A4-4		
1.1	3.3	R1	10	40	44	ACH550-01-03A3-4		
1.5	4.1	R1	10	52	44	ACH550-01-04A1-4		
2.2	5.4	R1	10	73	44	ACH550-01-05A4-4		
3	6.9	R1	10	97	44	ACH550-01-06A9-4		
4	8.8	R1	10	127	44	ACH550-01-08A8-4		
5.5	11.9	R1	16	172	44	ACH550-01-012A-4		
7.5	15.4	R2	16	232	88	ACH550-01-015A-4		
11	23	R2	25	337	88	ACH550-01-023A-4		
15	31	R3	35	457	134	ACH550-01-031A-4		
18.5	38	R3	50	562	134	ACH550-01-038A-4		
22	45	R3	50	667	134	ACH550-01-045A-4		
30	59	R4	63	907	280	ACH550-01-059A-4		
37	72	R4	80	1120	280	ACH550-01-072A-4		
45	87	R4	125	1440	280	ACH550-01-087A-4		
55	125	R5	160	1940	350	ACH550-01-125A-4		
75	157	R6	200	2310	405	ACH550-01-157A-4		
90	180	R6	250	2810	405	ACH550-01-180A-4		
110	205	R6	250	3050	405	ACH550-01-195A-4		
132	245	R6**	315	3260	405	ACH550-01-246A-4		
160	290	R6a**	315	3850	405	ACH550-01-290A-4		

Includes EMC filter

* Control panel is required for programming and set-up - see below

† Heavy duty ratings available, when higher overload requirements are needed - contact ABB

** R6a is not an official frame size, it just designates slightly different dimensions

208/240 V, 3-phase supply voltage

3-phase 240 V is also available for customers supplying the North American market. Please enquire for details.

Control panel

Control panel	Type	Price £
Assistant control panel	ACH-CP-B	£POA

Low voltage AC drives

ABB drive for HVAC

ACH550 – Dimensions, I/O and options

Dimensions and weights

Frame size	IP20 UL Open					IP54 / UL type 12			
	H1	H2	W	D	Weight	H	W	D	Weight
	mm	mm	mm	mm	Kg	mm	mm	mm	Kg
R1	369	330	125	212	6.5	449	213	234	8.2
R2	469	430	125	222	9	549	213	245	11.2
R3	583	490	203	231	16	611	257	253	18.5
R4	689	596	203	262	24	742	257	284	26.5
R5	739	602	265	286	34	776	369	309	38.5
R6	880	700	300	400	69	924	410	423	80
R6a	986	700	302	400	73	1119	410	423	84

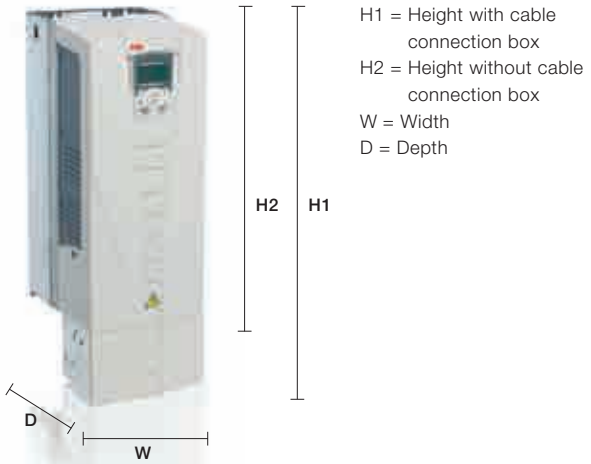
** R6a not an official frame size, shown here to highlight the slightly different dimensions of the largest rating

Brake units and choppers technical data

Frequency converter input voltage (AC)	Resistor	Continuous output	Max. output	Brake unit type code
	ohm	W	20 s W	
200 - 240 V AC	32	2000	4500	ACS-BRK-C
380 - 480 V AC	32	2000	12000	ACS-BRK-C
200 - 240 V AC	10.5	7000	14000	ACS-BRK-D
380 - 480 V AC	10.5	7000	42000	ACS-BRK-D

Typical control connections

These connections are shown as examples only. Please refer to the User's Manual – macro section, for more detailed information and for different I/O configurations.



Chopper dimensions

H	W	D	Weight	Brake unit type code
mm	mm	mm	Kg	
150	500	347	7.5	ACS-BRK-C
270	600	450	20.5	ACS-BRK-D

Other available options

- IP54 protection class (frames R1-R6a)
- Encoder feedback option available
- For other options, please see the user interfaces on page 46

Typical I/O connections

1	SCR	Signal cable shield (screen)
2	AI1	External reference 1: 0(2)...10 V or 0(4)...20 mA
3	AGND	Analogue input circuit common
4	10V	Reference voltage +10 V DC
5	AI2	Actual signal 1: 0(2)...10 V or 0(4)...20 mA ³
6	AGND	Analogue input circuit common
7	AO1	Output frequency: 0(4)...20 mA
8	AO2	Output current: 0(4)...20 mA
9	AGND	Analogue output circuit common
10	24V	Auxiliary voltage output +24 V DC
11	GND	Common for DI return signals
12	DCOM	Digital input common for all
13	DI1	Start/Stop: Activation starts the drive
14	DI2	Not used
15	DI3	Constant speed 1 (par. 1202) ¹
16	DI4	Start enable 1: Deactivation stops the drive ²
17	DI5	Not used
18	DI6	Not used
19	RO1C	Relay output 1 (par. 1401)
20	RO1A	Default operation
21	RO1B	Ready => 19 connected to 21
22	RO2C	Relay output 2 (par. 1402)
23	RO2A	Default operation
24	RO2B	Running => 22 connected to 24
25	RO3C	Relay output 3 (par. 1403)
26	RO3A	Default operation
27	RO3B	Fault (-1) => 25 connected to 27

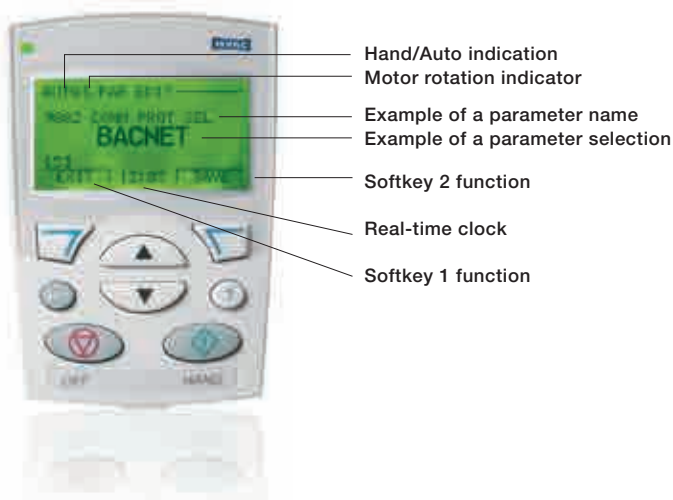
Low voltage AC drives

ABB drive for HVAC

ACH550 – User interfaces

Assistant control panel

For easy drive programming, a detachable, multilingual alphanumeric Assistant control panel is offered as standard. The control panel has various assistants and a built-in help function to guide the user. It includes a real-time clock, which can be used during fault logging and in controlling the drive, such as start/stop at certain times of the day. The control panel can be used for copying parameters for back-up or for downloading to another drive. A large graphical display and soft keys make it extremely easy to navigate.

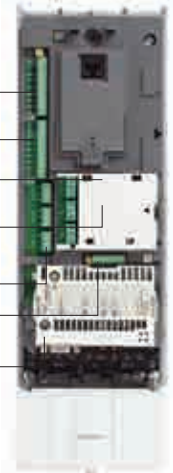


Keypad display can display any of the drive parameters. The display can be three lines (as shown here) or two lines (parameter name with value) or bar graph display.

	ACS550	ACH550	Function
	Start	Hand	Initiates operation of motor control
	Stop	Off	Ceases operation of motor control
		Up	Changes parameters and their value/ increases reference
		Down	Changes parameters and their value/ decreases reference
	Loc/Rem	Auto	Changes drive state from local/hand control (control panel) to remote/auto control (I/O or other external source)
		HELP	Built-in "Help" button
		Softkey 1	Function changes according to state of panel
		Softkey 2	Function changes according to state of panel

Interfaces

- Analogue I/O
- Digital inputs
- Relay output extension option module (3 relays)
- Encoder feedback option module (fits behind relay extension)
- Relay outputs
- Built-in Modbus using RS 485
- Built-in BACnet on ACH550
- Plug-in fieldbus module
 - DeviceNet LONWORKS®
 - PROFIBUS DP CANopen
 - ControlNet Ethernet and others



Relay extension (+L511)

An extra 3 V free change-over relays can be added to the ACx550 by requesting an OREL module.



Panel mounting kit, IP54 and IP66

The panel mounting kit enables mounting of control panels on cabinet doors. These kits include a 3 m extension cable, a gasket, mounting screws and a mounting template - two versions are now available, IP54 and IP66. The IP66 has an additional keypad membrane cover.



FlashDrop

A powerful palm-sized tool for fast and easy parameter setting, ideal for programming many drives. Programming in the box - unpowered. Ideal for OEMs as programming can be left until the moment before commissioning, or at the end of the production line, making it a safe option.



Fieldbus modules and fieldbus

An extensive range of fieldbus modules are available to allow connection to all the major industrial protocols. The drive has an RS485 Modbus interface built-in.



DriveWindow Light PC tool

DriveWindow Light is a parameterisation and commissioning tool used to set-up and commission the drive. Monitoring and diagnostic facilities are included, as well as a local control panel. Wizards are included to guide the user through the most commonly performed tasks.



Low voltage AC drives

ABB drive for water and wastewater



0.37 kW to 500 kW, ACQ810

Motor control method – DTC

200/480 V, 3-phase supply, 0.37 kW - 500 kW

What is an ABB drive for water and wastewater?

This industry-specific drive is designed for all of the applications commonly used in the water and wastewater industry. The modules feature tailor-made pump control functions for single and multi-pump systems. These functions ensure smooth, disturbance-free operation of water and wastewater processes, maximising energy efficiency while reducing unnecessary downtime. The drives' pump-specific functions decrease the life cycle cost of the pumping system, helping to save time and money. The power range is extended with the introduction of the G1 and G2 frame sizes.

Highlights

- Optimal pump control for various applications
- Intelligent solution for controlling pump performance
- Remote monitoring and diagnostics
- Pump auto change
- Full multipump software functionality
- Flow measurement included in the product, ideal for leak detection
- Anti-jam pump cleaning algorithms
- Easy and cost-effective cabinet assembly



For further information, see Technical Catalogue 3AUA0000055685

Where can it be used?

The ABB industry-specific drive module can be used for the variable-speed applications contained within the water and wastewater industry, to optimise the system and to save energy. The modules are designed for cabinet assembly and are easily mounted side-by-side. Intelligent start-up assistant ensures that drive commissioning is straightforward. The functions needed for most pumping systems can be easily implemented with the pre-programmed macros. Starting up a pumping system and optimising its performance is extremely easy.

Feature	Advantage	Benefit
Direct torque control	Premium motor control platform	Lower losses, improved energy saving
Soft pipe filling	Provides a pump with a smooth build-up of flow and pressure in pipes	This avoids pressure peaks and reduces the stresses on weak or ageing water mains when demand changes
Pump cleaning or anti-jam	Used in wastewater pumping stations to prevent pump and pipe clogging and expensive maintenance activities	The function can be set to trigger against different commands e.g on each pump start; on monitoring if the pump is becoming blocked; in response to a digital input or PLC command. If the pump cleaning function runs too often, an alarm is raised. Benefits: reduced downtime, increased efficiency
Flow calculation	The drive has a flow meter routine that very accurately determines the flow rate within a process	Avoids the need for costly external flow meters and is suitable for applications where the flow data is not needed for invoicing purposes
Level control	Used to effectively control the filling or emptying of water or wastewater storage tanks	Fast-ramp starting creates a flush effect to keep pipes clear. Users can define the "efficiency speed" based on the pumps best efficiency point
Multi-pump control	Optimal control of applications where several parallel pumps are operated together and the required flow rate is variable	Maintains stable process conditions optimising the speed and number of the pumps needed without over-riding controller
Pump priority	Optimal control of applications where the consumption rate varies based on demand	Operate higher capacity pumps during daytime and smaller units at night. This allows pumps to be operated closer to their best efficiency point
Pump specific protection features	The protection functions indicate if the pre-defined process conditions change	Underload and overload functions are pre-defined across the speed range at five distinct points. Belt breaks or dry sumps can be detected
Safe torque-off	TUV certified safely to SIL3	Remove the contactor from MCC builds, saving cost

Low voltage AC drives

ABB drive for water and wastewater



ACQ810 – Variants, ratings, types, voltages and prices

Available in several frame sizes to optimise the packing density ensuring MCC cabinet line-ups are as compact as possible. Minimised MCC line-ups mean that compliant bids to the water industry are as small as possible whilst still complying with EMC and thermal requirements.

Frame A and B – EMC external but plug-in, so no extra cabling required. Drives can be horizontally mounted for smaller compartments.

Frame C to E – EMC and harmonics choke built-into the unit, so most compact size with no extra items to fit or cable.

Frame G1 and G2 – New high power design, mounted on wheels for easy manual handling. Removeable cabling boxes ensure power cables are fitted only once.

4

380 to 480 V, 3-phase supply voltage

Light overload P _N kW	I _{2N} A	No overload use I _{cont.} max A	Max output A	Frame	Fuse A †Type gG	Heat dissipation W	Cooling requirements m ³ /h	Type	MCC mounting kits	IP20 Price
1.1	2.7	3	4.4	A	6	100	24	ACQ810-04-02A7-4	+J410	
UL	3	3.6	5.3	A	6	106	24	ACQ810-04-03A0-4	+J410	
1.5	3.5	4.8	7	A	10	126	24	ACQ810-04-03A5-4	+J410	
2.2	4.9	6	8.8	A	10	148	24	ACQ810-04-04A9-4	+J410	
3	6.3	8	10.5	A	16	172	24	ACQ810-04-06A3-4	+J410	
4	8.3	10.5	13.5	B	16	212	48	ACQ810-04-08A3-4	+J410	
5.5	11	14	16.5	B	20	250	48	ACQ810-04-11A0-4	+J410	
7.5	14.4	18	21	B	25	318	48	ACQ810-04-14A4-4	+J410	
11	21	25	33	C	25	375	142	ACQ810-04-021A-4	+J410	
15	28	30	36	C	32	375	142	ACQ810-04-028A-4	+J410	
18.5	35	44	53	C	50	541	200	ACQ810-04-035A-4	+J410	
22	40	50	66	C	50	646	200	ACQ810-04-040A-4	+J410	
30	53	61	78	D	63	840	290	ACQ810-04-053A-4	+J410	
37	67	78	100	D	80	1020	290	ACQ810-04-067A-4	+J410	
45	80	94	124	D	100	1200	290	ACQ810-04-080A-4	+J410	
55	98	103	138	E0	125	1190	168	ACQ810-04-098A-4	+J410	
75	138	144	170	E0	160	1440	405	ACQ810-04-138A-4	+J410	
90	162	202	282	E	250	2310	405	ACQ810-04-162A-4	+J410	
110	203	225	326	E	250	2810	405	ACQ810-04-203A-4	+J410	
132	240	260	326	E	315	3260	405	ACQ810-04-240A-4	+J410	
160	286	290	348	E	315	4200	405	ACQ810-04-286A-4	+J410	
200	377	387	470	G1	Δ 630	4403	1200	ACQ810-04-377A-4	+J410 +H381	
250	480	500	560	G1	Δ 800	5602	1200	ACQ810-04-480A-4	+J410 +H381	
315	570	580	680	G1	Δ 1000	6409	1200	ACQ810-04-570A-4	+J410 +H381	
355	634	650	730	G1	Δ 1000	8122	1200	ACQ810-04-634A-4	+J410 +H381	
400	700	710	850	G2	Δ 1250	8764	1200	ACQ810-04-700A-4	+J410 +H381	
450	785	807	1020	G2	Δ 1400	9862	1200	ACQ810-04-785A-4	+J410 +H381	
500	857	875	1100	G2	Δ 1400	10572	1420	ACQ810-04-857A-4	+J410 +H381	

To ensure ABB can tailor the drive to your needs, price on application

I_{2N} - Nominal output current. 110% overload 1 min / 5 min. I_{cont.} - Continuous rms output current with no overload capacity

UL = UL - NEMA rated motor - no IEC motor equivalent, however the current rating may be useful

† For fuse selection, refer to the hardware manual, weak networks may require aR fuses

Δ These fuses are aR type, gG fuses not recommended for this frame size

Low voltage AC drives

ABB drive for water and wastewater



ACQ810 – Dimensions, I/O and options

Dimensions and weights

Frame size	Height ¹ mm	Depth ² mm	Width mm	Weight kg
A	364	219	94	3.3
B	380	297	101	5.4
C	567	298	166	15.6
D	567	298	221	21.3
E0	602	376	276	34
E	700	465	312	67
G1	1,462 (1,560)	505 (515)	305 (329)	161 (191)
G2	1,662 (1,710)	505 (515)	305 (329)	199 (229)

() = Dimensions with optional cable boxes



Notes

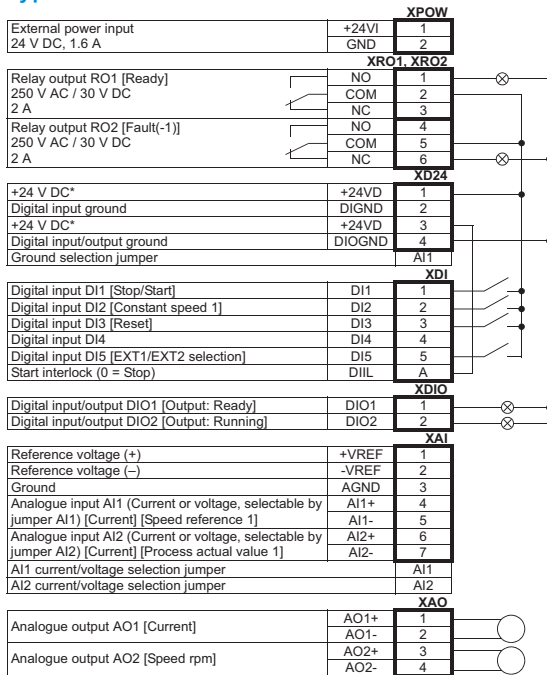
All dimensions and weights are without options

¹⁾ Height is the maximum measure without clamping plates. In A and B frames the external C3 EMC-filter adds 160mm to the height. (The EMC filter does not have to be plugged in, it can be sited nearby) EMC-filter is internal in frames C, D, E0 and G

²⁾ Total depth with control panel, 10mm less with keypad removed

^{1) 2)} These notes do not apply to the G1 and G2 frames

Typical I/O connections



Options available

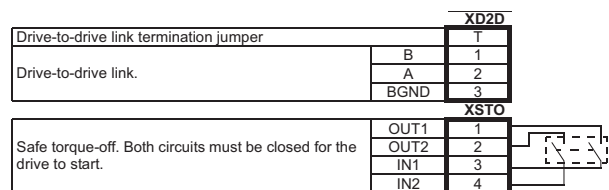
A number of control panel mounting options are available, to optimise MCC design. The drive is normally delivered with a control panel and holder fitted as standard. Other options include:

- No control panel at all
- Control panel door mounting kit
- No cover at all for the drive unit
- The new G1 and G2 frames can be ordered with cabling boxes (providing shrouding) which allow easier module removal

Other options for the ACQ810 include:

- Analogue I/O extension module
- Analogue and digital extension module
- Relay I/O extension module
- Extensive range of plug-in fieldbus modules
- External du/dt filters if required

Typical STO and drive-to-drive link connections

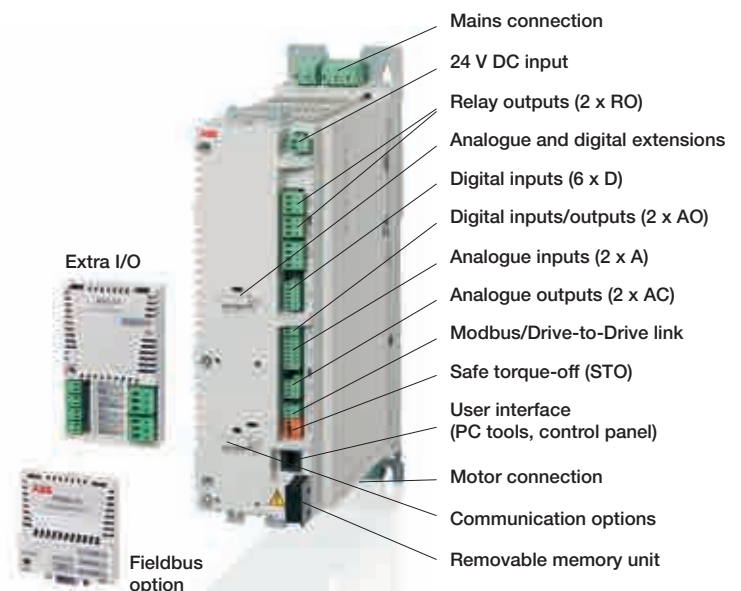


STO stands for safe torque-off and is certified by TÜV to SIL3 according to IEC61508.

No need for contactors

STO can be used to guarantee no mechanical rotation (no torque) at the shaft of the motor and thus allows MCC panels to be built without the need for the traditional contactor, where maintenance of the rotating machinery is a requirement. Electrical isolation will only be required for working on the drive or the electrical connections of the motor, so the traditional door isolator will suffice for that requirement.

ACQ810 main connections overview



Low voltage AC drives

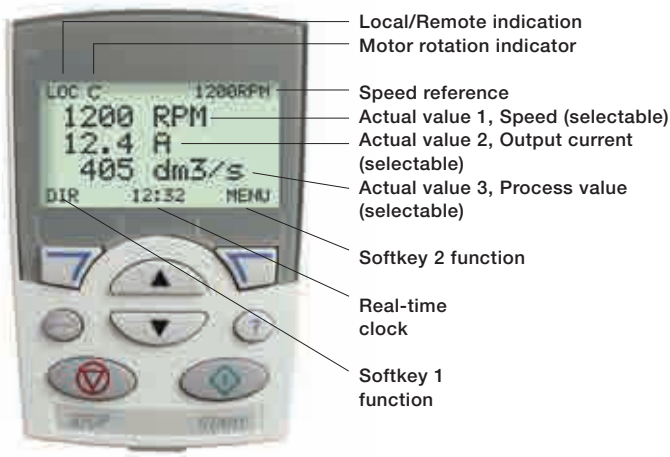
ABB drive for water and wastewater



ACQ810 – User interfaces

Assistant keypad

For easy drive programming, a detachable, multilingual alphanumeric Assistant control panel is offered as standard. The control panel has various assistants and built-in help functions to guide the user. It includes a real-time clock, which can be used during fault logging and in controlling the drive, such as starting and stopping. The control panel can be used for copying parameters for back-up or for downloading to another drive. A large graphical display and softkeys make it extremely easy to navigate.



Keypad display can display any of the drive parameters. The display can be three lines (as shown here) or two lines (parameter name with value) or bar graph display.

	Name	Function
	Start	Initiates operation of drive
	Stop	Ceases operation of drive
	Up	Changes parameters and their value/increases reference
	Down	Changes parameters and their value/decreases reference
	Loc/Rem	Changes drive state from local control (control panel) to remote control (I/O or other external source)
	HELP	Built-in "Help" button
	Softkey 1	Function changes according to state of panel
	Softkey 2	Function changes according to state of panel

Keypad door mounting platform

Designed to hold the keypad so that it can be attached to the MCC door. An IP54 variant is also available for higher IP requirements.



Removable memory unit

The memory unit stores the complete parameter and firmware set for the drive. Should a drive need to be replaced, swapping the memory unit to the new drive will transfer a complete drive set-up – absolutely no recommissioning is required. This reduces down time in the event of a problem.



Expansion for analogue and digital I/O

Additional I/O can be added to the ACQ810. This I/O can be addressed by the fieldbus so that the ACQ810 can be used as an I/O "nest", or of course the I/O can be used to simply allow more connectivity from the process to the drive, for example, flow or level transducers.



EMC filters – frames A and B

Pluggable EMC filters for frame sizes A and B can be plugged directly into the drive, or can be mounted next to the drive on the end of a plug and socket cable – easy to install and mount.



Fieldbus interfaces

Extensive range of plug-in fieldbus interfaces, allowing connection to Profibus, DeviceNet, CanOpen, Modbus RTU, ProfiNet and Ethernet.

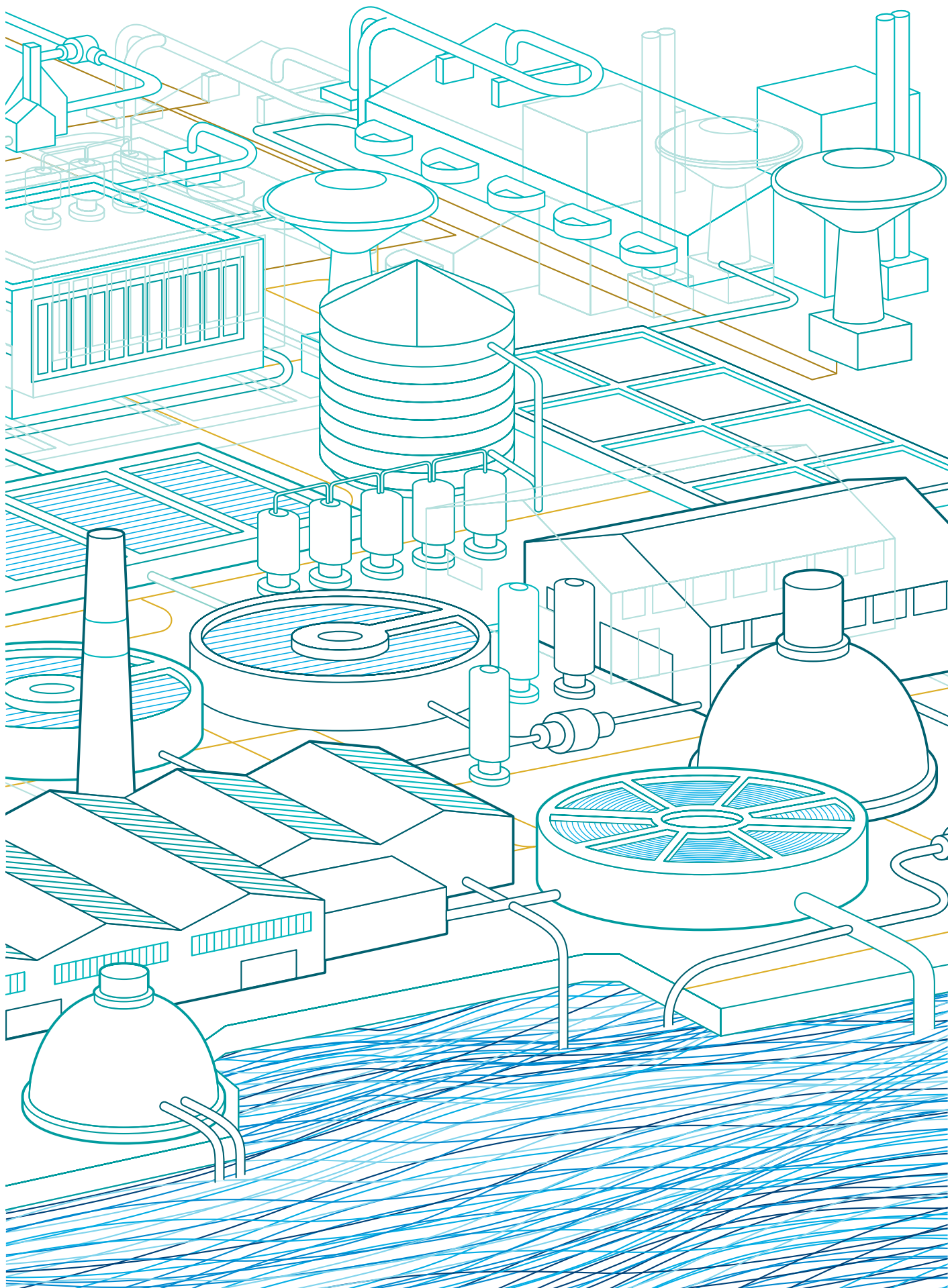


DriveStudio PC tool

DriveStudio is a parameterisation and commissioning tool used to set-up and commission the water and wastewater drive. Monitoring and diagnostic facilities are included, as well as a local control panel. Wizards are included to guide the user through the most commonly performed tasks.

DriveSPC PC tool

DriveSPC (Solution Program Composer) allows access to the extended programming area of the ACQ810. Application specific IEC 61131 solution programmes can be generated and stored inside the drive. This way the drive can be tailored to the application and fully utilise the extended I/O and removes the need for additional equipment.



Low voltage AC drives

ABB industrial drive



0.55 kW to 2800 kW, ACS880

Motor control method – DTC or scalar

208 / 240 V, 3-phase supply, powers dependent on range

380 / 415 V, 3-phase supply, powers dependent on range

380 / 500 V, 3-phase supply, powers dependent on range

525 / 690 V, 3-phase supply, powers dependent on range

What is the ABB industrial drive?

The ACS880 range contains a new harmonised parameter set, taking its features from all of the best functions within the existing ABB drive's family. The drive is programmed by the most intuitive and user-friendly keypad ABB has produced to date. A new PC tool is designed to incorporate all of the latest functionality including a free-of-charge entry level version and a professional level version. The drive also contains the very latest 4th generation DTC motor control core, making the drive all-compatible with any motor available on the market today including asynchronous, permanent magnet and synchronous reluctance (SynRM).

Where can it be used?

The ABB industrial drive is ideally suited for the most demanding industrial applications. Constant torque and torque at zero speed are perfect due to the DTC core.

Suitable applications include cranes, winders, hoists, extruders and heavy conveyors. Applications with high breakaway torque, like rubber mixers and highly precise applications like paper machines and engine dynamometers are easily handled.



Highlights

- Built-in safety functionality to satisfy the demands of IEC 62061 and ISO 13849-1
- Removable memory unit - zero re-commissioning
- Flexibility to programme more advanced applications
- Common user and process interface with fieldbus
- Common software tools for sizing and commissioning
- Innovative hardware variants
- Energy efficiency counters
- Energy optimiser – optimises the motor control for the application
- Load analyser for optimised dimensioning of the drive, motor and process

Low voltage AC drives

ABB industrial drive

Feature	Advantage	Benefit
Direct torque control (DTC)	Full torque at zero speed without encoder Accurate speed and torque control	Consistently excellent performance ensures that drive is not the limiting factor in the process
Intuitive modern keypad	High contrast, high definition display giving intuitive access to the drive parameters	Easy commissioning, programming, maintenance and fault finding
Start-up assistant	Guides user through all essential settings without going to parameter list	Easy set-up of parameters, your own language, on-line information system always available
Removable memory unit	Programme, parameter edits, motor calibrations and fault histories stored in the removable memory unit	Zero re-commissioning in case of drive failure, just move the memory unit, very short MTTR
Safe torque-off (STO)	Standard feature always in the drive. SIL3 PLc, TÜV approved	Convenient safety built-in. ATEX approved for hazardous areas
IEC61131 programming (CODESYS)	Familiar PLC programming on the drive	Decide to have distributed or central control of your process. Program can copy from PLC to drive using same tool
Integrated, patented, TÜV approved safety module option	No need to use external programmable safety hardware for drive specific functions. The module carries out drive specific safety functionality more efficiently than external programmable devices, as they are designed to work directly with the drive. Patented safety monitoring functions allow the drive to undertake speed related safety functions with no additional speed feedback devices needed	Minimise installation time and space. Shorter design times using TÜV approved module. Drive specific safety functions save time and money as they are built-in, and do not require additional speed monitoring devices to operate
Modern PC tools	Entry level (FOC) and Pro level PC tools are available for commissioning, tuning, parameter management and monitoring	Keep copies of the parameters for back-up. Use the PC tools to optimise the application
Fieldbus gateway I/O extension modules	Snap-on module that is easily mounted inside drive Additional I/O can be added to the drive	Access to all major automation platforms Easy addition of extra I/O to allow the drive to control the application properly
Speed feedback modules	A large array of high performance speed feedback devices can be interfaced to the drive via these modules	Higher performances can be achieved or position control can be undertaken
Energy monitoring and optimising features	Drive controls the motor voltage dependant on the load. Drive monitors the saved energy compared to equivalent DOL operation	Consumed energy optimised across the speed and load range. Energy savings presented in local currency and tonnes of CO ₂
Drive-to-drive link	Built-in industrial control link	Built-in ability to undertake master-follower applications with no extra hardware
ATEX approved package	ATEX 95 type tested motor/drive packages from one supplier	Easy selection of fully approved ATEX drive and motor packages, easier to satisfy ATEX rules with a more cost effective offering



Low voltage AC drives

ABB industrial drive



ACS880-01 - Variants, ratings, types, voltages and prices

Wall-mounted single drive

- 0.55 kW to 250 kW, (208 - 690 V)
- Largest power wall-mounted drive on market
- Coated boards as standard
- TÜV approved safe torque-off (STO) to SIL 3 PL e standard
- IP21 as standard, IP55 as option
- IP55 variant same footprint as IP21 variant
- Brake chopper standard to R4 frame, option thereafter
- Wide range of built-in options
- EMC filter for C3 category according to EN 61800-3 (2004) standard (category C2 optional)
- Optional UK cable box for SWA cables
- Optional internal fieldbus
- Optional safety module for extended safety functionality
- Optional I/O expansion
- Optional IEC61131 programming (CODESYS), full system capability



For further information, see Technical Catalogue 3AUA0000098111

380 to 415 V, 3-phase supply voltage. The power ratings are valid at nominal voltage (400 V)

No-overload (nominal) use		Light-duty use		Heavy-duty use		Max output A	Frame	Fuse A	Heat dissipation	Cooling requirements	Type (+ E200, + R700 + H358 to order EMC & SWA gland plate)	Price IP21	Price IP55 (+B056)
P _n kW	I _n A	P _{Ld} kW	I _{Ld} A	P _{hd} kW	I _{hd} A								
0.75	2.4	0.75	2.3	0.55	1.8	3.1	R1	4	30	44	ACS880-01-02A4-3	£ 854.00	£ 1,000.00
1.1	3.3	1.1	3.1	0.75	2.4	4.1	R1	6	40	44	ACS880-01-03A3-3	£ 894.00	£ 1,040.00
1.5	4.0	1.5	3.8	1.1	3.3	5.6	R1	6	52	44	ACS880-01-04A0-3	£ 924.00	£ 1,120.00
2.2	5.6	2.2	5.3	1.5	4.0	6.8	R1	10	73	44	ACS880-01-05A6-3	£ 1,054.00	£ 1,250.00
3	8	3	6.8	2.2	5.6	9.5	R1	10	94	44	ACS880-01-07A2-3	£ 1,114.00	£ 1,310.00
4	10	4	8.9	3	7.2	12.2	R1	16	122	44	ACS880-01-09A4-3	£ 1,244.00	£ 1,440.00
5.5	12.9	5.5	12	4	9.4	16	R1	16	172	44	ACS880-01-12A6-3	£ 1,484.00	£ 1,680.00
7.5	17	7.5	16	5.5	12.6	21	R2	25	232	88	ACS880-01-017A-3	£ 1,571.00	£ 1,767.00
11	25	11	24	7.5	17	29	R2	32	337	88	ACS880-01-025A-3	£ 2,001.00	£ 2,263.00
15	32	15	30	11	25	42	R3	40	457	134	ACS880-01-032A-3	£ 2,291.00	£ 2,553.00
18.5	38	18.5	36	15	32	54	R3	50	562	134	ACS880-01-038A-3	£ 2,451.00	£ 2,713.00
22	45	22	43	19	38	64	R4	63	667	200	ACS880-01-045A-3	£ 2,788.00	£ 3,136.00
30	61	30	58	22	45	76	R4	80	907	200	ACS880-01-061A-3	£ 3,298.00	£ 3,646.00
37	72	37	68	30	61	104	R5	100	1117	280	ACS880-01-072A-3	£ 3,721.00	£ 4,094.00
45	87	45	83	37	72	122	R5	100	1120	280	ACS880-01-087A-3	£ 4,511.00	£ 4,884.00
55	105	55	100	45	87	148	R6	125	1295	435	ACS880-01-105A-3	£ 4,810.00	£ 5,183.00
75	145	75	138	55	105	178	R6	160	1440	435	ACS880-01-145A-3	£ 5,330.00	£ 5,703.00
90	169	90	161	75	145	247	R7	^ 315	1940	450	ACS880-01-169A-3	£ 7,022.00	£ 7,395.00
110	206	110	196	90	169	287	R7	^ 315	2310	450	ACS880-01-206A-3	£ 8,162.00	£ 8,770.00
132	246	132	234	110	206	350	R8	^ 350	3300	550	ACS880-01-246A-3	£ 9,973.00	£ 10,581.00
160	293	160	278	132	246*	418	R8	^ 400	3900	550	ACS880-01-293A-3	£ 11,533.00	£ 12,141.00
200	363	200	345	160	293	498	R9	^ 550	4800	1150	ACS880-01-363A-3	£ 14,237.00	£ 14,939.00
250	430	250	400	200	363**	545	R9	^ 630	6000	1150	ACS880-01-430A-3	£ 17,327.00	£ 18,029.00

*130% overload, **125% overload

† For fuse selection, refer to the hardware manual. Weak networks may require aR fuses

^ These fuses are aR fuses, ABB does not recommend gG fuses on these larger drives

Note: Current rating match IE3 motor nameplates

Note: Prices include keypad, EMC filter and SWA gland plates and full manuals

Low voltage AC drives

ABB industrial drive

ACS880-01 – Dimensions and options



Drive dimensions and weights wall mounted drives

Frame size	Height ¹ IP21 mm	Depth ² IP21 mm	Width mm	Depth mm	Weight kg
R1	405	370	155	226	6
R2	405	370	155	249	8
R3	471	420	172	261	10
R4	573	490	203	274	18.5
R5	730	596	203	274	23
R6	726	569	251	357	45
R7	880	600	284	365	55
R8	963	681	300	386	70
R9	955	680	380	413	98

H1 - Height with cable entry box
H2 - Height without cable entry box
Width and depth with cable entry box

Frame size	Height ¹ IP55 mm	Width mm	Depth mm	Weight kg
R1	450	162	295	6
R2	450	162	315	8
R3	525	180	327	10
R4	576	203	344	18.5
R5	730	203	344	23
R6	726	251	421	45
R7	880	284	423	55
R8	963	300	452	72
R9	955	380	477	100



IP21



IP55
Highly compact with
same physical size as
IP21 variant

Options

ACS880-01 is a wall-mounted drive, so all of the options fit inside:

- IP55 variant
- Can be ordered without covers for cabinet installation
- Extensive range of expansion I/O options
- Extensive range of motor feedback devices
- Extensive range of fieldbus options
- IEC61131 (CODESYS) environment
- Built-in safety option module, TÜV approved
- UK gland box to accommodate SWA cable
- Different levels of EMC compliance
- Extended warranty

All ABB industrial drives use the same common options and user interfaces. These are detailed on page 61.

- The IP55 variant is designed to occupy the same physical space as the IP21 unit, thus minimising wall space required to support this module.
- The drive has three slots for I/O and fieldbus expansion and one drive-to-drive serial communication link.

- I/O modules can be chosen from analogue expansion, digital expansion, encoder and resolver feedback options
- Fieldbus modules can be connected to any slot and all of the major industrial fieldbus modules are available. The drive also supports two fieldbus modules at a time, so can control via a traditional industrial fieldbus, but data gather via an Ethernet based protocol
- Remote monitoring modules can be employed to monitor the drive over the web
- The safety module occupies a separate dedicated connection point ensuring safety integrity
- The drive is operated and commissioned either from a keypad or from a PC tool. The PC tool used with ACS880 is Drive Composer
- 32 drives can be connected onto a panelbus. The panelbus can be used to communicate to many drives, either using the keypad or the composer Pro tool
- 156K of IEC61131 environment is available

User interfaces

Please refer to page 61 for details of the ACS880 common user interfaces.

Low voltage AC drives

ABB industrial drive



ACS880-04- Variants, ratings, types, voltages and prices

Single drive modules

- 200 kW to 1400 kW, (380 - 690 V)
- Highest power density from a module on the market, extremely compact power module
- Wheeled module supplied with extendable ramp
- Coated boards as standard
- Speed controlled redundant fan cooling arrangement
- TÜV approved safe torque-off (STO) to SIL 3 PL e standard
- Plastic IP20 shrouds supplied which can be substituted for a pair of IP20 cabling panels which allow the module to be removed from the cabinet without disturbing wiring
- Brake chopper optional
- Wide range of cabinet installation options, including instructions for Rittal cabinet installation
- EMC filter for C3 category according to EN 61800-3 (2004)
- Optional common-mode filter
- Optional fieldbus modules, safety module, I/O expansion
- Optional fan kits and cabinet installation kits



For more information – see Technical Catalogue 3AUA0000115038

The following table details the R10 and R11 frames (pictured above).
If you require information on the higher power modules (D8T and R8i), please contact ABB.

380 to 415 V, 3-phase supply voltage. The power ratings are valid at nominal voltage (400 V)

No-overload (nominal) use		Light-duty use		Heavy-duty use		Max output A	Frame	Fuse A	Heat dissipation	Cooling requirements	Type (+ E210 + E208 + J410 + R700 + H381 to order filters, cable boxes and keypad door mounting)	Price IP21
P _N kW	I _N A	P _{Ld} kW	I _{Ld} A	P _{hd} kW	I _{hd} A			Type aR	W	m ³ /h		
250	505	250	485	200	361	560	R10	800	5602	1200	ACS880-04-505A-3	£ 16,404.00
315	585	315	575	250	429	680	R10	1000	6409	1200	ACS880-04-585A-3	£ 19,235.00
355	650	355	634	250	477	730	R10	1000	8122	1200	ACS880-04-650A-3	£ 21,411.00
400	725	400	715	315	566	850	R11	1250	8764	1200	ACS880-04-725A-3	£ 23,438.00
450	820	450	810	355	625	1020	R11	1600	9862	1200	ACS880-04-820A-3	£ 25,051.00
500	880	500	865	400	725	1100	R11	1600	10578	1420	ACS880-04-880A-3	£ 26,663.00

* For fuse selection refer to the hardware manual, weak networks may require a different rating
Price shown is complete with keypad door mounting kit, cabling panels, EMC filter, CMF filter and manuals
Note: Currents match IE3 motor ratings



The ACS880-04 can be supplied in two major variant variants. The standard variant comes complete with IP20 shrouds (plastic) a telescopic ramp, separate control unit and keypad. The customer power cabling is taken directly to the module and would need to be disconnected to allow module removal.

The second variant comes complete with cable panels which fit inside the cabinet. The customer power cabling is attached to these panels, which allows the module to be removed without disconnecting the customer cabling, In both cases the module is withdrawn down the ramp which is provided.

There is a wide range of other control card and keypad mounting options to allow the unit to integrate into a cabinet. The manual gives extensive instructions for Rittal cabinet installation, including a list of Rittal parts required.



Low voltage AC drives

ABB industrial drive

ACS880-04 – Dimensions and options



Dimensions and weights for drives modules

Basic module dimensions (no shrouds or panels)

Frame size	Height (H1) mm	Height (H2) (no pedestal) mm	Width (W1) mm	Depth mm	Weight kg
R10	1462 (1541)	1337	350	506	161
R11	1662 (1741)	1537	350	506	199

Numbers in brackets to top of shroud

Module dimensions including the cable panels +H381

Frame size	Height (H3) mm	Height (H4) (no pedestal) mm	Width (W2) mm	Depth mm	Weight kg
R10	1591	1466	329	506	161
R11	1741	1616	329	506	199

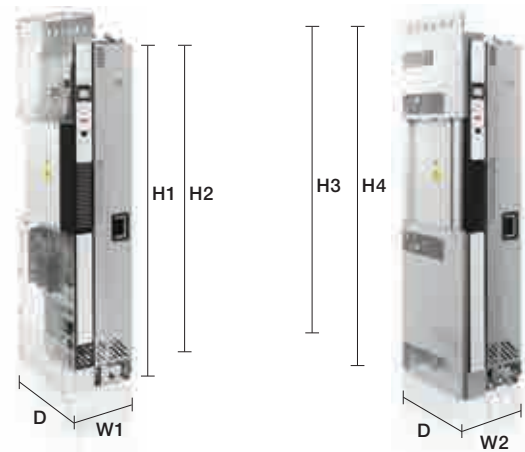
Options

ACS880-04 is a cabinet mounted drive, so the options are designed to complement cabinet installation:

- Cabling is arranged to come in at the top and motor out at the bottom
- Standard offering comes with plastic IP20 shrouds for input and output, and motor terminals are supplied with “full sized” terminals allowing for parallel motor cables. The standard configuration is also supplied with a separate control unit and keypad
- Option +H370 requests “full sized” terminals on the input power connections, allowing for parallel mains cables
- Option +H381 request full cable panels, which bolt onto the side of the module and onto the side of the cabinet wall (replaces the standard IP20 shrouds and fixed full size cable terminals)
- Option +H356 request DC terminals
- Option +P905 request the control unit to be fitted to the power module
- Option +J414 integrates the control panel onto the front of the power module
- Option +J410 includes a keypad door mounting kit with the module
- EMC filters and common mode filters can be included
- Shrouds, keypads and wheeled pedestal can be removed if required
- Fan kits and cabinet assembly kits are also available

All ACS880 drives use the same common options and user interfaces. These are detailed on page 61.

- The drive has three slots for I/O and fieldbus expansion and one drive-to-drive serial communication link
- I/O modules can be chosen from analogue expansion, digital expansion, encoder and resolver feedback options
- Fieldbus modules can be connected to any slot and all of



Module showing plastic shrouds fixed

Module showing cabling panels

the major industrial fieldbus modules are available. The drive also supports two fieldbus modules at a time, so can control via a traditional industrial fieldbus, but data gather via an Ethernet based protocol

- Remote monitoring modules can also be employed to monitor the drive over the internet
- The safety module occupies a separate dedicated connection point ensuring safety integrity
- The drive is operated and commissioned either from a keypad or from a PC tool. The PC tool used with ACS880 is Drive Composer
- 32 drives can be connected onto a panelbus. The panelbus can be used to communicate to many drives using the keypad or the Composer Pro PC tool

User interfaces

The ACS880-04 can be supplied with a keypad door mounting arrangement, which requires a single rectangular hole for the cabinet door.



Please refer to page 61 for details of the other ACS880 common user interfaces.

Low voltage AC drives

ABB industrial drive



ACS880-07 – Variants, ratings, types, voltages and prices

Cabinet-built single drive

- 45 kW to 2,800 kW, (380 - 690 V)
- IP21 as standard, IP42 and IP54 as options
- 250 kW based on a single module including rectifier and inverter
- Coated boards as standard
- TÜV approved safe torque-off (STO) to SIL 3 PL e standard
- TÜV approved emergency stopping options
- Extremely compact, internal swinging gate for control options minimises cabinet size, but ensures easy access
- Internal customer wiring is redesigned to give easier access, with pluggable connectors included
- Drive module can be extracted using a set of maintenance rails
- Factory-built cabinet with EMC and thermally type-tested for trouble-free operation
- Extensive range of standard options, that are increased to incorporate the most popular engineered options ordered with the ACS800 range
- Optional UK cable for SWA cables
- Optional motor thermistor and PTC connections
- Internal fieldbus options
- Optional safety module
- Optional I/O modules



For further information, see Technical Catalogue 3AUA0000098111

380 to 415 V, 3-phase supply voltage. The power ratings are valid at nominal voltage (400 V)

No-overload (nominal) use		Light-duty use		Heavy-duty use		Max output A	Frame	Fuse A	Heat dissipation	Cooling requirements	Type (+ E200, + R700 + H358 to order EMC & SWA gland plate)	Price
P _N kW	I _N A	P _{Ld} kW	I _{Ld} A	P _{hd} kW	I _{hd} A							
55	105	55	100	45	87	148	R6	160	1795	435	ACS880-07-0105A-3	ABB panels can be ordered with a wide range of standard options. Price on application!
75	145	75	138	55	105	178	R6	250	1940	435	ACS880-07-0145A-3	
90	169	90	161	75	145	247	R7	250	2440	450	ACS880-07-0169A-3	
110	206	110	196	90	169	287	R7	315	2810	450	ACS880-07-0206A-3	
132	246	132	234	110	206	350	R8	400	3800	550	ACS880-07-0246A-3	
160	293	160	278	132	246*	418	R8	500	4400	550	ACS880-07-0293A-3	
200	363	200	345	160	293	498	R9	630	5300	1150	ACS880-07-0363A-3	
250	430	250	428	200	363**	545	R9	700	6500	1150	ACS880-07-0430A-3	

*130% overload, **125% overload

† For fuse selection, refer to the hardware manual

ABB recommends the use of aR fuses for their cabinet drives, other fuses could be used if their melting curve matches ABB's recommendations

Low voltage AC drives

ABB industrial drive

ACS880-07 – Dimensions and options

Dimensions and weights, for cabinet-built drives

Frame size	Height H1	Height H2	Width	Depth	Weight
	IP22/42 mm	IP54 mm			
R6	2145	2315	430	673	240
R7	2145	2315	430	673	250
R8	2145	2315	430	673	265
R9	2145	2315	830	698	375

Larger powers use R8i modules, please contact ABB for information.

Note: these are the dimensions of the basic cabinet, dimensions will change with the addition of some options

Options

ACS880-07 is a cabinet-built drive, so its options fit inside the cabinet. The cabinet drive can be fitted with:

- IP21, IP42, IP54, variants
- Emergency stop variants, TÜV approved
- Motor thermistor relays
- Marine construction
- UL approved components
- Various types of cable markings, cabinet heaters, door furniture and lighting etc.
- Top or bottom cable entry for either motor or power cables
- UK gland plates for SWA cables
- 24 V control inside the cabinet
- Different levels of EMC compliance
- Extended warranty
- Additionally, ABB can accommodate any specialised option or feature by using its in-house application design team

ACS880-07 comes with options that are fitted to the drive module which is inside the cabinet:

- The drive module has three slots for I/O and fieldbus expansion and one drive-to-drive serial communication link.
- I/O modules can be chosen from analogue expansion, digital expansion, encoder and resolver feedback options
- Fieldbus modules can be connected to any slot and all of the major industrial fieldbus modules are available. The drive also supports two fieldbus modules at a time, so can control, via a traditional industrial fieldbus, but data gathers via an Ethernet-based protocol
- Remote monitoring modules can be employed to monitor the drive over the internet



- The safety module occupies a separate dedicated connection point ensuring safety integrity
- The drive is operated and commissioned either from a keypad or from a PC tool. The PC tool used with ACS880 is Drive Composer
- 32 drives can be connected onto a panelbus. The panelbus can be used to communicate to many drives, either using the keypad or the Composer Pro tool

User interfaces

Please refer to page 61 for details of the ACS880 common user interfaces

Low voltage AC drives

ABB industrial drive

ACS880 – Multidrive



A multidrive is a custom-made system to suit a larger application or a process line. The system contains multiple inverter stages of differing size, supplied from a common DC bus.

ABB can provide a ready-made cabinet, or it can provide system integrators with a comprehensive range of power modules and mechanical kits to build bespoke cabinets for end clients.

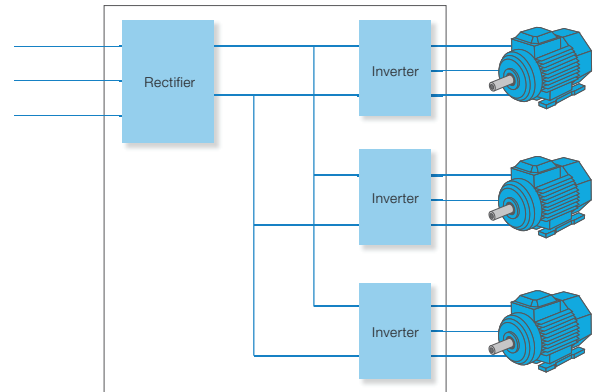
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Multidrive cabinets

- 1.5 kW to 5600 kW
- IP21 as standard IP42 as option
- High packing density with 16 inverter units (up to frame size R2i) can be installed into one 1000 mm cabinet
- Diode bridge that is highly reliable with high power density
- Fast connectors for motor cables in the bottom part of the cabinet, making installation easy
- Integrated safety including safe torque-off (STO) as standard with several safety functions as options
- Coated boards as standard
- Braking options
- DC fuse disconnectors, DC fuses or DC fuse switch including charging circuit for inverters
- Cabinet light and heater options
- Highly efficient thermal handling as heat loss of each inverter unit is guided to the back of the cabinet. All cabinets are their own separate compartment
- Long lifetime capacitors and high efficiency cooling fan with speed or on-off control
- TÜV approved emergency stops
- ACS880 user interfaces described later

Multidrive modules

- 1.5 kW to 2200 kW
- A range of IP20 modules and IP00 kits to generate bespoke multidrive systems built-into system integrators own panels
- Modules have no rectifiers, they are inverters only and range in frames from R2i to R8i (i=inverter only)
- Contain internal pre-charge circuits making them easier to integrate
- Selection of rectifiers available to generate DC link for the system. Active IGBT rectifiers and diode modules are available
- New style diode module (DxD) only contains diodes, making it more competitively priced and more reliable
- Cabinet kits ensure easy integration
- Safe torque-off (STO) as standard with several safety functions as options using the new safety module
- Coated boards as standard



For further information, see Technical Catalogue 3AUA0000115037



For further information, see Technical Catalogue 3AUA0000115038

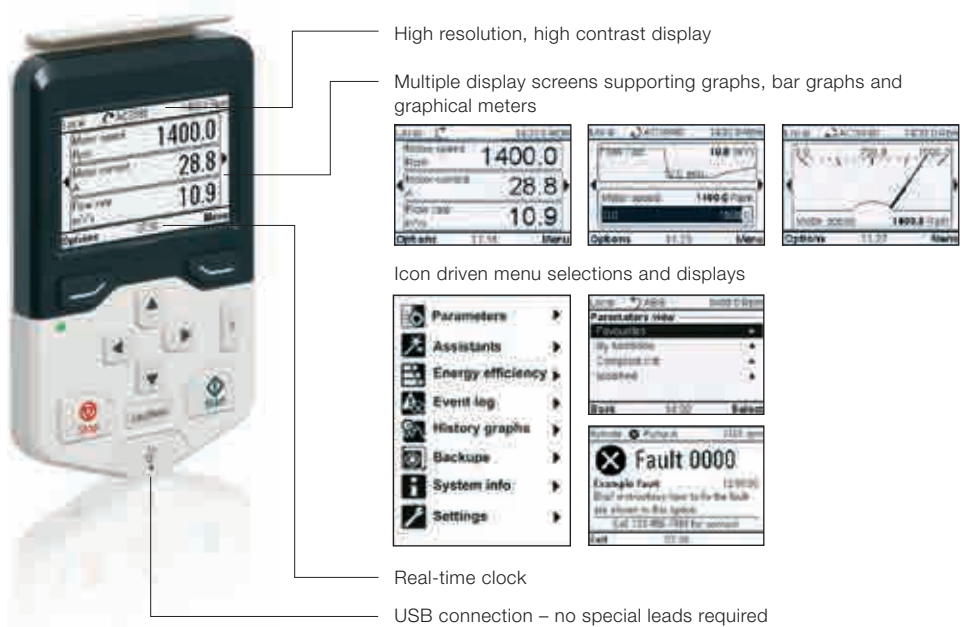
Low voltage AC drives ABB industrial drive

ACS880 – Common user interfaces



New control panel/keypad

State-of-the-art high resolution keypad brings a new level of usability to the drives marketplace. The keypad is designed by industrial designers to ensure maximum usability and intuitive use. The keypad display is extremely high definition and is visible in any control room. Innovative views, transitions and screen will be very familiar to users of smartphones. The display supports graphics and icons to help the user navigate. The keypad also supports text editing to allow users to re-name fault messages to match plant specific actions. Customer specific start-up images and parameter favourites make the keypad easily tailorable to customers and OEMs alike.



Removable memory unit

The memory unit stores the complete parameter and firmware set for the drive. Should a drive need to be replaced, swapping the memory unit to the new drive will transfer a complete drive set-up – absolutely no recommissioning is required. This reduces down time in the event of a problem.



Safety module, FSO-12

SIL3 rated TÜV approved safety module fits within the drive, to offer drive specific safety functions. Safely Limited Speed (SLS), Safe Maximum Speed (SMS), Safe Stop Emergency (SSE), Safe Stop 1 (SS1) / Stop Category 1 and Safe Brake Control (SBC) can be realised with no encoder feedback required (patent pending). Other functions available soon.



Fieldbus

The ACS880 supports an extensive list of fieldbus modules for connectivity to industrial networks. These modules are common with other drives within the ABB drives range. Two modules can be operated together.



Drive Composer PC tool

New PC tool for the ACS880 family come in two variants – the “entry” level is a free of charge point-to-point tool and allows simple parameter editing and storage, as well as monitoring and commissioning support, while the “Pro” level has all of this as well as animated control diagrams and extended commissioning, monitoring and diagnostic support, as well as the ability to program the safety functions. The Pro tool also allows the user to connect to multiple drives either over “panelbus” where the keypad port is used, or over Ethernet.



Expansion for analogue and digital I/O

Additional I/O can be added to the ACS880. This I/O can be addressed by the fieldbus so that the ACS880 can be used as an I/O “nest”, or the I/O can be used to simply allow more connectability from the process to the drive, for example, flow or level transducers.



Low voltage AC drives

ABB industrial drive

ACS880 – Variants, ratings, types, voltages and prices

Typical I/O and control connections

The ABB industrial drive family uses the same control card, keypad and software structure throughout its entire range. All I/Os are fully configurable to be whatever function is required. The diagram shows a typical I/O connection.

4

The ACS880 uses macros to configure its I/O. The macros pre-define the I/O functionality to comply with popular industrial configurations. It is also possible to configure the I/O manually to any function required.



The ACS880 control card showing the colour coded terminal strips

XPOW		External power input	
1	+24VI	24 V DC, 2 A	
2	GND		
XAI		Reference voltage and analogue inputs	
1	+VREF	10 V DC, R_L 1 to 10 kohm	
2	-VREF	-10 V DC, R_L 1 to 10 kohm	
3	AGND	Ground	
4	AI1+	Speed reference	
5	AI1-	0(2) to 10 V, R_{in} > 200 kohm	
6	AI2+	By default not in use.	
7	AI2-	0(4) to 20 mA, R_{in} > 100 ohm	
J1	J1	AI1 current/voltage selection jumper	
J2	J2	AI2 current/voltage selection jumper	
XAO		Analogue outputs	
1	AO1	Motor speed rpm 0 to 20 mA, R_L < 500 ohm	
2	AGND		
3	AO2	Motor current 0 to 20 mA, R_L < 500 ohm	
4	AGND		
XD2D		Drive-to-drive link	
1	B	Drive-to-drive link or built-in Modbus	
2	A		
3	BGND		
J3	J3	Drive-to-drive link termination switch	
XRO1, XRO2, XRO3		Relay outputs	
1	NC	Ready 250 V AC/30 V DC 2 A	
2	COM		
3	NO		
1	NC	Running 250 V AC/30 V DC 2 A	
2	COM		
3	NO		
1	NC	Faulted (-1) 250 V AC/30 V DC 2 A	
2	COM		
3	NO		
XD24		Digital interlock	
1	DIL1	By default not in use	
2	+24VD	+24 V DC 200 mA	
3	DICOM	Digital input ground	
4	+24VD	+24 V DC 200 mA	
5	DIOGND	Digital input/output ground	
J6		Ground selection switch	
XDIO		Digital input/outputs	
1	DIO1	Output: Ready	
2	DIO2	Output: Running	
XDI		Digital inputs	
1	DI1	Stop (0)/Start (1)	
2	DI2	Forward (0)/Reverse (1)	
3	DI3	Reset	
4	DI4	Acceleration and deceleration select	
5	DI5	Constant speed 1 (1=On)	
6	DI6	By default not in use	
XSTO		Safe torque-off	
1	OUT1	Safe torque-off. Both circuits must be closed for the drive to start.	
2	SGND		
3	IN1		
4	IN2		
X12	Safety functions module connection		
X13	Control panel connection		
X205	Memory unit connection		

Low voltage AC drives

ABB industrial drive - other variants



ACS800 – Variants, ratings, types, voltages and prices

Low harmonic, active rectifier drives

These are a dedicated range of low harmonic drives based on active rectifier technology. No regenerative capability ensures no mistakes on generator supplies, thereby still retaining a low 2-4 percent total harmonic distortion (THD) signature.

Series ACS800-31, wall-mounted

- 5.5 kW to 110 kW (230 - 690 V)
- IP21 as standard
- Single package for easy cabinet installation, reducing installation time and cabinet space

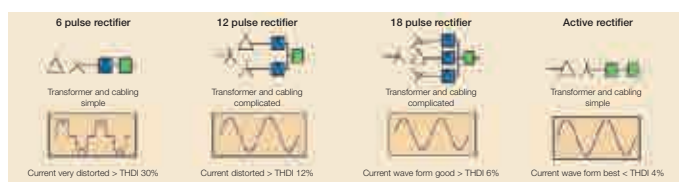
Series ACS800-37 and ACS880-37 cabinet-built

- ACS800 power range from 37 kW to 2700 kW (230 to 690 V)
- ACS880 power range from 250 kW to 3200 kW
- IP21 as standard; IP22, IP42, IP54 and IP54 R available as options
- Wheel-out power modules for improved manual handling
- Plug-in power connectors for easy maintenance and redundancy
- Power module redundancy for improved availability
- Factory-built cabinets ensure good installation



For further information, see Technical Catalogue 3AFE68375126

The R5 and R6 modules are detailed below. Please contact ABB if you require higher powers. Also, fully regenerative products are available called ACS800-11 and ACS800-17. Please refer to page 65 for more information.



Alternatives in reducing line harmonics

Low harmonic, wall-mounted drives - ACS800-31

380, 400 or 415 V, 3-phase supply voltage. The power ratings are valid at nominal voltage (400 V)

No-overload use		Light overload		Heavy-duty use		Max output	Frame	Fuse A	Heat dissipation	Cooling requirements	Type (+E200 to order the EMC filter)	IP21 price with keypad
Pcont. max kW	Icont. max A	PN kW	IN A	Phd kW	Ihd A	A		†Type gG	W	m³/h		
15	34	15	32	11	26	52	R5	40	550	350	ACS800-31-0016-3	£ 4,243.00
18.5	38	18.5	36	15	34	61	R5	40	655	350	ACS800-31-0020-3	£ 4,755.00
22	47	22	45	18.5	38	68	R5	50	760	350	ACS800-31-0025-3	£ 5,403.00
30	59	30	56	22	45	90	R5	63	1000	350	ACS800-31-0030-3	£ 6,193.00
37	72	37	69	30	59	118	R5	80	1210	350	ACS800-31-0040-3	£ 7,294.00
45	86	45	83	30	65	137	R5	100	1450	350	ACS800-31-0050-3	£ 8,658.00
55	120	55	114	45	88	168	R6	125	1750	405	ACS800-31-0060-3	£ 9,921.00
75	150	75	143	55	117	234	R6	160	2350	405	ACS800-31-0070-3	£ 11,535.00
90	165	75	157	75	132	264	R6	200	2800	405	ACS800-31-0100-3	£ 13,251.00

Other ratings and voltage ranges available, 230 V, 500 V, 690 V. Price on application.

Price includes 2nd environment EMC filter and control panel

Prices for low harmonic cabinet drives ACS800-37 available on application

† For fuse selection, refer to the hardware manual. Weak networks may require aR fuses

Low voltage AC drives

ABB industrial drive - other variants



ACS800 & ACS880 – Dimensions and options

Dimensions and weights, ACS800-31

Frame	H	W	D	Weight
size	mm	mm	mm	Kg
R5	816	265	390	62
R6	970	300	440	100

Height includes cable box, one enclosure, no external items

Options for ACS800-31, wall-mounted

- UK gland box to accommodate SWA cable
- Different levels of EMC compliance
- SIL2 safe torque-off interface (unit mounts outside the drive)
- Coated boards standard
- Extended warranty
- Marine certification mounts and kits

Options for ACS800-37, cabinet-built

Being cabinet drive, all of the options available for ACS800-31 are also valid, as they fit inside the cabinet. Additionally the cabinet drive can be fitted with:

- IP21, IP22, IP42, IP54, IP54R variants (no IP55)
- Emergency stop variants
- Motor thermistor relays
- ATEX-approved motor protection
- Marine construction
- UL approved components
- Various types of cable markings, cabinet heaters, door furniture and lighting etc.
- Sine filter fitted to output (for older motors)
- Top or bottom cable entry for either motor or power cables
- UK gland plates for SWA cables
- 110 V control inside the cabinet
- Additionally, ABB can accommodate any specialised option or feature, by using its in-house application design team
- SIL2/PL d safe torque-off interface
- Coated boards

ACS880-37 cabinet-built options and user interfaces

The ACS880-37 is part of the all compatible ACS880 range. It follows the same build format and options as the ACS880-07 (see page 58) and has the same ACS880 user interfaces (see page 61)



Ratings and dimensions for larger variants available on request

User interfaces

All ACS800s use the same common options and user interfaces, these are detailed on page 67.

- The drive has two slots for I/O and fieldbus expansion and one slot for an optical interface (an additional mother board can also be added – giving three more slots)
- I/O modules can be chosen from analogue expansion, digital expansion, encoder and resolver feedback options
- Fieldbus modules are always fixed to slot one, and all of the major industrial fieldbus modules are available
- The drive can be ordered with specially designed application specific software variants. There are 11 variants available in all, for example, crane, master follower, winder control, etc. The advantage of selecting these pre-written software variants is that they have been written to cover the market requirements. They are tested and certified by the factory and come complete with a User Manual and cabling instructions.

Low voltage AC drives

ABB industrial drive - other variants



ACS800 – Variants, ratings, types, voltages and prices

Regenerative, active rectifier drives

Series ACS 800-11, wall-mounted

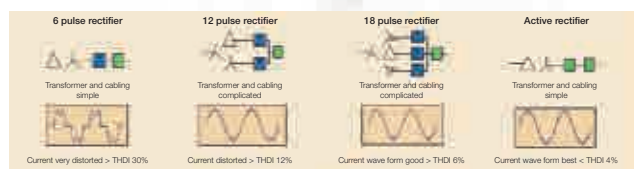
- 5.5 kW to 110 kW (230 - 690 V)
- IP21 as standard
- Active rectifier unit
- Single package for easy cabinet installation, reducing installation time and cabinet space

Series ACS800-17 and ACS880-17, cabinet-built

- ACS800, 45 kW to 2500 kW (230 - 690 V)
- ACS880-17, 250 kW to 3200 kW
- IP21 as standard, IP22, IP42, IP54 and IP54 R available as options
- Wheel-out power modules for improved manual handling
- Plug-in power connectors for easy maintenance and redundancy
- Power module redundancy for improved availability
- Factory-built cabinets ensure good installation and compliance with standards
- ATEX approved PTC interfaces and blanket certification with ABB motors



For further information see Technical Catalogue 3AFE 68375126



Alternatives in reducing line harmonics

Regenerative, active rectifier drive modules - low harmonic

Series ACS800-14

- 75 kW to 1700 kW (380 - 690 V)
- IP00 kits
- Assembly kits for Rittal cabinets and generic cabinets
- Separate controllers for galvanic isolation
- Requires a separate +24 V DC supply at 3 A
- Active supply unit can be configured for low harmonic mode (2-4 percent harmonic distortion) or regenerative mode, for better dynamic performance
- Comprehensive installation instructions and CAD drawings



For further information see Technical Catalogue 3AFE 68404592

Liquid cooled modules

Series ACS800-x04LC

- Extremely compact size, compared to air-cooled
- 98 percent of drive losses transferred to liquid - removes the need for air-conditioned control rooms
- Tested electrical/mechanical kits available - which make different solutions easy to build
- ACAD, PDF and full 3D EPLAN® modelling support
- Pre-designed mounting frames available to reduce design time
- Liquid / liquid-heat exchanger assemblies can be supplied by ABB
- Module features:
 - Diode supply modules include line side chokes
 - Inverter modules include du/dt filters
 - Easy structure, fewer components
 - Inverter units, IGBT supply units and dynamic braking units are based on one common R8i module



For further information see Technical Catalogue 3AFE68404592

Low voltage AC drives

ABB industrial drive - other variants

ACS800 – Variants, ratings, types, voltages and prices

Liquid-cooled drives

Series ACS800 - 17LC and ACS800 - 37LC

- 37 kW to 2700 kW, (380-690 V)
- IP42 as standard, IP54 as option
- ACS800-17LC, fully regenerative, ACS800-37LC, low harmonic
- Provides reliable operation in adverse conditions
- Silent and safe operation without the need for air ventilation or air conditioning, fully enclosed cabinets, smaller than previous generation
- Extensive range of cabinet options, including water pumping and heat exchanger cabinets
- Marine enclosure available
- Parallel modules allow redundant configuration
- Ideal where space is limited, in harsh environments, or at sites that require quieter operation, in applications where cooling water is freely available
- IEC, UL, CSA, Lloyds, DNV, ABS approvals
- ATEX-approved PTC interfaces and blanket certification with ABB motors



For further information see Technical Catalogue 3AFE68375126

Low voltage AC drives

Other variants

ACS800 – Common user interfaces

Control panel

The control panel features a full-text multilingual display. Dedicated keys allow fast access to actual signals, parameters, assistant functions and drive information. The panel can be used for parameter copying and for configuring adaptive programmes, working as a PLC inside the drive. Local motor control and parameter copying is also possible.



Panel mounting kits

Kits are available that allow mounting on the cabinet door, or in a holder inside the cabinet. The panel can be screwed to the cabinet door, without the need for an additional holder.



Fieldbus

The ACS800 supports an extensive list of fieldbus modules for connectivity to industrial networks.



I/O expansion

ACS800 can be fitted with a large range of analogue and digital I/O modules to expand its I/O capability.



DriveWindow - PC Tool

DriveWindow is a high specification, high speed commissioning, maintenance and monitoring tool for the ACS800 drive range. It operates over an optical fibre link. (Drive requires an RCDO module)

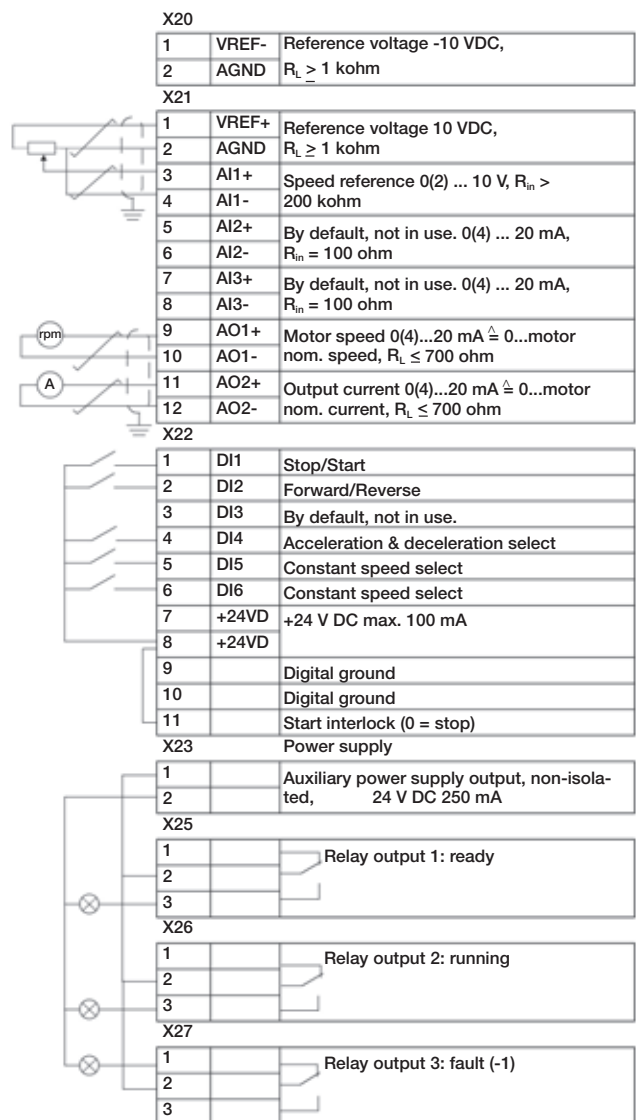
DriveAP - PC Tool

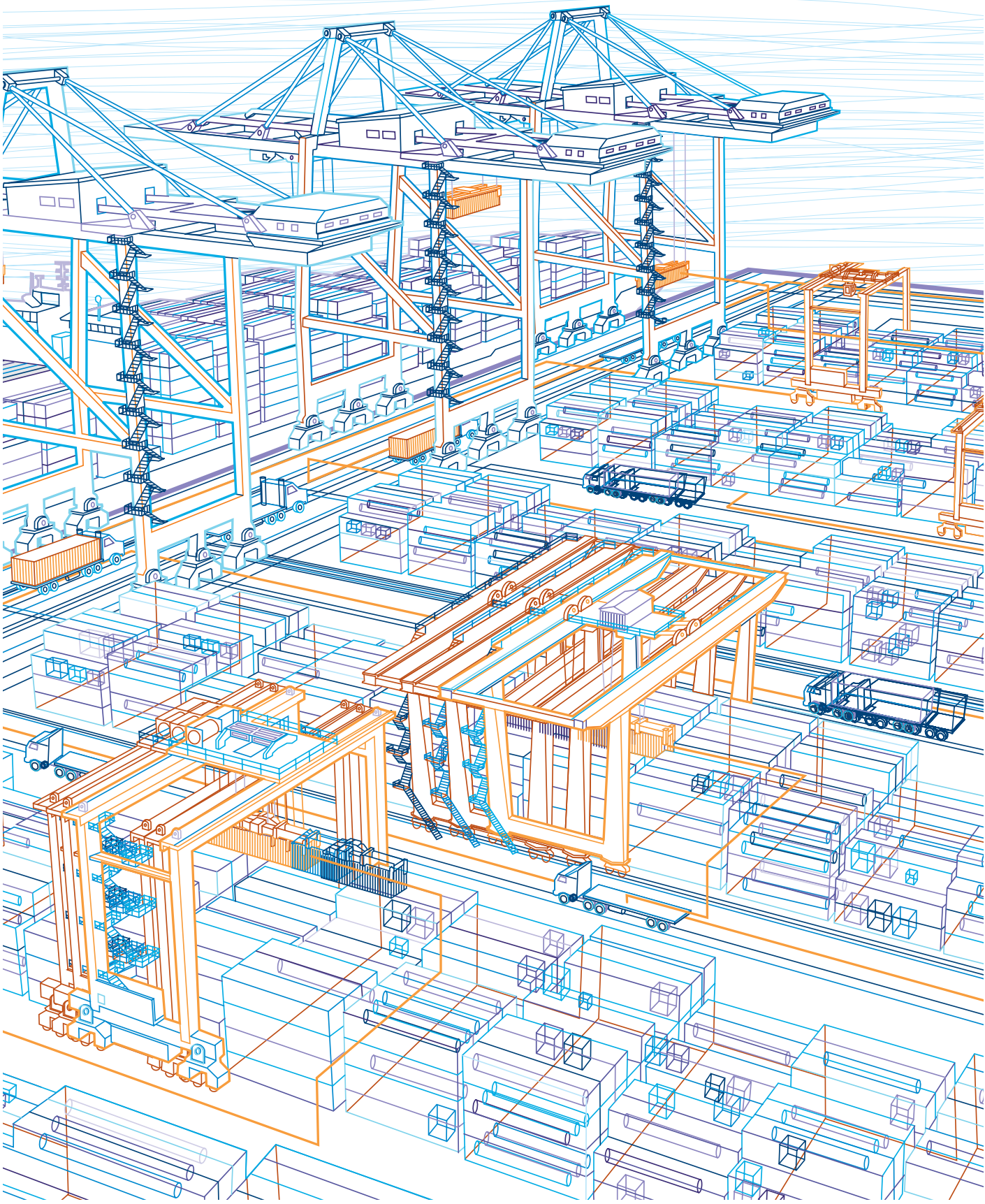
DriveAP allows access to the ACS800 adaptive, block programming environment.

Typical I/O and control connections

The ABB industrial drive family uses the same control card, keypad and software structure throughout its entire range. Analogue and digital I/O channels are used for different functions such as control, monitoring and measurement purposes (e.g. motor temperature). In addition, optional I/O extension modules are available providing additional analogue or digital I/O connections.

Below are the standard drive control I/O of the ABB industrial drive with factory macro. For other ACS800 application macros the functions may be different. Please refer to the firmware manual for details.





Other drives, accessories and services

Servo drives	70
Motion controllers	72
ABB motion control drive and ABB machinery drive module	74
Medium voltage AC drives	75
DC drives	76
Power quality filters (PQF)	77
Remote monitoring and support options	78
Software tools	79
Life Cycle Assessment service and training	81

Servo drives

Analogue, PTO, PowerLink and EtherCAT® options

MicroFlex Analogue

- Compact motion control drive for single and three-phase operation
- ± 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

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

5



Compact motion control drive for simple analogue or PTO control



Compact motion control drive with real time Ethernet PowerLink technology

Series MicroFlex Analogue

- 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.

Series MicroFlex e100

- 1 or 3-phase operation 105...250 V AC
- 3, 6 and 9 A rms
- IP20 enclosure for cabinet installation (UL open)
- Real-time Ethernet operation with PowerLink
- 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.

Servo drives

Analogue, PTO, PowerLink and EtherCAT® options

MicroFlex e150

- Compact motion control drive with embedded safety for single and three-phase operation
- Ethernet technology including EtherCAT® for real-time motion control
- Advanced MINT programming for multitasking control of communications, logic, motion and HMI interaction in high performance motion applications



Intelligent motion control drive with embedded safety and EtherCAT® technology

Series MicroFlex e150

- 1 or 3-phase operation 105...250 V AC
- 3, 6 and 9 A rms
- IP20 enclosure for cabinet installation (UL open)
- Embedded real-time Ethernet including EtherCAT®, Modbus® TCP and Ethernet/IP™
- Suitable for single drive and multi axis systems
- Controls rotary and linear AC servo motors
- Safe torque-off 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 power and feedback option
- Advanced MINT programming for multitasking control of communications, logic, motion and HMI interaction in high performance motion applications.
- Safety as standard



Versatile motion control drive with integrated real-time Ethernet technology

Series MotiFlex e180

- Three-phase operation 200...480 V AC
- 3.0..55 A rms in four frame sizes
- IP20 enclosure for cabinet installation (UL open)
- Real-time Ethernet with EtherCAT and PowerLink and Modbus TCP and EtherNet/IP
- 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
 - Filters, brake resistors and chokes

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

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

NextMove e100

- Compact panel mount motion controller
- Ethernet PowerLink technology for real-time motion control
- 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

5



Compact motion controller for analog and stepper control



Compact motion controller with real-time Ethernet PowerLink technology

Series NextMove ESB-2

- Up to 8 axis of coordinated motion
- 4 x PTO (stepper) axis
- 3 or 4 x analogue controlled axis with encoder feedback
- Maximum of 8 axis of control
- Digital and analog I/O including 4 x high speed registration latches
- Options
 - RS232 or RS485 serial option
 - Differential/single-ended stepper interfaces
 - 7 axis or 8 axis variants

Series NextMove e100

- 1 to 16 axis interpolated axis via PowerLink
- Additional CN profiled PowerLink axis
- 4 x PTO (stepper) axis
- 3 x analogue controlled axis with encoder feedback
- Maximum of 30 axis of control
- Digital and analogue I/O including 4 x high speed registration latches
- Options
 - Differential/single-ended stepper interfaces
 - 8, 12 or 16 axis of interpolated motion

Motion controllers

NextMove



NextMove e100

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

- Compact, high performance motion controller
- Real-time Ethernet PowerLink and Modbus[®] TCP/IP
- 8, 12 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

Number of axis	Order code	
	Differential stepper	Single ended stepper
8	NXE100-1608DBW	NXE100-1608SBW (1)
12	NXE100-1612DBW	NXE100-1612SBW (1)
16	NXE100-1616DBW	NXE100-1616SBW (1)

(1) For use with DSMS stepper/driver.



NextMove ESB-2

NextMove ESB-2

- Compact, panel mount motion controller
- Economical and simple to install
- Powerful multitasking MINT programming
- 4 axis of closed loop control
- 4 axis of open loop control (step/direction outputs)
- Max. 8 axis
- USB, serial and CANopen[®] provide flexible communications to PLC, distributed I/O and other devices
- Integrated digital/analogue I/O including high speed registration inputs
- Firmware variant allows the controller to operate as a CANopen[®] DS402 master and control up to 64 axis

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



NextMove PCI-2

NextMove PCI-2

- Compact, high performance PCI-bus motion controller
- 4 stepper axis + 4 analogue axis = max. 8 axis
- Onboard digital and analogue I/O
- CANopen[®] for distributed control
- High speed PCI bus interface
- Advanced multitasking MINT or ActiveX[®] programming
- Firmware variant allows the controller to operate as a CANopen[®] DS402 master and control up to 64 axis

Number of axis	Order code	
	PNP outputs	NPN outputs
1 (2)	PCI201-501	PCI201-511
2 (2)	PCI201-502	PCI201-512
3 (2)	PCI201-503	PCI201-513
4 (2)	PCI201-504	PCI201-514
8 (3)	PCI201-508	PCI201-518

(2) User configurable for servo or stepper. (3) 4-axis servo control and 4-axis stepper.



MotiFlex e100 connection panel

Plug in option cards for use with MotiFlex e100

- Plug-in motion controller
- 4 PowerLink axis + 1 analogue axis = max. 5 axis
- Onboard digital and analogue I/O
- Encoder input for electronic gearing functions
- CANopen[®] manager for I/O expansion (via host drive)
- Add CP600 HMI via RS485 Modbus[®] RTU
- Fully utilise drive I/O and interfaces including additional option cards

Description	Order code
Single axis MINT motion option (plug-in)	OPT-MF-100
Multi axis MINT motion option (plug-in)	OPT-MF-101

Other drives, accessories and services

ABB motion control drive and ABB machinery drive module

ABB offers an extensive range of machine control solutions for diverse industrial applications such as labelling, packaging, bottling, pick and place, laser cutting/trimming, stacking, cut-to-length, flying shear, web feeders and high speed rotary wrappers.

ABB's motion control solutions include human-machine interfaces (HMIs), programmable logic controllers (PLCs) and safety technology. Solutions extend to multi-axis motion controllers, high performance servo drives, rotary servo motors and linear motors; all of which seamlessly interface to provide a complete machine control solution. Motors are stocked or can be ordered with a wide range of options to suit application needs or DC retrofitting.

ABB motion control drive

Series ACSM1

- For demanding machinery applications
- One drive for all motor types
- For synchronous and induction motors
- Adaptable design with modular, compact hardware
- Memory unit for easy drive management and re-commissioning
- Wide range of feedback interfaces
- Solution programming to extend drive functions, DriveStudio (IEC 61131 compatible)
- Modular and compact design, includes the functionality needed for the application
- Safe torque-off (SIL3 rated), TÜV approved

ABB machinery drive modules

Series ACS850-04

- New higher powered module. Integral wheels and shrouding
- Optimal power frame sizes and side-by-side mounting
- Power in at top, motor out at bottom for logical cable management within the cabinet
- DC bus connection - common DC link schemes are possible
- Integrated brake chopper - choppers in each module can be used when on a DC link, to distribute braking
- DTC motor control platform
- DriveStudio and DriveSPC PC tools for customising the parameter driven drive with IEC61131 application coding and software application blocks
- Memory module contains the complete firmware, parameter and programme set-up – no re-commissioning
- Safe torque-off to SIL3/PL e as standard
- Modules which complement the full range of multidrive modules



For technical information see Technical Catalogue 3AKA0000068580



For more details, please refer to Technical Catalogue 3AFE68675073



For further information see Technical Catalogue 3AUA0000041481

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.

Series 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

Series 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

Series 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

Series 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



Other drives, accessories and services

Medium voltage AC drives and low voltage DC drives



Medium voltage drives cont...

Series 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



Series 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

Series 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



ABB industrial DC drives and DC heaters

Series 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



Other drives, accessories and services

Power quality filters (PQF)

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

Series 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

Series 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



Ethernet adapter for local communication

MOXA

MOXA module provides remote access to a single individual drive. The module connects to the drive via an RS232 connection to the keypad/panel port of the drive. It is a low cost point-to-point remote monitoring device. MOXA is ideal as a point-to-point device over which commissioning tools can be connected to the drive from a remote location, so diagnosis of faults and problems are possible.



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.



Ethernet adapter – for ABB machinery drives and ABB standard drives

SREA-01

Ethernet adapter provides remote monitoring access for up to 10 drives. It connects to the drive(s) via an RS485 modbus interface. 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. Web pages can be configured with site photos and site naming.



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.



Monitor drives on existing networks

DriveBrowser PC tool

DriveBrowser allows a user to monitor any ABB drive connected to an existing Ethernet network, without having to connect another “tools” chain network on the site. Connect DriveBrowser to a suitable “hub” location and view, edit and tune all of the ABB drives on the Ethernet ring.

Ethernet adapters

The ABB range of drives can be fitted with Ethernet adapters which allow them to communicate on Ethernet networks. The FENA-11 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.



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 next generation drive portfolio. The tool has two variants, a free version called Drive Composer

Entry and a professional level tool which is licensed. 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 will have add-ons for adaptive programming and enables CODESYS programming for more complicated system designs. CODESYS requires Automation Builder.

DriveAP

For adaptive programming of ABB industrial drives.

This PC tool is used to create, document, edit and download adaptive programs. Adaptive programming can be done with the standard control panel or with DriveAP.



DriveAP offers a clear and easy way to develop, test and document adaptive programmes with a PC. It modifies function blocks and their connections and requires no special programming.

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 utilizes 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.

DriveStudio

A user-friendly PC environment for simple drive commissioning tasks as well as more demanding drive tuning and programming tasks. DriveStudio is used with the ABB machinery drive and ABB motion control drives and water and wastewater drives. Drive Studio contains:

Commissioning and tuning

- Drive overview screen
- Parameter setting and signal monitoring
- Data logger and on-line signal monitoring for tuning

Solution programme composer

- Function block programming with standard function block library
- Professional programming environment: hierarchy levels, custom circuits, user parameters, copy protection etc.

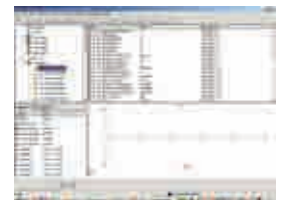
DriveCAM tool

Multiple methods for designing axis profile between reference axis and controlled drive axis

Start-up and maintenance tools

DriveWindow

A Windows application used for commissioning and maintenance. Functions include local control, monitoring, parameter edits, fault logging, trending, backup and restore



- Shows actual status of the connected drive
- Edit and show the drive parameters
- Save and load drive parameters
- Backup and restore drive parameters
- Offline configuration of drive parameters
- Read fault loggers and diagnostic data

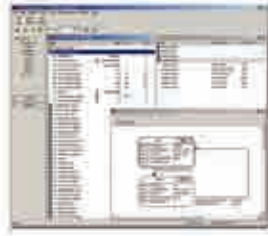
Used with ABB industrial drives equipped with high-speed fibre optic communication, or remotely via the Internet.

Other drives, accessories and services

Software tools

DriveWindow Light

Available for ABB general purpose drives and ABB machinery drives, has the same functions as DriveWindow but is designed for point-to-point communication, via control panel port.



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.



DriveConfig

Dedicated programming tool for the ABB micro drive. Allows access to the extended parameter set of ACS55 and allows un-powered programming.



To download, go to: www.abb.com > drives > drive PC tools.

Energy saving tools

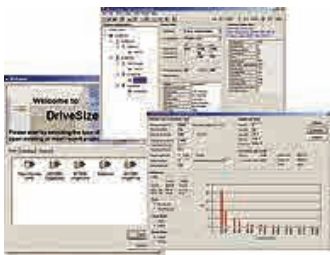
For comparison of energy consumption between different flow control methods in pumps and fans, ABB has developed calculation tools for estimating the energy savings that become available when applying electric speed control to certain flow machines.

To download software tools, go to: www.abb.com > drives > drive PC tools.

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.

PumpSave

For comparing AC drive control against throttling, on/off and hydraulic coupling control in pumps. Calculate how much energy and money you could be saving with ABB drives while also deriving other benefits such as soft starting and stopping, an improved power factor and connection into process automation. PumpSave also carries out a simple dimensioning and recommends an appropriate ABB drive type. Medium voltage drives now included.

FanSave

For comparing AC drive control against traditional flow control methods in fans. Calculate the savings you can achieve by replacing outlet damper, inlet vane or pitch control methods with electronic speed control from an ABB drive. FanSave also provides financial and environmental figures concerning the control method retrofit project and recommends a suitable ABB drive type.

AVP Energy Toolkit App

Energy, CO₂ 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.

Other drives, accessories and services

Life Cycle Assessment service and training

In the UK, it is estimated that over 80 percent of installed variable-speed drives are not maintained. The Life Cycle 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 Life Cycle 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.

Life Cycle Assessment

Maximizing 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 Life Cycle 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.

Life Cycle 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 Life Cycle Assessments reduces total cost of ownership since cost of not running is minimised via maximising uptime.

Life Cycle 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

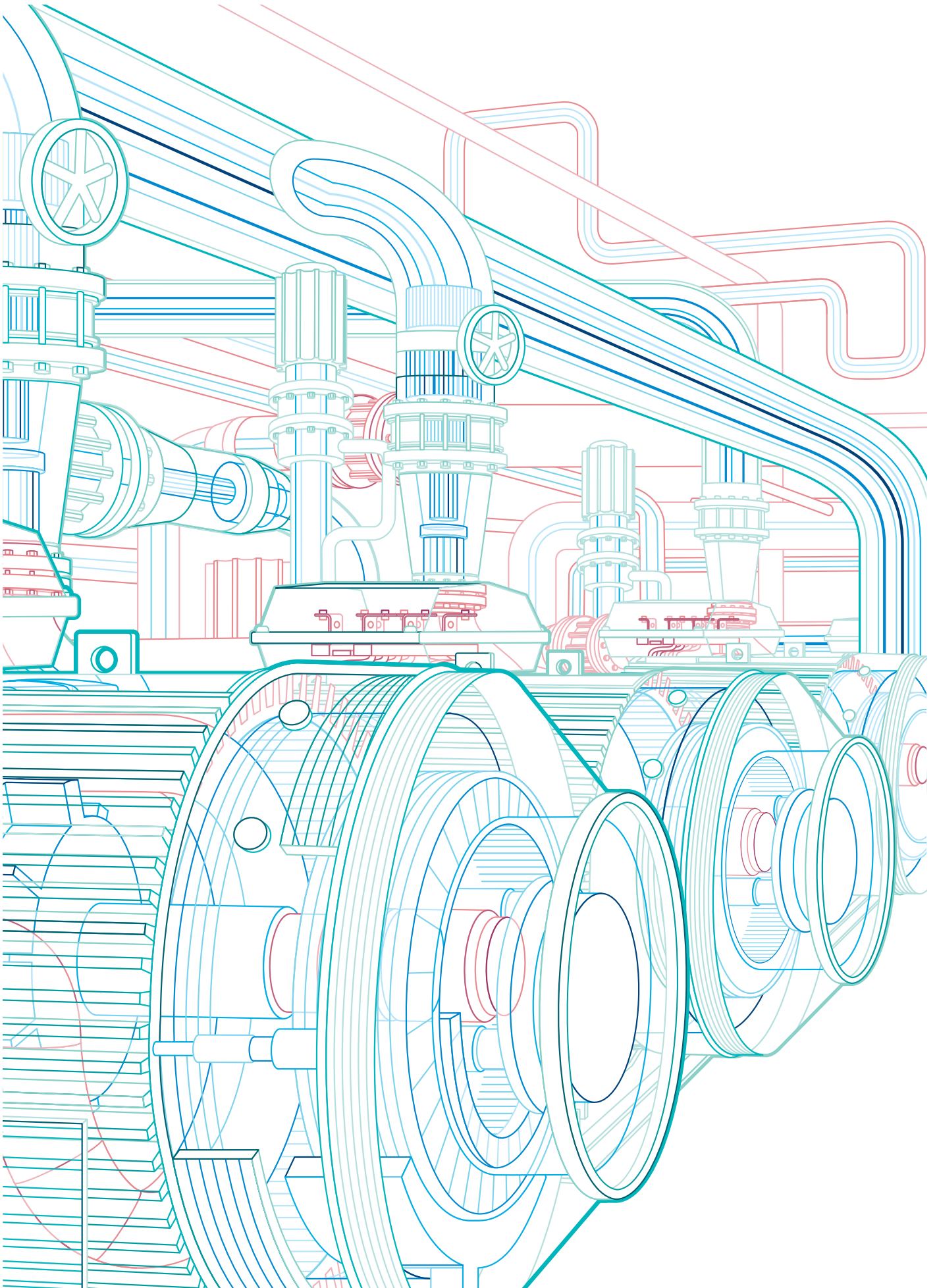
The Life Cycle Assessment service now combines the variables of each drive to paint a comprehensive picture of your entire technical infrastructure that allows you to define and review your maintenance plan.

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**



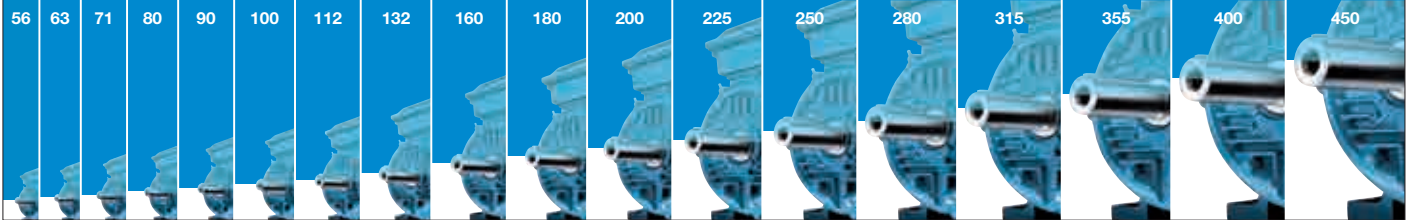
AC motors

Low voltage AC motors - overview	84
European MEPS for low voltage motors	86
EU 4/2014 - main changes and exclusions	87
Process performance motors	88
General performance motors	91
Explosive atmospheres	94
Flameproof motors	96
Optional extras for low voltage AC motors	98
NEMA motors	100
Central motor stock, Menden, Germany	101
High voltage AC motor range	103
Low voltage AC motor services	105
Motors and generators services	108

Low voltage AC motors

Sizes and ratings

Sizes 56-450



General performance motors - page 93

56	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
IE2 aluminum motors																	
IE2 cast iron motors																	
										IE3 cast iron motors							

Process performance motors - page 90

56	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
IE2 aluminium motors																	
IE3 aluminium motors																	
IE2 cast iron motors																	
IE3 cast iron motors																	
													IE4 cast iron motors				

Motors for hazardous areas - page 96

56	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
IE2 flameproof motor																	
Ineased safety motors																	
IE2 non-sparking motors																	
													IE3 non-sparking motors				
IE2 dust ignition protection motors																	
													IE3 dust ignition protection motors				

Marine motors

56	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Process performance motors (aluminium)																	
Process performance motors (cast iron)																	
General performance motors (aluminium, cast iron)																	

Motors for other applications

56	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Brake motors																	
										High ambient motors							
															Smoke venting motors		
Single phase motors					Roller table motors												
													Water-cooled motors				
													Permanent magnet motors				
															Wind turbine generators		
										High dynamic performance motors (HDP)							
													Synchronous reluctance motors (SynRM)				



Low voltage AC motors

European Minimum Energy Performance Standards (EU MEPS)

2014

Regulation
EU 4/2014
introduced

2009

EuP Directive
2005/32/EC
Eco-design
formally
adopted
EC 640/2009

Mandatory EuP Directive

Applies to motors:

- rated voltage up to 1000 V
- single-speed, three-phase, 50 Hz
- 2, 4 and 6-pole
- rated output from 0.75 kW - 375 kW
- S1 Duty

Does not apply to motors designed to operate exclusively:

- in potentially explosive atmospheres as defined in ATEX directive 94/9/EC
- brake motors
- ambient air temperature outside the range -30°C to +60°C
- altitudes exceeding 4000m asl
- maximum operating air temperature above 400°C

Implementation timetable

Phase 1

From 16 June, 2012

Motors must meet the IE2 efficiency level

Phase 2

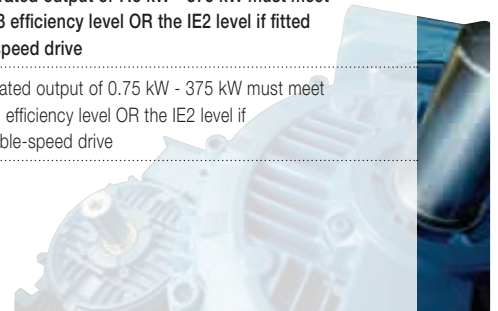
From 1 January, 2015

Motors with a rated output of 7.5 kW - 375 kW must meet EITHER the IE3 efficiency level OR the IE2 level if fitted with variable-speed drive

Phase 3

From 1 January, 2017

Motors with a rated output of 0.75 kW - 375 kW must meet EITHER the IE3 efficiency level OR the IE2 level if fitted with variable-speed drive



2008

IEC 60034-30

Standard for LV motor efficiency classes

Motors covered by standard include:

- Single-speed, three-phase, 50 and 60 Hz
- 2, 4 or 6-pole
- Rated output from 0.75 kW - 375 kW
- Rated voltage U_n up to 1000 V
- Duty type S1 (continuous duty) or S3 (intermittent periodic duty) with a rated cyclic duration factor of 80 percent or higher
- Capable of operating direct online 50 and 60 Hz

Super premium efficiency

IE4

Not yet defined

Premium efficiency

IE3

Premium

High efficiency

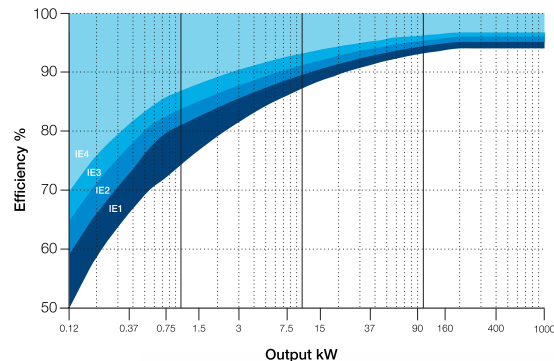
IE2

Comparable to Eff1

Standard efficiency

IE1

Comparable to Eff2



2007

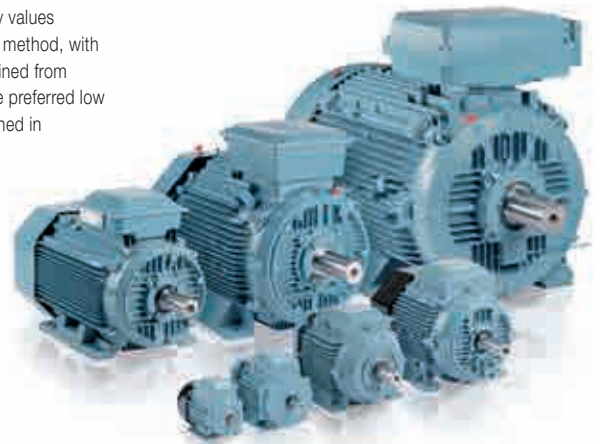
IEC 60034-2-1

Standard on efficiency measurement methods

Introduces new rules concerning the testing methods to be used for determining losses and efficiency.

The resulting efficiency values differ from those obtained under the previous IEC testing standard IEC 60034-2: 1996

ABB calculates efficiency values according to the indirect method, with additional losses determined from measurement. This is the preferred low uncertainty method outlined in the standard.



Low voltage AC motors

EU 4/2014 - main changes and exclusions

Original Regulation EC 640/2009



EU MEPS covers 2-, 4- and 6-pole single speed, three-phase induction motors in a power range of 0.75 kW - 375 kW rated up to 1000 V. It covers all duty types as long as the motors are capable of continuous duty operation.

Amending Regulation EU 4/2014

The amending Regulation came into force in mid-2014 and was intended to close loopholes in the original Regulation. The amendment was issued after it became clear that certain manufacturers were intentionally contravening the spirit of EU MEPS.

The amendment did not change the scope of EU MEPS, but instead clarified the original spirit of Regulation EC 640. The main changes are shown below.

The original Regulation excluded the following motors from the scope of EU MEPS:		
motors designed to operate wholly immersed in a liquid	change	specified to operate
motors completely integrated into a product where the motor's energy performance cannot be tested independently from the product		no change
motors specifically designed to operate continuously:	change	specified to operate exclusively
at altitudes exceeding 1000 meters ASL	change	4000 m
outside the ambient air temperature range of -15°C ... +40°C	change	-30°C ... +60°C
where ambient air temperatures are less than -15 °C for any motor or less than 0 °C for a motor with air cooling	change	water cooling
in maximum operating temperatures above 400°C		no change
where the water coolant temperature at the inlet to a product is less than 5°C or exceeds 25°C	change	0°C ... 32°C
in potentially explosive atmospheres as defined in Directive 94/9/EC		no change
brake motors		no change
Requirements for markings on motor rating plates:		
manufacturers must mark efficiency at 100%, 75% and 50% of rated load	change	In the case of small motors (ie, where the rating plate is small) only the efficiency for 100% rated load to be shown

Low voltage AC motors

Process performance motors

What is a process performance motor?

Process performance motors are the flagship of ABB's standard low voltage motors. This range provides the most comprehensive, versatile set of motors for the process industries and heavy-duty applications which are dependent on continuous reliability, lowest possible environmental impact and life cycle costs. Their superior ability to perform reliably and efficiently, continuously and even under the most challenging circumstances, ensures that they power their way through the toughest tasks and conditions.

6



Where can it be used?

- End-users in continuous process industries
- Project OEMs
- Demanding industries:
 - pulp and paper
 - metals
 - minerals and mining

Highlights

- All variant codes possible for process industry
- Application knowledge and engineering
- With three years warranty and option to extend to five years
- IE3 and IE4

Low voltage AC motors

Process performance cast iron motors

80-355, 2, 4 & 6 poles

TEFC low voltage motors, cast iron, IP55, IC 411, single-speed. 400 V 3-phase 50 Hz
See product catalogues or www.abb.com/motors&generators for more information on products.

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
3000 r/min = 2 poles						
0.75	2.5	1.65	80.7	M3BP 80 MC	£379	£421
1.1	3.7	2.2	82.7	M3BP 80 ME	£398	£439
1.5	4.9	2.8	84.2	M3BP 90 SLA	£419	£463
2.2	7.2	4.1	85.9	M3BP 90 LA	£521	£563
3	9.9	5.4	87.1	M3BP 100 MLA	£612	£680
4	13.3	7	88.1	M3BP 112 ME	£787	£883
5.5	18.1	9.7	89.2	M3BP 132 SMC	£953	£1,032
7.5	24.7	13.1	90.1	M3BP 132 SME	£1,149	£1,254
11	36	18.6	92.1	M3BP 160 MLA	£1,273	£1,402
15	49	25.3	92.5	M3BP 160 MLB	£1,512	£1,649
18.5	60	30.8	93.1	M3BP 160 MLC	£1,846	£1,967
22	71	37.2	93.2	M3BP 180 MLA	£2,229	£2,332
30	97	51	94.2	M3BP 200 MLA	£2,861	£2,981
37	119	61.9	94.7	M3BP 200 MLB	£4,166	£4,337
45	145	76.8	95	M3BP 225 SMA	£5,274	£5,459
55	177	93.6	95.2	M3BP 250 SMA	£6,255	£6,461
75	240	130	95.5	M3BP 280 SMB	£7,920	£8,374
90	288	154	95.7	M3BP 280 SMC	£9,016	£9,290
110	352	190	95.9	M3BP 315 SMB	£11,876	£12,266
132	422	225	95.9	M3BP 315 SMC	£13,129	£13,532
160	512	268	96.1	M3BP 315 MLA	£15,005	£15,411
200	640	335	96.2	M3BP 315 MLB	£20,889	£22,921
200	640	338	96.2	M3BP 355 SMA	£20,889	£22,921
250	801	413	96.3	M3BP 315 LKB	£26,432	£27,726
250	800	418	96.3	M3BP 355 SMB	£26,432	£27,726
315	1008	532	96.4	M3BP 355 SMC	£33,270	£34,565
355	1137	592	96.5	M3BP 355 MLA	£37,524	£38,817

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
1500 r/min = 4 poles						
0.75	4.9	1.68	82.5	M3BP 80 MLE	£364	£406
1.1	7.3	2.4	84.1	M3BP 90 LA	£398	£439
1.5	9.9	3.2	85.3	M3BP 90 LB	£480	£523
2.2	14.6	4.4	86.7	M3BP 100 LA	£544	£612
3	19.8	6	87.7	M3BP 100 MLB	£619	£693
4	26.3	8.5	88.6	M3BP 112 ME	£769	£828
5.5	36	11.8	89.6	M3BP 132 SMB	£978	£1,047
7.5	49	15.7	90.4	M3BP 132 SME	£1,205	£1,274
11	71	20.5	92.2	M3BP 160 MLA	£1,263	£1,390
15	97	27.8	92.6	M3BP 160 MLB	£1,573	£1,729
18.5	119	34.9	93.3	M3BP 180 MLA	£1,866	£1,986
22	142	41.5	93.3	M3BP 180 MLB	£2,229	£2,314
30	193	54.6	94.4	M3BP 200 MLA	£2,896	£3,052
37	238	65.4	94.9	M3BP 225 SMA	£3,859	£4,064
45	290	80.3	95.2	M3BP 225 SMB	£4,523	£4,745
55	354	97.9	95.4	M3BP 250 SMA	£5,409	£5,666
75	482	133	95.7	M3BP 280 SMB	£6,752	£7,158
90	578	159	95.9	M3BP 280 SMC	£8,105	£8,528
110	705	194	96.3	M3BP 315 SMC	£10,000	£10,441
132	846	232	96.4	M3BP 315 SMD	£11,810	£12,215
160	1026	279	96.4	M3BP 315 MLB	£13,804	£14,209
200	1282	344	96.5	M3BP 315 LKB	£19,621	£20,128
200	1282	344	96.5	M3BP 355 SMA	£19,621	£20,128
250	1601	430	96.6	M3BP 315 LKC	£23,171	£23,848
250	1601	430	96.6	M3BP 355 SMB	£23,171	£23,848
315	2017	554	96.7	M3BP 355 SMC	£30,780	£31,795
355	2274	617	96.7	M3BP 355 MLA	£32,811	£33,823

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
1000 r/min = 6 poles						
7.5	73	15.2	90.8	M3BP 160 MLA	£1,257	£1,381
11	107	23.5	91.2	M3BP 160 MLB	£1,850	£1,961
15	146	30.5	92.2	M3BP 180 MLA	£2,229	£2,385
18.5	178	37.3	92.8	M3BP 200 MLA	£2,637	£2,812
22	212	43	93.3	M3BP 200 MLB	£2,930	£3,122
30	290	56.8	94.1	M3BP 225 SMA	£4,560	£4,779
37	357	68.1	94.4	M3BP 250 SMA	£5,292	£5,531
45	434	79.8	94.8	M3BP 280 SMB	£7,684	£7,936
55	531	97.4	95	M3BP 280 SMC	£8,361	£8,631
75	721	135	95.3	M3BP 315 SMC	£10,286	£10,711
90	865	164	95.5	M3BP 315 SMD	£12,094	£12,738
110	1058	198	95.5	M3BP 315 MLB	£14,701	£15,343
132	1269	239	95.7	M3BP 315 LKA	£18,100	£19,283
160	1537	290	95.9	M3BP 315 LKC	£20,635	£21,820
160	1536	290	95.9	M3BP 355 SMB	£20,635	£21,820
200	1919	362	96	M3BP 355 SMC	£25,707	£26,890
250	2399	453	96	M3BP 355 MLB	£31,795	£32,979
315	3026	571	96	M3BP 355 LKA	£38,221	£39,404
355	3407	666	96	M3BP 355 LKB	£45,493	£46,676

* Efficiency full load 100%

Low voltage AC motors

IE3

Process performance aluminium motors

80-250, 2, 4 & 6 poles

TEFC low voltage motors, aluminium, IP55, IC 411, single-speed. 400 V 3-phase 50 Hz
See product catalogues or www.abb.com/motors&generators for more information on products.

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
3000 r/min = 2 poles						
0.75	2.5	1.59	81.8	M3AA 80 B	£240	£260
1.1	3.7	2.3	82.7	M3AA 80 C	£303	£424
1.5	4.9	2.9	84.4	M3AA 90 L	£359	£405
2.2	7.3	4.2	85.9	M3AA 90 LB	£444	£490
3	9.9	5.3	87.5	M3AA 100 LB	£541	£601
4	13.2	7.1	88.1	M3AA 112 MB	£640	£701
5.5	17.9	9.6	89.6	M3AA 132 SB	£838	£917
7.5	24.7	13.1	90.5	M3AA 132 SC	£1,062	£1,146
11	36	18.6	92.1	M3AA 160 MLA	£1,282	£1,390
15	49	25.3	92.5	M3AA 160 MLB	£1,665	£1,788
18.5	60	30.8	93.1	M3AA 160 MLC	£1,998	£2,120
22	71	37.2	93.2	M3AA 180 MLA	£2,279	£2,436
30	97	51	94.2	M3AA 200 MLA	£2,875	£3,048
37	119	61.9	94.7	M3AA 200 MLB	£3,750	£3,960
45	145	76.8	95	M3AA 225 SMA	£5,395	£5,627
55	177	93.6	95.2	M3AA 250 SMA	£6,312	£6,564

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
1500 r/min = 4 poles						
0.75	5	1.79	82.5	M3AA 80 E	£296	£325
1.1	7.3	2.3	84.1	M3AA 90 LB	£371	£409
1.5	9.9	3.3	85.3	M3AA 90 LD	£444	£483
2.2	14.5	4.5	86.7	M3AA 100 LC	£504	£563
3	19.8	5.9	87.9	M3AA 100 LD	£565	£623
4	26.5	8.2	88.6	M3AA 112 MB	£674	£736
5.5	36	10.8	89.6	M3AA 132 M	£863	£941
7.5	49	15.1	90.6	M3AA 132 MA	£1,108	£1,191
11	71	20.5	92.2	M3AA 160 MLA	£1,308	£1,416
15	97	27.8	92.6	M3AA 160 MLB	£1,697	£1,804
18.5	119	34.9	93.3	M3AA 180 MLA	£1,928	£2,085
22	142	41.5	93.3	M3AA 180 MLB	£2,314	£2,471
30	193	54.6	94.4	M3AA 200 MLA	£2,979	£3,189
37	238	65.4	94.9	M3AA 225 SMA	£3,789	£4,056
45	290	80.3	95.2	M3AA 225 SMB	£4,612	£4,880
55	354	97.9	95.4	M3AA 250 SMA	£5,510	£5,738

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
1000 r/min = 6 poles						
0.75	7.7	1.87	78.9	M3AA 90 LB	£322	£354
1.1	11.3	2.5	81	M3AA 90 LD	£397	£424
1.5	14.9	3.7	84.7	M3AA 100 LC	£455	£490
2.2	21.9	5.7	84.3	M3AA 112 MB	£571	£609
3	29.6	6.7	86.1	M3AA 132 S	£723	£772
4	40	8.1	86.8	M3AA 132 MA	£885	£929
5.5	54	13.3	88.5	M3AA 132 MC	£1,093	£1,126
7.5	73	15.2	90.8	M3AA 160 MLA	£1,390	£1,499
11	107	23.5	91.2	M3AA 160 MLB	£1,893	£1,998
15	145	30.5	92.2	M3AA 180 MLA	£2,366	£2,524
18.5	178	37.3	92.8	M3AA 200 MLA	£2,839	£3,049
22	212	43	93.3	M3AA 200 MLB	£3,348	£3,558
30	290	56.8	94.1	M3AA 225 SMA	£4,689	£4,918
37	357	68.1	94.4	M3AA 250 SMA	£5,573	£5,853

* Efficiency full load 100%



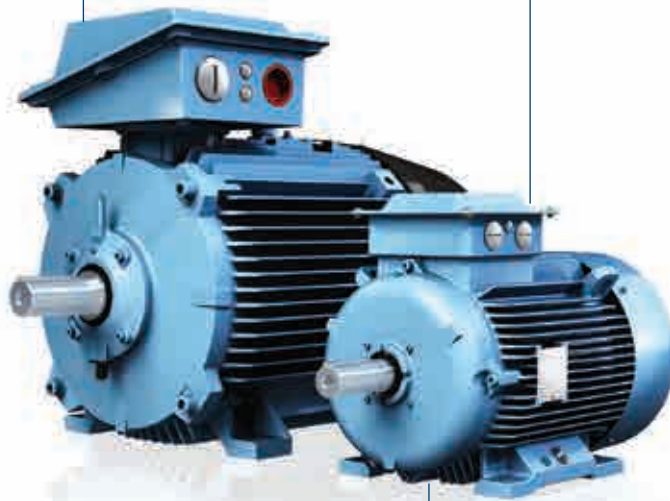
Low voltage AC motors

General performance motors

What is a general performance motor?
These motors combine convenience and easy handling seamlessly with ABB's engineering expertise, while at the same time providing standard variants and modifications. The motors can be tailored according to the specific needs of OEMs. The high modularity enables adding a wide variety of elements to the robust frame, thus making the overall solution to fit the specific situation and customer need perfectly. As the user only pays for the enhancements needed and used, the motors are free from all unnecessary elements.

Highlights

- Variant codes which OEM customers need
- One year warranty
- IE3
- 2, 4 & 6 pole



Where can it be used?

- End-users in various industries
- Tailored serial project OEM
- Pumps
- Fans
- Compressors

Low voltage AC motors

General performance cast iron motors

132-355, 2, 4 & 6 poles

IE3

TEFC low voltage motors, cast iron, IP55, IC 411, single-speed. 400 V 3-phase 50 Hz
See product catalogues or www.abb.com/motors&generators for more information on products.

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
3000 r/min = 2 poles						
7.5	24.7	13.2	90.1	M2BAX 132 SME	£1,042	£1,124
11	36	19.1	91.2	M2BAX 160 MLA	£1,088	£1,190
15	49	26.7	91.9	M2BAX 160 MLB	£1,385	£1,484
18.5	60	32.1	92.4	M2BAX 160 MLC	£1,646	£1,745
22	71	38	92.7	M2BAX 180 MLA	£1,940	£2,093
30	97	52.7	93.3	M2BAX 200 MLA	£2,621	£2,824
37	119	64	93.7	M2BAX 200 MLB	£3,232	£3,435
45	145	79.4	94	M2BAX 225 SMA	£3,751	£3,985
55	177	94.1	94.3	M2BAX 250 SMA	£4,543	£4,807
75	241	129	94.7	M2BAX 280 SMB	£6,807	£7,174
90	289	155	95	M2BAX 280 SMC	£8,186	£8,554
110	352	191	95.2	M2BAX 315 SMB	£9,970	£10,595
132	423	226	95.4	M2BAX 315 SMC	£12,048	£12,674
160	512	274	95.6	M2BAX 315 SMD	£14,954	£15,579
200	640	342	95.8	M2BAX 315 MLA	£18,762	£19,387
250	800	423	95.8	M2BAX 355 SMA	£23,765	£24,868
315	1009	533	95.8	M2BAX 355 SMB	£29,870	£31,003
355	1136	607	95.8	M2BAX 355 SMC	£33,475	£34,608

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
1500 r/min = 4 poles						
7.5	49	15.3	90.4	M2BAX 132 SME	£1,087	£1,168
11	71	21.1	91.4	M2BAX 160 MLA	£1,125	£1,224
15	97	28.6	92.1	M2BAX 160 MLB	£1,433	£1,533
18.5	119	34.7	92.6	M2BAX 180 MLA	£1,631	£1,785
22	142	41.6	93	M2BAX 180 MLB	£1,940	£2,093
30	193	55.1	93.6	M2BAX 200 MLA	£2,525	£2,726
37	238	68.5	93.9	M2BAX 225 SMA	£3,085	£3,318
45	290	82	94.2	M2BAX 225 SMB	£3,751	£3,985
55	354	100	94.6	M2BAX 250 SMA	£4,543	£4,807
75	483	134	95	M2BAX 280 SMB	£6,585	£6,953
90	579	158	95.2	M2BAX 280 SMC	£7,689	£8,076
110	705	195	95.4	M2BAX 315 SMB	£9,547	£10,172
132	847	231	95.6	M2BAX 315 SMC	£11,515	£12,140
160	1027	283	95.8	M2BAX 315 SMD	£13,924	£14,549
200	1284	349	96	M2BAX 315 MLB	£17,676	£18,302
250	1601	437	96	M2BAX 355 SMA	£22,054	£23,139
315	2017	550	96	M2BAX 355 SMB	£28,325	£29,458
355	2275	620	96	M2BAX 355 SMC	£31,930	£33,063

Output kW	Torque Nm	Current I	Eff*	Frame size	Foot price	Flange price
1000 r/min = 6 poles						
7.5	73	15.7	89.1	M2BAX 160 MLA	£1,162	£1,263
11	108	22.5	90.3	M2BAX 160 MLB	£1,559	£1,658
15	146	30	91.2	M2BAX 180 MLA	£2,009	£2,161
18.5	179	35.5	91.7	M2BAX 200 MLA	£2,455	£2,657
22	212	42.5	92.2	M2BAX 200 MLB	£2,919	£3,121
30	291	55.5	92.9	M2BAX 225 SMA	£3,847	£4,081
37	357	71.5	93.3	M2BAX 250 SMA	£4,584	£4,849
45	434	82.5	93.7	M2BAX 280 SMB	£6,016	£6,402
55	530	99.2	94.1	M2BAX 280 SMC	£7,358	£7,725
75	721	136	94.6	M2BAX 315 SMB	£9,860	£10,485
90	865	162	94.9	M2BAX 315 SMC	£11,845	£12,472
110	1058	201	95.1	M2BAX 315 SMD	£14,403	£15,028
132	1268	243	95.4	M2BAX 315 MLB	£17,198	£17,824
160	1540	294	95.6	M2BAX 355 SMA	£21,263	£22,367
200	1925	367	95.8	M2BAX 355 SMB	£26,780	£27,913
250	2404	464	95.8	M2BAX 355 SMC	£32,960	£34,093

* Efficiency full load 100%

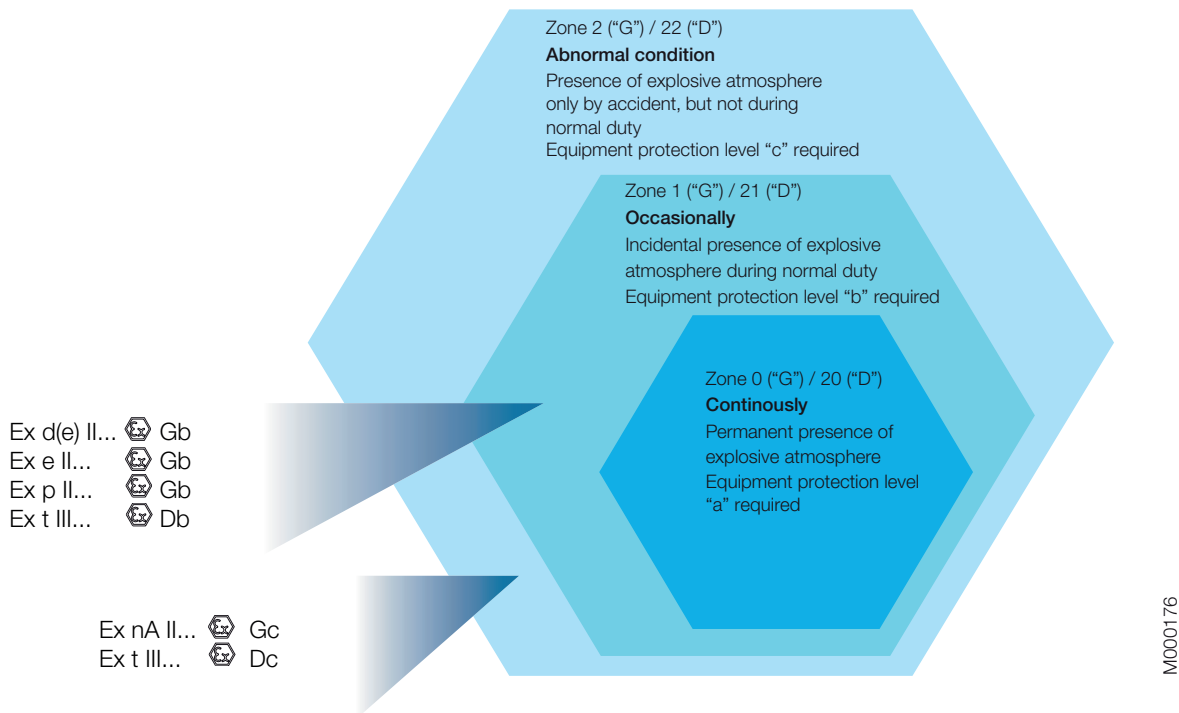
Low voltage AC motors

Explosive atmospheres

There are systems in place worldwide to classify explosive atmospheres by zones, according to the risk posed by explosive gas ("G") or dust ("D").



6



Classification of explosive atmospheres according to CENELEC and IEC

The following standards define areas according to the presence of gas or dust in the atmosphere:

- IEC/EN 60079-10-1 Gas
- IEC/EN 60079-10-2 Dust

Standard IEC 60079-0 EN 60079-0			Installation Zone acc. to IEC 60079-10-x EN 60079-10-x Zones	Atex Directive 94/9/EC	Main motor Protection Types	
Group	EPL	Protection level		Equipment group	Equipment category	
I (Mines)	Ma	very high	NA	I (Mines)	M1	NA
	Mb	high			M2	
II (Gas)	Ga	very high	0	II (Surface)	1G	NA
	Gb	high	1		2G	Ex d/Ex de, Ex p, Ex e
	Gc	enhanced	2		3G	Ex nA
III (Dust)	Da	very high	20		1D	NA
	Db	high	21		2D	Ex tb IP 65
	Dc	enhanced	22		3D	Ex tc, IP 65/IP 55

Low voltage AC motors

Explosive atmospheres

To ensure equipment can be safely used in potentially explosive atmospheres, the explosive atmospheres where the equipment is installed must be known. The temperature class of equipment must be compared with the spontaneous

ignition the equipment of the gas mixtures concerned, and in specific cases the gas group must be known (e.g. flame proof protection).

Gas classification

Temperature class	Ignition temp. of gas/vapour °C	Max. permitted temp. of equipment °C	Gas examples
T1	>450	450	Hydrogen
T2	>300 <450	300	Ethanol
T3	>200 <300	200	Hydrogen sulfide
T4	>135 <200	135	Diethyl ether
T5	>100 <135	100	-
T6	>85 <100	85	Carbon disulfide


Gas subdivision

IIA	- 120 gases and vapours, e.g. butane/petroleum/propane
IIB	- 30 gases and vapours, e.g. ethylene/dimethyl ether/coke oven gas
IIC	three gases: hydrogen H ₂ /acetylene C ₂ H ₂ carbon disulfide CS ₂

6

Marking of equipment protection for gas according to ATEX

CE Conformity marking

CE marking: **CE 0081**  **II 2 G**

Identification of the notified body responsible for the approval. 0081 is the identification number of LCIE

The European Commission mark for Ex products

Equipment grouping: II for surface industry

Equipment category: 2G for gas environment demanding a high level of protection

Equipment protection marking for gas:

Ex d IIB T4 Gb

Protection type Ex d = flameproof

Equipment grouping IIB for gas group B

Temperature class T4 = max. permitted 135°C

Equipment protection level = level b for gas

Marking of equipment protection for gas according to IEC

Example for gas:

Ex d IIB T4 Gb

Protection type Ex d = flameproof

Equipment grouping IIB for gas group B

Temperature class T4 = max. permitted 135°C

Equipment protection level = level b for gas

Low voltage AC motors

Flameproof motors 80-400, 2 & 4 poles

Exd/e* IIB T4

IE2

ATEX
 Certified

TEFC low voltage motors, cast iron, IP55, IC 411, single-speed. 400 V 3-phase 50 Hz
 See product catalogues or www.abb.com/motors&generators for more information on products.

Output kW	Torque Nm	Current I	Eff†	Frame size	Foot price	Flange price
3000 r/min = 2 poles						
0.75	2.5	1.55	80.1	M3JP/KP 80 MA	£727	£774
1.1	3.7	2.2	81.6	M3JP/KP 80 MB	£762	£835
1.5	4.9	3	81.9	M3JP/KP 90 SLA	£842	£914
2.2	7.3	4.2	84.5	M3JP/KP 90 SLC	£999	£1,062
3	9.8	5.5	86.0	M3JP/KP 100 LA	£1,058	£1,129
4	13.1	7.5	86.0	M3JP/KP 112 MB	£1,314	£1,401
5.5	18	10.1	87.0	M3JP/KP 132 SMB	£1,527	£1,605
7.5	24.5	13.6	88.3	M3JP/KP 132 SMD	£1,945	£2,009
11	35.8	19.7	90.1	M3JP/KP 160 MLA	£2,250	£2,410
15	48.9	26.6	91.2	M3JP/KP 160 MLB	£2,666	£2,779
18.5	60.2	32.3	91.8	M3JP/KP 160 MLC	£3,033	£3,115
22	71.5	38.6	91.7	M3JP/KP 180 MLA	£3,757	£3,884
22	71.7	38.6	91.2	M3JP/KP 160 MLD	£3,530	£3,644 HO
30	96.9	52.7	93.2	M3JP/KP 200 MLA	£4,782	£4,974
30	97.3	52	92.5	M3JP/KP 180 MLB	£4,476	£4,606 HO
37	119	64.1	93.6	M3JP/KP 200 MLC	£6,354	£6,641
37	119	63.9	92.8	M3JP/KP 180 MLC	£6,266	£6,506 HO
45	144	79.5	93.9	M3JP/KP 225 SMB	£8,596	£8,916
45	145	79.1	93.3	M3JP/KP 200 MLE	£8,099	£8,457 HO
55	176	94.5	94.3	M3JP/KP 250 SMA	£11,306	£11,723
55	177	96	93.9	M3JP/KP 225 SMC	£10,617	£11,018 HO
67	215	119	93.9	M3JP/KP 225 SMD	£12,009	£12,749 HO
75	240	130	94.3	M3JP/KP 280 SMA	£15,329	£15,841
75	241	129	94.0	M3JP/KP 250 SMB	£14,318	£14,815 HO
90	288	152	94.6	M3JP/KP 280 SMB	£20,043	£20,685
90	289	153	94.0	M3JP/KP 250 SMC	£16,018	£17,041 HO
110	352	194	94.9	M3JP/KP 315 SMA	£24,210	£24,690
110	352	185	95.1	M3JP/KP 280 SMC	£22,766	£23,249 HO
132	422	227	95.1	M3JP/KP 315 SMB	£28,699	£29,178
160	512	271	95.4	M3JP/KP 315 SMC	£32,545	£33,025
200	640	335	95.7	M3JP/KP 315 MLA	£40,879	£41,361
250	800	423	95.7	M3JP/KP 355 SMA	£44,530	£45,823
315	1009	533	95.7	M3JP/KP 355 SMB	£54,138	£55,431
355	1136	608	95.7	M3JP/KP 355 SMB	£58,202	£59,494
400	1280	677	96.9	M3JP/KP 355 MLA	£64,482	£65,776
450	1440	743	97.1	M3JP/KP 355 MLB	£72,057	£73,351
500	1601	827	96.9	M3JP/KP 355 LKA	£83,883	£85,176
560	1789	934	97.2	M3JP/KP 400 LA	£115,256	£118,623
560	1789	943	97.2	M3JP/KP 400 LKA	£115,256	£118,623
630	2014	1048	97.4	M3JP/KP 400 LB	£126,000	£130,485
630	2014	1048	97.4	M3JP/KP 400 KB	£126,000	£130,485
710	2269	1180	97.5	M3JP/KP 400 LC	£142,000	£147,000
710	2269	1180	97.5	M3JP/KP 400 LKC	£142,000	£147,000

*JP Exd

*KP Exde

HO = High-output design

† Efficiency full load 100%

Output kW	Torque Nm	Current I	Eff†	Frame size	Foot price	Flange price
1500 r/min = 4 poles						
0.55	3.6	1.41	76.6	M3JP/KP 80 MA	£665	£727
0.75	5	1.77	80.4	M3JP/KP 80 MB	£695	£762
1.1	7.3	2.4	83.3	M3JP/KP 90 SLA	£740	£805
1.5	10	3.2	83.2	M3JP/KP 90 SLC	£814	£883
2.2	14.5	4.3	84.7	M3JP/KP 100 LA	£887	£959
3	19.8	6	86.5	M3JP/KP 100 LB	£1,155	£1,224
4	26.1	8.3	88.2	M3JP/KP 112 MC	£1,233	£1,324
5.5	36	11.3	88.5	M3JP/KP 132 SMB	£1,632	£1,723
7.5	49	16.1	89.1	M3JP/KP 132 SMD	£1,815	£1,913
11	71.4	21.2	91.2	M3JP/KP 160 MLC	£2,264	£2,377
15	97.6	28	92.0	M3JP/KP 160 MLE	£2,808	£2,908
18.5	119	35.1	91.6	M3JP/KP 180 MLA	£3,515	£3,659
18.5	120	35	91.7	M3JP/KP 160 MLF	£3,307	£3,403 HO
22	142	41.7	91.6	M3JP/KP 180 MLB	£3,901	£4,044
22	143	43.1	90.8	M3JP/KP 160 MLG	£3,705	£3,836 HO
30	194	54.4	93.6	M3JP/KP 200 MLB	£4,879	£5,056
30	194	57.9	92.2	M3JP/KP 180 MLC	£4,573	£4,701 HO
37	238	67.1	93.6	M3JP/KP 225 SMB	£6,002	£6,226
37	239	70	93.0	M3JP/KP 200 MLC	£5,567	£5,761 HO
45	290	78.4	94.1	M3JP/KP 225 SMC	£7,091	£7,330
55	355	100	94.3	M3JP/KP 250 SMA	£8,694	£9,109
55	354	101	94.3	M3JP/KP 225 SMD	£8,211	£8,611 HO
62	400	113	93.5	M3JP/KP 225 SME	£9,360	£10,282 HO
75	482	134	94.5	M3JP/KP 280 SMA	£11,404	£11,931
75	485	133	94.3	M3JP/KP 250 SMB	£10,729	£11,225 HO
86	556	155	94.1	M3JP/KP 250 SMC	£12,875	£13,470 HO
90	579	159	94.7	M3JP/KP 280 SMB	£15,714	£16,195
110	706	194	95.1	M3JP/KP 315 SMA	£17,959	£18,599
110	707	194	95.1	M3JP/KP 280 SMC	£17,799	£18,279 HO
132	847	232	95.4	M3JP/KP 315 SMB	£21,965	£22,445
160	1027	284	95.6	M3JP/KP 315 SMC	£24,210	£24,690
200	1285	351	95.6	M3JP/KP 315 MLA	£31,904	£32,383
250	1604	437	95.9	M3JP/KP 355 SMA	£39,919	£41,041
315	2021	551	95.9	M3JP/KP 355 SMB	£50,338	£51,459
355	2279	621	95.9	M3JP/KP 355 SMC	£56,749	£57,871
400	2565	705	96.3	M3JP/KP 355 MLA	£63,802	£65,246
450	2884	780	96.8	M3JP/KP 355 MLB	£70,948	£72,241
500	3204	865	97.0	M3JP/KP 355 LKA	£78,524	£79,817
560	3586	982	96.8	M3JP/KP 400 LA	£89,425	£91,086
560	3586	982	96.8	M3JP/KP 400 LKA	£89,425	£91,086
630	4034	1077	97.0	M3JP/KP 400 LB	£100,671	£104,357
630	4034	1007	97.0	M3JP/KP 400 LKB	£100,671	£104,357
710	4547	1227	97.1	M3JP/KP 400 LC	£104,698	£108,531
710	4547	1227	97.1	M3JP/KP 400 LKC	£104,698	£108,531

Low voltage AC motors

Flameproof motors, 80-450, 6 & 8⁺ poles

Exd/e* IIB T4

IE2

ATEX
 Certified

TEFC low voltage motors, cast iron, IP55, IC 411, single-speed. 400 V 3-phase 50 Hz
 See product catalogues or www.abb.com/motors&generators for more information on products.

Output kW	Torque Nm	Current I	Eff†	Frame size	Foot price	Flange price	Output kW	Torque Nm	Current I	Eff†	Frame size	Foot price	Flange price
1000 r/min = 6 poles							750 r/min = 8 poles						
0.37	3.7	1.14	72.6	M3JP/KP 80 MA	£740	£805	0.18	2.3	0.88	61.0	M3JP/KP 80 MA	£741	£805
0.55	5.5	1.55	72.9	M3JP/KP 80 MB	£774	£837	0.25	3.3	0.97	63.8	M3JP/KP 80 MB	£780	£841
0.75	7.5	2	77.9	M3JP/KP 90 SLA	£807	£859	0.37	5	1.26	67.0	M3JP/KP 90 SLA	£799	£867
1.1	11.2	2.8	78.5	M3JP/KP 90 SLC	£819	£887	0.55	7.5	1.89	68.7	M3JP/KP 90 SLC	£878	£948
1.5	15	3.6	80.1	M3JP/KP 100 LA	£887	£959	0.75	9.9	2.4	75.9	M3JP/KP 100 LA	£963	£10,36
2.2	22.1	5	82.0	M3JP/KP 112 MB	£1,233	£1,324	1.1	14.6	3.6	76.4	M3JP/KP 100 LB	£1,257	£1,324
3	29.8	6.7	83.3	M3JP/KP 132 SMB	£1,657	£1,735	1.5	20	4.7	77.2	M3JP/KP 112 MC	£1,328	£1,413
4	39.6	9.2	84.6	M3JP/KP 132 SMC	£1,754	£1,815	2.2	29.1	6	80.1	M3JP/KP 132 SMC	£1,784	£1,864
5.5	54.3	12.5	87.6	M3JP/KP 132 SMD	£1,831	£1,945	3	40.3	7.7	79.9	M3JP/KP 132 SMD	£1,992	£2,054
7.5	74.2	15.3	87.2	M3JP/KP 160 MLA	£2,264	£2,377	4	52.9	9.3	86.7	M3JP/KP 160 MLA	£2,153	£2,347
11	108	21.7	90.1	M3JP/KP 160 MLB	£2,985	£3,082	5.5	72.6	12.8	86.8	M3JP/KP 160 MLB	£2,602	£2,697
14	137	30.2	89.2	M3JP/KP 160 MLC	£3,583	£3,656	7.5	99.7	18	85.5	M3JP/KP 160 MLC	£3,098	£3,209
15	147	29.2	90.4	M3JP/KP 180 MLB	£3,980	£4,107	11	145	24.9	88.3	M3JP/KP 180 MLB	£4,030	£4,158
18.5	181	40	90.1	M3JP/KP 180 MLC	£4,497	£4,640	15	195	30.4	89.9	M3JP/KP 200 MLA	£5,166	£5,360
18.5	179	35.8	90.9	M3JP/KP 200 MLA	£4,766	£4,959	18.5	240	40	90.0	M3JP/KP 225 SMA	£6,177	£6,384
22	213	42.2	91.6	M3JP/KP 200 MLB	£5,278	£5,456	18.5	240	37.1	89.8	M3JP/KP 200 MLB	£5,935	£6,129
30	291	59	91.6	M3JP/KP 200 MLC	£6,658	£6,832	22	287	45.5	90.6	M3JP/KP 225 SMB	£7,202	£7,539
30	290	57.2	92.2	M3JP/KP 225 SMB	£7,074	£7,281	30	389	60.7	91.4	M3JP/KP 250 SMA	£9,222	£9,671
37	357	70.8	93.1	M3JP/KP 250 SMA	£9,078	£9,319	30	391	61.2	90.7	M3JP/KP 225 SMC	£8,678	£8,885
37	359	69.8	92.1	M3JP/KP 225 SMC	£8,052	£8,274	37	476	73.8	92.7	M3JP/KP 280 SMA	£11,787	£12,157
45	434	82.7	93.4	M3JP/KP 280 SMA	£11,404	£11,931	37	479	74.2	92.2	M3JP/KP 250 SMB	£10,425	£10,682
45	435	85	93.1	M3JP/KP 250 SMB	£10,280	£10,520	45	579	89.3	93.2	M3JP/KP 280 SMB	£15,940	£16,514
55	530	100	93.8	M3JP/KP 280 SME	£15,841	£16,356	55	707	104	93.4	M3JP/KP 315 SMA	£18,118	£18,599
75	721	139	94.4	M3JP/KP 315 SMA	£18,118	£18,599	55	708	106	93.4	M3JP/KP 280 SMC	£16,514	£16,838
75	723	136	94.2	M3JP/KP 280 SMC	£16,003	£16,356	75	966	140	93.7	M3JP/KP 315 SMB	£22,766	£23,406
90	866	163	94.8	M3JP/KP 315 SMB	£21,965	£22,445	90	1159	168	94.0	M3JP/KP 315 SMC	£26,455	£27,095
110	1059	201	95.0	M3JP/KP 315 SMC	£25,332	£25,972	110	1419	203	94.0	M3JP/KP 315 MLA	£30,782	£31,422
132	1271	240	95.3	M3JP/KP 315 MLA	£29,019	£29,662	132	1694	251	94.7	M3JP/KP 355 SMA	£35,911	£36,873
160	1538	291	95.4	M3JP/KP 355 SMA	£35,752	£36,392	160	2053	303	95.2	M3JP/KP 355 SMB	£43,124	£44,246
200	1923	359	95.7	M3JP/KP 355 SMB	£44,566	£45,368	200	2570	378	95.3	M3JP/KP 355 SMC	£54,024	£54,988
250	2404	454	95.7	M3JP/KP 355 SMC	£55,466	£56,430	250	3213	472	95.4	M3JP/KP 355 MLB	£73,903	£75,198
315	3032	572	95.7	M3JP/KP 355 MLB	£69,896	£70,696	315	4043	584	96.1	M3JP/KP 400 LA	£85,123	£88,328
355	3417	645	95.7	M3JP/KP 355 LKA	£81,478	£82,772	315	4043	584	96.1	M3JP/KP 400 LKA	£85,123	£88,328
400	3846	731	96.2	M3JP/KP 400 LA	£88,489	£92,176	355	4562	641	96.2	M3JP/KP 400 LB	£96,023	£99,548
400	3846	731	96.2	M3JP/KP 400 LKA	£88,489	£92,176	355	4562	641	96.2	M3JP/KP 400 LKB	£96,023	£99,548
450	4323	819	96.6	M3JP/KP 400 LB	£99,548	£103,874	400	5134	731	96.3	M3JP/KP 400 LC	£99,507	£103,408
450	4323	819	96.6	M3JP/KP 400 LKB	£99,548	£103,874	400	5134	731	96.3	M3JP/KP 400 LKC	£99,507	£103,408
500	4808	900	96.6	M3JP/KP 400 LC	£110,700	£115,400	430	5519	789	95.9	M3JP/KP 450 LA	Price on request	
500	4808	900	96.6	M3JP/KP 400 LKC	£110,700	£115,400	470	6032	861	96.0	M3JP/KP 450 LB	Price on request	
560	5385	981	96.9	M3JP/KP 400 LD	£117,400	£122,000	530	6793	982	96.1	M3JP/KP 450 LC	Price on request	
560	5385	981	96.9	M3JP/KP 400 LKD	£117,400	£122,000	600	7690	1124	96.3	M3JP/KP 450 LD	Price on request	
610	5860	1098	96.6	M3JP/KP 450 LA	Price on request								

* JP Exd
 * KP Exde

HO = High-output design
 † Efficiency full load 100%
 * IE2 not applicable to 8 pole

Low voltage AC motors

Optional extras for low voltage AC motors

Please note, ABB general performance motors have limited optional extras (see extras marked with*).
Select motor from the ABB process performance range when additional extras are required.

R = On request
S = Standard
N = Not available

Option description	Modification code	Motor types	80	90	100	112	132	160	180	200	225	250	280	315	355
			£	£	£	£	£	£	£	£	£	£	£	£	£
Auxiliary terminal box for accessories	418	●	N	N	N	N	N	343	343	343	343	343	343	343	343
	418	■	343	343	343	343	343	343	343	343	343	343	343	343	343
British Standard sliderrails*		●	75	75	108	108	108	148	148	272	272	456	456	839	839
		■	75	75	108	108	108	148	148	272	272	456	456	839	839
Degree of Protection IP56*	403	●	232	232	232	289	289	331	331	331	331	331	331	363	383
	403	■	232	232	232	289	331	331	331	331	331	331	331	363	383
Degree of Protection IP65	158	●	232	232	232	294	294	375	375	375	375	375	330	363	383
	158	■	232	232	232	294	294	375	375	375	375	375	330	363	383
External earth bolt*	67	●	66	66	66	66	66	115	115	115	115	115	112	112	112
	67	■	66	66	66	66	66	115	115	115	115	115	112	112	112
Foot and face mounting*	8	●	122	122	122	159	159	N	N	N	N	N	N	N	N
	8	■	88	88	88	128	N	N	N	N	N	N	N	N	N
Foot and flange mounting*	9	●	122	122	122	159	159	303	303	402	402	440	379	656	1146
	9	■	88	88	88	128	128	268	268	358	358	390	379	656	1146
Frequency converter rating plate. Rating data according to quotation	163	●	67	67	67	67	67	67	67	67	67	67	67	67	67
	163	■	67	67	67	67	67	67	67	67	67	67	67	67	67
Heating element specify 120 V or 240 V*	450/451	●	220	220	220	246	246	297	329	366	418	502	447	447	500
	450/451	■	220	220	220	246	246	297	329	366	418	502	447	447	500
Insulated bearing at NDE. Frame 280 and above on variable-speed drives.*	701	●	R	R	R	R	R	R	R	R	R	R	1063	1063	1472
	701	■	R	R	R	R	R	R	R	R	R	R	1063	1063	1472
Metal fan	68	●	141	141	141	198	198	285	285	307	322	322	518	555	591
	68	■	136	136	136	196	196	253	253	270	285	285	518	555	591
Metal fan cover	53	●	94	94	94	131	129	S	S	S	S	S	S	S	S
	53	■	S	S	S	S	S	S	S	S	S	S	S	S	S
Paint colour to standard RAL specify RAL no.*	114	●	202	202	202	198	198	242	242	242	242	242	235	235	235
	114	■	202	202	202	198	198	242	242	242	242	242	235	235	235
PT100 resistance element one per phase	445	●	N	N	N	598	598	587	587	869	869	869	819	819	819
	445	■	R	R	R	598	598	587	587	869	869	869	819	819	819
PTC thermistors, three in series, 150°C others on request*	436	●	123	123	123	159	159	232	232	232	232	232	200	200	200
	436	■	123	123	123	159	159	232	232	232	232	232	200	200	200

Low voltage AC motors

Optional extras for low voltage AC motors

Please note, ABB general performance motors have limited optional extras (see extras marked with*).
Select motor from ABB process performance range when additional extras are required.

R = On request
S = Standard
N = Not available

Option description	Modification code	Motor types	80 £	90 £	100 £	112 £	132 £	160 £	180 £	200 £	225 £	250 £	280 £	315 £	355 £
Rain canopy for VI mounting*	5	●	104	104	104	119	119	136	157	165	221	273	329	388	579
	5	■	104	104	104	119	119	136	157	165	221	273	329	388	579
Restamping voltage, frequency and output, continuous duty*	2	●	48	48	48	48	48	48	48	48	48	48	48	48	48
	2	■	48	48	48	48	48	48	48	48	48	48	48	48	48
Roller bearing at DE (not available on IIC motors)*	37	●	N	N	N	N	N	242	278	316	364	402	346	346	506
	37	■	N	N	N	N	N	242	278	316	364	402	346	346	506
Separate (fixed speed) motor cooling fan	183	●	360	360	360	874	874	1085	1236	1733	2037	2376	N	N	N
	158	■	R	R	952	1144	1427	1530	1530	1530	1800	2100	2272	2858	3103
SPM nipples	43	●	N	N	N	146	146	246	276	308	317	317	310	310	310
	43	■	N	N	N	N	N	246	276	308	317	317	310	310	S
Test - routine*	148	●	196	196	196	222	222	222	222	222	222	222	222	222	222
	148	■	196	196	196	222	222	222	222	222	222	222	222	222	222
Test - Type test report from test of an identical motor (where available)*	145	●	83	83	83	83	83	83	83	117	117	117	166	166	166
	145	■	83	83	83	83	83	83	83	117	117	117	166	166	166

Alloy ●
Cast Iron ■

Low voltage AC motors

NEMA motors

General purpose industrial motors

Three-phase, totally enclosed, foot mounted

- 1/8 – 400 HP
- NEMA 42 – 449T



Applications

Pumps, compressors, fans, conveyors, machine tools and other general purpose three-phase applications.

Features

Suitable for mounting in any position. Ball bearings, heavy-gauge steel and cast-iron frames, and gasketed conduit boxes. Class F insulation, 1.15 service factor, low-loss electrical grade lamination steel. EM Super-E® motors have NEMA Premium® efficiency and three years warranty. Motors with TR suffix have roller bearings for heavy belted loads.

Severe duty motors

Three-phase, totally enclosed, foot mounted

- 1 – 400 HP
- NEMA 143T – 449T



Applications

Petrochemical plants, mines, foundries, pulp and paper plants, waste management facilities, chemical plants, tropical climates and other processing industry applications requiring protection against corrosion caused by severe environmental operating conditions.

Features

ECP motors are XEX designs. 1.15 service factor, corrosion resistant epoxy finish, regreasable ball or roller bearings, oversized rotatable cast iron conduit box, cast iron frames, V-ring shaft seal, moisture resistant copper windings. Class F insulation, stainless steel nameplate and corrosion resistant hardware. ECP/XEX Super-E® motors have NEMA Premium® efficiency and three years warranty. Positive lubrication system (PLS) on 360 frames and larger.

Explosion-proof motors

Single and three-phase, foot mounted

- 1/4 – 300 HP
- NEMA 48 – 449T



Applications

Ideal for use where hazardous fumes or dust may be present.

Features

UL and CSA approved for Division 1, Class I, Group D; Class I, Group D, Class II Group F & G; Class I, Group C & D, Class II, Group F & G. Corrosion resistant epoxy finish. Shipped with UL- and CSA approved cast conduit box assembled to each motor. 1.00 service factor. EM Super-E® explosion proof motors have NEMA Premium® efficiency and three years warranty.

Low voltage AC motors

Central motor stock, Menden, Germany

ABB's European logistics centre in Menden, Germany offers customers on-time and just-in-time delivery on a wide range of ABB products.

The 23,000 square metre facility has 45,000 automated parts bins and stocks over 2.5 million ABB items including parts and accessories.

NEMA motors are in stock at the facility and include:

- NEMA general purpose
- ECP XEX severe duty
- IEEEE841 totally enclosed severe duty and speciality motors.

NEMA general purpose TEFC motors are basic protection motors used on pump and fan applications and have a protection similar to the European IP44 rating.

The NEMA ECP XEX severe duty TEFC motors are suited to tougher industrial operating environments and are protected similar to IP54.

The IEEEE841 specification, totally enclosed severe duty motors are protected similar to IP56.

Among those motors stocked in Menden are 2-pole and 4-pole variants, with various mounting styles available including foot mounted, C-face mounted and C-face footless options. The speciality motors include a selection of Baldor permanent magnet DC motors.



6

NEMA motors are now available within 48 hours from ABB's central European stockholding in Germany.

NEMA general purpose motors

- 1/3 through 250 HP, 0.25 to 187 kW

NEMA general purpose motors

- 1/3 through 250 HP, 0.25 to 187 kW

IEEEE841 standard severe duty motors

- 1 through 250 HP, 0.75 to 187 kW



Low voltage AC motors

Mod Express® line, Menden, Germany

Modifications to NEMA motors, certified to CSA standards, can be carried out by ABB at its European logistics centre in Germany for distribution across Europe.

The motor build centre, called the Mod Express® line, carries out modifications to NEMA general purpose, severe duty and IEEE 841 severe duty motors held in stock. General purpose and IEEE severe duty motors are available with foot mount, C-face foot and C-face footless options and severe duty motors stocked with foot mounted options.

ABB's European logistics centre in Germany is fully equipped with a secure storage facility, access to fast-track air freight dispatch and has an export packaging option through the Mod Express® line, giving an all-in-one facility for immediate NEMA motor dispatch.

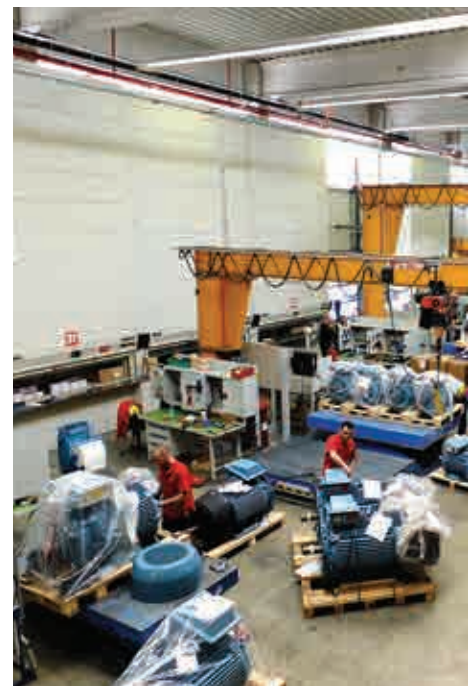
A dedicated exports team ensure that all the correct paperwork is supplied with the motor to allow on-time delivery worldwide without Customs delays.

ABB is the only supplier able to deliver a customised NEMA motor from local stock with full accreditation to CSA anywhere in the world.

The modifications available for these motors include:

- Installation of thermistors
- Thermal protection sensors
- Bearing upgrades
- Conduit box modifications
- Tropicalisation
- Customised paint finishes
- Nameplate modification

6



High voltage AC motors

Overview

Engineered rib-cooled motor NXR

- 100 kW to 1,250 kW
- 355 to 450 frame size
- New platform for HV rib-cooled motors
- High efficiency levels, low noise levels
- Fixed-speed, variable-speed and safe area use



Engineered rib-cooled motor HXR

- 100 kW to 2,250 kW
- 355 to 560 frame size
- High efficiency levels, low noise levels
- Fixed-speed, variable-speed and hazardous area use



High voltage AC motors

Overview

6



- Modular induction motors
- Built from the basic design by using modular construction
 - Complete range of enclosures and cooling arrangements
 - Optimal weight to power ratio
 - 140 kW to 23,000 kW
 - 400 – 1000 frame size



- Flameproof motors Ex d
- Motor intended for explosive atmosphere
 - Protection category according to EN/IEC Flameproof Ex d, Ex de
 - Totally-enclosed, fan-cooled
 - Cooling methods: IC411 and IC511
 - Both cast-iron and welded steel frame available
 - Certified according to ATEX directives, IEC, EN and NEMA standards and all major local requirements
 - Suitable for variable-speed drives
 - 160 kW to 8,000 kW
 - 355 – 900 frame size

Low voltage AC motor services

MotorAdvantage

MotorAdvantage aims to encourage industry to uncover the true cost of running electric motors. Research by ABB reveals that UK industry is failing to efficiently manage its motor inventory, thereby incurring millions of pounds of unnecessary downtime, repair and energy costs.

MotorAdvantage is aimed at companies operating a continuous process such as those found in food & beverage, chemical, oil & gas and pharmaceuticals. Such processes tend to have critical applications, whereby if a motor fails the cost to a company can be hundreds of pounds per hour in lost revenue. It is not just the loss of production but the potential loss of the company's customer.

How it works

There are three stages to MotorAdvantage:

1. Consultation

During the consultation process ABB examines the installed motor asset register for the plant and, working with the local engineers, identifies up to five critical applications that are running either continuously or for more than 4,000 hours per annum. They then determine some basic information about these motors such as:

- How old are the installed motors?
- How efficient are the installed motors?
- How many hours do they run per annum?
- Have they been rewound before?
- What spares holding do you have for critical plant?
- What is your repair/rewind policy for 'failed' motors?

ABB also engages with the plant's process engineers to determine the exact design criteria for the various processes. This gives ABB a clearer understanding of how the process is meant to operate and its critical design operating points, thereby ensuring that a properly dimensioned motor is selected should a replacement be deemed necessary.

2. The Appraisal

An ABB engineer, or one of ABB's Authorised Value Providers partners, visits the end-user to inspect the selected motors, get an understanding of the plant, the inventory of spare motors, energy and maintenance plans. It is not unusual to find that an old motor can be 1-5 percent lower in efficiency compared to a new premium efficiency variant. If that motor is running continuously then you can achieve a typical payback of between two to three years should you wish to take the decision to scrap the motor prior to failure.



If the motor is replaced at the point of failure then taking the rewind cost into the payback calculation, the new motor cost can be recovered in less than 12 months. Bear in mind that many rewound motors will only have a six month warranty of the repaired components whilst a new premium efficiency motor from ABB comes with a three year warranty.

3. Proving the savings – report and recommendations

Following the collection of the data, the findings are analysed and potential savings identified using dedicated software. The findings are methodically presented, with tables being created to help identify where savings are likely to arise. Among the data available includes an estimation of present energy usage; whether the application would benefit from variable-speed control; payback time if an investment is made in new motors; carbon dioxide emission reductions; along with many other key facts and analysis.

An action plan is prepared, usually comprising an Executive Summary and a detailed Engineer's Report, highlighting applications that can save the most. The figures will normally be translated into monthly savings, and there will be detailed recommendations for implementation.

Benefits

- In just half-a-day, an ABB engineer can assess up to five installed motors that could benefit from a motor management plan
- Examines the end-users current policy in the event of a motor failure and the financial impact on the company
- Identifies improvements to be made with regards to maintenance and stockholding
- Determines the energy use of the current installation

Low voltage AC motor services

DriveSize & MotSize

DriveSize

DriveSize is a software tool that helps users select an optimum motor, drive and transformer especially for applications where straightforward selection from a catalogue is not possible.



DriveSize can also compute current, network harmonics and create dimensioning documents based on actual load parameters. DriveSize is available to use online via the ABB website or can be downloaded for use on a PC. For system requirements see:

<http://new.abb.com/drives/software-tools/drivesize>

DriveSize contains a current version of the ABB motor and drives catalogue and allows users to import their own motor database. The default values make DriveSize simple to use with ample options for drive selection.

The software performs dimensioning based on the following input:

- Speed range and mechanical load with overloads
- Ambient temperature and altitude
- Required IP-class and allowed temperature rise
- Supply network characteristics
- Load type and duty cycle
- Optionally current requirements for inverter unit
- Optionally current requirements for inverter unit Optionally current
- Apparent power requirement for the transformer

The software enables you to:

- Calculate the network harmonics of individual drive or set of drives
- Obtain efficiency values
- See your selection in graphical or numeric form
- Select manually an optional unit from database
- Print reports in Excel
- Save the results into XML project files
- Import your own motor database

Benefit

- Select an optimal motor, frequency converter and transformer
- Dimensioning based on actual shaft load
- Documents dimensioning results, graphical and numerical presentation
- Network harmonic and power factor calculation
- Print and save the results

MotSize

MotSize is a selection tool that helps users to select an optimal direct-on-line (DOL) motor from the low voltage motors catalogue. Additionally, MotSize allows users to dimension motors for specific application requirements.

MotSize functions

The software performs dimensioning based on the following data:

- Ambient conditions
- Altitude
- Requirements for a temperature rise
- Supply network data
- Load type and duty cycle

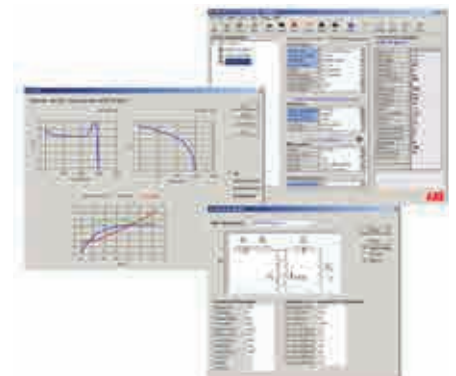
The following single-speed and/or two-speed motor types are included:

- General purpose motors:
 - Aluminium, cast iron, steel, open drip proof, brake
- Process performance motors:
 - Cast iron, aluminium
- Marine motors:
 - Aluminium, cast iron, steel, open drip proof
- Hazardous area motors:
 - Non-sparking aluminium, cast iron motors
 - Increased safety aluminium, cast iron motors
 - Flameproof cast iron motors
 - Dust ignition proof aluminium, cast iron motors

The software can handle imperial as well as metric units, all technical data is updated regularly.

The software also enables you to:

- Specify starting conditions
- Rest current, power, voltage and frequency
- Obtain rating data as well as data with partial load
- Choose the language for the printouts
- Print-out technical data sheets and graphs



Low voltage AC motor services Optimiser

ABB's Optimiser is an online tool that can quickly select the optimum motor for any minimum energy performance standard (MEPS) worldwide.

Motor users can select motors, compare running costs and get further documents about their motors and work out the cost of ownership.

Optimizer gives users eight drop down selection menus.

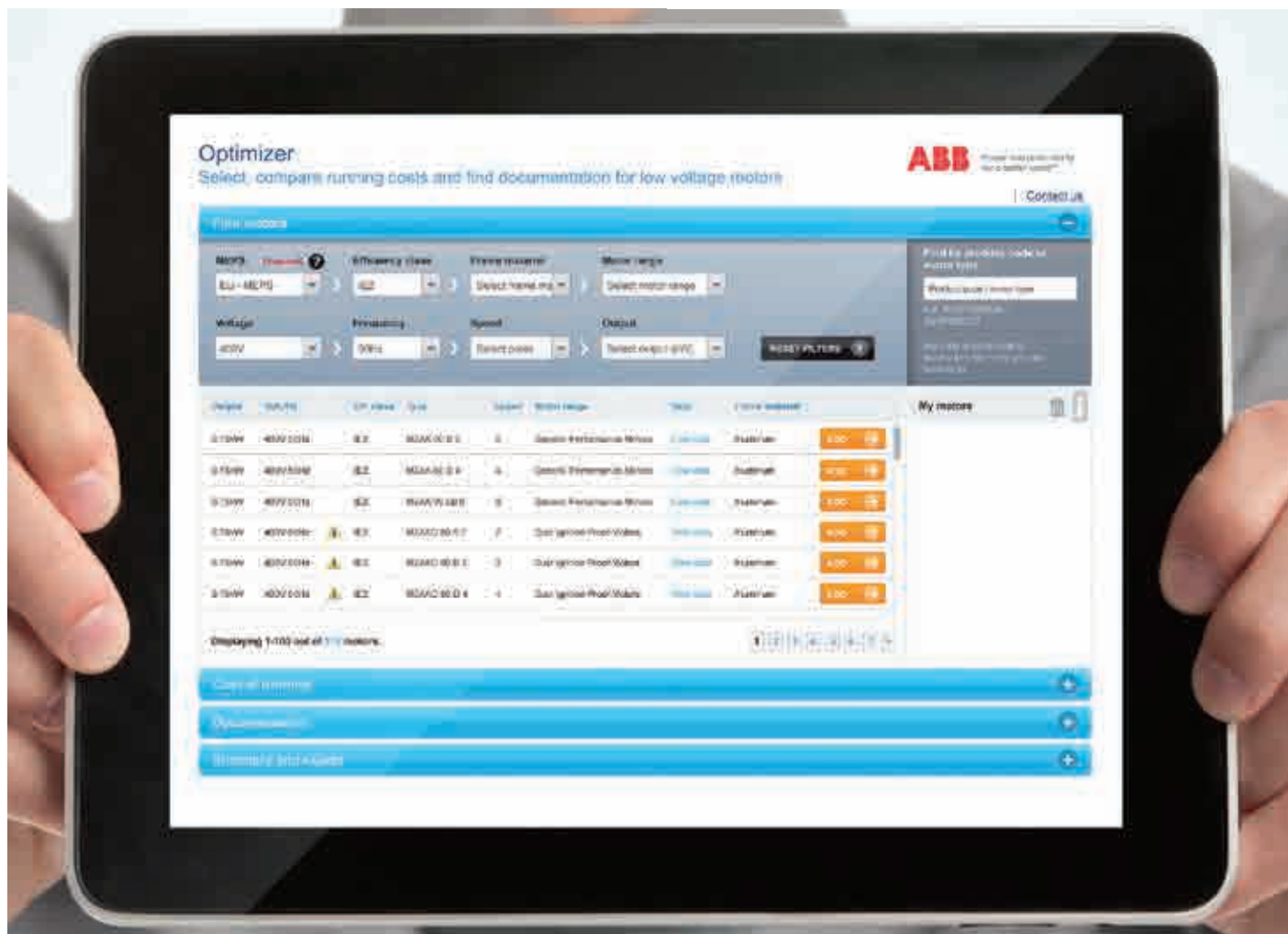
1. MEPS area (e.g. EU, United States)
2. Efficiency class (IE2, IE3 etc)
3. Frame material
4. Motor range
5. Voltage
6. Frequency
7. Speed
8. Power output

Once the required characteristics are selected, the tool presents a list of suitable motors. Selecting EU MEPS, IE3, dust ignition proof motors, 400 V, 50 Hz, all poles and outputs, returns a list of 49 suitable motors. They can be compared by running cost, payback periods, life cycle savings and reduction in greenhouse gas emission.

Optimizer automatically suggests a higher efficiency motor and highlights savings realised by upgrading. Test reports, drawings, data sheets and other documents can be accessed quickly and easily for the selected motors. Documents can be opened on screen, saved or exported as a zip file.

Optimizer can be downloaded from the Apple store for iPad use by searching for 'ABB Optimizer'.

For more information about Optimizer call the ABB motors team on **07000 MOTORS**, that's **07000 668677**





AC motors

Motors and generators services

ABB MACHsense-P

Regular health checks help to maintain maximum performance over entire life cycle

ABB MACHsense-P is a condition monitoring service that addresses the reliability of the complete shaft line, including the motor, gearbox and driven load (pump, fan or compressor). It identifies electrical and mechanical issues related to the rotor, bearings, gearbox and other components – problems which account for a major percentage of total failures.

Key benefits:

- Instant summary report, with a full report after detailed analysis
- Earlier warnings and more comprehensive diagnosis than conventional solutions
- Vibration and electrical measurements are processed in a single software platform to avoid false positives and negatives
- Advanced software delivers a high degree of accuracy
- Collection of vibration data over wider frequency range covers greater number of potential problems
- Testing is done with the motor in its operating condition, so no preparatory work is necessary
- Optimised cost of ownership

ABB MACHsense-R

Continuous, remote monitoring with instant alarms and expert follow-up

ABB MACHsense-R continuously monitors key condition parameters specific to the type of motor being monitored. ABB MACHsense-R can identify nascent fault conditions at an earlier stage than conventional methods. Shaft line monitoring can be implemented with MACHsense-R.

Customers can access operating data and trend graphs via the internet. An alarm is triggered if a measured parameter exceeds set limits, giving the plant operator an early warning that maintenance is needed.

Key benefits:

- Motor or generator is constantly monitored during operation
- Model based analysis increases reliability of defect identification and quantifies defect severity
- Motor and generator design and construction taken into account for higher precision
- Multi-channel operation and fast data collection rates increase sensitivity

- On-board processing reduces volume of data transmitted to server for lower communication costs
- Authorised customers can quickly access motor or generator specific data on ABB's server
- Customers can receive regular reports on condition of their motors and generators
- Unplanned downtime is reduced, resulting in optimised cost of ownership

ABB LEAP

Life Expectancy Analysis Program (LEAP) for motors and generators

ABB Life Expectancy Analysis Program or ABB LEAP is a diagnostic tool for assessing the condition of the stator winding insulation in electric machines.

ABB LEAP goes further than conventional health monitoring programmes for rotating electrical machines, which typically use green, yellow and red LEDs, or similar to express the results. ABB has evolved this methodology to a new level: ABB LEAP analysis provides precise information on the remaining lifetime of the stator winding. Based on this, specific service actions can be planned well ahead. This method drastically reduces unplanned shutdowns caused by the failures due to factors such as thermal, electrical, ambient, or mechanical aging.

Key benefits:

- Optimises maintenance planning for electrical machines by moving from time based to condition based maintenance
- Supports efforts to extend machine lifetime, boosting return on investment (ROI)
- Facilitates decision making for short and long term maintenance and run-replace decisions
- Minimises unplanned downtime and reduces risk levels
- Provides information for lifecycle cost estimation





Mechanical power transmission

[Gearings](#) [112](#)

[Mounted bearings](#) [113](#)

[Couplings](#) [115](#)

Mechanical power transmission

Gearings

For well over a century, Dodge products have helped manufacturers, OEM and producers increase the productivity and profitability of their operations.

ABB is excited to bring the history and innovation of ABB Dodge mechanical power transmission products to our portfolio.

Torque-Arm II



- All reducers can be shaft mounted: screw conveyor, vertical, and flange mounted
- Up to 294 kW
- Up to 56,500 Nm
- Standard 5, 9, 15, 25, and up to 40:1 gear ratios
- Nearly 300:1 speed reduction with V-belt drives
- Twin-tapered bushing bores: 25 mm through 160 mm
- Highly efficient helical gearing
- Meets or exceeds AGMA standards, including 5,000 hours L10 life and 25,000 average hour life
- New heavy duty lip seals for extended wear life, -40 - 138°C
- 100 percent factory noise and leak tested
- New metal shield sealing system with excluder lip
- AGMA output torque ratings up to 56,500 Nm

Quantis



- Inline helical (ILH), right angle helical bevel (RHB), motorised shaft mount (MSM)
- 0.75 kW - 56 kW up to 14,000 Nm
- Ratios, 1.5:1 - 300:1
- 8 case sizes per housing configuration, clamp collar, 3-piece coupled, integral gearmotor, separate input. Solid, straight hollow output – ILH/MSM efficiency of 98 percent per stage, RHB efficiency of 95 percent per stage
- All units shipped filled with oil from the factory and are installation ready
- Optional XT harsh duty seal for operation in wet and dirty environments
- Class 30 grey iron housings cast with internal ribbing for added strength
- Options include washdown and screw conveyor configurations

MagnaGearXTR®



- Parallel shaft or right angle configurations available
- Torque capacities from 32 - 104 kNm available
- Global product design to fit all markets
- Multiple mounting configurations available (base mounting, swing base mounting, tunnel housings)
- Can be used with a variety of soft start mechanisms including VSD and fluid couplings

Mechanical power transmission

Mounted bearings

When it comes to reliable service and low maintenance, ABB Dodge® mounted ball bearings are unmatched in the industry. ABB Dodge mounted ball bearings are available in any of our proven locking devices: our exclusive 65° setscrew locking

Setscrew ball bearings



system, our patented Grip Tight adapter mounted, eccentric locking collars and D-Lok™ concentric clamp locking system mounted ball bearing.

- Superior 65° locking setscrew
- DualGuard seal – comprised of single lip seal and rubberised flinger
- Stronger, more flexible bearing cage
- Optimum balance between locking forces
- Heat stabilised nylon construction with an inner ring stress fiber-glass reinforcement
- Secure fit to the shaft

Grip Tight® ball bearings



- Two types: normal duty GT and medium duty GTM
- DualGuard seal – comprised of single lip seal and rubberised flinger
- Thin wall adapter mounting offers 360° full shaft contact and concentricity. No shaft
- Marring or fretting corrosion like setscrew and eccentric collar products. Integral dismount feature easily removes the bearing from the shaft. Turned, ground and polished shafting is not required
- Anti-rotation device prevents insert rotation associated with heavy loads, vibration, unbalanced loads and high-speed applications
- High-temperature option available to 204 °C
- Plus or minus 2° static misalignment

Ultra Kleen®, E-Z Kleen®



- Reinforced polymer and stainless steel housings
- Patented polymer housing includes antimicrobial agent which resists bacterial and fungus growth - two inserts: corrosion resistant and stainless steel insert
- Three locking devices: 65° setscrew angle (SC), Grip Tight adapter mount and concentric clamp collar (D-Lok).
- Quadguard seal: comprised of our triple lip seal and rubberised flinger. Additional grease retention provided by the maxlife cage
- Anti-rotation device prevents insert rotation associated with heavy loads, vibration, unbalanced loads and high-speed applications - plus or minus 2° static misalignment

Mechanical power transmission

Roller bearings

For decades, industry's leading producers have depended on ABB Dodge® roller bearings to handle their conveyance and power transmission needs. ABB Dodge bearings

offer innovative designs; a wide range of shaft attachment methods, rolling elements, housings and seal choices, patented features and consistent performance.

ISN spherical roller bearings



- The only push/pull adapter mount system
- Available in two-bolt pillow blocks
- Accepts commercial shaft tolerances
- Installation and removal in fewer than 15 minutes
- Fully concentric shaft attachment with adapter sleeve mount
- Virtually eliminates fretting corrosion
- Capable of withstanding static or dynamic misalignment of $\pm 1^\circ$ - shaft-ready out of the box - available with Trident triple lip or labyrinth seal options
- Sizes range from 30 mm through 170 mm
- SN mounting dimensions

Type E-xtra® tapered roller bearings



- Tapered rolling elements
- Completely assembled, factory adjusted and properly lubricated
- Shaft ready
- Extra protection
- E-Tect seal option - comparable mounting dimensions with ball bearings
- E-xtra allows easy upgrade from ball bearings

Mechanical power transmission

Couplings

Elastomeric, sleeve style - ABB Dodge D-Flex couplings



Three-way flexing action handles shock, vibration and misalignment. The ABB Dodge D-Flex™ coupling features moulded, non-lubricated, interchangeable elastomeric sleeves of EPDM, neoprene Hytrel. Its three-way flexing action accommodates torsional, angular and parallel misalignment, as well as axial end float.

Elastomeric, tyre style - ABB Dodge Para-Flex



ABB Dodge Para-Flex elements are manufactured with reinforcing fabric tension cords that transmit much of the torque during operation.

The uniform and centred bead in the foot of the tyre element prevents it from pulling out during operation. Additionally, the tyre element is reinforced at the split to reduce fatigue and extend life.

ABB Dodge Para-Flex elements provide accommodation of shaft misalignment during installation, running-time and replacement better than other elastomeric elements.

With an industry-leading combined 4° angular, 3.17 mm (1/8 in.) parallel and 7.93 mm (5/16 in.) end-float capability, Para-Flex couplings will perform in difficult applications and reduce valuable time needed for installation and maintenance.

Metallic, grid style - ABB Dodge Grid-Lign



Compact in size, yet high in torque capability, ABB Dodge Grid-Lign couplings are available in a variety of sizes, in standard and spacer styles. Every coupling features two steel shaft hubs, a tapered grid element, two seals and a cover assembly. Its versatile design allows for a motor or reducer output speed connection and its speed capability ranges up to 6,000 rpm dependant on size. ABB Dodge Grid-Lign is available in T31 and T35 spacer designs up to size 1200T. This spacer offering can be used as a spacer coupling, or mounted to a brake disc or drum.

The ABB Dodge Grid-Lign coupling's tapered grid element is engineered with high-strength, spring steel that is quenched and tempered. This feature helps isolate vibration and cushions shock loads. In addition, it allows uniform contact during light, normal and shock-loading conditions for long machine life.

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Printed in the UK